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# **FT-2000 OC-48 Lightwave System Releases 3.0 Through 8.1**

Operations Systems Engineering  
Guide

824-102-148  
Issue 7  
December 1997

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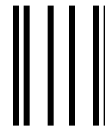
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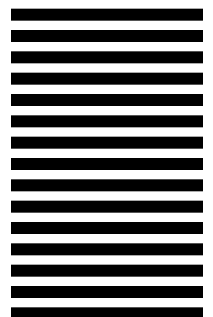
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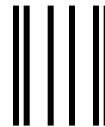
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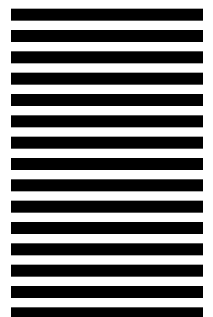
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---

# Contents

---

---

## About This Document

|                                                         |        |
|---------------------------------------------------------|--------|
| ■ Purpose                                               | xix    |
| ■ Intended Audiences                                    | xix    |
| ■ Reason for Reissue                                    | xix    |
| ■ How To Use This Document                              | xx     |
| ■ Related Documentation/Training                        | xxi    |
| Lucent Technologies Practices                           | xxi    |
| Lucent Technologies Drawings                            | xxv    |
| Lucent Technologies Practices for Related Equipment     | xxviii |
| Training                                                | xxix   |
| ■ Technical Support                                     | xxx    |
| ■ Documentation Support                                 | xxxiii |
| ■ How to Order Documents                                | xxxiii |
| ■ How to Comment on the FT-2000 -OC-48 Lightwave System | xxxiv  |
| ■ How to Comment on This Document                       | xxxiv  |
| ■ Electronic Documentation                              | xxxiv  |
| ■ Product Change Notifications                          | xxxv   |

---

## 1 Introduction

|                                                               |     |
|---------------------------------------------------------------|-----|
| ■ Overview                                                    | 1-1 |
| ■ Introduction to the Lucent Technologies 2000 Product Family | 1-1 |
| ■ Introduction to Operations Systems Interfaces               | 1-2 |
| ■ Introduction to This Document                               | 1-3 |

---

## 2 FT-2000 OC-48 TL1/X.25 Interface

|                            |     |
|----------------------------|-----|
| ■ Overview                 | 2-1 |
| ■ Introduction             | 2-1 |
| ■ TL1-Related Provisioning | 2-2 |

---

## Contents

|                                                                 |      |
|-----------------------------------------------------------------|------|
| Allow or Inhibit Alarms                                         | 2-2  |
| Operations Systems Types                                        | 2-2  |
| Gateway Network Element Provisioning                            | 2-3  |
| Repeater Site Provisioning                                      | 2-3  |
| Target Identifier (TID)                                         | 2-3  |
| Miscellaneous Discrete Environmental Alarm Level                | 2-4  |
| Miscellaneous Discrete Environmental Description                | 2-4  |
| ■ Repeater Fault Locating                                       | 2-5  |
| ■ Security                                                      | 2-5  |
| ■ X.25 Technical Specifications                                 | 2-7  |
| TL1 Autonomous Messaging in Release 4.1 and Earlier             | 2-7  |
| Provisioning Autonomous TL1 Messages for Releases 5.0 and Later | 2-8  |
| Automatic Tag (ATAG) Numbering                                  | 2-9  |
| Data Terminating Equipment (DTE) Configuration                  | 2-9  |
| ASCII-Based Terminal                                            | 2-11 |
| CPro-2000 (A PC-Based Tool)                                     | 2-11 |
| ITM SNC Element Management System                               | 2-11 |
| ■ <i>Datakit</i> ® Provisioning                                 | 2-12 |
| Background and Assumptions                                      | 2-12 |
| Groups                                                          | 2-14 |
| Destination Addresses                                           | 2-15 |
| Permanent Virtual Circuit (PVC) Addresses                       | 2-16 |
| Data Base Configuration                                         | 2-17 |
| Module Specification                                            | 2-17 |
| FT-2000 End                                                     | 2-17 |
| NMA End                                                         | 2-18 |
| Port Configuration                                              | 2-18 |
| FT-2000 End                                                     | 2-18 |
| NMA End                                                         | 2-20 |
| FT-2000 Cabling                                                 | 2-21 |
| ■ Network Monitoring and Analysis System (NMA)                  |      |
| Data Base Definition                                            | 2-24 |

---

# Contents

---

|          |                                    |     |
|----------|------------------------------------|-----|
| <b>3</b> | <b>FT-2000 TL1 Message Details</b> |     |
|          | ■ Overview                         | 3-1 |
|          | ■ TL1 Messages                     | 3-6 |

---

|          |                                                                                                                                  |      |
|----------|----------------------------------------------------------------------------------------------------------------------------------|------|
| <b>4</b> | <b>FT-2000 OC-48 Serial Telemetry (TBOS)</b>                                                                                     |      |
|          | ■ Overview                                                                                                                       | 4-1  |
|          | ■ Introduction                                                                                                                   | 4-1  |
|          | ■ TBOS Test                                                                                                                      | 4-7  |
|          | ■ TBOS Alarm and Status Points                                                                                                   | 4-8  |
|          | FT-2000 OC-48 Common Alarm and Status<br>Points for Add/Drop-Rings Terminal,<br>Release 3.0/3.0.1                                | 4-18 |
|          | FT-2000 OC-48 TBOS Alarm and Status<br>Points for OC-48 Add/Drop-Rings Terminals,<br>Releases 4.0, 4.1, 5.0, 6.0, 7.0 and<br>7.1 | 4-29 |
|          | FT-2000 OC-48 TBOS Alarm and Status<br>Points for Repeater Sites                                                                 | 4-39 |
|          | FT-2000 OC-48 TBOS Status Points for<br>Repeater Sites                                                                           | 4-41 |
|          | ■ TBOS Control Points                                                                                                            | 4-43 |
|          | ■ TBOS Alarm and Status Point — TL1<br>Translation                                                                               | 4-50 |
|          | ■ TBOS Control Point — TL1 Translation                                                                                           | 4-57 |
|          | ■ NMA Scan Point Definition                                                                                                      | 4-57 |
|          | NMA Service Effect                                                                                                               | 4-57 |
|          | NMA "Threshold Level" (Condition<br>Description)                                                                                 | 4-57 |
|          | NMA Signal Levels                                                                                                                | 4-58 |
|          | NMA Equipment Data Base Definition                                                                                               | 4-58 |

---

|          |                                                          |  |
|----------|----------------------------------------------------------|--|
| <b>5</b> | <b>FT-2000 OC-48 ADR Terminal Parallel<br/>Telemetry</b> |  |
|----------|----------------------------------------------------------|--|

---

## Contents

|                           |     |
|---------------------------|-----|
| ■ Overview                | 5-1 |
| ■ Introduction            | 5-1 |
| ■ Parallel Telemetry Test | 5-3 |

---

|           |                 |      |
|-----------|-----------------|------|
| <b>GL</b> | <b>Glossary</b> | GL-1 |
|-----------|-----------------|------|

---

|           |              |      |
|-----------|--------------|------|
| <b>IN</b> | <b>Index</b> | IN-1 |
|-----------|--------------|------|



# Figures



## About This Document

|                    |      |
|--------------------|------|
| 1. Product Support | xxxi |
|--------------------|------|



|          |                                                           |      |
|----------|-----------------------------------------------------------|------|
| <b>2</b> | <b>FT-2000 OC-48 TL1/X.25 Interface</b>                   |      |
| 2-1.     | FT-2000 <i>Datakit</i> Provisioning Example               | 2-13 |
| 2-2.     | <i>Datakit</i> II to FT-2000 Cabling Arrangement          | 2-22 |
| 2-3.     | Pinouts for Modified FT-2000/ <i>Datakit</i> II VCS Cable | 2-24 |

---

## Tables

---

### 2

#### **FT-2000 OC-48 TL1/X.25 Interface**

|      |                                                               |      |
|------|---------------------------------------------------------------|------|
| 2-1. | TL1/X.25 Interface — PVC Assignments<br>(Through Release 4.1) | 2-7  |
| 2-2. | TL1/X.25 Interface — SVC Assignments<br>(Through Release 4.1) | 2-7  |
| 2-3. | TL1/X.25 Interface — X.25 Packet Layer<br>Parameters          | 2-9  |
| 2-4. | TL1/X.25 Interface — LAPB Link Layer<br>Parameters            | 2-10 |
| 2-5. | TL1/X.25 Interface — EIA-232D Pin<br>Connections              | 2-10 |
| 2-6. | Node Address Assignments                                      | 2-16 |
| 2-7. | Cable Part Numbers                                            | 2-22 |

---

### 3

#### **FT-2000 TL1 Message Details**

|      |                               |     |
|------|-------------------------------|-----|
| 3-1. | TL1 Command and User ID Table | 3-2 |
|------|-------------------------------|-----|

---

### 4

#### **FT-2000 OC-48 Serial Telemetry (TBOS)**

|      |                                                                                                                                           |     |
|------|-------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 4-1. | FT-2000 OC-48 TBOS Port Display<br>Configuration for 1x1 End Terminal (SER<br>TLM 1) - Releases 1.1 and 2.1                               | 4-2 |
| 4-2. | FT-2000 OC-48 TBOS Port Display<br>Information for Repeater Sites 1 through 6<br>(SER TLM 2) - Release 2.1                                | 4-3 |
| 4-3. | FT-2000 OC-48 TBOS Port Display<br>Configuration for Add/Drop-Rings Terminal<br>(SER TLM 1) - Release 3.0/3.0.1                           | 4-4 |
| 4-4. | FT-2000 OC-48 TBOS Port Display<br>Configuration for Add/Drop-Rings Terminal<br>(SER TLM 1) - Releases 4.0, 4.1, 5.0, 6.0,<br>7.0 and 7.1 | 4-5 |

## Tables

|       |                                                                                                                                                                                        |      |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 4-5.  | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Port Display Configuration (SER TLM<br>2) - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and<br>7.1                                                  | 4-6  |
| 4-6.  | FT-2000 OC-48 1x1 End Terminal TBOS<br>Alarm and Status Points (SER TLM 1) -<br>Releases 1.1 and 2.1 ( <b>Note</b> )                                                                   | 4-9  |
| 4-7.  | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Alarm and Status Points (EAST) -<br>SER TLM 1, Display 1 - Release<br>3.0/3.0.1                                                          | 4-18 |
| 4-8.  | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Alarm and Status Points (WEST) -<br>SER TLM 1, Display 3 - Release 3.0/3.0.1                                                             | 4-20 |
| 4-9.  | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Alarm and Status Points for General<br>System and Common Equipment - SER<br>TLM 1, Display 3 Releases 4.0, 4.1, 5.0,<br>6.0, 7.0 and 7.1 | 4-30 |
| 4-10. | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Alarm and Status Points for Line 1E<br>- SER TLM 1, Display 5 - Releases 4.0,<br>4.1, 5.0, 6.0, 7.0 and 7.1                              | 4-33 |
| 4-11. | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Alarm and Status Points for Line<br>1W - SER TLM 1, Display 7 - Releases<br>4.0, 4.1, 5.0, 6.0, 7.0 and 7.1                              | 4-36 |
| 4-12. | FT-2000 OC-48 TBOS Common Alarm and<br>Status Points for Repeater Sites - SER<br>TLM 2 - Releases 2.1, 4.0, 4.1, 5.0, 6.0,<br>7.0 and 7.1                                              | 4-39 |
| 4-13. | FT-2000 OC-48 TBOS Fault Locating<br>Status Points for Repeater Sites -<br>Releases 2.1, 4.0, 4.1, and 5.0                                                                             | 4-41 |
| 4-14. | FT-2000 OC-48 TBOS Control Points for a<br>1x1 End Terminal - SER TLM 1 - Releases<br>1.1 and 2.1                                                                                      | 4-44 |
| 4-15. | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Control Points for General System<br>and Common Equipment (SER TLM 1) -<br>Releases 3.0/3.0.1                                            | 4-46 |

---

## Tables

|       |                                                                                                                                                                      |      |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 4-16. | FT-2000 OC-48 Add/Drop-Rings Terminal<br>TBOS Control Points for General System<br>and Common Equipment (SER TLM 1) -<br>Releases 4.0, 4.1, 5.0, 6.0, 7.0 and<br>7.1 | 4-48 |
| 4-17. | FT-2000 OC-48 TBOS Alarm and Status<br>Point Translation to TL1 Messages                                                                                             | 4-51 |
| 4-18. | NMA Field Label to TL1 Parameter Name<br>Mapping                                                                                                                     | 4-57 |
| 4-19. | SONET Signal Mapping                                                                                                                                                 | 4-58 |

---

## 5 FT-2000 OC-48 ADR Terminal Parallel Telemetry

|      |                                   |     |
|------|-----------------------------------|-----|
| 5-1. | FT-2000 Parallel Telemetry Points | 5-2 |
|------|-----------------------------------|-----|



---

## About This Document

---

### Contents

|                                                              |        |
|--------------------------------------------------------------|--------|
| <b>About This Document</b>                                   | i      |
| <b>Purpose</b>                                               | xix    |
| <b>Intended Audiences</b>                                    | xix    |
| <b>Reason for Reissue</b>                                    | xix    |
| <b>How To Use This Document</b>                              | xx     |
| <b>Related Documentation/Training</b>                        | xxi    |
| ■ Lucent Technologies Practices                              | xxi    |
| ■ Lucent Technologies Drawings                               | xxv    |
| ■ Lucent Technologies Practices for Related Equipment        | xxviii |
| ■ Training                                                   | xxix   |
| <b>Technical Support</b>                                     | xxx    |
| <b>Documentation Support</b>                                 | xxxiii |
| <b>How to Order Documents</b>                                | xxxiii |
| <b>How to Comment on the FT-2000 -OC-48 Lightwave System</b> | xxxiv  |
| <b>How to Comment on This Document</b>                       | xxxiv  |
| <b>Electronic Documentation</b>                              | xxxiv  |
| <b>Product Change Notifications</b>                          | xxxv   |

---

## About This Document

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### **Purpose**

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This document includes operations systems (OS) engineering information for FT-2000 OC-48 Lightwave System (Releases 3.0 and later).

### **Intended Audiences**

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This document is primarily for network operations planners, facility maintenance center personnel, transmission engineers, and technical support staff. It may be used by anyone desiring specific information about the OS interfaces of the FT-2000 OC-48 Lightwave System.

### **Reason for Reissue**

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This document, Issue 7, replaces the FT-2000 OC-48 Lightwave System, Issue 6. This document was reissued to provide information for Release 8.0 and 8.1. Significant changes include the following:

- Because FT-2000 Release 8.0 and later are intended to facilitate OS-based centralized operations in multi-vendor networks and because TL1/X.25 OS access is the key standardized multi-vendor Operations Interworking (OI) application, the following Remote NE Status features are not (except the FE ACTY LED - See the following Note.) supported in FT-2000 OC-48 R8.0 and later:
  - Remote office alarms

- Remote CIT alarm reports
- Remote user panel indications
- TBOS
- Parallel telemetry.



**NOTE:**

For Releases 8.0 and later, the FE ACTY LED is lighted only when an OC-48 protection switch is active at the remote terminal.

This change in operations functionality affected the TL1 message details of many TL1 commands.

- Updated Transaction Language 1 (TL1) message details (See above.)
- Added new TL1 messages
- Parallel and Serial Telemetry are not supported in Releases 8.0 and later. (See above.)

Vertical bars (|) located in the right margin indicate changes between issues.

## **How To Use This Document**

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This document is divided into eight white tabbed parts as follows:

- "Contents" — Provides an overall document contents.
- "About This Document" — Provides a brief description about the purpose and what the document contains.
- "Introduction" — Provides an Overview on the document, Introductions to: The Lucent Technologies 2000 Family of Products, OS Interfaces, and To This Document.
- "TL1/X.25 Interface" — This section provides information on the TL1/X.25 Interface.
- "TL1 Message Details" — This section provides detailed information for TL1 Messages.
- "Serial Telemetry (TBOS)" — This section provides information on serial telemetry OS interface.
- "Parallel Telemetry" — This section provides information on parallel telemetry to the OS.
- "Glossary"

## **Related Documentation/Training**

### **Lucent Technologies Practices**

The following Lucent Technologies practices provide information about the FT-2000 OC-48 Lightwave System:

- Number: 365-575-100  
Title: *FT-2000 OC-48 Lightwave System, Applications, Planning, and Ordering Guide*  
Audience: System planners and engineers  
Content: Features, applications, general description, system planning/engineering, and ordering information
- Number: 365-575-101  
Title: *FT-2000 OC-48 Lightwave System, Quick Reference Guide*  
Audience: End user maintenance personnel  
Content: Abbreviated list of common report commands and a trouble clearing procedure that can be used to clear most trouble
- Number: 365-575-115  
Title: *FT-2000 OC-48 Lightwave System, Releases 3 Through 7 Installation Manual*  
Audience: Customers planning to install and turn up the equipment  
Content: Customer installation instructions for the FT-2000 OC-48 Add/Drop-Rings Terminal and FT-2000 OC-48 Repeater Bay platforms
- Number: Comcode 107027484\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 4.0.0-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 4.0.0-ADR software
- Number: Comcode 107027468\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 4.0.0-RPTR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 4.0.0-RPTR software

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\* The software release descriptions are shipped with the FT-2000 software and are not orderable from the Lucent Technologies Customer Information Center.

- Number: Comcode 107027476\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 4.1.0-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 4.1.0-ADR software
- Number: Comcode 107361875\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 5.0.1-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 5.0.1-ADR software
- Number: Comcode 107653396\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 5.0.2-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 5.0.2-ADR software
- Number: Comcode 107717068\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 5.0.3-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 5.0.3-ADR software
- Number: Comcode 107741787\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 6.0.2-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 6.0.2-ADR software
- Number: Comcode 107559833\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 6.0.0-RPTR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 6.0.0-RPTR software

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\* The software release descriptions are shipped with the FT-2000 software and are not orderable from the Lucent Technologies Customer Information Center.

- Number: Comcode 107715096\*  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 7.0.0-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 7.0.0-ADR software
- Number: Comcode 107743437  
Title: *FT-2000 OC-48 Lightwave System, Software Release Description, Release 7.1.0-ADR*  
Audience: End user maintenance personnel  
Content: Status of problems fixed and known problems for Release 7.1.0-ADR software
- Number: 365-575-121  
Title: *FT-2000 OC-48 Repeater Bay/Shelf Provisioning Job Aid (Releases 2, 4, and 6)*  
Audience: End user maintenance personnel  
Content: List of provisionable parameters, original values, options, and the corresponding inputs for the FT-2000 OC-48 Repeater Bay/Shelf
- Number: 365-575-122  
Title: *FT-2000 OC-48 Add/Drop-Rings Terminal Provisioning Job Aid (Releases 4, 5, 6, and 7)*  
Audience: End user maintenance personnel  
Content: List of provisionable parameters, original values, options, and the corresponding inputs for the FT-2000 OC-48 Add/Drop-Rings Terminal
- Number: 365-575-123  
Title: *FT-2000 Threshold Crossing Alert (TCA) Parameters Provisioning Job Aid (Releases 4, 5, 6, and 7)*  
Audience: End user maintenance personnel  
Content: List of provisionable TCA parameters, original values, and the corresponding inputs for the FT-2000 OC-48 Add/Drop-Rings Terminal
- Number: 824-102-144  
Title: *2000 Product Family Multi-Vendor Operations Interworking Guide*  
Audience: Engineers responsible for system planning, using, or maintaining networks containing a mixture of 2000 Product Family products  
Content: Information on using operations interworking capabilities of the 2000 Product Family in multi-vendor subnetworks

- Number: 824-102-147  
Title: *2000 Product Family Operations Interworking Guide*  
Audience: Engineers responsible for system planning, using, or maintaining networks containing a mixture of 2000 Product Family products  
Content: Information on using operations interworking capabilities of the 2000 Product Family in multi-vendor subnetworks
- Number: 824-102-148  
Title: *FT-2000 OC-48 Lightwave System Operations Systems Engineering Guide*  
Audience: Engineers  
Content: Operations systems engineering information for the FT-2000 OC-48 Lightwave System
- Number: 824-102-151  
Title: *DDM-2000 Multiplexers Operations Systems Engineering Guide*  
Audience: Engineers  
Content: Operations systems engineering information for the DDM-2000 Multiplexers
- Number: MIP0030-MV  
Title: *Modification Implementation Procedure 0030-MV, FT-2000 End Terminal to 2-Fiber Add/Drop-Rings Terminal Out-of-Service Upgrade*  
Audience: RTAC, Installers, Engineers, and Planners  
Content: Procedures for upgrading out-of-service FT-2000 OC-48 1x1 End Terminals to FT-2000 OC-48 Add/Drop-Rings Terminals for 2-Fiber Rings
- Number: MIP0036-MV  
Title: *Modification Implementation Procedure 0036-MV, FT-2000 End Terminal to 2-Fiber Add/Drop-Rings Terminal In-Service Upgrade*  
Audience: RTAC, Installers, Engineers, and Planners  
Content: Procedures for transferring service off an in-service FT-2000 OC-48 1x1 End Terminal in preparation for the MIP0030-MV out-of-service upgrade to be performed
- Number: MIP0046-MV  
Title: *Modification Implementation Procedure 0046-MV, FT-2000 Add/Drop Ring Terminal DCC Cable Upgrade.*  
Audience: RTAC, Installers, Engineers, Planners  
Content: Convert an in-service FT-2000 OC-48 ADR Terminal J68974, L3 or equivalent to an ADR Terminal with OC-3 Data Communications Channel (DCC) capability, J68974, L5 or equivalent

## **Lucent Technologies Drawings**

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The following Lucent Technologies drawings provide information about the FT-2000 OC-48 Lightwave System:

|             |                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J68974AK-1  | <i>FT-2000 OC-48 Lightwave Terminating Bay<br/>(Circuit Packs, Miscellaneous Hardware, and Spare<br/>Parts Shipped Separately from Equipment)</i>          |
| J68974E-1   | <i>FT-2000 OC-48 Enhanced Lightwave Terminating Bay<br/>(Equipment and Circuit Packs Ordered with Equipment)</i>                                           |
| J68974EK-1  | <i>FT-2000 OC-48 Enhanced Lightwave Terminating Bay<br/>(Circuit Packs, Miscellaneous Hardware, and Spare<br/>Parts Shipped Separately from Equipment)</i> |
| J68974ES-1  | <i>FT-2000 OC-48 Enhanced Lightwave Terminating Bay<br/>(Software and Documentation)</i>                                                                   |
| J68974R-1   | <i>FT-2000 OC-48 Lightwave Repeater Bay<br/>(Equipment and Circuit Packs Ordered with Equipment)</i>                                                       |
| J68974RK-1  | <i>FT-2000 OC-48 Lightwave Repeater Bay<br/>(Circuit Packs, Miscellaneous Hardware, and Spare<br/>Parts Shipped Separately from Equipment)</i>             |
| J68974RS-1  | <i>FT-2000 OC-48 Lightwave Repeater Bay<br/>(Software and Documentation)</i>                                                                               |
| SD-5G250-01 | <i>FT-2000 OC-48 Lightwave Terminating Bay<br/>Application Schematic</i>                                                                                   |
| SD-5G250-02 | <i>FT-2000 OC-48 Enhanced Lightwave Terminating Bay<br/>Application Schematic</i>                                                                          |
| SD-5G252-01 | <i>FT-2000 OC-48 Lightwave Repeater Bay<br/>Application Schematic</i>                                                                                      |
| T-5G250-31  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Terminating Bay<br/>Interconnect Circuit</i>                                                  |
| T-5G250-33  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>Interconnect Circuit</i>                                         |
| T-5G252-31  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Repeater Bay<br/>Interconnect Circuit</i>                                                     |
| ED-6G994-30 | <i>User/Filter Panel</i>                                                                                                                                   |
| ED-6G995-30 | <i>High Speed Shelf Assembly</i>                                                                                                                           |



|                   |                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| ED-6G995-31       | <i>Enhanced High Speed Shelf Assembly</i>                                                                                                   |
| ED-6G999-30       | <i>Low Speed Shelf Assembly</i>                                                                                                             |
| ED-6G999-31       | <i>Low Speed Shelf Assembly</i>                                                                                                             |
| ED-7G000-30       | <i>Repeater Shelf Assembly</i>                                                                                                              |
| ED-7G001-10       | <i>Method of Cabling for ED-7G001-30<br/>OC-48 Lightwave Terminating Bay</i>                                                                |
| ED-7G001-11       | <i>Method of Cabling for ED-7G001-31<br/>OC-48 Enhanced Lightwave Terminating Bay</i>                                                       |
| ED-7G001-20       | <i>Cable Assemblies for ED-7G001-30<br/>OC-48 Lightwave Terminating Bay</i>                                                                 |
| ED-7G001-24       | <i>Cable Assemblies for ED-7G001-31<br/>OC-48 Enhanced Lightwave Terminating Bay</i>                                                        |
| ED-7G001-21       | <i>FT-2000 OC-48 Coaxial Cable Assemblies for<br/>All EC-1/DS3 Applications (Intraoffice Transmission<br/>Cables)</i>                       |
| ED-7G001-22       | <i>FT-2000 OC-48 Interbay Cable Assemblies<br/>(Intraoffice Non-Transmission Cables)</i>                                                    |
| ED-7G001-30       | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Terminating Bay Framework</i>                                                  |
| ED-7G001-31       | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>Framework</i>                                     |
| ED-7G002-10       | <i>Method of Cabling for ED-7G002-30<br/>OC-48 Lightwave Repeater Bay</i>                                                                   |
| ED-7G002-30       | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Repeater Bay Framework</i>                                                     |
| ED-8C500-50       | <i>Network Bay Frame</i>                                                                                                                    |
| ED-8C800-50       | <i>Seismic Network Bay Frame</i>                                                                                                            |
| FPD 804-911-168-1 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Terminating Bay<br/>(with 2 Active Shelves)</i>                                |
| FPD 804-911-168-2 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Lightwave Terminating Bay<br/>(with 3 Active Shelves)</i>                                |
| FPD 804-911-168-3 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>with 2 Active Shelves on Nonseismic Framework</i> |

|                    |                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| FPD 804-911-168-4  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>with 3 Active Shelves on Nonseismic Framework</i> |
| FPD 804-911-168-5  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>with 2 Active Shelves on Seismic Framework</i>    |
| FPD 804-911-168-6  | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Enhanced Lightwave Terminating Bay<br/>with 3 Active Shelves on Seismic Framework</i>    |
| FPD 804-911-168-10 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 1 Active Shelf on Nonseismic Framework</i>                         |
| FPD 804-911-168-11 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 2 Active Shelves on Nonseismic Framework</i>                       |
| FPD 804-911-168-12 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 3 Active Shelves on Nonseismic Framework</i>                       |
| FPD 804-911-168-13 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Shelf Miscellaneously Mounted</i>                                               |
| FPD 804-911-168-14 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 1 Active Shelf on Seismic Framework</i>                            |
| FPD 804-911-168-15 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 2 Active Shelves on Seismic Framework</i>                          |
| FPD 804-911-168-16 | <i>FT-2000 Lightwave Transmission System<br/>OC-48 Repeater Bay<br/>with 3 Active Shelves on Seismic Framework.</i>                         |

## **Lucent Technologies Practices for Related Equipment**

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The following Lucent Technologies practices provide information about related equipment:

|             |                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 065-215-200 | <i>Seismic Network Bay Frame Application, Planning, and Ordering Guide</i>                                                           |
| 065-215-250 | <i>Seismic Network Bay Frame Installation Guide</i>                                                                                  |
| 190-523-101 | <i>SNC-2000 CPro User Manual</i>                                                                                                     |
| 365-331-000 | <i>DACS III-2000 Release 2.0 Applications, Planning, and Ordering Guide</i>                                                          |
| 365-340-004 | <i>DACS IV-2000 Release 2.1 Reference Manual</i>                                                                                     |
| 363-206-200 | <i>DDM-2000 OC-3 and OC-12 Multiplexers, Applications, Planning, and Ordering Guide</i>                                              |
| 363-206-202 | <i>DDM-2000 OC-3 Multiplexer, User/Service Manual</i>                                                                                |
| 363-206-207 | <i>DDM-2000 OC-12 Multiplexer, User/Service Manual</i>                                                                               |
| 365-301-130 | <i>System III DSX-3/4, Planning, Engineering, Installation, and Operation System Reference Guide</i>                                 |
| 365-303-102 | <i>DSX-3 Cross-Connect Bay, Description, Operation, and Maintenance Manual</i>                                                       |
| 636-299-120 | <b>LGX</b> <sup>®</sup> <i>Distribution System, Planning, Engineering, Installation, and Operation System Reference Guide</i>        |
| 365-565-500 | <i>Digital Transmission Systems, FT-Lightwave Booster Amplifier, Description, Engineering, Installation, and Maintenance Manual.</i> |

## Training

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No product offering is complete without a formal training package. The National Product Training Center at Dublin, Ohio, provides management courses for system planning, engineering, and ordering, as well as training telecommunications technicians in installation, operations, and maintenance. Suitcasing of these courses is also available. Contact the National Product Training Center on **1-800-TRA-INER (1-800-872-4637)** to enroll in training classes. To arrange suitcase sessions, call the Product Training Manager on **1-614-764-5542**.

The following courses are provided by the National Product Training Center:

- Number: LW2248  
Title: *FT-2000 OC-48 Lightwave System Applications and Architecture*  
Audience: Fundamental planners, account executives, and private telecommunications network technical consultants  
Content: Basic synchronous optical network (SONET) terms, applications (for example, point-to-point, add/drop, rings), architecture (that is, bays, shelves, circuit packs), and operation, administration, maintenance, and provisioning (OAM&P) features
- Number: LW2348  
Title: *FT-2000 OC-48 Lightwave System Equipment Engineering and Planning*  
Audience: Facility planners, outside plant engineers, central office equipment engineers, and private network design engineers  
Content: Equipment and cabling specifications for engineering and ordering the FT-2000 OC-48 Lightwave System
- Number: LW2616  
Title: *FT-2000 OC-48 Add/Drop-Rings Terminal Operations and Maintenance*  
Audience: Technicians, installers, maintenance engineers, technical support personnel, product evaluators, and anyone desiring operations and maintenance information for the FT-2000 OC-48 Add/Drop-Rings Terminal  
Content: Description of initial turnup and day-to-day operations and maintenance tasks. Emphasis on developing the following:
  - Skills using the installation manual and the user/service manual
  - Competence performing turnup and day-to-day provisioning and maintenance tasks.

## Technical Support

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The Regional Technical Assistance Center (RTAC) and the Customer Technical Support (CTS) organization provide help in maintaining installed systems.

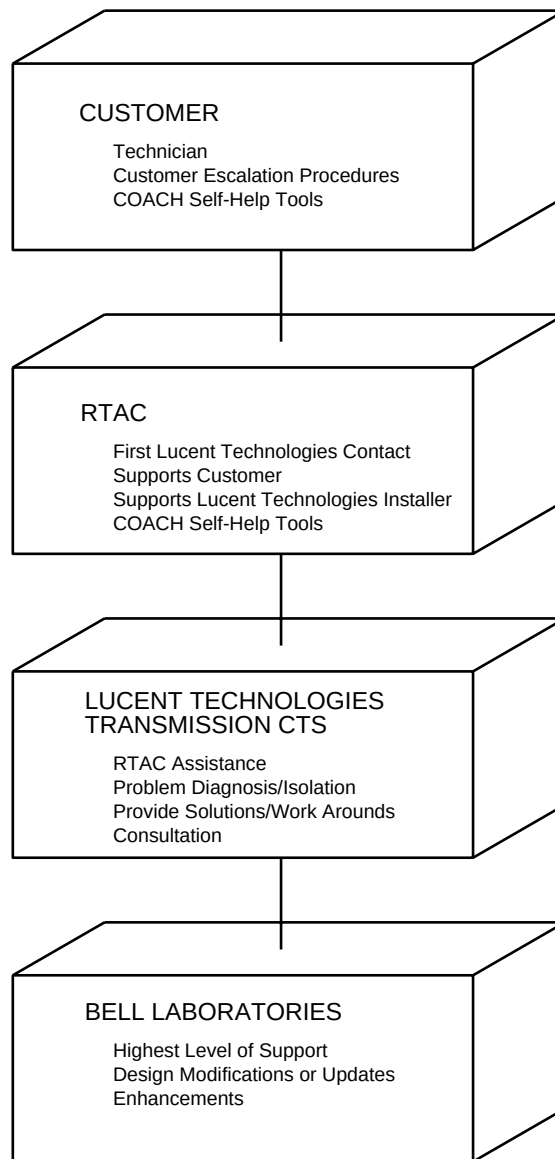
Figure 1 shows that the single point of contact is the RTAC. RTAC personnel troubleshoot field problems 24 hours a day over the phone and, if necessary, on site. For technical help, notify your supervisor, your local technical support organization, or call **1-800-225-RTAC** in accordance with local procedures. The RTAC technical assistance telephone number is also available for customers to provide feedback and enhancement suggestions for improving the FT-2000 OC-48 Lightwave System. One call guarantees support.

RTAC organizations are supported by a centralized CTS organization for transmission products. The CTS organization maintains a close relationship with Bell Laboratories and other Lucent Technologies organizations to expedite resolutions and maintain contact with the development community. This association provides continuous accessibility to every phase of a product life cycle and assures a prompt resolution to all inquiries.

The CTS organization has also established a technical support medium: the COACH customer support tools. COACH is a system of on-line support tools aimed at providing product news and bulletins, diagnostic services, compatibility information, and on-line documents. COACH tools provide you with the most up-to-date product information so that problems are either prevented or quickly resolved. COACH tools reside on a dedicated time-share computer accessible over toll free lines and are available 24 hours a day, 7 days a week.

Many transmission products are currently supported by COACH, including the FT-2000 OC-48 Lightwave System.

Once connected to COACH, the user specifies which product to access and COACH grants the appropriate combination of tools and commands. The user reaches each one of these tools and commands through a centralized, menu-driven computer program. Every screen provides help in making appropriate menu selections. COACH users achieve proficiency quickly because of the consistency of menu selections among products.



---

**Figure 1. Product Support**

These COACH tools are available to the user:

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diagnostic dictionary | The diagnostic dictionary contains histories of previously encountered problems and the descriptions of the solutions or workarounds. Your support staff can use this tool when published documentation or standard diagnostic procedures fail to address a problem.                                                                                                                                                                                                                                                                                           |
| News and bulletins    | Immediately after a user logs into the COACH tools, the news and bulletins tool displays bulletins containing urgent information relating to all the user's products. All users are automatically notified about urgent matters, such as problems with scheduled releases, recalls of hardware or software, or scheduled maintenance for computer support. Less urgent messages are distributed through news items that can be sent to individuals or categories of users. Notification of news appears on the screen immediately following current bulletins. |
| Compatibility data    | Occasionally, hardware/software configuration problems arise when new software releases are issued. The compatibility data tools permit users to view the correct hardware configuration associated with a specific software release. The user simply enters the appropriate software release number and COACH responds with page-formatted lists of circuit packs compatible with the selected software release. This tool also contains the latest issue numbers of the customer documentation.                                                              |
| COACH user's guide    | COACH supplies an on-line version of its user's guide. The COACH user's guide includes instructions on using the customer support tools and documents any changes to the previous version of the guide.                                                                                                                                                                                                                                                                                                                                                        |

For information about how to access COACH, contact:

COACH Software Development  
Department NB0031200  
Lucent Technologies  
1600 Osgood St.  
North Andover, MA 01845  
  
Telephone: **1-800-238-4021**  
FAX: **1-508-960-1772**

The RTAC and CTS organization strive to provide proactive and responsive technical customer support for all its products. Through the combined efforts of the individual customer support groups and through COACH tools, the RTAC and CTS organization provide the best possible customer support.

## **Documentation Support**

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The Lucent Technologies Customer Training and Information Products (CTIP) Organization provides a contact to report errors to or to ask questions about information in this document. The document support telephone number is **1-888-LTINFO6 or 1-910-727-6681** (Monday through Friday, 8:00 a.m. to 4:00 p.m. EST).

## **How to Order Documents**

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To order additional copies of this document and/or to request placement on the standing order list, send or call in an order as follows:

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|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commercial Customers* | Lucent Technologies<br>Customer Information Center<br>Attention: Order Entry Section<br>2855 N. Franklin Road<br>P.O. Box 19901<br>Indianapolis, IN 46219 | Within USA:<br><b>1-888-LUCENT-8</b><br><i>7:30 a.m to 6:30 p.m. EST</i><br>FAX: <b>1-317-322-6484</b><br>Europe, Middle East:<br>and Africa<br>Toll: <b>1-317-322-6416</b><br>Carribean, Latin America, and<br>Canada<br>Toll: <b>1-317-322-6646</b><br>All Other Countries:<br>Toll: <b>1-317-322-6411</b><br>Worldwide:<br>FAX: <b>1-317-322-6699</b> |
| RBOC/BOC              | Process through your company documentation coordinator                                                                                                    |                                                                                                                                                                                                                                                                                                                                                          |

\* For commercial customers, a check, money order, purchase order number, or charge card number is required with all orders. Make checks payable to Lucent Technologies.

Lucent Technologies entities should use Form IND 1-80.80 FA, available through the Customer Information Center.

One-time orders include a binder (if applicable) and the document contents for the current issue in effect at the time of order. Also, you may request placement on the standing order list for all later reissues of any document. The standing order list for each document provides automatic distribution for all reissues of the document. RBOC/BOC customers should process document orders or standing order requests through their company documentation coordinator.



If you do not have a company documentation coordinator, use the commercial customer telephone number listed above.

## **How to Comment on the FT-2000 OC-48 Lightwave System**

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The Regional Technical Assistance Center (RTAC) technical assistance telephone number is available 24 hours a day for customers to provide feedback and enhancement suggestions for improving the FT-2000 OC-48 Lightwave System. The toll free number is **1-800-225-RTAC**.

## **How to Comment on This Document**

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Feedback forms are located immediately after the title page of this document. Please fill out the form and return it to the address stamped on the front of the form, or fax it to the number provided on the form.

If the feedback forms are missing, send comments on this document to:

Documentation Services  
Lucent Technologies  
2400 Reynolda Road  
Winston-Salem, NC 27106

You may also report errors or request changes to this document by calling the toll free number, **1-888-LTINFO6** and giving the 9-digit document number.

## **Electronic Documentation**

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Documentation for the FT-2000 OC-48 Lightwave System is now available in electronic form, on compact disk, read-only memory (CD-ROM). CD-ROM has many advantages over traditional paper documentation, including cost savings, search and retrieve capability, and the assurance of the most current documentation.

CD-ROM is available by annual subscription (on standing order).

- To order, call your Technical Information Resource Manager, your Lucent Technologies Account Executive, or the Lucent Technologies Customer Information Center (1-888-LUCENT-8). The CD-ROM Product Line Order Number for the Lucent Technologies transmission product documentation is 300-100-010.
- For pricing information, contact your Lucent Technologies Account Executive or the Lucent Technologies Customer Information Center (1-888-LUCENT-8).

- For technical information, call Lucent Technologies Documentation Support (**1-888-LTINFO6**).

## **Product Change Notifications**

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During the life of a product, changes may be required in service to correct an existing or potential problem. Product changes are issued in the form of product change notices (PCNs). Customers are notified about PCNs through the Design Change Management System (DCMS). The DCMS is an on-line tool similar to COACH. For more information about DCMS, contact your local Account Executive.



**Introduction**

**1**

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**Contents**

|                                                                        |     |
|------------------------------------------------------------------------|-----|
| <b>Overview</b>                                                        | 1-1 |
| <b>Introduction to the Lucent Technologies 2000<br/>Product Family</b> | 1-1 |
| <b>Introduction to Operations Systems Interfaces</b>                   | 1-2 |
| <b>Introduction to This Document</b>                                   | 1-3 |

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## Introduction

# 1

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## Overview

This document provides information on the Lucent Technologies 2000 Family of Products and operations systems (OS) interfaces as follows:

- FT-2000 OC-48 Lightwave System
- FT-2000 Operations Systems Interfaces
  - Transaction Language (TL1)/X.25
  - Serial Telemetry (TBOS)\*
  - Parallel Telemetry.\*

## Introduction to the Lucent Technologies 2000 Product Family

Lucent Technologies is focused on a carefully planned and growing product family designed to provide total network solutions. The family complies with the synchronous optical network (SONET) standard and builds on items that customers have found to be useful and successful in networks such as single-ended maintenance features and upgrade capabilities. The Lucent Technologies 2000 Product Family includes the following products:

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\* Parallel and Serial Telemetry are supported by Release 7.2 and earlier only.

- DDM-2000 OC-3 Multiplexer
- DDM-2000 OC-12 Multiplexer
- DDM-2000 OC-12 Regenerator
- DDM-2000 FiberReach Multiplexer
- FT-2000 OC-48 Lightwave System
- DACS III-2000 Cross-Connect System
- DACS IV-2000 Cross-Connect System
- ITM XM
- *SLC*<sup>®</sup>-2000 Access System
- Business Remote Terminal-2000 (BRT-2000).

The 2000 Family, along with the *5ESS*<sup>®</sup>-2000 Switch, provides the significant elements of the Lucent Technologies Service Net-2000 Architecture.

The Service Net-2000 Architecture furnishes increased network capabilities with standard interfaces, increased bandwidth for end customer services, and faster provisioning.

## **Introduction to Operations Systems Interfaces**

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Transaction Language 1 (TL1), telemetry byte-oriented serial (TBOS) protocol, and parallel telemetry interfaces communicate alarm, status, and control information to/from alarm surveillance operations systems (OSs). In Regional Bell Operating Company (RBOC) applications, the alarm surveillance OS is typically Network Monitoring and Analysis (NMA). Serial telemetry interface uses the Telemetry Byte-Oriented Serial (TBOS) protocol. Parallel telemetry interface uses contact closures.

FT-2000 uses TBOS or parallel telemetry to communicate with a telemetry remote unit; the telemetry remote unit communicates with the OS. The TL1 interface communicates directly with the OS, not requiring the use of telemetry remote units or mediation devices (MDs).

The TL1 interfaces provide significantly more detailed alarm and status information than the TBOS or parallel telemetry interfaces. The TL1 interfaces also support performance-monitoring (PM) threshold-crossing alerts (TCAs) and retrievals of current and historical PM data. TBOS supports more detailed alarm, status, and control capabilities than parallel telemetry, and only a single TBOS connection to FT-2000 is required.

## **Introduction to This Document**

The following five tabbed sections will describe information in this document as follows:

- TL1/X.25 Interface
- TL1 Messages
- Serial Telemetry (TBOS)
- Parallel Telemetry
- Glossary.

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**Contents**

|                                                                   |      |
|-------------------------------------------------------------------|------|
| <b>Overview</b>                                                   | 2-1  |
| <b>Introduction</b>                                               | 2-1  |
| <b>TL1-Related Provisioning</b>                                   | 2-2  |
| ■ Allow or Inhibit Alarms                                         | 2-2  |
| ■ Operations Systems Types                                        | 2-2  |
| ■ Gateway Network Element Provisioning                            | 2-3  |
| ■ Repeater Site Provisioning                                      | 2-3  |
| ■ Target Identifier (TID)                                         | 2-3  |
| ■ Miscellaneous Discrete Environmental Alarm Level                | 2-4  |
| ■ Miscellaneous Discrete Environmental Description                | 2-4  |
| <b>Repeater Fault Locating</b>                                    | 2-5  |
| <b>Security</b>                                                   | 2-5  |
| <b>X.25 Technical Specifications</b>                              | 2-7  |
| ■ TL1 Autonomous Messaging in Release 4.1 and Earlier             | 2-7  |
| ■ Provisioning Autonomous TL1 Messages for Releases 5.0 and Later | 2-8  |
| ■ Automatic Tag (ATAG) Numbering                                  | 2-9  |
| ■ Data Terminating Equipment (DTE) Configuration                  | 2-9  |
| ■ ASCII-Based Terminal                                            | 2-11 |
| CPro-2000 (A PC-Based Tool)                                       | 2-11 |
| ITM SNC Element Management System                                 | 2-11 |
| <i>Datakit</i> <sup>®</sup> Provisioning                          | 2-12 |
| ■ Background and Assumptions                                      | 2-12 |
| ■ Groups                                                          | 2-14 |

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## Contents

|                                             |      |
|---------------------------------------------|------|
| ■ Destination Addresses                     | 2-15 |
| ■ Permanent Virtual Circuit (PVC) Addresses | 2-16 |
| ■ Data Base Configuration                   | 2-17 |
| ■ Module Specification                      | 2-17 |
| FT-2000 End                                 | 2-17 |
| NMA End                                     | 2-18 |
| ■ Port Configuration                        | 2-18 |
| FT-2000 End                                 | 2-18 |
| NMA End                                     | 2-20 |
| ■ FT-2000 Cabling                           | 2-21 |

|                                                                              |      |
|------------------------------------------------------------------------------|------|
| <b>Network Monitoring and Analysis System<br/>(NMA) Data Base Definition</b> | 2-24 |
|------------------------------------------------------------------------------|------|



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## Overview

This section provides information on the Transaction Language 1 (TL1)/X.25 interface to the FT-2000 OC-48 1x1 End Terminal, OC-48 Line Repeater Bay, and OC-48 Add/Drop-Rings Terminal. For information on provisioning parameters, as well as a description of TL1 messages and commands, refer to Section 3, "**TL1 Message Details**," in this document.

---

## Introduction

FT-2000 supports a TL1/X.25 interface to report alarm and status conditions and performance-monitoring data to operations systems (OS) such as Networking Monitoring and Analysis (NMA) operations systems. The FT-2000 TL1/X.25 interface also supports service provisioning with memory administration OSs such as the Lucent ITM SNC. FT-2000 also supports remote recovery and control functions, installation provisioning and security on the TL1/X.25 interface. The TL1 message set has been updated to offer full remote reporting and control capabilities. This functional equivalency between CIT and TL1 allows the option of using either the CIT or TL1 for provisioning tasks, whichever is more convenient.

The FT-2000 TL1/X.25 interface provides significantly more detailed information (such as identifying specific circuit packs and facilities) than the telemetry byte-oriented serial (TBOS) or parallel telemetry interfaces. FT-2000's TL1 messages are based on Bellcore's TR-NWT-000199, Issue 2; TR-NWT-000833, Issue 5, Rev. 1; and TR-NWT-000835, Issue 3. This interface is supported on FT-2000 OC-48 Release 1.1 (or later) systems.

## **TL1-Related Provisioning**

---

The following list summarizes the TL1-related parameters that are software provisionable in FT-2000 via the craft interface terminal personal computer (CIT-PC) and/or the TL1 commands. These parameters may affect the sending and receiving of autonomous TL1 messages.

The following parameters affect the *reporting* of autonomous messages:

- a. Allow or inhibit alarms
- b. Operations Systems (OS) types
- c. Gateway network element (GNE) (Release 4.1 only)
- d. X.25 packet size (Release 6.0 and later).

The following are several parameters that affect the *content* of autonomous messages:

- a. Repeater site provisioning  
(Release 2.1 [end terminals only])
- b. Target identifier (TID)
- c. Miscellaneous discrete environmental alarm level
- d. Miscellaneous discrete environmental description
- e. Alarm level (NTFCNCDE).

Refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*, for the specific CIT-PC commands which are used to set the software provisionable parameters and which report all the parameter values. The user/service manual provides data on the original (factory set) parameter values implemented by FT-2000 as well. Additional FT-2000 software provisionable parameters exist that affect when, if, and how TL1 messages will be output.

### **Allow or Inhibit Alarms**

---

Allowing or inhibiting autonomous reporting of alarms may be provisioned using the **Allow-Alarm** and **Inhibit-Alarm** CIT-PC user interface commands or the **ALW-MSG** and **INH-MSG** TL1 messages. Alarm reporting interfaces include office alarms, the parallel telemetry interfaces, and the X.25 link.

### **Operations Systems Types**

---

Beginning in Release 5.0, a user can select the type of autonomous TL1 messages to be received by selecting the OS type. An OS type is a filter for the autonomous TL1 messages. Several different OS types may be provisioned.

Refer to the "Provisioning Autonomous TL1 Messages for Releases 5.0 and later" part presented later in this section for more information on OS types.

### **Gateway Network Element Provisioning**

---

In Release 4.1, each FT-2000 Add-Drop/Ring terminal may be provisioned to be a GNE. If a terminal is provisioned as a GNE and there is an active connection on its local X.25 port, that terminal will forward autonomous TL1 messages from all other nodes in the ring that it can reach via the Synchronous Optical Network (SONET) Data Communications Channel (DCC) to its local X.25 port. The messages will appear on permanent virtual circuit (PVC) channel 1 of the local port. The Target Identifier (TID) present in each message can be used to identify the source of the message. The original GNE value is `N0`. (That is, a terminal is not designated as a GNE unless provisioned to be one.)

In Release 5.0 and later, all FT-2000 Add/Drop-Ring Terminals are GNEs at all times, so this parameter is no longer provisionable. However, TL1 communication, including autonomous messaging, occurs only through FT-2000 communication channels where there are active login sessions. It is possible to log in and communicate with remote network elements without being logged in to the node that is serving as a GNE. A login to the GNE is necessary to obtain TL1 error messages that are generated by GNEs. (See the **RTRV-HDR** command.)

### **Repeater Site Provisioning**

---

Site ID provisioning for all FT-2000 repeater bays (Release 2.1) between two terminals is done automatically from the terminals on a per-line basis. One terminal *must* be provisioned as `site-0`. The site ID of each line at a particular repeater bay or terminal is reported via the CIT-PC command **Retrieve-Network Element**. The Site ID is set via the CIT-PC command **Set-Network Element**. The factory default is for a terminal to *not* be `site-0`. In Release 4.0 and later, repeater site provisioning is done automatically and is not user-provisionable.

### **Target Identifier (TID)**

---

The TID of each FT-2000 terminal must be provisioned using the CIT-PC command **Set-Network Element** at installation. In Release 4.1, the TID of any FT-2000 terminal may be changed after installation using the TL1 message **ENT-SYS**. In Releases 5.0 and later the TL1 command **SET-SID** may also be used. In Release 5.0, the TID must be a string of up to 20 characters with no spaces. The characters may be alphanumeric or a dash (-). In Release 6.0, the *tid* is a case insensitive character string of up to 20 characters. The allowed American Standard Code for Information Interchange (ASCII) characters are letters "A" through "Z" and "a" through "z", numbers "0" through "9", and special characters: "#" (pound), "%" (percent), "+" (plus), "-" (hyphen), and "." (period).

The TID is a unique identifier of the subject FT-2000 terminal and must match the TID provisioned in the OS. The TID is typically the *CLLI*\* code (a location identifier) of FT-2000, although additional characters such as the synchronous optical network (SONET) Carrier ID (SCID) may need to be appended to the *CLLI* code to assure that the TID is unique. The terms TID and source identifier (SID) are generally used interchangeably. However, in TL1 messages, the term target identifier implies the network element to which a message is sent; and the term source identifier implies the network element from which a response is received. The value given to TID in the factory is LT-FT-2000.

### **Miscellaneous Discrete Environmental Alarm Level**

---

The alarm level to be associated with each miscellaneous discrete environmental point may be provisioned using the **Set-Attribute-Environment** CIT-PC user interface command. Starting in Release 7.0, the TL1 message **SET-ATTR-ENV** may also be used to provision the alarm level. If a miscellaneous discrete environmental point is provisioned as an alarm (minor, major, or critical), the TL1 autonomous message **REPT ALM ENV** is used to report the alarm. If a miscellaneous discrete environmental point is provisioned as not alarmed, the TL1 autonomous message **REPT EVT COM** is used to report the condition. The default is that each miscellaneous discrete environmental point is a minor alarm.

### **Miscellaneous Discrete Environmental Description**

---

The description to be associated with each miscellaneous discrete environmental alarm and status point may be provisioned using the **Set-Attribute-Environment** CIT-PC user interface command. Starting in Release 7.0, the TL1 message **SET-ATTR-ENV** may also be used to provision the description. The provisioned description will appear as the *almmsg* or *conddescr* parameter values in applicable TL1 messages. The default description for each miscellaneous discrete environmental point is environment 1, environment 2, etc.

---

\* COMMON LANGUAGE is a registered trademark and CLEI, CLLI, CLCI, and CLFI are trademarks of Bell Communication Research, Inc.

## Repeater Fault Locating

---

Repeater fault locating and communication is done via the F1 SONET overhead byte. The F1 byte is used to report the following repeater bay alarm and status conditions:

- Incoming OC-48 LOS/LOF detected
- Invalid F1 byte detected
- Incoming OC-48 B1 parity error detected
- Optical parameter out of range
- Local equipment failure
- Active local environmental input (16 miscellaneous discrete environmental inputs).

Each line in each direction will be treated independently. Only the highest priority condition is received and reported to the OS by the downstream terminal. Equipment failures and environmental inputs are reported to both the upstream and downstream terminals.

## Security

---

In releases prior to Release 5, security is not needed and cannot be specified, since the two network end points are specified by the network administrator, and no other entity can gain access.

Starting in Release 5, all users, including TL1 users, are subject to user login security. User login security provides the capability to control access to the FT-2000 OC-48 Lightwave System on an individual user basis. One hundred user logins are supported. User login security includes the following:

- Login ID and password: All users must properly identify themselves by providing a valid login ID and password before gaining access to the FT-2000 OC-48 Lightwave System.
- Three levels of access privileges: Each user login ID is assigned one of the following access levels to control which system functions may be performed:
  - **Privileged:** A privileged login has access to all the system functional capabilities. Only the privileged logins have access to the security and access functions. These functions include assigning/changing logins/passwords for other users, setting TID names, resetting the system, and system installation functions, such as the auto turnup tests. The system installation functions are performed using the FT-2000 CIT-PC only. There are also a few privileged user (or "expert mode") commands that are available to

CIT users. The TL1 interface has no such restrictions on privileged user commands. (For detailed information about the CIT-PC, refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*.)

- **General:** The general logins have access to all the system functional capabilities except the security, access, system initialization, and software installation functions.
  - **Reports Only:** The reports only logins have access to the **RETRIEVE-** (except **RETRIEVE-USER-SECURITY**), **EDIT-PID**, and **OPERATE-ALARM-CUTOFF** TL1 commands. The reports only logins are not allowed to change any of the system provisioning values; however, reports-only logins may change their password.
- **Visitor Logins:** Temporary visitor logins may be provisioned using the **ENTER-USER-SECURITY** TL1 command. Visitor logins are automatically deleted on the provisioned expiration date. Visitor logins are nonprivileged logins.

A privileged user can create up to 98 nonprivileged (general, reports-only, or visitor) logins per system. Login IDs and passwords are administered with the **ENTER-USER-SECURITY**, **EDIT-USER-SECURITY**, **DELETE-USER-SECURITY**, and **RETRIEVE-USER-SECURITY** TL1 commands. For more information about provisioning user login security via TL1, refer to Section 3, "**TL1 Message Details**," part.

In Release 5.0 and later releases, login aging prevents inactive, nonprivileged users from accessing the FT-2000 OC-48 Add/Drop-Rings Terminal. Any nonprivileged logins that have not been active within the CIT-PC provisionable login lifetime parameter are automatically removed. (For detailed information about the CIT-PC provisioning capabilities, refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*.) Login aging applies only to nonprivileged logins; a privileged login is never deleted. Login aging can be disabled through CIT-PC provisioning.

Password aging provides the capability to force users to periodically change their password. If the users do not change their password within the provisioned period of time, their password will expire. The next time the users attempt to log in, they will not be allowed to execute any commands until they change their password. The **EDIT-PID** TL1 command can be used by users to change their password. For more information about provisioning passwords via TL1, refer to Section 3, "**TL1 Message Details**," part.

To enable or disable password aging, the password aging interval must be provisioned using the CIT-PC. If password aging is enabled, a user may not change a password unless at least 7 days have passed since the last password change for that login. Any attempt to change a password when less than 7 days have passed shall be denied.

## **X.25 Technical Specifications**

---

Each FT-2000 terminal is capable of supporting a direct, synchronous TL1/X.25 link to the OS. The following tables list X.25 detailed technical specifications that are supported by FT-2000.

The X.25 interface to FT-2000 supports two permanent virtual circuits (PVCs) and up to six switched virtual circuits (SVCs). Every virtual circuit may be used to issue TL1 commands to FT-2000 and obtain responses. The ability of virtual circuits to send autonomous TL1 messages varies with the FT-2000 release used, as described in the following sections. Once communication is established, the OS can send a TL1 command to any connected virtual circuit (VC) and can expect the FT-2000 terminal to reply via the same VC.

### **TL1 Autonomous Messaging in Release 4.1 and Earlier**

---

For Releases through Release 4.1, FT-2000 supports two PVCs, as listed in Table 2-1. Only PVC #1 can send autonomous messages. FT-2000 releases through Release 4.1 also support up to six SVCs, as listed in Table 2-2.

**Table 2-1. TL1/X.25 Interface — PVC Assignments (Through Release 4.1)**

| <b>Logical Channel #</b> | <b>Use</b>                               |
|--------------------------|------------------------------------------|
| 1                        | Autonomous and Command/Response Messages |
| 2                        | Command/Response Messages                |

**Table 2-2. TL1/X.25 Interface — SVC Assignments (Through Release 4.1)**

| <b>Logical Channel #</b> | <b>Use</b>                |
|--------------------------|---------------------------|
| 3                        | Command/Response Messages |
| 4                        | Command/Response Messages |
| 5                        | Command/Response Messages |
| 6                        | Command/Response Messages |
| 7                        | Command/Response Messages |
| 8                        | Command/Response Messages |

## Provisioning Autonomous TL1 Messages for Releases 5.0 and Later

---

In Releases 5.0 and later, up to eight logical channels (two PVCs and up to six SVCs) are supported. All logical channels may be used for command/response messages. In addition, TL1 autonomous messages are optionally available on all of the logical channels via user provisioning. There are types of autonomous messages, or OS types, that can be provisioned per PVC logical channel at the TL1/X.25 GNE. An OS type is a filter that determines the types of TL1 autonomous messages that appear at a logical channel.

The OS types available for autonomous messages in Releases 5.0 and later are as follows:

- **Maintenance:** A maintenance OS type will send autonomous messages that report on the status of the system (**REPORT ALARM**, **REPORT ALARM ENVIRONMENT**, **REPORT CONDITION**, **REPORT EVENT**, and **REPORT SWITCH**).
- **Memory administration:** A memory administration OS type will send autonomous messages that report on changes in the provisioning status of equipment (**REPORT DATA BASE CHANGE**).
- **Test:** A test OS type will send no autonomous messages (Release 8.0 and later.)
- **Command/response only:** A command/response only OS type will send no autonomous messages.
- **Other:** An other OS type will send all available autonomous messages.

The OS type parameter is provisionable using the CIT-PC command **SECURITY-Set-Security-Port** input and, in Release 7.2 and later, TL1 command **ENT-CID-SECU**. The OS type of the PVCs is directly provisionable.

For SVCs, the OS type is provisioned indirectly, in conjunction with the X.25 calling address. The user can specify what OS type to associate with a given X.25 calling address. When an SVC is set up using one of the provisioned calling addresses, then the call is assigned the associated OS type. If the SVC does not supply an X.25 calling address or if the X.25 calling address does not match any of the provisioned X.25 calling addresses, then command/response only is assumed.

When an OS establishes an SVC call, an available SVC is selected by the packet network. The user does not control SVC selection.



## **Automatic Tag (ATAG) Numbering**

---

Automatic tags (ATAGs) are integer values assigned to autonomous TL1 messages for message sequencing. They are used by the OS to ensure that all autonomous TL1 messages output by FT-2000 are received by the OS. ATAGs are output by each individual FT-2000 independently. Beginning with Release 3.0, FT-2000 uses a 3-digit integer value from 001 to 999 for the ATAG, with an initial value of 001. The ATAG value is increased by 1 for each autonomous additional message reported to the OS. In Release 5.0 and later, the values may range from 000 to 999, with an initial value of 000. In Release 5.0 through 7.2, FT-2000 uses a four digit ATAG value of 9999 to report remote communication failures (OS communication failures in Release 8.0 and later) on behalf of a remote network element.

## **Data Terminating Equipment (DTE) Configuration**

---

At the packet layer, the FT-2000 terminal is configured as a passive data terminating equipment (DTE) with the parameters listed in Table 2-3. Starting in Release 6.0, the X.25 packet size is provisionable to 128 or 256 bytes via the TL1 **ENT-SYS** command and the CIT-PC Set-Network Element command. This allows users to choose the X.25 packet size needed in an office where multiple network elements are deployed. The value given to the X.25 packet size in the factory is 256.

**Table 2-3. TL1/X.25 Interface — X.25 Packet Layer Parameters**

| <b>Parameter</b> | <b>Value</b>     |
|------------------|------------------|
| Packet Size      | 128 or 256 bytes |
| Window Size      | 2 packets        |
| D bit support    | No               |
| M bit support    | Yes              |
| Q bit support    | No               |

At the link layer, the FT-2000 terminal uses the standard link access procedure B (LAPB) protocol with the parameters listed in Table 2-4.

**Table 2-4. TL1/X.25 Interface — LAPB Link Layer Parameters**

| Parameter          | Value         |
|--------------------|---------------|
| Maximum Frame Size | 2104 bits     |
| Modulo             | 8             |
| Window Size        | 7 frames      |
| n2                 | 6 retries     |
| T1                 | 3 seconds     |
| T3                 | not supported |

FT-2000 uses synchronous, full duplex, continuous carrier communication. Data rates of 1200, 2400, 4800, 9600, and 19200 are supported. The EIA-232D interface is configured as DTE, using the pins listed in Table 2-5.

**Table 2-5. TL1/X.25 Interface — EIA-232D Pin Connections**

| Pin | Description                   |
|-----|-------------------------------|
| 1   | Protective Ground (Shield)    |
| 2   | Transmitted Data              |
| 3   | Received Data                 |
| 4   | Request to Send (RTS)*        |
| 5   | Clear to Send (CTS)†          |
| 6   | DCE Ready                     |
| 7   | Signal Ground                 |
| 8   | Received Line Signal Detector |
| 15  | Transmit Clock (TC)           |
| 17  | Receive Clock (RC)            |
| 20  | Data Terminal Ready (DTR)*    |

\* DTR and RTS are always on when FT-2000 is powered.

† FT-2000 will only transmit data via X.25 when CTS is on.

---

The X.25 circuits between an FT-2000 terminal and the OS may be transported via an X.25 packet network, dedicated private line, or circuit switched network at the user's option.

## **ASCII-Based Terminal**

---

In Releases 5 and later, an ASCII-based terminal may be used to interface with the FT-2000 OC-48 Add/Drop-Rings Terminal. Users communicate with the FT-2000 OC-48 Add/Drop-Rings Terminal using an ASCII-based terminal and TL1 messages. The same TL1 message set is used by the message-based operations system interface (X.25/TL1). The TL1 messages must be entered manually by an experienced user.

In Releases 5 and later, the ASCII-based terminal can be used to enter maintenance, provisioning, and security commands in the FT-2000 OC-48 Add/Drop-Rings Terminal. Autonomous messages and software installation are not supported by the ASCII-based terminal interface.

## **CPro-2000 (A PC-Based Tool)**

In Releases 5.0 and later, CPro-2000 may be used to interface to the FT-2000 OC-48, DDM-2000 OC-12, DDM-2000 OC-3, DDM-2000 FiberReach, and SLC-2000. CPro-2000 is a graphical interface to the PF-2000 network elements that is based on *Microsoft\* Windows†*. It is a tool that uses graphical means and menu selections to perform network element functions, such as entering cross-connections and port provisioning. These functions can be performed on an individual network element, or for all network elements in a ring. The graphical interface is referred to as the GUI, for Graphical User Interface.

CPro-2000 also provides an ASCII-based terminal emulator, referred to as the AUI. The user may enter TL1 commands at the AUI for further access to the network elements. CPro-2000 can communicate with up to 32 network elements that have DCC connectivity with each other.

For more detailed information about CPro-2000, refer to 190-523-101, CPro-2000 User Manual.

## **ITM SNC Element Management System**

In Releases 5.0 and later, the ITM SNC Element Management System (EMS) may be used to access the FT-2000 OC-48 Add/Drop-Rings Terminal. The ITM SNC EMS uses an HP-platform, and is capable of providing remote operations for the DDM-2000 OC-3, DDM-2000 OC-12, DDM-2000 FiberReach and SLC-2000, in addition to the FT-2000, OC-48 ADD/Drop-Rings Terminal. The CPro-2000 can provide remote operations for up to 512 network elements simultaneously.

ITM SNC EMS supports remote configuration and fault management functions. All ITM SNC functions are based on network configuration data sourced electronically from the network to ensure the accuracy of the operations. ITM SNC EMS provides a graphical interface for its operations functions, which includes alarm surveillance and reporting, cross-connection and line/port

provisioning, and backup and restoral of provisionable parameters. The ITM SNC EMS supplements its graphical interface with TL1 cut-through mode, which provides direct access to the network elements ASCII character based command/response repertoire.

For more information about ITM SNC EMS, refer to 107-564-270, ITM SNC Element Management System User Guide.

## *Datakit*<sup>®</sup> Provisioning

X.25 ports in a *Datakit* II VCS network may be configured for monitoring FT-2000 line terminating equipment with operations systems such as Bellcore's NMA. By using a *Datakit* network between the FT-2000 GNEs and the NMA host, costly dedicated and private lines are eliminated. A *Datakit* network also offers the following: increased network reliability; decreased network complexity; faster installation of a new circuit; centralized network management; easier, less costly reconfiguration; and alternate routing. These benefits are transparent to the end points.

The following paragraphs detail the steps needed to configure the *Datakit* II X.25 module and its constituent ports on the FT-2000 and NMA (as an OS example) ends of the connection. Specific dialogs are given that describe the exact input and output sequences required to enter this information into the *Datakit* II data base. The prompts in the example are based on *Datakit* II, Release 2.1 documentation and may differ for other releases. In the sample dialogs, text in constant width font is verbatim output from *Datakit* II, text in **bold** font is data to be entered verbatim into *Datakit* II, and text in *italics* surrounded by angle brackets <> stands for a special control key on a keyboard.

## Background and Assumptions

This section provides necessary background information and describes in detail the assumptions made about the *Datakit* II network used to connect NMA and FT-2000. Figure 2-1 provides an example network. *Datakit* nodes BOST5 and MVNSMA are highlighted, and examples presented in this section are based on this figure.

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\* Registered trademark of Microsoft Corporation.

† Trademark of Microsoft Corporation.

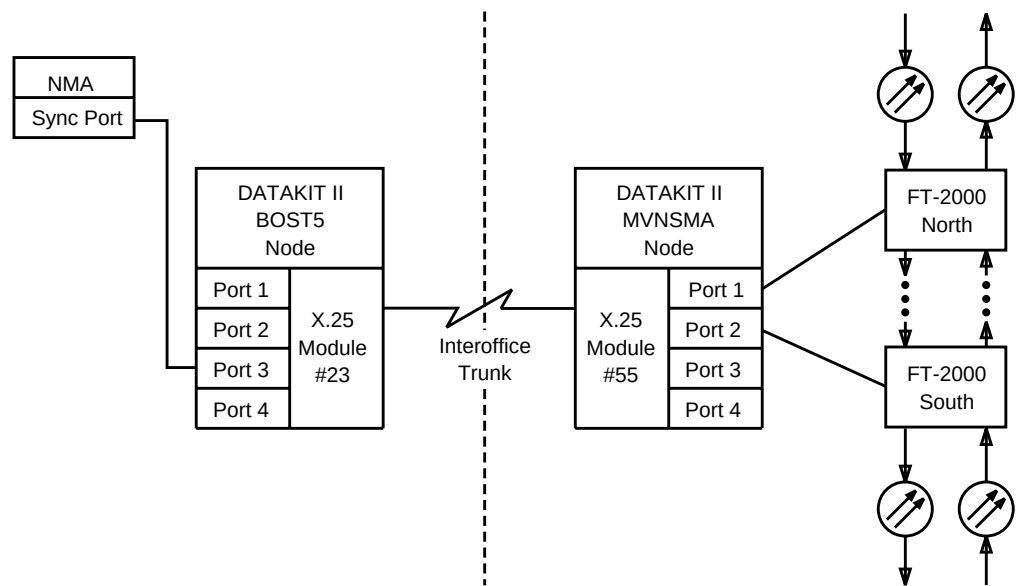


**Figure 2-1. FT-2000 Datakit Provisioning Example**

The connection between each FT-2000 and the NMA host consists of two X.25 permanent virtual circuits (PVCs). Logic Channel # 1 (LCN#1) is used to carry autonomous TL1 messages from the FT-2000 network GNE node to the NMA. Logic Channel # 2 (LCN#2) is used to carry TL1 commands from NMA to the FT-2000 and the responses to these commands from the FT-2000 GNE back to the NMA. Even if information for LCN#2 is flowing in one direction only, a 2-way PVC is required by the NMA.

The PVCs from multiple FT-2000 networks may connect logically to the same physical NMA port. The *Datakit* X.25 module "multiplexes" the PVCs from the FT-2000s onto one port of the NMA host.

All *Datakit* nodes between the node containing the X.25 modules connecting to the FT-2000s, and the node containing the X.25 module connecting to the NMA host, must have installed *Datakit* II, Release 2.1 software or higher. *Datakit* I (2000) nodes running releases 3.4 software and lower do not support PVCs, nor can they act as tandem nodes for X.25 PVCs. In the intermediate tandem nodes, if any, the only requirement is to define routing through the node for the PVC. Routing should be specified using *Datakit* exchange or X.121 service area addresses. The specifics of routing are dependent on the network topology and local naming conventions.

Any internodal trunks between *Datakit* nodes should have a minimum speed of 56KB in order to ensure adequate throughput performance and response time.

## Groups

---

A group is a logical bundle of ports/channels within a *Datakit* II node. A group can consist of either trunk modules, for internodal connections, or any other module type, for local connections. The configuration in Figure 2-1 requires four groups, two each at the BOST5 and MVNSMA nodes. BOST5 has one group for PVCs on the local NMA port(s) and one group for the trunk(s) between BOST5 and MVNSMA. MVNSMA has one group for PVCs on the local FT-2000 ports and one group for the trunk(s) between BOST5 and MVNSMA. In MVNSMA, each FT-2000 port could belong to its own individual group, if desired; but, for this example, one universal group is sufficient for the PVCs.

To illustrate this example, assume that there is a group called **ftoc** defined for the PVCs on the local FT-2000 ports in the MVNSMA node. The **DEVICE** OR **HOST** parameter for this group is assumed to be **ft2000**. This group must be defined as a 2-way group and should not be given any passwords. The **HOST AUTOBAUD** feature should be **off** and the **ROUND-ROBIN SERVICE** parameter should be **none** for this group. A similar group (call it **nmagrp**) must be defined in the BOST5 node for the X.25 NMA port.

Trunk groups must be defined in both nodes and in any intermediate nodes.

## **Destination Addresses**

---

Every *Datakit* II destination is uniquely identified by an address, which consists of a maximum of four parts or levels in a hierarchy. *Datakit* II VCS uses two types of addresses: mnemonic and X.121. For mnemonic addresses, each level consists of up to eight alphanumeric characters. For X.121 addresses, each part consists only of three to four digits depending on level. For mnemonic addresses, the level hierarchy is arranged as follows:

network/area/exchange/local address.

For X.121 addresses, the hierarchy is arranged as follows:

DNIC/service region/service area/endpoint number.

Where (assuming the North American numbering plan):

- DNIC has four digits
- Service Region (SR) has three digits.
- Service Area (SA) has three digits.
- Endpoint Number (EPN) has four digits.

There is a direct correspondence between the mnemonic and X.121 addresses at each level in the hierarchy. An address can be a mixture of the two structures; for example:

DNIC/area/exchange/endpoint number

Note that an address can have four levels, but only the minimum number of levels that uniquely defines the destination is needed. *Datakit* addressing is analogous to the telephone network numbering plan. In an office complex, usually one dials only the last four digits of the telephone number, which for *Datakit* corresponds to the local address or endpoint number. When calling outside the complex, one uses an exchange followed by the four digit number. This corresponds in *Datakit* addressing to exchange/local address or service area/endpoint number. Similarly, the analogy follows for area codes, service regions, etc. Hence, one uses the minimum number of levels required to call the destination.

Refer to Figure 2-1. Assume Node Address Assignments 2-6 have been defined at the respective nodes in this figure (using the **enter** or **change node** commands):

**Table 2-6. Node Address Assignments**

| Level                                                       | Mnemonic     | X.121       |
|-------------------------------------------------------------|--------------|-------------|
| <b>Node BOST5</b><br>network, DNIC<br>area, service region  | netel<br>mab | 2345<br>617 |
| <b>Node MVNSMA</b><br>network, DNIC<br>area, service region | netel<br>ma  | 2345<br>508 |
| <b>Node BOST5</b><br>exchange, service area                 | bos          | 123         |
| <b>Node MVNSMA</b><br>exchange, service area                | mvd1         | 957         |

Since the nodes exist in the same network but in different areas, three levels of addressing are needed to uniquely identify a destination; that is,

area/exchange/local address

or

service region/service area/endpoint number.

The local addresses or endpoint numbers used in this example are described in the next section.

### **Permanent Virtual Circuit (PVC) Addresses**

---

In order to identify a particular PVC circuit associated with an X.25 destination, extensions to the address structure described above are needed. These additions are:

module.port.pvc number

The complete address is:

network/area/exchange/local address.module.port.pvc number.

or

DNIC/service region/service area/endpoint number.module.port.pvc number

Destination addresses that use a mixture of mnemonic and X.121 levels are used in the example and have the following structure:

area/exchange/endpoint number.module.port.pvc number



As shown in Figure 2-1, the BOST5 node is assumed to have an X.25 module installed in slot 23, with port 3 of the module connected to an NMA synchronous port which has an assigned endpoint number of 2145. It is assumed that the NMA port has PVC channels 7, 8, 9, and 10 available. The PVCs on the NMA port(s) will point to the destination PVCs on the FT-2000 ports.

The MVNSMA node has an X.25 module in slot 55. Port 1 is connected to FT-2000 North via PVC channels 1 and 2. Port 2 is similarly connected to FT-2000 South via PVC channels 1 and 2 on that port. The assigned EPN number for the PVCs on port 1 is 0100; on port 2, it is 0200.

Therefore, in order for the NMA host to access the destination PVCs in the MVNSMA node, the destination addresses that would be specified in the BOST5 node would be:

For FT-2000 North,

**ma/mvdk1/0100.55.1.1**  
**ma/mvdk1/0100.55.1.2**

and

for FT-2000 South,

**ma/mvdk1/0200.55.2.1**  
**ma/mvdk1/0200.55.2.2.**

## Data Base Configuration

---

After entering the groups described earlier into the *Datakit* nodes data bases, the X.25 modules must be entered followed by the specification of the individual port parameters. The details for entering these port parameters are listed in the following sections. The following sections give the exact prompts and responses for entering the X.25 modules and ports on each end node.

## Module Specification

---

### FT-2000 End

This section provides a detailed example dialog required to set up the X.25 module in the MVNSMA *Datakit* II node (FT-2000 end of the connection). This example is based on Figure 2-1. The parameters entered here determine the X.25 link level and administrative characteristics of the module. The dialog assumes the *Datakit* network administrator is using the node's A or B port console and that the node is actively running using the CC0 controller.

```
CC0> enter<ret>
OBJECTS [...x25...]: x25<ret>
COMPONENT [module, port]: module<ret>
```

```
MODULE ADDRESS: 55<ret>

DOWNLOAD SERVER [(controller)]: <ret>
SOFTWARE VERSION [(standard)]: <ret>

DEFAULT NETWORK LEVEL WINDOW SIZE [2, 3: +(2)]: <ret>
DEFAULT PACKET SIZE [128, 256: +(128)]: 256<ret>
INFO: Flow control parameter negotiation for all ports on this
      module is being turned on based on the specified window
      or packet size values.
NUMBER OF USER CHANNELS [1-50: +(50)]: 9<ret>

INTERNAL BAUD RATE [1200, 2400, 4800, 9600, 19200, 48k, 56k,
                    64k, none: +(9600)]: <ret>

MODULE ADDRESS: <del>
```

Note that the response to the INTERNAL BAUD RATE prompt is dependent on the type of X.25 Input/Output (I/O) board to which the FT-2000 port is connected in the *Datakit* node. The response shown above assumes a Data Circuit Terminating Equipment (DCE) I/O board (either AWJ5 or AWJ18) is physically installed in the node to which the FT-2000 port cable is connected. A DCE I/O board is used when the FT-2000 port is directly cabled to the *Datakit* node with no intervening modems or modem-eliminators. The DCE I/O board acts like a modem and provides the necessary timing signals.

## NMA End

For the NMA end, the X.25 module is defined in the BOST5 node the same as above except for the slot location and the number of user channels. The number of channels depends on the number of FT-2000s being monitored through the X.25 module in BOST5. The maximum number per *module* is 50 because the X.25 packet size and window size are set at 256 and 2, respectively. Therefore, one X.25 module connected to NMA can support the monitoring of 25 FT-2000s.

## Port Configuration

---

### FT-2000 End

This section provides a detailed example dialog required to set up the X.25 channels in the MVNSMA *Datakit* II node in order to connect to both FT-2000 Network Elements (NEs) in the office. Refer to Figure 2-1. The parameters shown here determine the X.25 network level characteristics and channel assignments of each port in the module.

The dialog details the configuration of the four PVC channels, two per FT-2000, as described above for NMA monitoring.

```
CC0> enter<ret>
OBJECTS [...x25...]: x25<ret>
COMPONENT [module, port]: port<ret>
MODULE ADDRESS: 55<ret>

PORT NUMBER [1-4]: 1<ret>
COMMENT [up to 60 chars double quoted, none: +(none)]:
  "FT-2000 north bay MVNSMA 55 conn 1"<ret>

PORT TYPE [host, pdn: +(pdn)]: host<ret>

CLOCKING TYPE [internal, external: +(external)]: internal<ret>

MAXIMUM NUMBER OF OUTSTANDING I-FRAMES (K) [1-7: +(7)]: <ret>
WAITING ACKNOWLEDGEMENT TIMER (T1) [2-20: +(3)]: <ret>
MAXIMUM ATTEMPTS TO COMPLETE A TRANSMISSION (N2) [2-15: +(7)]: 6<ret>
BILLING STATUS [on, off: +(off)]: <ret>

DEFAULT CALLING ADDRESS [up to 15 digits, none: +(none)]: <ret>
LOCAL X.3 PROFILE ID [up to 20 chars, mbit, simple, transparent:
  +(transparent)]: <ret>

NUMBER OF SVC CHANNELS PER PORT [0-10: +(10)]: 0<ret>

NUMBER OF PVC CHANNELS [0-9: +(9)]: 2<ret>
PVC GROUP [up to 8 chars]: ftoc<ret>

ENDPOINT NUMBERS FOR PVC CHANNELS [0000-9999]: 0100<ret>

INFO: Enter assignment of destinations to logical channels
      using the following prompts.  Hit <DEL> once when
      finished making entries.
PVC LOGICAL CHANNEL NUMBER [1-2]: <del>

PORT NUMBER [1-4]: 2<ret>
COMMENT [up to 60 chars double quoted, none: +(none)]:
  "FT-2000 south bay MVNSMA 55 conn 2"<ret>

PORT TYPE [host, pdn: +(pdn)]: host<ret>

CLOCKING TYPE [internal, external: +(external)]: internal<ret>

MAXIMUM NUMBER OF OUTSTANDING I-FRAMES (K) [1-7: +(7)]: <ret>
WAITING ACKNOWLEDGEMENT TIMER (T1) [2-20: +(3)]: <ret>
MAXIMUM ATTEMPTS TO COMPLETE A TRANSMISSION (N2) [2-15: +(7)]: 6<ret>
BILLING STATUS [on, off: +(off)]: <ret>

DEFAULT CALLING ADDRESS [up to 15 digits, none: +(none)]: <ret>
```

LOCAL X.3 PROFILE ID [up to 20 chars, mbit, simple, transparent:  
+(transparent)]: <ret>

NUMBER OF PVC CHANNELS [0-6: +(6)]: 2<ret>  
PVC GROUP [up to 8 chars]: **ftoc**<ret>

ENDPOINT NUMBERS FOR PVC CHANNELS [0000-9999]: **0200**<ret>

INFO: Enter assignment of destinations to logical channels  
using the following prompts. Hit <DEL> once when  
finished making entries.  
PVC LOGICAL CHANNEL NUMBER [1-2]: <del>  
PORT NUMBER [1-4]: <del>

Since FT-2000 ports are the destination end of the PVC circuit, no PVC  
destinations are specified in the last set of prompts.

## NMA End

To define the X.25 port in BOST5, (specifically, the PVCs on that port that point  
to the FT-2000 PVCs in MVNSMA), assume 50 user channels were specified in  
the definition of the module. Assume also that for the two FT-2000s in the  
example, PVCs 7, 8, 9, and 10 are to be defined to point to FT-2000 North and  
FT-2000 South.

CC0> **enter**<ret>  
OBJECTS [...x25...]: **x25**<ret>  
COMPONENT [module, port]: **port**<ret>  
MODULE ADDRESS: **23**<ret>

PORT NUMBER [1-4]: 3<ret>  
COMMENT [up to 60 chars double quoted, none: +(none)]:  
"NMA monitor port for MVNSMA FT-2000s"<ret>

PORT TYPE [host, pdn: +(pdn)]: **host**<ret>  
CLOCKING TYPE [internal, external: +(external)]: **internal**<ret>

MAXIMUM NUMBER OF OUTSTANDING I-FRAMES (K) [1-7: +(7)]: <ret>  
WAITING ACKNOWLEDGEMENT TIMER (T1) [2-20: +(3)]: <ret>  
MAXIMUM ATTEMPTS TO COMPLETE A TRANSMISSION (N2) [2-15: +(7)]: **6**<ret>  
BILLING STATUS [on, off: +(off)]: <ret>

DEFAULT CALLING ADDRESS [up to 15 digits, none: +(none)]: <ret>  
LOCAL X.3 PROFILE ID [up to 20 chars, mbit, simple, transparent:  
+(transparent)]: <ret>

NUMBER OF SVC CHANNELS PER PORT [0-50: +(50)]: **0**<ret>

NUMBER OF PVC CHANNELS [0-50: +(50)]: 50<ret>  
PVC GROUP [up to 8 chars]: **nmagrp**<ret>

ENDPOINT NUMBERS FOR PVC CHANNELS [0000-9999]: 2145<ret>

INFO: Enter assignment of destinations to logical channels  
using the following prompts. Hit <DEL> once when  
finished making entries.

PVC LOGICAL CHANNEL NUMBER [1-50]: 7<ret>  
PVC DESTINATION [up to 72 chars, none: +(none)]:  
**ma/mvdk1/0100.55.1.1**<ret>  
PVC LOGICAL CHANNEL NUMBER [1-50]: 8<ret>  
PVC DESTINATION [up to 72 chars, none: +(none)]:  
**ma/mvdk1/0100.55.1.2**<ret>  
PVC LOGICAL CHANNEL NUMBER [1-50]: 9<ret>  
PVC DESTINATION [up to 72 chars, none: +(none)]:  
**ma/mvdk1/0200.55.2.1**<ret>  
PVC LOGICAL CHANNEL NUMBER [1-50]: 10<ret>  
PVC DESTINATION [up to 72 chars, none: +(none)]:  
**ma/mvdk1/0200.55.2.2**<ret>  
PVC LOGICAL CHANNEL NUMBER [1-50]: <del>  
PORT NUMBER [1-4]: <del>

### **FT-2000 Cabling**

---

It is assumed that the *Datakit II* node in the MVNSMA office has an AWJ5 or AWJ18 DCE I/O board installed and directly connected to the two FT-2000 Network Element X.25 ports. The normal cabling arrangement for a DTE device that is directly connected to a *Datakit* DCE I/O board is shown in Figure 2-2.

---

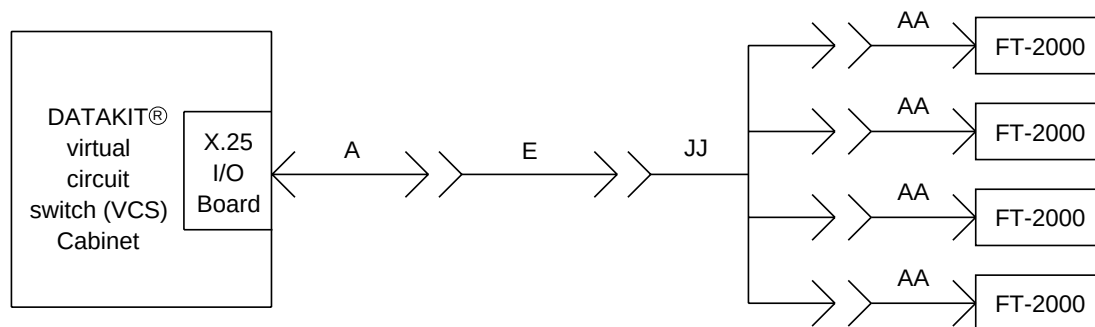


**Figure 2-2. Datakit II to FT-2000 Cabling Arrangement**

Due to a problem described in the following paragraphs, a modified cable must be used in place of cable AA.

All cables can be ordered from the *Datakit* product line using part numbers in Table 2-7.

**Table 2-7. Cable Part Numbers**

| Letter Code | Cable Name | Group Number                                             | Comments                                            |
|-------------|------------|----------------------------------------------------------|-----------------------------------------------------|
| A           | B25FS-1MOD | ED-7G001-22<br>Group 602 (60 ft.)<br>Group 652 (150 ft.) | 50-pin M to 50-pin M, shielded (25 ft. min. length) |
| E           | B25A       | ED-5P055-31<br>248, Group L or Z                         | Optional 50-pin F to 50-pin M (any length)          |
| JJ          | SYNC4-M    | ED-5P055-31<br>248, Group L or Z                         | 50-pin F to 4 RS232 25-pin M connectors             |
| AA          | M25FT      | N/A                                                      | 25-pin M to 25-pin F "modified cable"               |

During field testing, it was noted that in a certain mode the X.25 link level protocol may not recover properly after *Datakit II* fails the link (for example, due to restarting the port, losing the trunk circuit over which the PVC's are routed, etc.). The difficulty occurs because the FT-2000 sometimes momentarily drops the RS-232 Request To Send (RTS) control lead immediately after the *Datakit II* X.25 port has issued X.25 SABM and level 3 restart requests. The *Datakit II* port then drops the Clear To Send (CTS) and Carrier Detect (CD) leads and returns

to the level 2 startup mode. FT-2000 sees the CTS lead drop, assumes the link is down, and does not respond to the level 3 restart request. This cycle repeats for seven tries, and then the *Datakit* node declares the link failed.

To prevent this difficulty, a scheme has been devised using a modified cable that keeps all control leads in fixed states as seen by FT-2000 and *Datakit* II Virtual Circuit Switch (VCS). Tying the RTS lead on the *Datakit* side to the DTR lead on the FT-2000 side prevents the *Datakit* II X.25 port from seeing the RTS drop. Tying the CTS lead to the DTR lead on the FT-2000 side prevents FT-2000 from seeing the CTS drop so it will respond to the level 3 restart request with a restart confirmation. FT-2000 always keeps the DTR lead on if the SYSCTL circuit pack is running its software.

Figure 2-3 shows the pinout used in the modified cable. The cable can be built with commercial custom 25-pin RS-232 connector kits. However, it is recommended that this cable be purchased from either the *Datakit* or FT-2000 product lines, since they are also shielded to help avoid problems with electrostatic discharge (ESD) and electromagnetic compatibility (EMC).

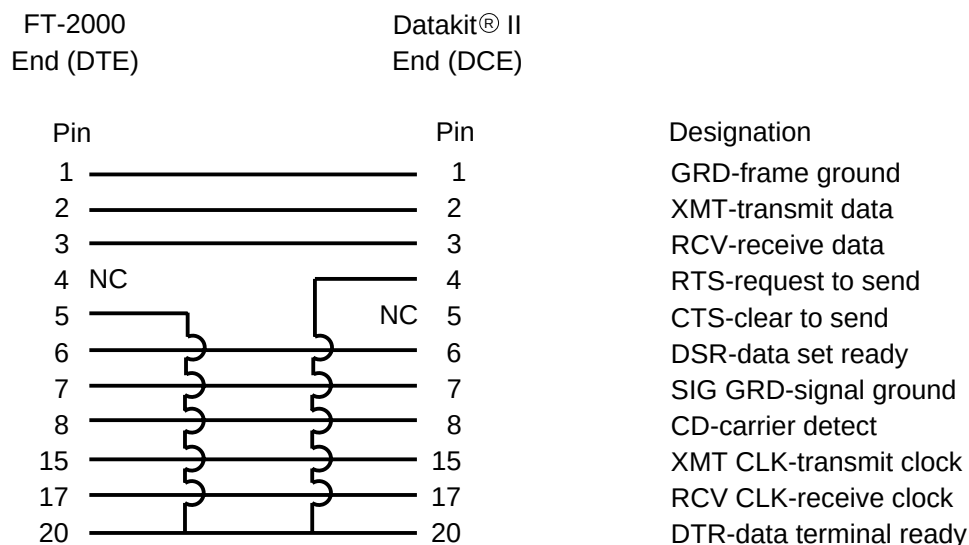


**Figure 2-3. Pinouts for Modified FT-2000/Datakit II VCS Cable**

If the application does not involve a direct link from the *Datakit II* node to the FT-2000 (for example, there are intervening modems), then the preceding cable discussion does not apply since the RS-232 control leads are provided in the intervening device. In this case, the AWJ6 or AWJ17 DTE I/O boards would be used in the *Datakit* node. The standard cabling would apply, except for cable AA which would be an unmodified 25-pin to a 25-pin straight cable.

## **Network Monitoring and Analysis System (NMA) Data Base Definition**

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The provisioning required in the NMA operation system to monitor FT-2000 via TL1/X.25 is documented in interim methods (IMs) prepared by Bellcore under the Operations Systems Modifications for Intelligent Network Elements (OSMINE) contract with Lucent Technologies. Contact Lucent Technologies Technical Support Organization or Regional Technical Assistance Center for a copy of this document.



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**Contents**

|                     |       |
|---------------------|-------|
| <b>Overview</b>     | 3-1   |
| <b>TL1 Messages</b> | 3-6   |
| REPT-ALM            | 3-13  |
| REPT-ALM-ENV        | 3-23  |
| REPT-COND           | 3-26  |
| REPT-DBCHG          | 3-31  |
| REPT-EVT            | 3-40  |
| REPT-SW             | 3-48  |
| ACT-USER            | 3-51  |
| ALW-MSG             | 3-62  |
| CANC-USER           | 3-65  |
| CPY-PRGM            | 3-69  |
| DLT-ASGNMT-DCC      | 3-78  |
| DLT-CRS-rr          | 3-83  |
| DLT-ULSDCC-L4       | 3-104 |
| DLT-USER-SECU       | 3-110 |
| ED-CRS-rr           | 3-114 |
| ED-DAT              | 3-128 |
| ED-PID              | 3-133 |
| ED-USER-SECU        | 3-140 |
| ENT-ASGNMT-DCC      | 3-148 |
| ENT-CID-SECU        | 3-155 |
| ENT-CRS-rr          | 3-172 |
| ENT-FECOM           | 3-204 |
| ENT-NE-SECU         | 3-207 |
| ENT-PROT-rr         | 3-212 |
| ENT-PROTN-LINE      | 3-217 |

---

## Contents

|                  |       |
|------------------|-------|
| ENT-PROTN-LS     | 3-220 |
| ENT-ROLL-rr      | 3-223 |
| ENT-rr           | 3-252 |
| ENT-STS1         | 3-291 |
| ENT-SYCN         | 3-299 |
| ENT-SYS          | 3-310 |
| ENT-ULSDCC-L3    | 3-325 |
| ENT-ULSDCC-L3    | 3-335 |
| ENT-USER-SECU    | 3-360 |
| INH-MSG          | 3-369 |
| INIT-REG         | 3-373 |
| INIT-SYS         | 3-377 |
| OPR-ACO          | 3-386 |
| OPR-EXT-CONT     | 3-389 |
| OPR-LPBK-rr      | 3-392 |
| OPR-PROTNSW-OC12 | 3-400 |
| OPR-PROTNSW-OC3  | 3-410 |
| OPR-PROTNSW-OC48 | 3-422 |
| OPR-PROTNSW-rr   | 3-432 |
| OPR-SYCN         | 3-444 |
| RLS-EXT-CONT     | 3-455 |
| RLS-LPBK-rr      | 3-457 |
| RLS-PROTNSW-OC12 | 3-465 |
| RLS-PROTNSW-OC3  | 3-471 |
| RLS-PROTNSW-OC48 | 3-478 |
| RLS-PROTNSW-rr   | 3-487 |
| RLS-SYCN         | 3-496 |
| RTRV-ALM         | 3-502 |
| RTRV-ALM-ENV     | 3-508 |
| RTRV-ALM-NTWK    | 3-512 |
| RTRV-AO          | 3-517 |
| RTRV-ASGNMT-DCC  | 3-526 |
| RTRV-ATTR-ALM    | 3-529 |
| RTRV-ATTR-CONT   | 3-533 |
| RTRV-ATTR-ENV    | 3-538 |
| RTRV-ATTR-rr     | 3-542 |
| RTRV-CID-SECU    | 3-550 |
| RTRV-CKT-rr      | 3-558 |
| RTRV-COND        | 3-564 |
| RTRV-CRS-rr      | 3-572 |

---

## Contents

|                                        |       |
|----------------------------------------|-------|
| RTRV-DAT                               | 3-606 |
| RTRV-EQPT                              | 3-608 |
| RTRV-FECOM                             | 3-617 |
| RTRV-HDR                               | 3-619 |
| RTRV-LOG                               | 3-631 |
| RTRV-MAP                               | 3-636 |
| RTRV-MAP-NEIGHBOR                      | 3-640 |
| RTRV-MAP-NETWORK                       | 3-645 |
| RTRV-MAP-RING                          | 3-652 |
| RTRV-NE-SECU                           | 3-658 |
| RTRV-PM                                | 3-661 |
| RTRV-PM-STIME                          | 3-677 |
| RTRV-PROT-rr                           | 3-679 |
| RTRV-PROTN-LINE                        | 3-684 |
| RTRV-PROTN-LS                          | 3-686 |
| RTRV-PTHTRC-rr                         | 3-688 |
| RTRV-rr                                | 3-697 |
| RTRV-STATE                             | 3-748 |
| RTRV-SYNCN                             | 3-757 |
| RTRV-SYS                               | 3-770 |
| RTRV-TH                                | 3-780 |
| RTRV-TMSLT-rr                          | 3-788 |
| RTRV-USER-SECU                         | 3-806 |
| SET-ATTR-ALM                           | 3-810 |
| SET-ATTR-CONT                          | 3-816 |
| SET-ATTR-ENV                           | 3-821 |
| SET-ATTR-rr                            | 3-826 |
| SET-PM-STIME                           | 3-834 |
| SET-SID                                | 3-837 |
| SET-TH                                 | 3-841 |
| SW-TOPROTN                             | 3-849 |
| SW-TOWKG                               | 3-857 |
| TEST-AUTO                              | 3-862 |
| TEST-EQPT                              | 3-871 |
| TEST-TLM                               | 3-878 |
| UPD-SYS                                | 3-882 |
| <b>FT-2000 Parameter Detail Tables</b> | 3-884 |
| Table 3-7. FT-2000 ADR Terminal AID    | 3-885 |
| Table 3-8. Condition Descriptions      | 3-887 |

---

## Contents

|                                                                                          |       |
|------------------------------------------------------------------------------------------|-------|
| Table 3-9. FT-2000 Monitored Parameter Types<br>(montype)                                | 3-903 |
| Table 3-10. FT-2000 Monitored Parameter Types<br>(montype) With User-Settable Thresholds | 3-905 |
| Table 3-11. FT-2000 Condition Type (condtype)                                            | 3-907 |
| Table 3-12. TL1 Character Set Definitions                                                | 3-912 |

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### Overview

This section provides detailed information about the input and output parameters for the supported TL1 commands. Both autonomous messages (generated by the FT-2000 independent of any request) and command/response messages (generated in response to a request from the OS or OS user) are supported.

The following parameter detail tables are included at the end of this section:

- Access Identifiers (AIDs)
- Monitored Parameter Types
- Condition Types
- Condition Descriptions
- TL1 Character Set Definitions.

All alphabetic characters in the FT-2000 TL1 command responses and autonomous messages are output in uppercase except access identifier (*aid*), condition description (*conddescr*), alarm message description (*almmsg*), and error text. The *aid* is displayed in lowercase in the FT-2000 user interface, and the same is done for the FT-2000 TL1 interface. The *conddescr*, *almmsg*, and error text are output in mixed case for readability.

The FT-2000 does not support parameter grouping.

TL1 command entries which are to be typed exactly as shown are printed in **bold type**. The FT-2000 responses are printed in `courier type`. Descriptive names of entry values are shown in *italic type*. `<cr>` is used to represent a carriage return and `<lf>` is used to represent a line feed. Items

enclosed in brackets "[ ]" indicate optional parameters. Table 3-1 lists the TL1 Commands and identifies the type user. The user types are:

- Privileged - Privileged users are the only ones that can add, change, or delete logins. Privileged users also have access to system capabilities.
- General - General users have access to all system functional capabilities except the security access, system initialization, and software installation functions.
- Reports-Only - Reports-Only users can only make inquiries of the NE and define their own password.

**Table 3-1. TL1 Command and User ID Table**

| TL1 Command    | Privileged User | General User | Reports-Only User |
|----------------|-----------------|--------------|-------------------|
| ACT-USER       | X               | X            | X                 |
| ALW-MSG        | X               | X            |                   |
| CANC-USER      | X               | X            | X                 |
| CPY-PRGM       | X               |              |                   |
| DLT-ASGNMT-DCC | X               | X            | X                 |
| DLT-CRS-rr     | X               | X            |                   |
| DLT-ULSDCC-L4  | X               |              |                   |
| DLT-USER-SECU  | X               |              |                   |
| ED-CRS-rr      | X               | X            | X                 |
| ED-DAT         | X               |              |                   |
| ED-PID         | X               | X            |                   |
| ED-USER-SECU   | X               |              |                   |
| ENT-ASGNMT-DCC | X               | X            | X                 |
| ENT-CID-SECU   | X               |              |                   |
| ENT-CRS-rr     | X               |              |                   |
| ENT-FECOM      | X               | X            | X                 |
| ENT-NE-SECU    | X               |              |                   |
| ENT-PROT-rr    | X               | X            | X                 |
| ENT-PROTN-LINE | X               | X            | X                 |
| ENT-PROTN-LS   | X               | X            | X                 |
| ENT-ROLL-rr    | X               |              |                   |
| ENT- <i>rr</i> | X               | X            |                   |
| ENT-STS1       | X               | X            |                   |
| ENT-SYCN       | X               |              |                   |
| ENT-SYS        | X               | X            |                   |

**Table 3-1. TL1 Command and User ID Table (Contd)**

| <b>TL1 Command</b> | <b>Privileged User</b> | <b>General User</b> | <b>Reports-Only User</b> |
|--------------------|------------------------|---------------------|--------------------------|
| ENT-ULSDCC-L3      | X                      |                     |                          |
| ENT-ULSDCC-L4      | X                      |                     |                          |
| ENT-USER-SECU      | X                      |                     |                          |
| INH-MSG            | X                      |                     |                          |
| INIT-REG           | X                      | X                   |                          |
| INIT-SYS           | X                      |                     |                          |
| OPR-ACO            | X                      | X                   |                          |
| OPR-EXT-CONT       | X                      | X                   |                          |
| OPR-LPBK-rr        | X                      | X                   |                          |
| OPR-PROTNSW-OC12   | X                      | X                   | X                        |
| OPR-PROTNSW-OC3    | X                      | X                   |                          |
| OPR-PROTNSW-OC48   | X                      | X                   |                          |
| OPR-PROTNSW-rr     | X                      | X                   |                          |
| OPR-SYNCNSW        | X                      | X                   |                          |
| RLS-EXT-CONT       | X                      | X                   |                          |
| RLS-LPBK-rr        | X                      | X                   |                          |
| RLS-PROTNSW-OC12   | X                      | X                   | X                        |
| RLS-PROTNSW-OC3    | X                      | X                   |                          |
| RLS-PROTNSW-OC48   | X                      | X                   |                          |
| RLS-PROTNSW-rr     | X                      | X                   |                          |
| RLS-SYNCNSW        | X                      | X                   |                          |
| RTRV-ALM           | X                      | X                   | X                        |
| RTRV-ALM-ENV       | X                      | X                   | X                        |
| RTRV-ALM-NTWK      | X                      | X                   | X                        |
| RTRV-AO            | X                      | X                   | X                        |
| RTRV-ASGNMT-DCC    | X                      | X                   | X                        |
| RTRV-ATTR-ALM      | X                      | X                   | X                        |
| RTRV-ATTR-CONT     | X                      | X                   | X                        |
| RTRV-ATTR-ENV      | X                      | X                   | X                        |
| RTRV-ATTR-rr       | X                      | X                   | X                        |
| RTRV-CID-SECU      | X                      | X                   | X                        |
| RTRV-CKT-rr        | X                      | X                   | X                        |
| RTRV-COND          | X                      | X                   | X                        |
| RTRV-CRS-rr        | X                      | X                   | X                        |

**Table 3-1. TL1 Command and User ID Table (Contd)**

| TL1 Command       | Privileged User | General User | Reports-Only User |
|-------------------|-----------------|--------------|-------------------|
| RTRV-DAT          | X               | X            | X                 |
| RTRV-EQPT         | X               | X            | X                 |
| RTRV-FECOM        | X               | X            |                   |
| RTRV-HDR          | X               | X            | X                 |
| RTRV-LOG          | X               | X            |                   |
| RTRV-MAP          | X               | X            | X                 |
| RTRV-MAP-NEIGHBOR | X               | X            | X                 |
| RTRV-MAP-NETWORK  | X               | X            | X                 |
| RTRV-MAP-RING     | X               | X            | X                 |
| RTRV-NE-SECU      | X               | X            | X                 |
| RTRV-PM           | X               | X            | X                 |
| RTRV-PM-STIME     | X               | X            | X                 |
| RTRV-PROT-rr      | X               | X            | X                 |
| RTRV-PROTN-LINE   | X               | X            | X                 |
| RTRV-PROTN-LS     | X               | X            | X                 |
| RTRV-PTHTRC-rr    | X               | X            |                   |
| RTRV-rr           | X               | X            | X                 |
| RTRV-STATE        | X               | X            | X                 |
| RTRV-SYNCN        | X               | X            | X                 |
| RTRV-SYS          | X               | X            | X                 |
| RTRV-TH           | X               | X            | X                 |
| RTRV-TMSLT-rr     | X               | X            | X                 |
| RTRV-ULSDCC-L3    | X               | X            | X                 |
| RTRV-ULSDCC-L4    | X               | X            | X                 |
| RTRV-USER-SECU    | X               |              |                   |
| SET-ATTR-ALM      |                 | X            |                   |
| SET-ATTR-CONT     |                 | X            |                   |
| SET-ATTR-ENV      | X               | X            |                   |
| SET-ATTR-rr       | X               | X            |                   |
| SET-PM-STIME      | X               | X            | X                 |
| SET-SID           | X               | X            |                   |
| SET-TH            | X               | X            |                   |
| SW-TOPROTN        | X               | X            |                   |
| TEST-AUTO         | X               |              |                   |



**Table 3-1. TL1 Command and User ID Table (Contd)**

---

| <b>TL1 Command</b> | <b>Privileged User</b> | <b>General User</b> | <b>Reports-Only User</b> |
|--------------------|------------------------|---------------------|--------------------------|
| TEST-EQPT          | X                      | X                   | X                        |
| TEST-TLM           | X                      | X                   | X                        |
| SW-TOWKG           | X                      | X                   |                          |
| UPD-SYS            | X                      | X                   |                          |

---

## **TL1 MESSAGES**

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The FT-2000 OC-48 Lightwave System (FT-2000) TL1 messages are based on Bellcore's TR-NWT-000199, Issue 2; TR-NWT-000833, Issue 5, Revision 1; and TR-NWT-000835, Issue 3. The X.25 "short stack" protocol is based on TR-TSY-000827, Issue 1.

The following autonomous messages are supported:

- REPORT ALARM (**REPT ALM**) —  
autonomous reports of alarm conditions
- REPORT ALARM ENVIRONMENT (**REPT ALM ENV**) —  
autonomous reports of environmental alarm conditions
- REPORT CONDITIONS (**REPT COND**) —  
autonomous reports of active status conditions
- REPORT DATA BASE CHANGES (**REPT DBCHG**) —  
autonomous reports of provisioning changes
- REPORT EVENT (**REPT EVT**) —  
autonomous reports of status conditions, including performance-monitoring threshold-crossing alerts (TCAs)
- REPORT SWITCH (**REPT SW**) —  
autonomous reports of circuit pack protection switches.

The following command/response messages are supported:

- ACTIVATE-USER (**ACT-USER**) —  
activates a TL1 access login session
- ALLOW-MESSAGE (**ALM-MSG**) —  
allows transmission of autonomous messages
- CANCEL-USER (**CANC-USER**) —  
terminates a TL1 login session
- COPY-PROGRAM (**CPY-PRGM**) —  
initiated to copy software generic
- DELETE-ASSIGNMENT-DCC (**DLT-ASGNMT-DCC**) —  
initiated to delete assignment of a DCC channel
- DELETE-CROSS-CONNECTION-rr (**DLT-CRS-rr**) —  
deletes cross-connections
- DELETE-UPPER-LAYER-STACK-DCC - LAYER-4 (**DLT-ULSDCC-L4**) —  
initiated to delete data which affects Layer 4 of the Open Systems Interconnection (OSI) protocol stack on the DCC
- DELETE-USER-SECURITY (**DLT-USER-SECU**) —  
deletes user logins from a network element

EDIT-CROSS-CONNECTION-STS1(**ED-CRS-rr**) —  
protects a cross-connection from accidental deletion

EDIT-DATE (**ED-DAT**) —  
changes the system date and time

EDIT-PASSWORD ID (**ED-PID**) —  
changes the user password

EDIT-USER-SECURITY (**ED-USER-SECU**) —  
changes the security parameters associated with a user

ENTER-ASSIGNMENT-DCC (**ENT-ASGNMT-DCC**) —  
initiated to assign DCC channel to a particular low speed slot or Quad or pair of slots or Quads

ENTER-CHANNEL-IDENTIFIER-SECURITY **ENT-CID-SECU** —  
initiated to set the port security parameters for the X.25, DTE, DCE, and DCC ports

ENTER-CROSS-CONNECTION-rr (**ENT-CRS-rr**) —  
establishes cross-connections

ENTER-FAR-END-COMMUNICATIONS (**ENT-FECOM**) —  
initiated to enable/disable remote alarm capabilities over the DCC

ENTER-NETWORK-ELEMENT-SECURITY (**ENT-NE-SECU**) —  
initiated to set global security parameters of the system

ENTER-TRIBUTARY-LEVEL-PROTECTION-ACCESS (**ENT-PROT-rr**) —  
initiated to alter the value of tributary level protection access attribute

ENTER-PROTECTION-LINE **ENT-PROTN-LINE** —  
initiated to specify the wait-to-restore line protection switching characteristic

ENTER-PROTECTION-LOW-SPEED **ENT-PROTN-LS** —  
initiated to specify the wait-to-restore low speed protection switching characteristic

ENTER-ROLL-rr (**ENT-ROLL-rr**) —  
performs a 1-way roll of cross-connections

ENTER-rr (**ENT-rr**) —  
enter attributes for transmission objects provisions various parameters of low speed ports and slots

ENTER-STS1 (**ENT-STS1**) —  
assigns user-settable strings to the transmit and receive path trace fields of a SONET path terminating signal

ENTER-SYNCHRONIZATION (**ENT-SYCN**) —  
provisions the synchronization mode, the synchronization source, the DS1 signal format of the external timing reference inputs and outputs, the DS1 signal line code of the external timing reference inputs, the

equalization of the DS1 signal for the external timing reference outputs,  
and whether output synchronization messaging is enabled or disabled

**ENTER-SYSTEM (ENT-SYS) —**

sets network element name and other system level parameters

**ENTER-UPPER-LAYER-STACK-DCC - LAYER-3 (ENT-ULSDCC-L3) —**

initiated to provision the user-settable parameters in Layer 3 of the Open  
Systems Interconnection (OSI) protocol stack on the DCC

**ENTER-UPPER-LAYER-STACK-DCC - LAYER-4 (ENT-ULSDCC-L4) —**

initiated to provision the user-settable parameters in Layer 4 of the Open  
Systems Interconnection (OSI) protocol stack on the DCC

**ENTER-USER-SECURITY (ENT-USER-SECU) —**

enters the security parameters associated with a user

**INHIBIT-MESSAGE (INH-MSG) —**

inhibits transmission of all autonomous TL1 messages, office alarms,  
and/or parallel telemetry from a network element

**INITIALIZE-REGISTER (INIT-REG) —**

initializes all current day and/or current 15-minute performance-  
monitoring storage registers

**INITIALIZE-SYSTEM (INIT-SYS) —**

initializes (resets) provisionable parameters to their original value

**OPERATE-ALARM CUTOFF (OPR-ACO) —**

operates alarm cutoff to silence the audible office alarms

**OPERATE-EXTERNAL-CONTROL (OPR-EXT-CONT) —**

operates an external discrete control, such as a relay activation, a fan, a  
light, or sprinkler

**OPERATE-LOOPBACK (OPR-LPBK-rr) —**

operates a low speed (LS) manual terminal or facility loopback at the  
specified LS interface

**OPERATE-OC12-LOW-SPEED-OPTICAL-LINE-PROTECTION-SWITCH  
(OPR-PROTNSW-OC12) —**

initiated to request a manual or forced switch or to lockout, or inhibit  
protection switching on a 1+1 (protected) OC-12 Optical Interface

**OPERATE-PROTECTION-SWITCH-OC3 (OPR-PROTNSW-OC3) —**

operates OC-3 line protection switching

**OPERATE-PROTECTION-SWITCH-OC48 (OPR-PROTNSW-OC48) —**

operates OC-48 line protection switching

**OPERATE-PROTECTION-SWITCH (OPR-PROTNSW-rr) —**

operates a manual Dual Ring Interworking (DRI) path protection switch  
on a line tributary within the OC-48 line

- OPERATE-SYNCHRONIZATION-SWITCH (**OPR-SYNCNSW**) —  
operates synchronization reference protection switching
- RELEASE-EXTERNAL-CONTROL (**RLS-EXT-CONT**) —  
releases an external miscellaneous discrete control, such as a generator,  
a fan, a light, or a sprinkler
- RELEASE-LOOPBACK-rr (**RLS-LPBK-rr**) —  
releases a manual low speed (LS) terminal loopback at the specified  
electrical LS interface
- RELEASE-OC12-LINE-PROTECTION-SWITCH (**RLS-PROTNSW-OC12**) —  
initiated to request release (*clear*) forced, lockout or inhibit protection  
switching requests on a 1+1 (protected) OC-12 low speed optical line  
pair
- RELEASE-PROTECTION-SWITCH-OC3 (**RLS-PROTNSW-OC3**) —  
resets OC-3 line protection switching
- RELEASE-PROTECTION-SWITCH-OC48 (**RLS-PROTNSW-OC48**) —  
resets OC-48 line protection switching
- RELEASE-PROTECTION-SWITCH-rr (**RLS-PROTNSW-rr**) —  
release any standing automatic or manual Dual Ring Interworking (DRI)  
path protection switching requests on a line tributary
- RELEASE-SYNCHRONIZATION-SWITCH (**RLS-SYNCNSW**) —  
resets synchronization reference protection switching
- RETRIEVE-ALARM (**RTRV-ALM**) —  
retrieves all active alarms from an LCT terminal
- RETRIEVE-ALARM-ENVIRONMENT (**RTRV-ALM-ENV**) —  
retrieves active alarm environmental conditions from an LCT terminal
- RETRIEVE-ALARM-NETWORK (**RTRV-ALM-NTWK**) —  
initiated to retrieve a report of all network elements with active alarm/or  
status conditions
- RETRIEVE-AUTONOMOUS-OUTPUT (**RTRV-AO**) —  
retrieves copies of autonomous TL1 messages
- RETRIEVE-ASSIGNMENT-DCC (**RTRV-ASGNMT-DCC**) —  
initiated to retrieve information on assignment of DCC Channels
- RETRIEVE-ATTRIBUTE-ALARM (**RTRV-ATTR-ALM**) —  
retrieves the values that have been set for incoming signal alarm delay  
(almdel), the alarm clear delay interval (clrdel), power minor alarm (pmn),  
protection access availability (protaccav), and tributary level reporting  
(tribrept) parameters
- RETRIEVE-ATTRIBUTE-CONTROL (**RTRV-ATTR-CONT**) —  
retrieves the provisioned description(s) associated with an external  
control device or devices

- RETRIEVE-ATTRIBUTE-ENVIRONMENT (**RTRV-ATTR-ENV**) —  
retrieves the alarm level and description parameters for each selected miscellaneous discrete environmental input point
- RETRIEVE-ATTRIBUTE (**RTRV-ATTR-rr**) —  
retrieves the notification code associated with incoming signal failure events
- RETRIEVE-CHANNEL-IDENTIFIER-SECURITY **RTRV-CID-SECU** —  
initiated to retrieve the current CIT or TL1 port provisioning parameters
- RETRIEVE CIRCUIT PATH **RTRV-CKT-rr**) —  
initiated to retrieve a circuit path report showing cross-connections
- RETRIEVE-CONDITION (**RTRV-COND**) —  
retrieves all active alarm and status conditions
- RETRIEVE-CROSS-CONNECT-rr (**RTRV-CRS-rr**) —  
retrieve a cross-connection associated with the specified access identifier
- RETRIEVE-DATE-AND-TIME **RTRV-DAT** —  
initiated to retrieve the network element's time zone and daylight savings time provisioning information
- RETRIEVE-EQPT (**RTRV-EQPT**) —  
retrieves circuit pack and version information for one or more slots
- RETRIEVE-FAR-END-COMMUNICATIONS (**RTRV-FECOM**) —  
initiated to retrieve provisioned state of DCC remote alarm capabilities
- RETRIEVE-HEADER (**RTRV-HDR**) —  
retrieves system ID, time, and date
- RETRIEVE-LOG (**RTRV-LOG**) —  
generates a history log for the network element
- RETRIEVE-MAP-OF-NEAREST-DCC-NEIGHBORS (**RTRV-MAP-NEIGHBOR**) —  
issued to retrieve network elements with direct optical connections carrying active DCC channels to that NE
- RETRIEVE-MAP (**RTRV-MAP**) —  
retrieves the topological map of the SONET subnetwork
- RETRIEVE-MAP-NETWORK (**RTRV-MAP-NETWORK**) —  
retrieves a list of all Network Elements that are immediate DCC to the local Network Element and returns a report containing the Target IDentifiers (or TIDs) of every NE that is directly connected (via the DCC) to that NE, including the connectivity between each one of those NE's and the local NE, as well as other information
- RETRIEVE-MAP-RING (**RTRV-MAP-RING**) —  
retrieves topological map of OC-48 ring

RETRIEVE-NETWORK-ELEMENT-SECURITY (**RTRV-NE-SECU**) —  
initiated to retrieve network element global security information

RETRIEVE-PERFORMANCE-MONITORING (**RTRV-PM**) —  
retrieves performance-monitoring (PM) data, including historical PM data

RETRIEVE-PERFORMANCE-MONITORING-START-TIME **RTRV-PM-STIME** —  
initiated to retrieve the start time for measuring the day bins

RETRIEVE-PROTECTION-ACCESS-ATTRIBUTE (**RTRV-PROT-rr**) —  
instructs NE to retrieve current values of protection access attributes for  
high speed protection tributaries

RETRIEVE-PROTECTION-LINE **RTRV-PROTN-LINE** —  
initiated to retrieve the network element's line protection switching  
characteristics

RETRIEVE-PROTECTION-LOW-SPEED **RTRV-PROTN-LS** —  
initiated to retrieve the network element's low speed protection switching  
characteristics

RETRIEVE-PATH-TRACE (**RTRV-PTHTRC-rr**) —  
retrieves the provisioned transmit and receive path traces, the status of  
the path trace, and the actual receive path trace, if available

RETRIEVE-rr (**RTRV-rr**) —  
retrieves current provisioned state of low speed ports and slots

RETRIEVE-STATE (**RTRV-STATE**) —  
initiated to retrieve slot, STS-1 tributary protection switching state, and  
timing circuit pack switch priority information

RETRIEVE-SYNCHRONIZATION (**RTRV-SYNCN**) —  
displays provisioning and operational information on synchronization  
attributes

RETRIEVE-SYSTEM (**RTRV-SYS**) —  
retrieves network element name and other system level parameters

RETRIEVE-TH (**RTRV-TH**) —  
retrieves the current threshold level of one or more monitored  
parameters for which violation will trigger an automatic message

RETRIEVE-TIME-SLOT (**RTRV-TMSLT-rr**) —  
initiated to retrieve tributary map report

RETRIEVE-UPPER-LAYER-SECTION-DCC - LAYER-3 (**RTRV-ULSDCC-L3**) —  
retrieves the parameters in Layer 3 of the Open Systems Interconnection  
(OSI) protocol stack on the DCC

RETRIEVE-UPPER-LAYER-SECTION-DCC - LAYER-4 (**RTRV-ULSDCC-L4**) —  
retrieves the parameters in Layer 4 of the Open Systems Interconnection  
(OSI) protocol stack on the DCC

- RETRIEVE-USER-SECURITY (**RTRV-USER-SECU**) —  
retrieves security parameters associated with a login
- SET-ATTRIBUTE-ALARM(**SET-ATTR-ALM**) —  
sets the incoming signal alarm delay, the alarm clear delay intervals, the office alarm levels to be raised during a power minor alarm condition, the reporting of protection access availability, and the reporting of tributary level conditions
- SET-ATTRIBUTE-CONTROL (**SET-ATTR-CONT**) —  
sets the description associated with an external control
- SET-ATTRIBUTE-ENVIRONMENT (**SET-ATTR-ENV**) —  
sets the notification code (alarm level) and alarm message (condition description) associated with environmental alarm/status points
- SET-ATTRIBUTE (**SET-ATTR-rr**)† —  
sets the notification code associated with an incoming signal failure event
- SET-PERFORMANCE-MONITORING-START-TIME (**SET-PM-STIME**) —  
specifies the start time for the measurement of all twenty-four hour performance monitoring parameters
- SET-SYSTEM ID (**SET-SID**) —  
sets the target identifier (TID) of the network element
- SET-TH (**SET-TH**) —  
sets the threshold level for a monitored parameter
- SWITCH-TO-PROTECTION (**SW-TOPROTN**) —  
performs an equipment (circuit pack) protection switch on DS3 and/or STS1E, or TG3 (DS1) circuit packs
- SWITCH-TO-WORKING (**SW-TOWKG**) —  
resets an equipment (circuit pack) protection switch on DS3 and/or STS1E, or TG3 (DS1) circuit packs
- TEST-AUTO-TURNUP (**TEST-AUTO**) —  
used for turnup testing of the network element in an automated manner
- TEST EQUIPMENT (**TEST-EQPT**) —  
initiated to test the audible and visible office alarms
- TEST-TELEMETRY (**TEST-TLM**) —  
initiated to perform tests of the parallel telemetry and miscellaneous discrete control points
- UPDATE-SYSTEM (**UPD-SYS**) —  
updates the state of all the automatically provisioned parameters.



**NAME**

DUMMY PAGE:

**INPUT FORMAT**

Dummy page

**DESCRIPTION**

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**NAME**

DUMMY PAGE:

**INPUT FORMAT**

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**DESCRIPTION**

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## NAME

REPT ALM: Report Alarm

This autonomous message is available in FT-2000 Releases 3.0 and later.

## DESCRIPTION

REPT ALM messages are generated autonomously by FT-2000 to report an event that requires immediate attention by the craft at the OS. Each alarm message has an alarm severity associated with it.

If a condition original values or is provisioned to have an alarm level of critical, major, or minor, the occurrence (and clearing) of that condition will be reported in a REPT ALM message.

An alarm condition reported to the OS via the REPT ALM message has a corresponding REPT ALM clearance message that is generated when the alarm condition clears.

## OUTPUT FORMAT

```

      sid date time
almcde atag REPT ALM modifier
      "[aid]:ntfcncde,condtype,srveff,ocrdat,ocrtm,,, [thlev]:
        \"conddescr\",:[tblislt]"
;

```

## OUTPUT PARAMETERS

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier. This is the system name.                                             |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).        |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds). |

- almcde* Alarm code. This has one of the following values:
- \*C Critical alarm
  - \*\* Major alarm
  - \* Minor alarm
  - A Automatic message (nonalarm). This is used only to report a cleared alarm.
- atag* Automatic tag. The *atag* is used for message sequencing. The number is incremented by one for each autonomous message sent by FT-2000.
- modifier* This is a message modifier to the REPT ALM command. It has one of the following values:
- COM Common. This reports an event that is not an equipment or facility condition but applies to the whole FT-2000 system.

```
<lf>
  LT-PF-2000 93-10-26 16:21:30
* 1 REPT ALM EQPT
  "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure\\",:,ISLTD"
;

<lf>
  LT-PF-2000 93-10-26 16:23:18
A 2 REPT ALM EQPT
  "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure-cleared\\",:,ISLTD"
;

<lf>
  LT-PF-2000 93-10-26 16:25:45
* 3 REPT ALM OC48
  "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\\"incoming OC-48 LOS\\",:"
;

<lf>
  LT-PF-2000 93-10-26 16:30:08
A 4 REPT ALM OC48
  "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\\"incoming OC-48 LOS-cleared\\",:"
;

<lf>
  LT-PF-2000 93-10-26 16:21:30
* 1 REPT ALM EQPT
  "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure\\",:,ISLTD"
;
Continued next page
```

```
Continued
<lf>
    LT-PF-2000 93-10-26 16:23:18
A   2 REPT ALM EQPT
    "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\DS3 INTFC failure-cleared\",";ISLTD"
;

<lf>
    LT-PF-2000 93-10-26 16:25:45
*   3 REPT ALM OC48
    "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\incoming OC-48 LOS\",";
;

<lf>
    LT-PF-2000 93-10-26 16:30:08
A   4 REPT ALM OC48
    "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\incoming OC-48 LOS-cleared\",";
;

<lf>
    LT-PF-2000 93-10-26 16:36:56
**  5 REPT ALM OC3
    "ls-3a:MJ,LOF,NSA,10-26,16-36-46,,,,:\incoming OC-3 LOF\",";
;

<lf>
    LT-PF-2000 93-10-26 16:40:09
A   6 REPT ALM OC3
    "ls-3a:CL,LOF,NSA,10-26,16-40-09,,,,:\incoming OC-3 LOF-cleared\",";
;

<lf>
    LT-PF-2000 93-10-26 16:21:30
*   1 REPT ALM EQPT
    "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\DS3 INTFC failure\",";ISLTD"
;

<lf>
    LT-PF-2000 96-10-26 16:23:18
A   2 REPT ALM EQPT
    "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\DS3 INTFC failure-cleared\",";ISLTD"
;

<lf>
    LT-PF-2000 96-10-26 16:25:45
A   3 REPT ALM OC48
    "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\incoming OC-48 LOS\",";
;

<lf>
    LT-PF-2000 96-10-26 16:30:08
A   4 REPT ALM OC48
    "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\incoming OC-48 LOS-cleared\",";
;
Continued next page
```

Continued

<lf>

LT-PF-2000 96-10-26 16:36:56  
\*\* 5 REPT ALM OC3  
"ls-3a:MJ,LOF,NSA,10-26,16-36-46,,,,:\incoming OC-3 LOF\",";"

<lf>

LT-PF-2000 96-10-26 16:40:09  
A 6 REPT ALM OC3  
"ls-3a:CL,LOF,NSA,10-26,16-40-09,,,,:\incoming OC-3 LOF-cleared\",";"

<lf>

LT-PF-2000 96-10-26 16:47:57  
\*C 7 REPT ALM OC12  
"ls-5a:CR,LOF,NSA,10-26,16-46-57,,,,:\incoming OC-12 LOF\",";"

<lf>

LT-PF-2000 96-10-26 16:59:08  
A 8 REPT ALM OC12  
"ls-5a:CL,LOF,NSA,10-26,16-59-08,,,,:\incoming OC-12 LOF-cleared\",";"

EQPT This reports an equipment-related event.

OC48 This reports a facility-related event at the optical carrier signal level 48 (Releases 3.0 and later).

OC12 This reports a facility-related event at the optical carrier signal level 12 (Releases 7.1 and later).

OC3 This reports a facility-related event at the optical carrier signal level 3 (Release 5.0 and later).

The OC3 *modifier* is also applicable for the IS3 circuit pack (Release 7.1 and later).

STS1 This reports a facility-related event at synchronous transport signal level 1.

STS3 This reports a facility-related event at synchronous transport signal level 3.

EC1 This reports a facility-related event at electrical carrier signal level 1 for an FT-2000 terminal (Release 4.0 and later).

T3 This reports a facility-related event at the DS3 level for an FT-2000 terminal.

T1 This reports a facility-related event at the DS1 level for an FT-2000 terminal.

*aid* Access identifier. This is the address of the equipment component, facility, or repeater bay site ID for which an alarm is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ntfcncde* Notification code. This is the alarm level and will have one of the following values:

CR Critical alarm

MJ Major alarm

MN Minor alarm

CL Cleared alarm.

*condtype* Condition type. This has one of the values listed in Table 3-11 at the end of this section.

*srveff* Service effect. This indicates the effect of the reported alarm on service and has one of the following values:

SA Service-affecting condition

NSA Non-service-affecting condition.

A message reporting the clearing of an alarm has the same *srveff* value as the one reporting the alarm.

|                  |                                                                                                                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>ocrdat</i>    | Occurrence date. This indicates the date of the event being reported and has the format MM-DD (month-day).                                                                                                                                                                                                              |
| <i>ocrtm</i>     | Occurrence time. This indicates the time of the event being reported and has the format HH-MM-SS (hours-minutes-seconds).                                                                                                                                                                                               |
| <i>thlev</i>     | Threshold level. If an incoming facility degradation or failure (or clear) is reported, the <i>thlev</i> parameter value is the bit error ratio (BER) threshold level, in integer form, representing the closest negative power of 10 to the BER. Otherwise, this parameter is not reported.                            |
|                  | Threshold Level modifier type alarms only for:<br>OC48 (Releases 3.0 and later)<br>OC12 (Releases 7.1 and later)<br>OC3 (Releases 5.0 and later)<br>EC1 (Releases 4.0 and later)<br>T3 (Releases 3.0 and later)                                                                                                         |
| <i>conddescr</i> | Condition description. This is the text description of the reported condition. If further explanation, including likely causes, of a reported condition is required, refer to Table 3-8 at the end of this section.                                                                                                     |
| <i>tblislt</i>   | Trouble isolated. If a reported condition is isolated to the reported <i>aid</i> , the <i>tblislt</i> parameter value is ISLTD to indicate that the <i>aid</i> identifies the circuit pack that should be replaced by craft to correct the reported condition. Otherwise, the <i>tblislt</i> parameter is not reported. |



## EXAMPLE OUTPUT

For Release 3.0:

```
LT-FT-2000 93-10-26 16:21:30
* 1 REPT ALM EQPT
  "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure",:,ISLTD\\"
;

LT-FT-2000 93-10-26 16:23:18
A 2 REPT ALM EQPT
  "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure-cleared",:,ISLTD\\"
;

LT-FT-2000 93-10-26 16:25:45
* 3 REPT ALM OC48
  "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\\"incoming OC-48 LOS\\",:\""
;

LT-FT-2000 93-10-26 16:30:08
A 4 REPT ALM OC48
  "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\\"incoming OC-48 LOS-cleared\\",:\""
;
```

For Release 5.0:

```
LT-FT-2000 93-10-26 16:21:30
* 1 REPT ALM EQPT
  "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure",:,ISLTD\\"
;
LT-FT-2000 93-10-26 16:23:18
A 2 REPT ALM EQPT
  "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\\"DS3 INTFC failure-cleared",:,ISLTD\\"
;
LT-FT-2000 93-10-26 16:25:45
* 3 REPT ALM OC48
  "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\\"incoming OC-48 LOS\\",:"
;
LT-FT-2000 93-10-26 16:30:08
A 4 REPT ALM OC48
  "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\\"incoming OC-48 LOS-cleared\\",:"
;
LT-FT-2000 93-10-26 16:36:56
** 5 REPT ALM OC3
  "ls-3a:MJ,LOF,NSA,10-26,16-36-46,,,,:\\"incoming OC-3 LOF\\",:"
;
LT-FT-2000 93-10-26 16:40:09
A 6 REPT ALM OC3
  "ls-3a:CL,LOF,NSA,10-26,16-40-09,,,,:\\"incoming OC-3 LOF-cleared\\",:"
;
```

For Release 7.1:

```
LT-FT-2000 93-10-26 16:21:30
* 1 REPT ALM EQPT
  "ls-1a-2:MN,TS3TERM,NSA,10-26,16-21-30,,,,:\DS3 INTFC failure\","::ISLTD"
;

LT-FT-2000 96-10-26 16:23:18
A 2 REPT ALM EQPT
  "ls-1a-3:CL,TS3TERM,NSA,10-26,16-21-30,,,,:\DS3 INTFC failure-cleared\","::ISLTD"
;

LT-FT-2000 96-10-26 16:25:45
A 3 REPT ALM OC48
  "line-1:MN,LOS,NSA,10-26,16-25-45,,,,:\incoming OC-48 LOS\","::"
;

LT-FT-2000 96-10-26 16:30:08
A 4 REPT ALM OC48
  "line-1:CL,LOS,NSA,10-26,16-30-08,,,,:\incoming OC-48 LOS-cleared\","::"
;

LT-FT-2000 96-10-26 16:36:56
** 5 REPT ALM OC3
  "ls-3a:MJ,LOF,NSA,10-26,16-36-46,,,,:\incoming OC-3 LOF\","::"
;

LT-FT-2000 96-10-26 16:40:09
A 6 REPT ALM OC3
  "ls-3a:CL,LOF,NSA,10-26,16-40-09,,,,:\incoming OC-3 LOF-cleared\","::"
;

LT-FT-2000 96-10-26 16:47:57
*C 7 REPT ALM OC12
  "ls-5a:CR,LOF,NSA,10-26,16-46-57,,,,:\incoming OC-12 LOF\","::"
;

LT-FT-2000 96-10-26 16:59:08
A 8 REPT ALM OC12
  "ls-5a:CL,LOF,NSA,10-26,16-59-08,,,,:\incoming OC-12 LOF-cleared\","::"
;
```

**RELATED TL1 COMMANDS/MESSAGES**

For Release 3.0 and later:

REPT EVT

**RTRV - ALM**

For Release 4.1 and later:

**RTRV - COND**

For Release 5.0 and later:

REPT COND

**RTRV - AO**

## NAME

REPT ALM ENV: Report Alarm Environment

This autonomous message is available in FT-2000 Releases 3.0 and later.

## DESCRIPTION

REPT ALM ENV messages are generated autonomously by FT-2000 to inform the OS an environmental condition has been detected at either the FT-2000 end terminal, repeater bay (Release 3 and later), or add/drop-rings terminal (Release 3 and later).

If a miscellaneous discrete environmental point original values to, or is provisioned to have, an alarm level of critical, major, or minor, the occurrence (and clearing) of that environmental point will be reported in a REPT ALM ENV message. If provisioned as a nonalarmed condition, a REPT EVT message is used to report the event.

For each miscellaneous discrete environmental condition reported to the OS via the REPT ALM ENV message, a corresponding REPT ALM ENV clearance message will be generated when the environmental condition clears.

## OUTPUT FORMAT

```
sid date time
almcde atag REPT ALM ENV
      "aid:ntfcncde,almtype,ocrdat,ocrtm,\"almmsg\""
;
```

## OUTPUT PARAMETERS

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier. This is the system name.                                             |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).        |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds). |

|                 |                                                                                                                                                                                                                                                                                                                          |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>almcde</i>   | Alarm code. This has one of the following values: <ul style="list-style-type: none"><li>*C Critical alarm</li><li>** Major alarm</li><li>* Minor alarm</li><li>A Automatic message (nonalarm). This is used only to report a cleared alarm.</li></ul>                                                                    |
| <i>atag</i>     | Automatic tag. The <i>atag</i> is used for message sequencing. The number is incremented by one for each autonomous message sent by FT-2000. FT-2000 uses whole numbers 000 to 999.                                                                                                                                      |
| <i>aid</i>      | Access identifier. This is the address of miscellaneous discrete environmental point or repeater bay site ID for which an alarm is being reported.<br><br>Refer to Table 3-7 at the end of this section for a list of valid addresses.                                                                                   |
| <i>ntfcncde</i> | Notification code. This is the alarm level and has one of the following values: <ul style="list-style-type: none"><li>CR Critical alarm</li><li>MJ Major alarm</li><li>MN Minor alarm</li><li>CL Cleared alarm</li></ul>                                                                                                 |
| <i>almtype</i>  | Alarm type. This parameter has one of the following values: <ul style="list-style-type: none"><li>MISC Miscellaneous discrete environmental conditions reported for near end terminals</li><li>REGR-MISC Miscellaneous discrete environmental conditions reported for far end terminals or repeater bay sites.</li></ul> |
| <i>ocrdat</i>   | Occurrence date. This indicates the date of the event being reported and has the format MM-DD (month-day).                                                                                                                                                                                                               |
| <i>ocrtm</i>    | Occurrence time. This indicates the time of the event being reported and has the format HH-MM-SS (hours-minutes-seconds).                                                                                                                                                                                                |
| <i>almmsg</i>   | Alarm message. This is the text description of the reported condition. (the text description of the actual condition monitored and reported by each miscellaneous discrete environmental point can be provisioned by the user. The original value is environment <i>n</i> .)                                             |

**EXAMPLE OUTPUT**

```
LT-FT-2000 93-10-26 16:25:48
* 5 REPT ALM ENV
  "env-1:MN,MISC,10-26,16-25-48,\"open door\""
;
LT-FT-2000 93-10-26 16:27:35
A 6 REPT ALM ENV
  "env-3:MN,MISC,10-26,16-25-48,\"environment 3\""
;
```

## NAME

REPT COND: Report Condition

This autonomous message is available in FT-2000 Releases 5.0 and later.

## DESCRIPTION

REPT COND messages are generated periodically and autonomously by FT-2000 to report the active *status* conditions at the network element. REPT COND messages are generated every 6 hours, that is, at 6:00 a.m., 12:00 noon, 6:00 p.m., and 12:00 midnight.

Each REPT COND message reports one active status condition similar to the autonomous REPT EVT message used to report each status condition (non-alarmed event) when it occurred.

Any status condition reported by an autonomous REPT EVT message, which is active when the periodic REPT COND messages are output, is included in a REPT COND message.

Any *active* status condition that was initially reported by an autonomous REPT EVT message *with a standing condition effect* (*condeff* = SC) is included in one of the periodic REPT COND messages.

The information content of each REPT COND message is effectively equivalent to a line in the response to a **RTRV-COND** command.

## OUTPUT FORMAT

If there are no active status conditions to report, the following report is output:

```
sid date time
A atag REPT COND
;
```



If there are active status conditions to report, the following report is output:

```

      sid date time
A atag REPT COND modifier
      "[aid]:ntfcncde,condtype,srveff,ocrdat,ocrtm,,, "conddescr""
;
```

## OUTPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------|------|----------------------------------------------|------|---------------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|
| <i>sid</i>      | Source identifier. This is the system name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| <i>date</i>     | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| <i>time</i>     | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| <i>A</i>        | This indicates that the message is sent autonomously.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| <i>atag</i>     | Automatic tag. The <i>atag</i> is used for message sequencing. The number is incremented by one for each autonomous message sent by FT-2000.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| <i>modifier</i> | This is a message modifier to the REPT COND command. It has one of the following values: <table> <tr> <td>COM</td><td>Common. This reports a condition that is not an equipment or facility condition but applies to the whole FT-2000 system.</td></tr> <tr> <td>EC1</td><td>This reports a facility-related condition at electrical carrier signal level 1.</td></tr> <tr> <td>EQPT</td><td>This reports an equipment-related condition.</td></tr> <tr> <td>OC12</td><td>For releases 7.1 and later, this reports a facility-related condition at the optical carrier signal level 12.</td></tr> <tr> <td>OC3</td><td>This reports a facility-related condition at the optical carrier signal level 3.</td></tr> <tr> <td>OC48</td><td>This reports a facility-related condition at the optical carrier signal level 48.</td></tr> </table> | COM | Common. This reports a condition that is not an equipment or facility condition but applies to the whole FT-2000 system. | EC1 | This reports a facility-related condition at electrical carrier signal level 1. | EQPT | This reports an equipment-related condition. | OC12 | For releases 7.1 and later, this reports a facility-related condition at the optical carrier signal level 12. | OC3 | This reports a facility-related condition at the optical carrier signal level 3. | OC48 | This reports a facility-related condition at the optical carrier signal level 48. |
| COM             | Common. This reports a condition that is not an equipment or facility condition but applies to the whole FT-2000 system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| EC1             | This reports a facility-related condition at electrical carrier signal level 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| EQPT            | This reports an equipment-related condition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| OC12            | For releases 7.1 and later, this reports a facility-related condition at the optical carrier signal level 12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| OC3             | This reports a facility-related condition at the optical carrier signal level 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |
| OC48            | This reports a facility-related condition at the optical carrier signal level 48.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                                                                                                          |     |                                                                                 |      |                                              |      |                                                                                                               |     |                                                                                  |      |                                                                                   |

- STS3 This reports a facility-related condition at synchronous transport signal level 3.
- STS1 This reports a facility-related condition at synchronous transport signal level 1.
- T3 This reports a facility-related condition at the DS3 level.
- T1 This reports a facility-related condition at the DS1 level.

The *modifier* value is null if there are not any active status conditions to report.

*aid* Access identifier. This is the address of the equipment component, facility, or repeater bay site ID for which an alarm is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ntfcncde* Notification code. This parameter value is always NA (not alarmed) for status conditions.

*condtype* Condition type. This has one of the values listed in Table 3-11 at the end of this section.

*srveff* Service effect. This indicates the effect of the reported condition on service. This parameter value is always NSA (not service affecting) for status conditions

*ocrdat* Occurrence date. This indicates the date of the condition being reported and has the format MM-DD (month-day).

*ocrtm* Occurrence time. This indicates the time of the condition being reported and has the format HH-MM-SS (hours-minutes-seconds).

*conddescr* Condition description. This is the text description of the reported condition.

If further explanation, including likely causes, of a reported condition is required, refer to Table 3-8 at the end of this section.

**EXAMPLE OUTPUT**

```
LT-PF-2000 93-10-26 06:21:18
A 810 REPT COND COM
  "env-1:NA,MISC,NSA,10-01,01-03-29,,,\"environment1\""
;
```

For Releases 3.0 and later:

```
LT-PF-2000 93-10-01 06:00:00
A 810 REPT COND OC48
  "line-1e:NA,OC48,NSA,10-01,02-04-30,,,\"line auto switched\""
;
```

For Releases 7.1 and later:

```
LT-PF-2000 96-10-01 06:00:00
A 810 REPT COND OC12
  "ls-5a:NA,OC12,NSA,10-01,02-04-30,,,\\"OC12 auto switched
    at near end\\"
;
```

## RELATED TL1 MESSAGES

REPT ALM

REPT EVT

RTRV-ALM

RTRV-AO

RTRV-COND

## NAME

REPT DBCHG: Report Data Base Change

This autonomous message is available in FT-2000 Releases 5.0 and later.

## DESCRIPTION

For Releases 5.0 and 6.0, REPT DBCHG messages are generated autonomously by network element to report data base changes that have occurred as a result of line termination and cross-connection provisioning commands.

For Releases 7.0 and later, REPT DBCHG messages are generated by a network element to report database changes that have occurred as a result of line termination, STS-3 cross-connection, and performance monitoring parameter threshold provisioning commands.

For Releases 7.0 and later, REPT DBCHG messages are sent on an another virtual circuit, different from the virtual circuit on which the command that caused the database change(s) was received.

The REPT DBCHG message is generated in response to the following data base changes:

Change in line termination provisioning:

Anytime the **ENT - rr** command is entered on the OS-NE interface, or the equivalent command is entered via the CIT, and successfully executes, a REPT DBCHG message is generated indicating the new settings.

Change in line termination alarm attribute provisioning:

Anytime the **SET -ATTR** command is entered on the OS-NE interface, or the equivalent command is entered via the CIT, and successfully executes, a REPT DBCHG message is generated indicating the new settings.

Change in alarm, control, and environment attribute provisioning:

For Releases 7.0 and later, any time the **SET -ATTR-ALM**, **SET -ATTR-CONT**, or **SET -ATTR-ENV** command is entered on the OS-NE interface, or the equivalent command is entered via the CIT, and successfully executed, a REPT DBCHG message is generated indicating the new settings. (See following table.)

Change in a cross-connection for a SONET signal path:

Anytime a SONET signal path cross-connection is changed by an **ENT-CRS-STS3**, **DLT-CRS-STS3**, or **ENT-ROLL-STS3** command on the OS-NE interface, or the equivalent command is entered via the CIT, a REPT DBCHG message is generated indicating the changed cross-connection.

Performance monitoring parameter threshold provisioning:

For Releases 7.0 and later, any time the **SET-TH-rr** command is entered on the OS-NE interface, or the equivalent command is entered via the CIT, and successfully executes, a REPT DBCHG message is generated indicating the new settings.

OSI/TARP Provisioning:

For Releases 8.0 and later, any time the **ENT-ULSDCC** or **DLT-ULSDCC** command is entered on the OS-NE interface, or the equivalent command is entered via the CIT, and successfully executed, a REPT DBCHG message is generated indicating the new settings. (See following table.)

When the **ENT-ULSDCC-L3** command is entered to change one or more NSAP fields of the target NE, or to set the target NE as a level 2 router, the system controllers will reset. A REPT DBCHG message is attempted before the controller resets.

System initialization:

Anytime the **INIT-SYS** command is entered on the OS/NE or CIT interface, a REPT DBCHG message is transmitted before the system resets.

Controller reset:

Anytime the system controller resets (including on power-up), a REPT DBCHG message is transmitted after the controller has successfully recovered from the reset.

**⇒ NOTE:**

For Release 5.0:

The user is logged out when the controller reset process begins. However, the user can relogin after a couple of minutes of controller reset process initiation. The user will be able to see the REPT DBCHG message at the time it is sent only if the user has logged in again after a couple of minutes of controller reset initiation and before the completion of system controller reset. Otherwise, the user has to use the **RTRV-A0** message to see the REPT DBCHG stored in the buffer internally in the system.

Update:

Anytime the UPDATE function is asserted, a REPT DBCHG message is transmitted.

The following additional TL1 and equivalent CIT commands will trigger a REPT DBCHG message in Releases 7.0 and later.

| Command       | Special Notes                       | Releases      |
|---------------|-------------------------------------|---------------|
| SET-ATTR-ALM  |                                     | 7.0 and later |
| SET-ATTR-CONT |                                     | 7.0 and later |
| SET-ATTR-ENV  |                                     | 7.0 and later |
| SET-TH        |                                     | 7.0 and later |
| CPY-PRGM      | Causes a change on a far end system | 7.1 and later |
| ENT-SYS       |                                     | 8.0 and later |
| ENT-ULSDCC    |                                     | 8.0 and later |
| DLT-ULSDCC    |                                     | 8.0 and later |
| SET-SID       |                                     | 8.0 and later |

## OUTPUT FORMAT

```

      sid date time
A atag REPT DBCHG
      "umb:ccb:aid:[com_block]:[spec_block]:[state_block]"
;
```

Trailing commas after the last non-null parameter value within a parameter block are *not* included in the output message. Also, trailing colons after the last non-null parameter block are *not* included in the output message.

## OUTPUT PARAMETERS

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>    | Source identifier. This is the system name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>date</i>   | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>time</i>   | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>A</i>      | This indicates that the message is sent autonomously.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>atag</i>   | Automatic tag. The <i>atag</i> is used for message sequencing. The number is incremented by one for each autonomous message sent by FT-2000, on a per-OS-type basis. The network element uses only whole numbers from 000 through 999.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>umb</i>    | Update management block. This parameter field is used for returning the time and date of the data base change and the source ID of the command that caused the change (when applicable). Parameters within the update management block are positionally independent and are specified using a name defined construct of: <b>PARAMETER=</b> <i>value</i> in a comma separated list. The parameters are listed and explained below. <table border="0"> <tr> <td><b>TIME</b></td><td>This reflects the time that the data base change occurred and is in the form: HH-MM-SS. The time is the same as the time that is in the REPT DBCHG message header.</td></tr> <tr> <td><b>DATE</b></td><td>This reflects the date that the data base change occurred and is in the form: YY-MM-DD. The date is the same as the date that is recorded in the history log for the data base change record.</td></tr> <tr> <td><b>SOURCE</b></td><td>If the data base change occurs as a result of a TL1 command with a non-null <i>ctag</i>, the <b>SOURCE</b> field contains this value. Otherwise, this parameter is not included in the message.</td></tr> </table> | <b>TIME</b> | This reflects the time that the data base change occurred and is in the form: HH-MM-SS. The time is the same as the time that is in the REPT DBCHG message header. | <b>DATE</b> | This reflects the date that the data base change occurred and is in the form: YY-MM-DD. The date is the same as the date that is recorded in the history log for the data base change record. | <b>SOURCE</b> | If the data base change occurs as a result of a TL1 command with a non-null <i>ctag</i> , the <b>SOURCE</b> field contains this value. Otherwise, this parameter is not included in the message. |
| <b>TIME</b>   | This reflects the time that the data base change occurred and is in the form: HH-MM-SS. The time is the same as the time that is in the REPT DBCHG message header.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <b>DATE</b>   | This reflects the date that the data base change occurred and is in the form: YY-MM-DD. The date is the same as the date that is recorded in the history log for the data base change record.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <b>SOURCE</b> | If the data base change occurs as a result of a TL1 command with a non-null <i>ctag</i> , the <b>SOURCE</b> field contains this value. Otherwise, this parameter is not included in the message.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |
| <i>ccb</i>    | Command code block. This is a single position defined parameter block which indicates the trigger information of the action which created the data base update. If a TL1 command created this update, the command code parameter is specified in the form:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |                                                                                                                                                                    |             |                                                                                                                                                                                               |               |                                                                                                                                                                                                  |

**<verb>-<modifier>[-<modifier>]**

For Releases 7.0 and later, if the database change was caused by a user interface command or a button push caused the database change, the Command Code Block contains the



equivalent TL1 command which would have had to have been entered to make the change. The format is shown above.

For Releases 5.0 through 7.2, if the data base change was caused by a user interface command, a button push caused the data base change, or a TBOS control input. The command code block contains the equivalent TL1 command which would have had to be entered to make the change. The format is shown above.

If the data base change was caused by execution of the **SET-ATTR-rr** command, the command code block contains the **ENT-rr** command with the appropriate *rr* value.

For Releases 7.0 and later, if the database change was caused by execution of the **SET-TH-rr** command, the Command Code Block contains the **ENT-rr** command with the appropriate *rr* value.

For controller reset, the *ccb* is equal to RESET. For the UPDATE function, the *ccb* is equal to UPD-SYS.

*aid*

Access identifier. This is the address of the object entity which the data base update has affected. For cross-connect changes, this is the pair of AIDs specified in the cross-connection command. The AIDs are separated by a comma.

For cross-connect rolls, this is the trio of AIDs specified in the roll command. The AIDs are separated by commas (that is, *src\_aid, dest\_aid, new\_srd\_aid*).

For line termination provisioning changes, this field contains the AID of the line which was provisioned.

For system initialization, RESET, and UPDATE events, this field is null.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*com\_block*

Common block. FT-2000 does not use this parameter. Therefore this field is always null.

*spec\_block*

Specific block. This is a name-defined field. If the data base change is the result of a TL1 command which contains parameters in this block, the parameter names and values are included in this block. Parameters within the specific block are positionally independent and are specified using a name defined construct of: **PARAMETER=value** in a comma separated list. The parameter names are the same as those for

the corresponding TL1 command.

All the database changes except the state change are reported in the *spec\_block* as name-defined parameters (PARAMETER=*value*) whether or not the data was originally input as a position-defined parameter or name-defined parameter in the input command. The parameter names are the same as those for the corresponding TL1 command.

If the input command used a name-defined parameter that causes a database change, then the REPT DBCHG will report it as a name-defined parameter in the specific block. If the input command used a position-defined parameter that causes a database change, then the REPT DBCHG will report this position-defined parameter as a name-defined parameter (PARAMETER=*value*) in the specific block.

If the data base change is the result of a (non-TL1) user interface command which contains parameters in this block, the equivalent TL1 parameter names and values are included in this block. The parameter names are the same as those for the corresponding TL1 command.

This field is null if the value in the *ccb* is one of:  
INIT-SYS, RESET, UPD-SYS, PLUGIN, or UNPLUG.

If the data base change is a result of a cross-connect or roll command, the cross-connect type (*cct*) of those commands is reported in the *spec\_block* as CCT=*value*, where CCT can assume the following values: 1WAY, 2WAY, and 1WAYDRI as defined in the **RTRV-CRS-STS3** command.

For Releases 7.0 and later:

If the database change is a result of system initialization command, the phase parameter (*ph*) of the command is reported in the *spec\_block* as PH=*value*, where PH can assume the following values: 9 and 3 as defined in the **INIT-SYS** command.

*state\_block* State block. This is a position defined field. If a state change is being reported, the new state is included in this block. It contains the following parameters in the order shown:

*pst* Primary State.

*sst* Secondary State.

When the *sst* parameter is reported alone, i.e. the *pst* is not also reported, the comma (,) that would normally separate the *pst* and *sst* fields is output after the colon (:) which delimits the *state\_block*, followed by the *sst* value.

### EXAMPLE OUTPUT

The following message is sent when a cross-connection is established between STS-3 number 1 from the East line to low speed slot 3A:

```
LT-PF-2000 93-10-01 08:00:00
A 888 REPT DBCHG
"TIME=07-59-20,DATE=93-10-01,SOURCE=123456:ENT-CRS-ST3:sts3-1e-1,ls-3a"
;
```

For Release 6.0, the following messages are sent when a **set-oc48:line=ALL, SDTHR=-9** CIT-PC command is executed:

```
LT-PF-2000 95-03-08 08:00:00
A 6 REPT DBCHG
"TIME=07-59-20,DATE=95-03-08:ENT-OC48:line-1e::SDTHR=-9:"
;

LT-PF-2000 95-03-08 08:00:00
A 7 REPT DBCHG
"TIME=07-59-20,DATE=95-03-08:ENT-OC48:line-1w::SDTHR=-9:"
;
```

The following message is sent when the **ENT-T3** message has been completed for a DS3 port:

```
LT-PF-2000 93-10-01 08:00:00
A 888 REPT DBCHG
  "TIME=07-59-20,DATE=93-10-01,SOURCE=123456:ENT-T3:
    ls-3a-1::NTFCNCDE=CR,SDTHR=-6,FMT=ASYNC,
    LINECDE=B3ZS,OMODE=NORM,PBIT=ON:IS"
;
```

For Releases 7.0 and later, the following message is sent when the **SET-ATTR-CONT** message has been completed for the control point 3:

```
LT-PF-2000 93-10-01 08:00:00
A 888 REPT DBCHG
  "TIME=07-59-20,DATE=93-10-01,SOURCE=123456:SET-ATTR-CONT:cont-3:
    :CONTTYPE=\"StartGenerator\""
;
```

**RELATED TL1 MESSAGES**

For Releases 5.0 and later:

**DLT-CRS-*rr***  
**ENT-CRS-*rr***  
**ENT-ROLL-*rr***  
**ENT-*rr***

For Releases 7.0 and later:

**INIT-SYS**  
**RESET**  
**RTRV-AO**  
**SET-ATTR-*rr***  
**UPD-SYS**  
**SET-TH-*rr***  
**SET-ATTR-ALM**  
**SET-ATTR-CONT**  
**SET-ATTR-ENV**

For Releases 7.1 and later:

**CPY-PRGM**

For Releases 8.0 and later:

**DLT-ULSDCC**  
**ENT-ULSDCC**  
**ENT-SYS**  
**SET-SID**

## NAME

REPT EVT: Report Event

This autonomous message is available in FT-2000 Releases 3.0 and later.

## DESCRIPTION

REPT EVT messages are generated autonomously by FT-2000 to report events (nonalarmed conditions).

If an event with a user-provisionable alarm level original values to or is provisioned as a not alarmed (NA) level, the occurrence of that event is reported in a REPT EVT message. REPT EVT messages also occur when any such standing conditions clear, and are used to report transient conditions.

In Release 4.0 and later, autonomous performance-monitoring (PM) threshold-crossing alert (TCA) messages are provided to the OS using this message.

## OUTPUT FORMAT

```
sid date time
A atag REPT EVT modifier
"[aid]:condtype,condeff,ocrdat,ocrtm,[locn],[dirn],[monval],[thlev],
[tmper]:\"conddescr\",:[,tblislt]"
;
```

## OUTPUT PARAMETERS

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier. This is the system name.                                             |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).        |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds). |
| A           | This indicates the nonalarmed message was sent autonomously.                            |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>atag</i>     | Automatic tag. The <i>atag</i> is used for message sequencing. The number is incremented by one for each autonomous message sent by FT-2000.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>modifier</i> | This is a message modifier to the REPT EVT message and has one of the following values: <ul style="list-style-type: none"> <li>COM Common. This reports an event that is not an equipment or facility condition but applies to the FT-2000 as a whole. This is also used to report miscellaneous discrete environmental nonalarmed conditions.</li> <li>EQPT This reports an equipment-related event.</li> <li>OC48 This reports a facility-related event at the optical carrier signal level 48.</li> <li>OC12 For Releases 7.1 and later, This reports a facility-related event at the optical carrier signal level 12. (Release 7.1 and later).</li> <li>OC3 This reports a facility-related event at the optical carrier signal level 3 (Release 5.0 and later). The <b>OC3</b> modifier is also applicable for the IS3 signal. (Release 7.1 and later.)</li> <li>STS3 This reports a facility-related event at synchronous transport signal level 3.</li> <li>STS1 This reports a facility-related event at synchronous transport signal level 1 for an FT-2000 terminal.</li> <li>EC1 This reports a facility-related event at electrical carrier signal level 1 for an FT-2000 end terminal. This signal is also known as an STS-1E signal and is available in Release 3 and later.</li> <li>T3 This reports a facility-related event at the DS3 level for an FT-2000 end terminal.</li> <li>T1 This reports a facility-related event at the DS1 level for an FT-2000 end terminal.</li> </ul> |
| <i>aid</i>      | Access identifier. This is the address of the equipment component, facility, or repeater bay site ID (Release 2 and later) for which an event is being reported. Refer to Table 3-7 at the end of this section for a list of valid addresses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>condtype</i> | Condition type. This has one of the values listed in Table 3-11 at the end of this section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>condeff</i> | <p>Condition effect. This indicates the effect of the reported event on the condition of FT-2000 and has one of the following values:</p> <p>SC For Releases 3.0 through 5.0:<br/>Standing condition. This is a condition that is active for an extended period of time. If a REPT EVT message reports an event that results in a standing condition, then another REPT EVT message will be used to report when the standing condition no longer exists.</p> <p>For Release 6.0 and later:<br/>Standing Condition Raised. This is a condition that is active for an extended period of time. When the standing condition no longer exists, another REPT-EVT message will be sent with condeff of CL.</p> <p>TC For Releases 4.0 and later:<br/>Transient condition. This is a condition that does not change the basic condition of FT-2000 for an extended period of time.</p> <p>CL For Release 6.0 and later:<br/>Standing Condition Cleared. This is used to report when a standing condition no longer exists.</p> |
| <i>ocrdat</i>  | Occurrence date. This indicates the date of the event being reported and has the format MM-DD (month-day).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>ocrtm</i>   | Occurrence time. This indicates the time of the event being reported and has the format HH-MM-SS (hours-minutes-seconds).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>locn</i>    | <p>Location. This parameter is available in Release 4 and later and indicates whether the event being reported pertains to the near end or far end. This parameter may be null or have one of the following values:</p> <p>NEND Near end event or TCA report.</p> <p>FEND Far end event or TCA report.</p> <p>The FT-2000 will output a null value for this parameter <i>except</i> in cases where a TCA message is being generated. A null value is to be interpreted as meaning NEND.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>dirn</i>    | Direction. This indicates the direction of the event being reported relative to the entity identified by the <i>aid</i> . The system will always provide a null entry for the <i>dirn</i> parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>monval</i>  | Monitored value. For performance monitoring TCAs, this is the measured value of the parameter specified in <i>condtype</i> (=T- <i>montype</i> ) at the time the REPT EVT TCA is reported. Otherwise this parameter is not reported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |



For Releases 4.0 and later, if an incoming facility degradation or failure (or clear) is reported, the *thlev* parameter is the BER threshold level, in integer form, representing the closest negative power of 10 to the BER.

For performance monitoring TCAs, this is the current provisioned threshold value of the parameter specified in *condtype* (=T-montype).

Otherwise this parameter is not reported.

*timper* Time period. For releases prior to Release 4, this parameter is not reported. For performance-monitoring TCAs (Release 4 and later), this is the performance-monitored time interval in which the reported threshold-crossing event was observed. This parameter may have the following values:

15-MIN 15-minute interval

1-DAY daily interval

Otherwise, this parameter is not reported.

*conddescr* Condition description. This is the text description of the reported condition.

If further explanation, including likely causes, of a reported condition is required, refer to Table 3-8 at the end of this section.

*tblislt* Trouble isolated. If a reported condition is isolated to the reported *aid*, the *tblislt* parameter value is ISLTD to indicate that the *aid* identifies the circuit pack that should be replaced by craft to correct the reported condition. Otherwise, this parameter is not reported.

## EXAMPLE OUTPUT

For Releases 7.1 and later:

```
LT-PF-2000 97-10-26 16:28:41
A 7 REPT EVT OC48
  "line-1e:WKSUPR-p,SC,10-26,16-28-41,,,,:\line ring auto switch\",";
;

LT-PF-2000 97-10-26 16:38:17
A 8 REPT EVT OC48
  "line-1e:NORMAL,CL,10-26,16-38-17,,,,:\line ring auto switch-cleared\",";
;

LT-PF-2000 97-10-26 16:48:21
A 9 REPT EVT OC12
  "ls-5a:WKSUPR-p,SC,10-26,16-48-21,,,,:\OC12 auto switch at near end\",";
;

LT-PF-2000 97-10-26 17:08:17
A 10 REPT EVT OC12
  "ls-5a:NORMAL,CL,10-26,17-08-17,,,,:\OC12 auto switch at near end-cleared\",";
;

LT-PF-2000 93-10-26 17:19:02
A 11 REPT EVT STS1
  "sts1-1e-14-3:T-SESP-FE,TC,10-26,17-19-02,FEND,,250,250,1-DAY:
  \STS1 TCA Day:SESP-FE\",";
;

LT-PF-2000 93-10-26 18:22:11
A 12 REPT EVT T3
  "ls-5b-2:T-UASP,TC,10-26,18-22-11,NEND,,12,10,15-MIN:\DS3 TCA QH:UAS-P\",";
;
```

For Releases 6.0 and later:

```
LT-PF-2000 96-10-26 16:28:41
A 7 REPT EVT OC48
  "line-1e:WKSWPR-p,SC,10-26,16-28-41,,,,:\"line ring auto switch\",:"
;

LT-PF-2000 96-10-26 16:38:17
A 8 REPT EVT OC48
  "line-1e:NORMAL,CL,10-26,16-38-17,,,,:\"line ring auto switch-cleared\",:"
;

LT-PF-2000 93-10-26 17:19:02
A 9 REPT EVT STS1
  "sts1-1e-14-3:T-SESP-FE,TC,10-26,18-22-11,FEND,,250,250,1-DAY:
  \"STS1 TCA Day:SESP-FE\",:"
;

LT-PF-2000 93-10-26 18:22:11
A 10 REPT EVT T3
  "ls-5b-2:T-UASP,TC,10-26,17-19-02,NEND,,12,10,15-MIN:\"DS3 TCA QH:UAS-P\",:"
;
```

For Releases 3.0 through 5.0:

```
LT-PF-2000 93-10-26 16:28:41
A 7 REPT EVT 0C48
  "line-1:WKSWPR-p,SC,10-26,16-28-41,,,,:\line auto switch\",";
;

LT-PF-2000 93-10-26 16:38:17
A 8 REPT EVT 0C48
  "line-1:NORMAL,SC,10-26,16-38-17,,,,:\line auto switch-cleared\",";
;

LT-PF-2000 93-10-26 17:19:02
A 9 REPT EVT STS1
  "sts1-1e-14-3:T-SESP-FE,TC,10-26,18-22-11,FEND,,250,250,1-DAY:
  \"STS1 TCA Day:SESP-FE\",";
;

LT-PF-2000 93-10-26 18:22:11
A 10 REPT EVT T3
  "ls-5b-2:T-UASP,TC,10-26,17-19-02,NEND,,12,10,15-MIN:\DS3 TCA QH:UAS-P\",";
;
```

**RELATED TL1 MESSAGES**

For Release 3.0 and later:

REPT ALM

**RTRV-ALM**

For Release 4.1 and later:

**RTRV-COND**

For Release 5.0 and later:

REPT COND

**RTRV-AO**

## NAME

REPT SW: Report Switch

This autonomous message is available in FT-2000 Releases 4.1 and later.

## DESCRIPTION

REPT SW command messages are generated autonomously to report equipment (that is, circuit pack) protection switches. Equipment protection switches associated with OC-*N* line protection switches are *not* reported via this command.

REPT SW messages are generated autonomously to report *automatic* equipment protection switches *only*.

If the protection (*stbyid*) circuit pack is removed and the UPDATE function is performed, no REPT SW message is expected.

REPT SW messages are generated autonomously to report *automatic* equipment protection switches *only*.

## OUTPUT FORMAT

```
IP ctag
    sid date time
A ctag REPT SW
  "actid,stbyid"
;
```

## OUTPUT PARAMETERS

|               |                                                                                                                                                                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>    | Source identifier (or Target identifier, <i>tid</i> ). This is the system name.                                                                                                  |
| <i>date</i>   | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                                 |
| <i>time</i>   | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                                          |
| A             | This indicates the message is sent autonomously.                                                                                                                                 |
| <i>atag</i>   | Automatic tag. This is used for message sequencing. The number is incremented by one for each autonomous message sent by the network element on a per-OS-type basis.             |
| <i>actid</i>  | Active access identifier. This is the slot address of the <i>active</i> circuit pack.<br><br>Refer to Table 3-7 at the end of this section for a list of valid slot addresses.   |
| <i>stbyid</i> | Standby access identifier. This is the slot address of the <i>standby</i> circuit pack.<br><br>Refer to Table 3-7 at the end of this section for a list of valid slot addresses. |

### ⇒ NOTE:

FT-2000 has two low-speed protection slots intended for a DS3 circuit pack and a STS1E circuit pack per FT-2000 user documentation. However, if both low-speed protection slots are equipped with the same circuit pack type, FT-2000 may not be able to identify the correct address of the protection circuit pack when FT-2000 protection switches *from* protection back to *service* in such cases.

## EXAMPLE OUTPUT

```
LT-PF-2000 93-10-26 16:42:11
A 123 REPT SW
  "tg-2, tg-1"
;
```

## RELATED TL1 COMMANDS/MESSAGES

REPT COND

REPT EVT

**RTRV-AO**

**RTRV-COND**

**SW-TOPROTN**

**SW-TOWKG**



## NAME

**ACT-USER:** Activate User

This command is available in FT-2000 Releases 5.0 and later.

## INPUT FORMAT

**ACT-USER:***tid:uid:ctag::pid;*

## DESCRIPTION

The **ACT-USER** command is initiated to set up a session with the network element.

An active TL1 access login session is required at each network element in order to interact with that network element (including receiving autonomous message output as well as using TL1 commands).

A maximum of one active login session is allowed per network element, per access channel. Any subsequent login attempt while a session is still active is denied.

Also, the ASCII DCE or DTE ports (when providing the "TL1 on CIT Port" feature) are "access channels". Note that in the latter case, the local FT-2000 Network Element behaves as a TL1 Gateway Network Element for the duration of the remote login session(s).

This command is available to reports-only users, also.

Until a successful login attempt is complete for a given Network Element and virtual circuit, there is no communications (autonomous or command responses) outbound from the network element, except to DENY unsuccessful login attempts.

If a user's password has expired upon execution of the **ACT-USER** command, the **ACT-USER** will be accepted but that user will not be able to perform any function, or receive any autonomous message output until the associated password has successfully been modified.

A special banner message will be displayed as part of the command completion response, informing the user that the password has expired and must be updated (see the "Output Format" section). The only action then allowed for the user is to change the password identifier via the "**ED-PID**" command.

No response will be provided for any command with an invalid syntax or parameters (other than the *uid* and *pid*), unless the same access channel has an active login session with the Gateway Network Element. In those cases only, some other invalid commands are DENY-ed by the GNE (refer to the **RTRV-HDR ERROR RESPONSES** section for details).

When the network element receives an **ACT-USER** command, the given login ID will initiate a login session on the network element provided that:

- Logins are enabled on the access port
- A provisioned login ID and correct password are entered
- Network element login security is enabled (for non-privileged users only).

If the X.25 link to the GNE fails, all active X.25 logins are terminated without notice to the user. Similarly, all active logins to a remote network element are terminated if a communication failure occurs between the GNE and that remote network element, or if either the GNE, the targeted remote network element or an intermediate network element is reset or initialized. Communication failures include OC-N and DCC failures, unless protected in rings, between the GNE and the targeted remote network element, also.

## INPUT PARAMETERS

- |            |                                                                                                                    |
|------------|--------------------------------------------------------------------------------------------------------------------|
| <i>tid</i> | Target identifier. This is the name of the network element to which the command is addressed.                      |
| <i>uid</i> | User identifier. This is the unique user login identifier for which the <b>ACT-USER</b> login command is intended. |

Grouping and/or ranging of *uid* values for this command is not allowed.

Valid *uid* values for the **ACT-USER** command are case-sensitive alphanumeric strings of 1 to 10 characters which have been previously provisioned as valid login IDs in the network element.

Four classes of users are allowed, as listed below in order of decreasing privilege:

- Privileged Users
- General Users
- Maintenance Users
- Reports Only Users.

Login IDs for TL1 access are not treated any differently from other user login IDs. That is, a *uid* for TL1 access can have the same possible user privileges ("Privileged User", "General User", or "Reports Only User") and that login ID can be used for craft interface as well as OS port access.

This includes login and password aging.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*pid* Private identifier. This required parameter is the confidential password authenticator for a given *uid*. Valid *pid* values consist of case-sensitive strings of six to ten alphabetic, numeric, and symbolic characters where at least two are nonalphabetic and at least one is symbolic (white space is ignored). Password strings are transmitted in unencrypted form in the **ACT-USER** command. Password strings are encrypted when stored in the network element and are never transmitted from the network element.

Refer to Bellcore TR-831 for definition of the terms, "alphabetic", "numeric" and "symbolic".

## OUTPUT FORMAT

If the login request completes successfully, the following normal completion response is returned:

```

sid date time
M ctag COMPLD
  "uid: lastlog, attempts"
  /* AT&T <system>
    <release>
    User Privilege Level: <privilege>
    AT&T - PROPRIETARY
    THIS SOFTWARE CONTAINS INFORMATION OF AT&T
    AND IS NOT TO BE DISCLOSED OR USED EXCEPT
    IN ACCORDANCE WITH APPLICABLE AGREEMENTS.

    NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
    USE OF THIS SOFTWARE IS GOVERNED
    SOLELY AS EXPRESSLY AUTHORIZED IN THE
    RELEVANT AGREEMENT BETWEEN AT&T AND CUSTOMER.
    UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
  */
;
```

For Releases 7.1 and later:

```

sid date time
M ctag COMPLD
  "uid: lastlog, attempts"
  /* Lucent Technologies <system>
    <release>
    User Privilege Level: <privilege>
    LUCENT TECHNOLOGIES - PROPRIETARY
    THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
    AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
    WITH APPLICABLE AGREEMENTS.
    NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
    USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
    AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
    LUCENT TECHNOLOGIES AND CUSTOMER.
    UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
  */
;
```

If the network element receives a valid **ACT-USER** command and the addressed *uid* is already currently logged in on the same access channel and has the same privilege level, the network element provides a normal completion response. The following string is used for the *<system>* value:  
FT-2000 OC-48 Lightwave System

The *<release>* string is of the form:

Release *x.y.z-type*

where *x.y.z* reflects the actual software release number and *type* is either ADR for add/drop rings terminals or RPTR for OC-48 repeater bays. The *<privilege>* string will have one of the following values reflecting the user's privilege level:

|            |                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRIVILEGED | This indicates that the user has a privileged login. A privileged login has access to all the system functional capabilities. Only the privileged logins have access to the security and access functions. These functions include assigning/changing login/passwords for other users , setting target identifier (TID) names, resetting the system, and system initialization functions. |
| GENERAL    | This indicates that the user has a general login. A general login has access to all the system functional capabilities except security, access, system initialization, and software installation functions.                                                                                                                                                                               |
| REPORTS    | This indicates that the user has reports only login. A reports only login has access to the <b>RETRIEVE-</b> (except <b>RTRV-USER-SECU</b> ), <b>ED-PID</b> and <b>OPR-ACO</b> TL1 command/response messages.                                                                                                                                                                             |

If the login request would otherwise complete successfully, but the user's password has expired, the following completion response is returned:

```

sid date time
M ctag PRTL
"uid: last log, attempts"
/* Your password has expired. Until you change your password (ED-PID)
   you will not be allowed further access to this Network Element */
;
```

Note that if the password must be changed to log in successfully, only one attempt at the ED-PID is allowed. If that attempt is denied, the network element returns to a mode in which it is expecting an ACT-USER command on that access channel.

## OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. The remainder of the output parameter variables are described below.

*uid* User identifier. This is included in the command by the OS and repeated by the network element as a confirmation that the given user identifier is successfully logged in.

*lastlog* Last login. This is the date and time of the last login session established by this user. It is output in the format of "MM-DD HH-MM-SS", with time and date separated by one space. If no information is available regarding the last login session for this *uid* (for example, this is the first login session), this output field is null.

*attempts* This is the number of unsuccessful session attempts since the last successful login session on this network element.

A user is given three tries to correctly enter their login ID and password. Three tries equals one attempt. If three login attempts are denied in a row on a single port, the OS is autonomously notified via a **REPT EVT** message with a condition description of INTRUSION ALERT. The intrusion alert counter is restarted when a successful login is recorded on the port, or the "intrusion alert" message is generated, or when the network element is reset.

## EXAMPLE INPUT/OUTPUT

No response message is transmitted except to convey that the login is granted (or denied). The following example shows a successful login session initiation attempt.

```

sid date time
M ctag COMPLD
  "uid;lastlog,attempts"
/*  Lucent Technologies <system>
    <release>
    User Privilege Level: <privilege>
    LUCENT TECHNOLOGIES - PROPRIETARY
    THIS SOFTWARE CONTAINS INFORMATION OF LUCENT
    TECHNOLOGIES AND IS NOT TO BE DISCLOSED OR USED
    EXCEPT IN ACCORDANCE WITH APPLICABLE AGREEMENTS.
    NOTICE:  THIS IS A PRIVATE COMPUTER SYSTEM.
    USE OF THIS SOFTWARE IS GOVERNED
    SOLELY AS EXPRESSLY AUTHORIZED IN THE
    RELEVANT AGREEMENT BETWEEN LUCENT TECHNOLOGIES AND CUSTOMER.
    UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
*/
;
```

For Releases 5.0 through 7.0:

```

ACT-USER:LT-PF-2000:PeterPan:123456::N*v*rL*d3;

LT-PF-2000 96-01-03 16:42:11
M 123456 COMPLD
  "PeterPan:01-03 16-39-27,1"
/*  LUCENT FT-2000 OC-48 Lightwave System
    Release 5.0.0-ADR
    User Privilege Level: GENERAL
    LUCENT - PROPRIETARY
    THIS SOFTWARE CONTAINS INFORMATION OF LUCENT
    TECHNOLOGIES AND IS NOT TO BE DISCLOSED OR USED
    EXCEPT IN ACCORDANCE WITH APPLICABLE AGREEMENTS.
    NOTICE:  THIS IS A PRIVATE COMPUTER SYSTEM.
    USE OF THIS SOFTWARE IS GOVERNED
    SOLELY AS EXPRESSLY AUTHORIZED IN THE
    RELEVANT AGREEMENT BETWEEN LUCENT AND CUSTOMER.
    UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
*/
;
```

For Releases 7.1 and later:

```
ACT-USER:LT-PF-2000:PeterPan:123456::N*v*rL*d3;  
LT-PF-2000 97-10-26 16:42:11  
M 123456 COMPLD  
"PeterPan:10-26 16-39-27,1"  
/* Lucent Technologies FT-2000 OC-48 Lightwave System  
Release 7.1.0-ADR  
User Privilege Level: GENERAL  
LUCENT TECHNOLOGIES - PROPRIETARY  
THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES  
AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE  
WITH APPLICABLE AGREEMENTS.  
NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.  
USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY  
AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN  
LUCENT TECHNOLOGIES AND CUSTOMER.  
UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.  
*/  
;
```

The following example shows a login session attempt for a user login whose password is expired.

```
ACT-USER:LT-PF-2000:PeterPan:123456::N*v*rL*d3;  
  
LT-PF-2000 93-10-26 16:42:11  
M 123456 PRTL  
"PeterPan:10-25 16-39-27,1"  
/* Your password has expired. Until you change your password (ED-PID)  
you will not be allowed further access to this Network Element */  
;
```



## ERROR RESPONSES

Refer to the **RTRV - HDR** error responses section. The error responses listed there also apply to the **ACT - USER** command.

For invalid login tries, the error response message is transmitted only after both *uid* and *pid* are provided by the session requester. The error response message does not indicate if the *uid*, *pid*, or both are invalid.

Exception:

For an **ACT - USER** command with extra punctuation *after* the *pid* other than an end-of-message semicolon (;), no error response is returned if no active login to the network element exists. Usually, if non-null *uid* and *pid* values are received, the network element would provide a response.

If the network element receives an **ACT - USER** command with an invalid *uid*, invalid *pid*, or both invalid entries, or if a different login session is already active on the access channel, the following error response is returned:

```
      sid date time
M    ctag DENY
      DENY
      /* Login Failed */
;
```

For Releases 8.0 and later, if a GNE receives a command but is unable to determine a TID-to-NSAP translation, the following error response is returned, using the *sid* value of the addressed network element:

```

    sid date time
M  ctag DENY
    IITA
    /* Input, Invalid Target identifier, TL1-GNE unknown TID */
;

```

For Releases 8.0 and later, if an **ACT-USER** command is addressed to a remote NE, but the GNE's association setup attempt fails, the following message response is returned by the GNE, using the SID of the addressed RNE:

```

    sid date time
M  ctag DENY
    SARB
    /* Status, All Resources Busy, TL1-GNE association setup failure */
;

```

For Releases 8.0 and later, if a remote network element receives an otherwise valid ACT-USER command, but the TID in the command does not match the remote NE's local TID, the following error response is returned, using the *sid* value of the addressed Network Element:

```
sid date time
M ctag DENY
IITA
/* Input, Invalid Target identifier, TL1-RNE unknown TID */
;
```

#### RELATED TL1 MESSAGES

CANC-USER

ED-PID

DLT-USER-SECU

ENT-USER-SECU

RTRV-USER-SECU

ED-USER-SECU

## NAME

**ALW-MSG:** Allow Message

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**ALW-MSG**-*modifier:tid:aid:ctag[:,, ]*;

## DESCRIPTION

The **ALW-MSG** command is initiated by a user to resume transmission of autonomous messages, office alarms, and/or parallel telemetry from an FT-2000 if autonomous message or alarm reporting from that network element has been inhibited.

When a network element receives an **ALW-MSG** command from a user, the network element resumes transmission of all autonomous messages, office alarms, and/or parallel telemetry if message or alarm reporting had been inhibited.

The default system state at user login is **ALW-MSG**.

When autonomous message reporting to the user is resumed after having been inhibited, the network element reports that autonomous message reporting is allowed in an autonomous **REPT EVT** message.

The network element reports all active alarm and status conditions to all users, depending on OS type, in autonomous (REPT) messages, when the reporting of autonomous messages is resumed by any user after having been inhibited.

If there are no active alarm or status conditions to report, the network element returns a normal completion (COMPLD) response to the **ALW-MSG** command and reports that autonomous message reporting is allowed in an autonomous **REPT EVT** message.

## INPUT PARAMETERS

*modifier* Modifier. The value for this parameter must be EQPT.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. The original value value is **all**, or value must be only one of the following:

**office alms** This specifies that reporting of office alarms is to resume on the network element.

|                    |                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------|
| <b>par tlm</b>     | This specifies reporting of alarms over the parallel telemetry is to resume on the network element.    |
| <b>tl1</b>         | This specifies that autonomous message reporting is to resume on all TL1 ports on the network element. |
| <b>all</b> or null | This specifies that reporting of all of the above parameters is to resume on the network element.      |

The default is **all**.

**ctag** Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

## OUTPUT FORMAT

If the network element fully complies with the **ALW-MSG-EQPT** request, the following completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If FT-2000 receives an **ALW-MSG** command from a user when transmission of all autonomous messages, office alarms, and/or parallel telemetry had already been enabled, the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
alw-msg-eqpt:LT-PF-2000:all:123xyz;
```

```
IP 123xyz
```

```
<
```

```
LT-FT-2000 93-06-06,09:30:49
```

```
M 123xyz COMPLD
```

```
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there also apply to the **ALW-MSG** command.

If an **ALW-MSG** command is received with an invalid *aid* value, the following error response is returned:

```
sid date time  
M ctag DENY  
IIAC  
/* Input, Invalid Access Identifier */  
;
```

## RELATED TL1 MESSAGES

**INH-MSG**

REPT EVT

## NAME

**CANC - USER:** Cancel User

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**CANC - USER:***tid:uid.ctag;*

## DESCRIPTION

The **CANC - USER** command can be initiated to terminate a login session with network element.

This command is available to reports-only users, also, for all CIT, DCC or TL1 ports on the network element.

### ⇒ NOTE:

Only privileged users may cancel other users.

When network element receives a **CANC - USER** command, the given login identifier will terminate a login session on the network element provided that:

- A provisioned login identifier is entered
- The login identifier is currently active on the access channel on which the command is received.

After the **CANC - USER** command successfully completes, an autonomous message is sent, via all access channel(s) provisioned to receive such messages and on which a login session is active, to report that the login session has been terminated.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                              |
| <i>uid</i>  | User identifier. This is the unique case sensitive user login identifier for which the <b>CANC - USER</b> logout command is intended.<br><br>Grouping and/or ranging of <i>uid</i> values for this command is not allowed. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                      |

## OUTPUT FORMAT

If the logout request completes successfully, a system prompt is returned.

```
      sid date time  
M  ctag COMPLD  
;
```

If the network element receives a valid **CANC-USER** command, but the addressed *uid* is not currently logged in on the access channel, or the addressed *uid* is invalid (for example, > 10 characters), the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.



### **EXAMPLE INPUT/OUTPUT**

The following example shows a successful login session termination.

For Release 5.0 only:

```
CANC-USER::PeterPan:123456;  
  
IP 123456  
<  
  
    LT-PF-2000 96-01-02 16:42:11  
M 123456 COMPLD  
;
```

```
CANC-USER:LT-PF-2000:PeterPan:123456;  
  
IP 123456  
<  
  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

### **ERROR RESPONSES**

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there also apply to the **CANC-USER** command.

**RELATED TL1 COMMANDS/MESSAGES**

**ACT-USER**

**ED-PID**

**DLT-USER-SECU**

**ENT-USER-SECU**

**RTRV-USER-SECU**

**ED-USER-SECU**

## NAME

**CPY - PRGM:** Copy Program.

This command is available in FT-2000 Releases 7.1 and later.

## INPUT FORMAT

**CPY - PRGM:***tid::ctag::,,dest\_tid;*

## DESCRIPTION

The **CPY - PRGM** command can be initiated by users to copy the software generic contained in the memory of one network element (the source) to the memory of another network element (the destination) of the **same type**. Copying the program (software download) occurs in the background. Once the background download is initiated, there is no mechanism provided to cancel the operation. A maximum of 15 downloads can be in progress at any given time.

### ⇒ NOTE:

This command is available to privileged users only.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                              |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                |
| <i>ctag</i>     | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.        |
| <i>dest_tid</i> | Destination target identifier. This is the target identifier of the destination network element to which the program will be copied. It has no default value. A valid value must be entered. |

## OUTPUT FORMAT

If the network element fully complies with the **CPY - PRGM** request, the network element sends the following normal completion response just prior to transmitting the software copy.

```
IP ctag
<
  sid date time
M ctag COMPLD
;
```

Since the execution and completion of the **CPY - PRGM** command will take anywhere from about 20 minutes (for a single download) to about 3.5 hours (for 15 simultaneous downloads), the command will be executed in the background.

Once the command execution starts in the background, the system will be free to accept and execute other commands.

Since the software download occurs in the background and takes several minutes to a few hours, the user will be allowed to log-off during this time if the user decides to do so. The download condition is reported in the REPT EVT COM message with a condition effect of SC (standing condition raised).

When the software download is completed, it is reported in the REPT EVT COM message with a condition effect of CL (standing condition cleared).

If the software download is successful, it is reported in the REPT EVT COM message with a condition type that indicates the successful completion of the software download and a condition effect of TC (transient condition).

If the software download has failed, it is reported in the REPT EVT COM message with a condition type that indicates the failure of the software download and a condition effect of TC (transient condition).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **CPY-PRGM** command.

## EXAMPLE INPUT/OUTPUT

The following example shows an input and output of CPY-PRGM command for a PF-2000 system:

**CPY-PRGM:LT-PF-2000::123456::,,Node5NE;**

```
IP 123456
<

LT-PF-2000 97-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **CPY-PRGM** command.

If the *dest\_tid* is syntactically incorrect, the following error response will be returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid destination TID */
;
```

If the product type of the *dest\_tid* does not match the product type of the *tid*, the following error response will be returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, destination TID is of different
product type */
;
```

For Releases 7.1 and 7.2, if communications cannot be established to the *dest\_tid* because of a DCC failure condition, the following error response will be returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, remote communication failure */
;
```

If the *dest\_tid* is being programmed by another download program, the following error response will be returned:

```

sid date time
M ctag DENY
SARB
/* Status, All Resources Busy */
;
```

The *dest\_tid* cannot be the *tid*. If the *tid* is entered as the *dest\_tid*, the following error response will be returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid destination TID */
;
```

If the *dest\_tid* is null, the following error response will be returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, destination TID must be specified */
;
```



For Releases 7.1 and 7.2, if communications cannot be established to the destination network element because of an invalid TID (that is, the destination TID is not in Local Cache/DIB), the following error response will be returned:

```

sid date time
M ctag DENY
IITA
/* Input, Invalid TArget identifier, unknown destination TID */
;
```

For Releases 8.0 and later, if an invalid destination TID (*dest\_tid*) is entered (that is, the *dest\_tid*-NSAP translation information is not found in local TARP Data Cache [TDC], and the corresponding *dest\_tid* entered cannot be found in the subnetwork), the following error response will be returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, destination TID not found by source */
;
```

For Releases 8.0 and later, if the user enters a destination TID (*dest\_tid*) that has a corresponding *dest\_tid*-NSAP translation in the local TARP Data Cache (TDC), but the association setup attempt to the destination network element fails (e.g. the destination network element is currently unreachable), the following error response will be returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, Association Setup Failure */
;
```

For Releases 8.0 and later, if the user enters an otherwise valid destination TID (*dest\_tid*), but the local TARP Data Cache translation results in an association setup request to a remote network element whose TID does not match the *dest\_tid*, the following error response will be returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, Inconsistent dest_tid */
;
```

Up to 15 downloads may be initiated from the Local Network Element. If executing this command exceeds this limit, the following error response will be returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, A Limit of 15 Copy-Software
requests already in Progress */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

None

## NAME

**DLT - ASGNMT - DCC:** Delete-Assignment-DCC.

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**DLT - ASGNMT - DCC:***tid:aid:ctag::spec\_block;*

## DESCRIPTION

For Release 7.1, the **DLT - ASGNMT - DCC** command can be initiated by users to delete assignment of a DCC channel to a particular OC-3 slot or OC-12 Quad or pair of 1+1 protected OC-3 slots.

For Release 7.2, the **DLT - ASGNMT - DCC** command can be initiated by users to delete assignment of a DCC channel to a particular OC-3 slot or OC-12 Quad or pair of 1+1 protected OC-3 slots or OC-12 Quads.

### ⇒ NOTE:

Deleting a DCC channel assignment effectively disables DCC communication on the supporting OC-3 or OC-12, as well as disabling DCC access to a particular remote network element.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                   |
| <i>aid</i>  | Access identifier. The <i>aid</i> value specifies the low speed slot or Quad command slot address for which DCC channel assignment is to be deleted.<br><br>The command can specify a 1+1 protected OC-3 slot pair by either the A slot or B slot. Refer to Table 3-7 at the end of this section for a list of valid addresses. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                           |

*spec\_block* Specific Parameter Block. The system level attributes to be modified are specified inside the *spec\_block*. Parameters within *spec\_block* are specified using a *name=value*, *name=value*, . . . type construct with no constraints on the order of parameters. Constructs such as *name1=value1*, *name2=*, *name3=*, . . . are acceptable and in this example only the parameter *name1* will be changed at the network element. If the current value of the parameter *name1* is already *value1* in the above example, *name1* will not be changed.

For the **DLT-ASGNMT-DCC** command, the *spec\_block* must contain the following parameter:

**DCC\_CHAN** DCC Channel. The **DCC\_CHAN** specifies the dcc channel address.

## OUTPUT FORMAT

If the network element fully complies with the **DLT-ASGNMT-DCC** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
;
```

If the **DLT-ASGNMT-DCC** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **DLT-ASGNMT-DCC** command.

## EXAMPLE INPUT/OUTPUT

The following example deletes assignment of DCC channel "1" to low speed slot "ls-1a" for an FT-2000 system:

```
dlt-asgnmt-dcc:LT-PF-2000:ls-1a:CTAG:::DCC_CHAN=1;
```

```
IP CTAG
<

LT-PF-2000 97-10-26 16:42:11
M CTAG COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **DLT-ASGNMT-DCC** command.

If the network element receives a **DLT-ASGNMT-DCC** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives a **DLT-ASGNMT-DCC** command with an invalid *DCC\_CHAN* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid DCC_CHAN */
;
```

If the network element receives a **DLT-ASGNMT-DCC** command while the TOHCTL slot is in the AUTO state, the TOHCTL has been removed, or the TOHCTL has failed, the following error response is returned:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed, TOHCTL pack failed/removed */
;
```

If the network element receives an otherwise valid **DLT-ASGNMT-DCC** command while an auto turnup test is running, and the DCC connections between OC-3 or OC-12 low speed interfaces and the TOHCTL circuit pack are being verified, the following error response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed, auto turnup test running */
;
```

The duration of the window during an auto turnup test when the command is denied is about 20 seconds.

If the network element receives a **DLT-ASGNMT-DCC** command when a DCC assignment does not exist for the given low speed slot or Quad command slot aid and the specified DCC\_CHAN, the following error response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed,
  The specified Slot AID and DCC Channel do not specify an existing DCC
  assignment
  */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**ENT-ASGNMT-DCC**

**RTRV-ASGNMT-DCC**



## NAME

**DLT - CRS - rr:** Delete Cross-Connection rr

This command is available in FT-2000 Releases 4.1 and later.

## INPUT FORMAT

For Releases 5.0 and later:

**DLT - CRS -**

*modifier:tid:src\_aid,dest\_aid:ctag::[cct][:spec\_block];*

For Release 4.1 only:

**DLT - CRS -**

*modifier:[tid]:src\_aid,dest\_aid:ctag::[cct][:spec\_block[:pst[,sst]]];*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Releases 4.1 through 6.0:

Throughout this TL1 command description the use of the term "low speed interface" implies

- a single slot when referring to slots equipped with DS3, or STS1E low speed circuit packs.

For Releases 5.0 through 6.0:

The use of the term "low speed interface" also implies

- a single slot when referring to slots equipped with OC3 low speed circuit packs.

For Releases 7.0 and later:

The use of the term "low speed interface" implies

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 or STS-3 tributary within the OC-3 when referring to slots equipped with OC3 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

For Releases 7.1 and later:

The use of the term "low speed interface" also implies

- a single STS-1 or STS-3 tributary within IS-3 when referring to slots equipped with IS3 low speed circuit packs, or

- a single STS-1 or STS-3 tributary within the OC-12 when referring to slots equipped with OC12 low speed circuit packs, or
- a single slot when referring to slots equipped with IS3 low speed circuit packs.
- a single quad when referring to slots equipped with OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, i.e., STS-3 or STS-1.

**DLT-CRS-rr** command messages can be initiated by a user to request the network element to take down cross-connections in the FT-2000 OC-48 Add/Drop-Rings Terminal for 2-Fiber Rings. It takes down a cross-connection between a line tributary and one or more low speed interfaces and/or between an east or west-facing line tributary and the same numbered tributary facing in the opposite direction.

An "STS-3 line tributary" is an STS-3 synchronous payload envelope (within an OC-n signal) plus its pointers.

For Releases 7.0 and later:

An "STS-1 line tributary" is an STS-1 synchronous payload envelope (within an OC-n signal) plus its pointers.

Time Slot Assignment (TSA) allows for tributary-to-tributary cross-connections to be made only between same numbered tributaries between the two lines (e.g., from tributary 1E-1 to tributary 1W-1). Time Slot Interchange (TSI) (not supported by FT-2000 or the T1X1.5 Draft Standard on SONET Bidirectional Line Switched Rings) would allow a tributary-to-tributary cross-connection from any tributary of one line to any other tributary of the other line.

Deletions can be made to 1-way, 2-way and Dual Ring Interworking (DRI) cross-connections. For more information about FT-2000 cross-connections, refer to the **ENT-CRS-rr** Command/Response message description.

When the network element receives a **DLT-CRS-rr** command from the user, the network element will take down a cross-connection according to the parameter settings in the command.

For Releases 4.1 through 7.1:

Provided that the input command is syntactically correct and uses input parameter values that are consistent with those supported by the network element and currently in effect for the named cross-connection, the **DLT-CRS-rr** command is never DENY-ed.

For Releases 7.2 and later:

The **DLT-CRS-rr** command will be denied if the specified cross-connection does not exist.

For Releases 8.1 and later:

The **DLT-CRS-rr** command will be denied if the specified cross-connection is designated as a Red Line Service. The Red Line service designation must be removed by using the **ED-CRS-STs1** TL1 command or the **set-crossconnection-sts1** CIT-PC command before the cross-connection can be deleted.

If a DRI cross-connection is being deleted and the DRI path protection switch is in the auto (AUTO) or manual (MAN) state, the network element will first automatically reset the switch (with interface notifications, as appropriate - e.g., an autonomous REPT EVT message is sent via TL1), "**before**" performing the cross-connection deletion.

## INPUT PARAMETERS

*modifier* This is the message modifier and may have the following value:  
**STS3**.

For Releases 7.0 and later:

The message modifier may also have the following value: **STS1**.

**STS3** This specifies that an STS-3 line tributary cross-connection be taken down.

For Releases 7.0 and later:

For an non-STs1 capable ring node, this specifies that an STS-3 line tributary cross-connection be taken down. For an STs1 capable ring node, this specifies that an STS-3 line tributary's three constituent STS-1 line tributaries' cross-connections be taken down.

For Releases 7.0 and later:

If this command is denied for any of the constituent STS-1 entities of the STS-3 entity specified by this command, then the command will be denied with the same error response as is used for the offending STS-1 entity.

**STS1** For Releases 7.0 and later:  
For an STS1 capable ring node, this specifies that an STS-1 line tributary cross-connection be taken down.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

For Release 4.1 only:

If no *tid* is given, the command is interpreted to be addressed to the Gateway Network Element (GNE- the network element connected directly via an X.25 link).

*src\_aid* Source access identifier. This is the source address of the line tributary or low speed interface for which the **DLT-CRS-rr** command is intended.

*dest\_aid* Destination access identifier. This is the destination address of the line tributary or low speed interface for which the **DLT-CRS-rr** command is intended.

Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in the network element. While FT-2000 does allow for the use of the **all** construct within the *aid* field of other TL1 commands to provide access to a range of AIDs, the **all** construct is **not** supported in the **DLT-CRS-rr** command.

*ctag* Correlation tag. This is included in the command by the user and is repeated by FT-2000 in the response to allow the user to associate the command and response messages.

*cct* Cross-connection type. This parameter specifies the type of cross-connection being requested and, for FT-2000, may be null or have one of the following values:

**2WAY** This requests a 2-way cross-connection between the source and destination be taken down (this is the default value).

**1WAY** This requests a 1-way cross-connection between the source and destination be taken down.

**1WAYDRI** This requests that a 1-way, primary input DRI cross-connection between the source and destination be taken down at a ring interconnect node. Simultaneously, this also implicitly requests that the STANDBY 1-way cross-connection established with the same *dest\_aid* of the line tributary named explicitly in the command **and** an implied *src\_aid* identifying the same numbered line tributary on the other OC-48 line be taken down.

For Releases 8.1 and later:

This parameter may also have one of the following values:

**2WAYDRI** This requests that a "1-way-dri" cross-connection between the source low speed interface and destination line tributary be taken down.

Simultaneously, this requests that a "drop and continue" cross-connection be taken down between the opposite line tributary and the same low speed interface of the "1-way-dri" cross-connection.

**2WAYDRIPRI** This requests an enhanced version of the **2WAYDRI** cross-connection. Enhanced means that the through portion of the DRI cross-connection involves a Time Slot Interchange (TSI) from the service tributary to the corresponding protection tributary (e.g. sts1-1w-1-3 and sts1-1e-9-3). This cross-connection is taken down on the primary node in a DRI architecture.

**2WAYDRISEC** This requests an enhanced version of a **2WAY** cross-connection. Enhanced here means that the tributary involved in the **2WAY** cross-connection must be associated with protection rather than with service lines. This cross-connection is taken down on the secondary node in a DRI architecture.

If the *cct* value is null, the value of *cct* is **2WAY**.

Because the Dual Ring Interworking cross-connection types are specific to the primary input point of a DRI circuit, the following restriction applies.

For a *cct*=**1WAYDRI** is that the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a line tributary.

For Releases 8.1 and later:

The following cross-connection restrictions also apply. For a *cct*=**2WAYDRI**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a line tributary.

For a *cct*=**2WAYDRIPRI**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a service line tributary.

For a *cct*=**2WAYDRISEC**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a protection line tributary.

For Releases 4.1 through 8.0:

A DRI cross-connection can only be taken down by specifying a *cct* value of **1WAYDRI** in the **DLT-CRS-rr** command. Because the **DLT-CRS-rr** command is rarely DENY-ed, provided its syntax and parameter values are appropriate, consider the following scenario: a 1-way cross-connection is in effect between a line tributary and a low speed interface, and FT-2000 receives a **DLT-CRS-rr** command specifying that cross-connection, but with a null *cct* or a *cct* value of **2WAY**. The response of FT-2000 is that the established 1-way cross-connection will be taken down and the command will complete successfully.

Next consider that a 2-way cross-connection is in effect between a line tributary and a low speed interface, and FT-2000 receives a **DLT-CRS-rr** command specifying that cross-connection, but with a *cct* value of **1WAY**. The response is that the command will complete successfully and a 1-way delete acting on an established 2-way cross-connection takes down the half of the 2-way cross-connection specified. The other half (a 1-way cross-connection in the opposite direction) remains intact.

For Releases 4.1 through 7.1:

The philosophy of FT-2000 is that if the result of a command completing successfully either changes the state of the network element **exactly** as stated in the command, or results in no change of state in the network element, then the command is not DENY-ed.

For Releases 7.2 and later:

The **DLT-CRS-rr** command will be DENY-ed if the specified cross-connection does not exist.

For Releases 8.1 and later:

The **DLT-CRS-rr** command will be DENY-ed if any part of the specified cross-connection is designated as a Red Line Service.

*spec\_block* Specific block. This positionally independent parameter field is not used in the **DLT-CRS-rr** command by FT-2000 and must be null.

*pst* Primary state. The primary state parameter is position defined. This parameter is not used in the **DLT-CRS-rr** command by FT-2000 and must be null. See the **ENT-rr** command description for details on setting the *pst* parameter value and the **RTRV-rr** command description for details on retrieving the current *pst* value.

*sst* Secondary State. The secondary state parameter is position defined. This parameter is not used in the **DLT-CRS-rr** command by FT-2000 and must be null. See the **RTRV-rr** command description for details on retrieving the current *sst* value.

## OUTPUT FORMAT

Leading carriage returns (<cr>), line feeds (<lf>), and spaces () are explicitly shown.

If the network element fully complies with the cross-connection deletion request, the following output message is returned:

```
sid date time
M ctag COMPLD
;
```

The designations defined below are used as headings in the tables that follow, describing operation of the **DLT-CRS-rr** command.

- *Node Capable* refers to the transmitter and receiver circuit packs populated in the NE where the **DLT-CRS-rr** command is executed. STS1 capable nodes require all series 5 or later packs. Otherwise, the node is considered STS3 capable.
- *Type Param As Entered by User* refers to the Cross-Connection Type chosen in the **DLT-CRS-rr** command when attempting to delete an existing cross-connect.
- *Cross-Connect Type* refers to the Cross-Connection Type of the existing cross-connect attempting to delete using the **DLT-CRS-rr** command. Note that although the *Type Param As Entered by User* may be different than the *Cross-Connect Type*, it's assumed that the Source and Destination are the same for the existing cross-connect and the options chosen in the **DLT-CRS-rr** command.

- *Cross-Connect Granularity* refers to the granularity of the existing cross-connect attempting to delete using the **DLT-CRS-rr** command.
- *Command Results* refers to whether the **DLT-CRS-rr** command was completed or denied.
- *Command Message/Status* refers to the deny message associated with the **DLT-CRS-rr** command execution or the status of the command completion.

The following table describes operation of the **DLT-CRS-rr** command for Release 7.0 and later.

|    | Node Capable | Type Param As Entered by User | Cross-Connect Type | Cross-Connect Granularity | Command Results | Command Message/Status |
|----|--------------|-------------------------------|--------------------|---------------------------|-----------------|------------------------|
| 1  | STS1         | 1way                          | 1way               | STS1                      | Denied          | Not Cross-Connected    |
| 2  | STS1         | 1way                          | 1way               | STS3                      | Completed       | STS3 1way Deleted      |
| 3  | STS1         | 1way                          | 2way               | STS1                      | Denied          | Not Cross-Connected    |
| 4  | STS1         | 1way                          | 2way               | STS3                      | Completed       | STS3 1way Deleted      |
| 5  | STS1         | 1way                          | 1wayDRI            | STS1                      | Denied          | Not Cross-Connected    |
| 6  | STS1         | 1way                          | 1wayDRI            | STS3                      | Denied          | Not Cross-Connected    |
| 7  | STS1         | 2way                          | 1way               | STS1                      | Denied          | Not Cross-Connected    |
| 8  | STS1         | 2way                          | 1way               | STS3                      | Denied          | Not Cross-Connected    |
| 9  | STS1         | 2way                          | 2way               | STS1                      | Denied          | Not Cross Connected    |
| 10 | STS1         | 2way                          | 2way               | STS3                      | Completed       | STS3 2way Deleted      |
| 11 | STS1         | 2way                          | 1wayDRI            | STS1                      | Denied          | Not Cross-Connected    |
| 12 | STS1         | 2way                          | 1wayDRI            | STS3                      | Denied          | Not Cross-Connected    |
| 13 | STS1         | 1wayDRI                       | 1way               | STS1                      | Denied          | Not Cross-Connected    |
| 14 | STS1         | 1wayDRI                       | 1way               | STS3                      | Denied          | Not Cross-Connected    |
| 15 | STS1         | 1wayDRI                       | 2way               | STS1                      | Denied          | Not Cross-Connected    |
| 16 | STS1         | 1wayDRI                       | 2way               | STS3                      | Denied          | Not Cross-Connected    |
| 17 | STS1         | 1wayDRI                       | 1wayDRI            | STS1                      | Denied          | Not Cross-Connected    |
| 18 | STS1         | 1wayDRI                       | 1wayDRI            | STS3                      | Completed       | STS3 1wayDRI Deleted   |
| 19 | STS3         | 1way                          | 1way               | STS3                      | Completed       | STS3 1way Deleted      |
| 20 | STS3         | 1way                          | 2way               | STS3                      | Completed       | STS3 1way Deleted      |
| 21 | STS3         | 1way                          | 1wayDRI            | STS3                      | Denied          | Not Cross-Connected    |
| 22 | STS3         | 2way                          | 1way               | STS3                      | Denied          | Not Cross-Connected    |
| 23 | STS3         | 2way                          | 2way               | STS3                      | Completed       | STS3 2way Deleted      |
| 24 | STS3         | 2way                          | 1wayDRI            | STS3                      | Denied          | Not Cross-Connected    |
| 25 | STS3         | 1wayDRI                       | 1way               | STS3                      | Denied          | Not Cross-Connected    |
| 26 | STS3         | 1wayDRI                       | 2way               | STS3                      | Denied          | Not Cross-Connected    |
| 27 | STS3         | 1wayDRI                       | 1wayDRI            | STS3                      | Completed       | STS3 1wayDRI Deleted   |
| 28 | STS3         | Any Option                    | Any Xcon           | STS1                      | Denied          | Not Cross-Connected    |



In addition to the previous table, the following table describes enhanced operation of the **DLT-CRS-rr** command for Release 8.1 and later.

|    | Node<br>Capable | Type Param<br>As Entered<br>by User | Cross-<br>Connect<br>Type | Cross-<br>Connect<br>Granularity | Command<br>Results | Command<br>Message/Status |
|----|-----------------|-------------------------------------|---------------------------|----------------------------------|--------------------|---------------------------|
| 1  | STS1            | 1way                                | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 2  | STS1            | 1way                                | 2wayDRI                   | STS3                             | Completed          | STS3 1way Deleted         |
| 3  | STS1            | 1way                                | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 4  | STS1            | 1way                                | 2wayDRIpri                | STS3                             | Completed          | STS3 Drop Deleted         |
| 5  | STS1            | 1way                                | 2wayDRIsec                | STS1                             | Denied             | Not Cross-Connected       |
| 6  | STS1            | 1way                                | 2wayDRIsec                | STS3                             | Denied             | Not Cross-Connected       |
| 7  | STS1            | 2way                                | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 8  | STS1            | 2way                                | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 9  | STS1            | 2way                                | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 10 | STS1            | 2way                                | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 11 | STS1            | 2way                                | 2wayDRIsec                | STS1                             | Denied             | Not Cross-Connected       |
| 12 | STS1            | 2way                                | 2wayDRIsec                | STS3                             | Denied             | Not Cross-Connected       |
| 13 | STS1            | 1wayDRI                             | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 14 | STS1            | 1wayDRI                             | 2wayDRI                   | STS3                             | Completed          | STS3 1wayDRI Deleted      |
| 15 | STS1            | 1wayDRI                             | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 16 | STS1            | 1wayDRI                             | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 17 | STS1            | 1wayDRI                             | 2wayDRIsec                | STS1                             | Denied             | Not Cross-Connected       |
| 18 | STS1            | 1wayDRI                             | 2wayDRIsec                | STS3                             | Denied             | Not Cross-Connected       |
| 19 | STS1            | 2wayDRI                             | 1way                      | STS1                             | Denied             | Not Cross-Connected       |
| 20 | STS1            | 2wayDRI                             | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 21 | STS1            | 2wayDRI                             | 2way                      | STS1                             | Denied             | Not Cross-Connected       |
| 22 | STS1            | 2wayDRI                             | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 23 | STS1            | 2wayDRI                             | 1wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 24 | STS1            | 2wayDRI                             | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 25 | STS1            | 2wayDRI                             | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 26 | STS1            | 2wayDRI                             | 2wayDRI                   | STS3                             | Completed          | STS3 2wayDRI Deleted      |
| 27 | STS1            | 2wayDRI                             | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 28 | STS1            | 2wayDRI                             | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 29 | STS1            | 2wayDRI                             | 2wayDRIsec                | STS1                             | Denied             | Not Cross-Connected       |
| 30 | STS1            | 2wayDRI                             | 2wayDRIsec                | STS3                             | Denied             | Not Cross-Connected       |
| 31 | STS1            | 2wayDRI                             | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |
| 32 | STS1            | 2wayDRIpri                          | 1way                      | STS1                             | Denied             | Not Cross-Connected       |
| 33 | STS1            | 2wayDRIpri                          | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 34 | STS1            | 2wayDRIpri                          | 2way                      | STS1                             | Denied             | Not Cross-Connected       |
| 35 | STS1            | 2wayDRIpri                          | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 36 | STS1            | 2wayDRIpri                          | 1wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 37 | STS1            | 2wayDRIpri                          | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 38 | STS1            | 2wayDRIpri                          | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 39 | STS1            | 2wayDRIpri                          | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 40 | STS1            | 2wayDRIpri                          | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 41 | STS1            | 2wayDRIpri                          | 2wayDRIpri                | STS3                             | Completed          | STS3 2wayDRIpri Deleted   |
| 42 | STS1            | 2wayDRIpri                          | 2wayDRIsec                | STS1                             | Denied             | Not Cross-Connected       |
| 43 | STS1            | 2wayDRIpri                          | 2wayDRIsec                | STS3                             | Denied             | Not Cross-Connected       |
| 44 | STS1            | 2wayDRIpri                          | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |

Enhanced operation of the DLT-CRS-rr command table continued.

|    | Node<br>Capable | Type Param<br>As Entered<br>by User | Cross-<br>Connect<br>Type | Cross-<br>Connect<br>Granularity | Command<br>Results | Command<br>Message/Status |
|----|-----------------|-------------------------------------|---------------------------|----------------------------------|--------------------|---------------------------|
| 45 | STS1            | 2wayDRIssec                         | 1way                      | STS1                             | Denied             | Not Cross-Connected       |
| 46 | STS1            | 2wayDRIssec                         | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 47 | STS1            | 2wayDRIssec                         | 2way                      | STS1                             | Denied             | Not Cross-Connected       |
| 48 | STS1            | 2wayDRIssec                         | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 49 | STS1            | 2wayDRIssec                         | 1wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 50 | STS1            | 2wayDRIssec                         | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 51 | STS1            | 2wayDRIssec                         | 2wayDRI                   | STS1                             | Denied             | Not Cross-Connected       |
| 52 | STS1            | 2wayDRIssec                         | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 53 | STS1            | 2wayDRIssec                         | 2wayDRIpri                | STS1                             | Denied             | Not Cross-Connected       |
| 54 | STS1            | 2wayDRIssec                         | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 55 | STS1            | 2wayDRIssec                         | 2wayDRIssec               | STS1                             | Denied             | Not Cross-Connected       |
| 56 | STS1            | 2wayDRIssec                         | 2wayDRIssec               | STS3                             | Completed          | STS3 2wayDRIssec Deleted  |
| 57 | STS1            | 2wayDRIssec                         | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |
| 58 | STS3            | 1way                                | 2wayDRI                   | STS3                             | Completed          | STS3 1way Deleted         |
| 59 | STS3            | 1way                                | 2wayDRIpri                | STS3                             | Completed          | STS3 Drop Deleted         |
| 60 | STS3            | 1way                                | 2wayDRIssec               | STS3                             | Denied             | Not Cross-Connected       |
| 61 | STS3            | 2way                                | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 62 | STS3            | 2way                                | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 63 | STS3            | 2way                                | 2wayDRIssec               | STS3                             | Denied             | Not Cross-Connected       |
| 64 | STS3            | 1wayDRI                             | 2wayDRI                   | STS3                             | Completed          | STS3 1wayDRI Deleted      |
| 65 | STS3            | 1wayDRI                             | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 66 | STS3            | 1wayDRI                             | 2wayDRIssec               | STS3                             | Denied             | Not Cross-Connected       |
| 67 | STS3            | 2wayDRI                             | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 68 | STS3            | 2wayDRI                             | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 69 | STS3            | 2wayDRI                             | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 70 | STS3            | 2wayDRI                             | 2wayDRI                   | STS3                             | Completed          | STS3 2wayDRI Deleted      |
| 71 | STS3            | 2wayDRI                             | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 72 | STS3            | 2wayDRI                             | 2wayDRIssec               | STS3                             | Denied             | Not Cross-Connected       |
| 73 | STS3            | 2wayDRI                             | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |
| 74 | STS3            | 2wayDRIpri                          | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 75 | STS3            | 2wayDRIpri                          | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 76 | STS3            | 2wayDRIpri                          | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 77 | STS3            | 2wayDRIpri                          | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 78 | STS3            | 2wayDRIpri                          | 2wayDRIpri                | STS3                             | Completed          | STS3 2wayDRIpri Deleted   |
| 79 | STS3            | 2wayDRIpri                          | 2wayDRIssec               | STS3                             | Denied             | Not Cross-Connected       |
| 80 | STS3            | 2wayDRIpri                          | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |
| 81 | STS3            | 2wayDRIssec                         | 1way                      | STS3                             | Denied             | Not Cross-Connected       |
| 82 | STS3            | 2wayDRIssec                         | 2way                      | STS3                             | Denied             | Not Cross-Connected       |
| 83 | STS3            | 2wayDRIssec                         | 1wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 84 | STS3            | 2wayDRIssec                         | 2wayDRI                   | STS3                             | Denied             | Not Cross-Connected       |
| 85 | STS3            | 2wayDRIssec                         | 2wayDRIpri                | STS3                             | Denied             | Not Cross-Connected       |
| 86 | STS3            | 2wayDRIssec                         | 2wayDRIssec               | STS3                             | Completed          | STS3 2wayDRIssec Deleted  |
| 87 | STS3            | 2wayDRIssec                         | Not Xcon                  |                                  | Denied             | Not Cross-Connected       |

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

|             |                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier (or Target identifier, <i>tid</i> ). This is the system name.                                                                                        |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                       |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                                |
| M           | This indicates the output message is generated in response to a manual command.                                                                                        |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and repeated by FT-2000 in the response to allow the user to associate the command and response messages. |
| COMPLD      | This indicates that the command has been completed.                                                                                                                    |

## EXAMPLE INPUT/OUTPUT

Leading carriage returns (<cr>), line feeds (<lf>), and spaces () are explicitly shown.

For Releases 7.0 and later:

All the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

The following example takes down a 2-way (add/drop) cross-connection between an STS-3 line tributary ("sts3-1e-6") and a low speed interface ("ls-7a") as follows:

```
dlt-crs-sts3:LT-PF-2000-3:sts3-1e-6, ls-7a:123456::;

IP 123456
<

<lf>
    LT-PF-2000-3 93-11-26 16:42:11
M 123456 COMPLD
;
```

The following example takes down a 1-way (drop) cross-connection between an STS-3 line tributary ("sts3-1w-8") and a low speed interface ("ls-2b") as follows:

```
dlt-crs-sts3:LT-PF-2000-3:sts3-1w-8,ls-2b:789abc::1Way;;
```

```
IP 789abc  
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD  
;
```

The following example takes down a 1-way (add) cross-connection between a low speed interface ("ls-1a") and an STS-3 line tributary ("sts3-1w-1") as follows:

```
dlt-crs-sts3:LT-PF-2000-3:ls-1a,sts3-1w-1:654321::1Way;
```

```
IP 654321  
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:54:33
```

```
M 654321 COMPLD  
;
```

The following example takes down a 2-way (add/drop) cross-connection between a low speed interface ("ls-1a") and an STS-3 line tributary ("sts3-1w-12") for extra traffic (i.e., using a protection time slot) as follows:

```
dlt-crs-sts3:LT-PF-2000-3:ls-1a,sts3-1w-12:654321::2Way;
```

```
IP 654321  
<
```

```
<lf>  
    LT-PF-2000-3 93-11-26 16:54:33  
M 654321 COMPLD  
;
```

The following example takes down a 2-way (through) cross-connection between a west-facing STS-3 line tributary ("sts3-1w-2") and the east-facing STS-3 line tributary ("sts3-1e-2") with the same tributary number, as follows:

```
dlt-crs-sts3:LT-PF-2000-3:sts3-1w-2,sts3-1e-2:abc456;
```

```
IP abc456  
<
```

```
<lf>  
    LT-PF-2000-3 93-11-26 16:59:44  
M abc456 COMPLD  
;
```

For Releases 8.1 and later:

The following example removes a 2-way-dri cross-connection between a low speed interface ("ls-1a-2") and an STS-1 line tributary ("sts1-1w-1-3") as follows:

```
dlt-crs-sts1:LT-PF-2000-3:ls-1a-2,sts1-1w-12:654321::2WAYDRI;  
  
IP 654321  
<  
  
<lf>  
    LT-PF-2000-3 98-11-26 16:54:33  
M 654321 COMPLD  
;
```

## ERROR RESPONSES

Leading carriage returns (<cr>), line feeds (<lf>), and spaces () are explicitly shown in the first error output. Leading carriage returns (<cr>) and line feeds (<lf>) are explicitly shown in the error outputs thereafter.

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses are listed in the order and priority that FT-2000 checks for each condition.

If the network element receives a **DLT-CRS-rr** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (not supported by FT-2000, delimited by ","), or termination characters (;), the following error response is returned:

```
sid date time  
M ctag DENY  
IISP  
/* Input, Invalid Syntax or Punctuation */  
;
```

If the network element receives a **DLT-CRS-rr** command with the same parameter specified more than once, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

If the network element receives a **DLT-CRS-rr** command with a command code modifier other than **STS3**, the following error response is returned:

```
sid date time
M ctag DENY
IICM
/* Input, Invalid Command, modifier must be STS3 */
;
```

If the network element receives a **DLT-CRS-rr** command without a *src\_aid* or *dest\_aid* value or with a *src\_aid* or *dest\_aid* value that does not identify either a single STS-3 line tributary or a single low speed interface, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier,
   Source or Destination AID missing or invalid */
;
```

For Release 4.1 only:

If the network element receives a **DLT-CRS-rr** command with a *cct* value that is not supported, the following error response is returned:

```
sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data,
   CCT = 2WAY, 1WAY, 1WAYDRI or null (default: CCT = 2WAY)
*/
;
```



For Releases 5.0 and later:

If the network element receives a **DLT-CRS-rr** command with a *cct* value that is not supported, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid CCT */
;
```

If the network element receives a **DLT-CRS-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed */
;
```

If the network element receives a **DLT-CRS-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed, LNCTL missing or failed */
;
```

If the network element receives an otherwise valid instance of this command, but for which the *modifier*, *src\_aid*, and/or *dest\_aid* parameters values do not all identify entities which carry the same signal type, e.g., STS-3 or STS-1, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid,
  src_aid, and/or dest_aid is inconsistent with modifier
  */
;
```

For Releases 4.1 through 6.0:

If the network element receives this command with a *modifier* other than **STS3**, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid, invalid modifier */
;
```

For Releases 7.0 and later:

If an otherwise valid **DLT-CRS-rr** command is received by a network element which has any TRMTRs or RCVRs which are not STS1TSA capable, but for which the *modifier* is set to **STS1**, the following response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed
  Specified modifier is not supported by the installed hardware.
  This node's hardware does not support STS-1 granular cross-connections.
  */
;
```

For Releases 7.2 and later:

If an otherwise valid **DLT-CRS-rr** command is received by a network element when no cross-connection exists between the specified *src\_aid* and/or *dest\_aid*, or that attempts to delete a **1WAYDRI cct** by specifying a **1WAY** or **2WAY cct**, or that attempts to delete a **1WAY** or **2WAY cct** by specifying a **1WAYDRI cct**, the following response is returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed,
The specified Source and Destination AIDs do not specify an existing
cross-connect
*/
;
```

For Releases 8.1 and later:

If an otherwise valid **DLT-CRS-rr** command is received with any part of the specified cross-connect marked with a Red Line Services designation, the following response is returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed,
The specified cross-connect is designated as a RED LINE Service.
Use the ED-CRS-rr command to remove the Red Line designation
and re-enter this command.
*/
;
```

**RELATED TL1 MESSAGES**

**ENT-CRS-*rr***

**ENT-ROLL-*rr***

**RTRV-CRS-*rr***

## NAME

**DLT-ULSDCC-L4:** Delete Upper Layer Stack DCC-Layer 4.

This command is available starting in FT-2000 ADR Release 8.0.

## INPUT FORMAT

**DLT-ULSDCC-L4:***tid*[:*aid*]:*ctag*::[:*spec\_block*];

## DESCRIPTION

**DLT-ULSDCC** commands are used to delete data which affects Layers 3 through 7 of the Open Systems Interconnection (OSI) 7-layer protocol stack. This stack refers to the OSI reference model which is a logical structure for network operations. This model defines a standard communication protocol between SONET network elements as specified by the International Standards Organization (ISO).

**DLT-ULSDCC-L4** is used to delete data which affects Layer 4 of the OSI protocol stack. A TARP Manual Adjacency or a TARP Data Cache (TDC) entry may be deleted.

### ⇒ NOTE:

This command is available to privileged users only.

## INPUT PARAMETERS

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>aid</i>        | Access identifier. The <i>aid</i> value may be <b>all</b> or <b>null</b> . Specifying the <i>aid</i> optional.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>spec_block</i> | Specific Parameter Block. The parameters to be modified are specified inside the <i>spec_block</i> . Parameters within <i>spec_block</i> are specified using <i>name=value</i> , <i>name=value</i> , ... with no constraints on the order of the arrangement of parameters. Constructs such as <i>name1=value1</i> , <i>name2=</i> , <i>name3=value3</i> , ... are acceptable, and in this example only the parameters <i>name1</i> and <i>name3</i> will be attempted to be changed. If the current value of the parameter <i>name1</i> is already <i>value1</i> in the above example, then <i>name1</i> will not be changed. |

If a null value is provided for a parameter, (e.g. *name=*), the value will not be changed.

Any *spec\_block* parameter may appear only once in the command line. If the same parameter is in the command line more than once, the command is denied and an error message is returned.

If the *spec\_block* is null, the current attributes at the Network Element remain in effect.

The *spec\_block* may contain one or more of the following parameters:

**L4AJSYS** This parameter specifies the System ID field of the NSAP address of a Network Element to delete from TARP Manual Adjacency list of the target NE (i.e., the NE indicated by the *tid* parameter). Since the System ID is unique for each network element, the System ID is sufficient to identify a specific Manual Adjacency.

Since the Manual Adjacency table has the entire 20 byte NSAP, identifying the Network Element NSAP to delete from the table using the System ID means that the search is done only against the 6 bytes of the NSAP that represents the System ID.

The System ID field of the NSAP is sufficient to uniquely identify an entry in the Manual Adjacency table as long as only a single NSAP address is allowed for each Network Element.

The format for this parameter is "**L4AJSYS=***l4ajsys*" where *l4ajsys* is the 6 byte (12-digit hexadecimal) System ID field of the NSAP of the Adjacent Network Element in the list.

This parameter deletes a single Manual Adjacent Network Element. Multiple Manual Adjacent Network Elements are deleted using multiple occurrences of **DLT-ULSDCC-L4**.

The following parameter, **L4TDCTID** is used to specify an entry in the TARP Data Cache (TDC) to delete.

This parameter deletes a single row of data in the TDC. Multiple rows of data are deleted using multiple occurrences of **DLT-ULSDCC-L4**.

If an entry in the TARP Data Cache does not match the Target Identifier (TID) specified by **L4TDCTID**, then no action is taken and an error response is returned.

The TDC stores three parameters for each entry, the TID, NSAP and the address type, referred to as "tar-pro" in Bellcore GR-253. The address type is not user provisionable and is set to it's default value ('FE' hex) in the TDC. Specifying the TID is sufficient to identify the complete TDC entry. The entire entry, including the address type, is deleted.

**L4TDCTID** Target Identifier (TID) portion of a TARP Data Cache entry for deleting a row of data in the TARP Data Cache.

The format for this parameter is "**L4TDCTID=***l4tdctid*" where *l4tdctid* is the Target Identifier name of a network element, in the TARP Data Cache.

## OUTPUT FORMAT

If the Network Element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the requested command does not alter the existing condition, the Network Element shall respond with a COMPLD message.



## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

The following example deletes a TARP Manual Adjacency:

```
DLT-ULSDCC-L4:LT-PF-2000::123456::l4ajsys=08006A112345;  
LT-PF-2000 98-04-23 13:12:16  
M 123456 COMPLD  
;
```

The following example deletes an entry in the TARP Data Cache:

```
DLT-ULSDCC-L4:LT-PF-2000::987654::l4tdctid=LT-PF2001;  
LT-PF-2000 98-04-23 13:12:16  
M 987654 COMPLD  
;
```

**ERROR RESPONSES**

Refer to the **RTRV - HDR** error responses section. The error responses listed there also apply to this command. If an error is detected in any of the command parameters, the entire command is denied; there is no partial completion of the command. If there are errors in more than one command parameter, an error is detected and reported in only one of the parameters. The parameter for which the error is detected may not be the first parameter in the command that is in error. The Network Element returns the following error response if the *L4AJSYS* syntax is invalid.

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid L4AJSYS */
;
```

The Network Element returns the following error response if the *L4AJSYS* does not correspond to the NSAP System ID field of a current TARP Manual Adjacency:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, L4AJSYS is not one of the TARP
Manual Adjacencies */
;
```

The Network Element returns the following error response if the *L4TDCTID* syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCTID */
;
```

If there is no entry in the TDC that matched *L4TDCTID*, the Network Element returns the following error response

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, The TDC does not contain the entry
specified by L4TDCTID */
;
```

## RELATED TL1 MESSAGES

RTRV-ULSDCC-L4

ENT-ULSDCC-L4

## NAME

**DLT-USER-SECU:** Delete User Security

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**DLT-USER-SECU:***tid:uid:ctag;*

## DESCRIPTION



### CAUTION:

*Execution of this command will remove a user account. That user will no longer be able to log in.*

The **DLT-USER-SECU** command is used by an appropriate administrator to delete the security parameters associated with a user. This is applicable when a user account is being closed.



### NOTE:

This command is available to privileged users only.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>uid</i>  | This is the user identifier of a user. Its valid values are a case-sensitive alphanumeric string of 1 to 10 characters. Only a single <i>uid</i> is supported in the command.         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the network element fully complies with the command request, the following normal completion response is returned:

```
      sid date time  
M    ctag COMPLD  
;
```

If the *uid* is currently logged into the Network Element through any of the communication interface ports (DTE, DCE, or X.25), when this command is successfully executed, the user identified by the *uid* is disconnected, and the Network Element responds to the user who entered the **DLT-USER-SECU** with the completion message (shown above).

If the network element receives a **DLT-USER-SECU** command containing a nonexisting *uid*, the following normal completion response is returned:

```
      sid date time  
M    ctag COMPLD  
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
DLT-USER-SECU:ATT-FT-2000:kjlee:123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **DLT-USER-SECU** command also.

For Release 5.0 and later, if the network element receives a **DLT-USER-SECU** command with an invalid *uid* (user identifier), the following error response is returned:

```
sid date time  
M ctag DENY  
IDNV  
/* Input, Data Not Valid, invalid UID */  
;
```

For Releases 7.0 and later:

FT-2000 requires two privileged user logins to exist in the network element at all times. If the user attempts to delete a privileged user login, the following error response is returned:

```
sid date time
M ctag DENY
PIFC
/* Privilege, Illegal Field Control
Attempting to delete a privileged login. Two privileged
user logins are required at all times. */
;
```

For Release 6.0, if the network element receives a **DLT-USER-SECU** command with an invalid *uid* (user identifier), the following error response is returned:

```
sid date time
M ctag DENY
PIUI
/* Privilege, Illegal User Identity, invalid UID */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**ENT-USER-SECU**

**ED-USER-SECU**

**RTRV-USER-SECU**

## NAME

**ED - CRS - rr**: Edit Cross-connection STS1

This command is available in FT-2000 Releases 8.1 and later.

## INPUT FORMAT

**ED - CRS - modifier:tid:src\_aid,dest\_aid:ctag:[cct]:spec\_block;**

## DESCRIPTION

Throughout this TL1 command description the use of the term "low speed interface" implies

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 tributary within the OC-3 or IS-3 when referring to slots equipped with OC3 or IS3 low speed circuit packs, or
- a single STS-1 tributary within the OC-12 when referring to slots equipped with OC12 low speed circuit packs.

**ED - CRS - rr** command messages can be initiated by an user to request FT-2000 to edit a cross-connection's designation as a **Red Line** service. This command is used to protect a cross-connection from accidental deletion. Any cross-connection that has been **Red Lined**, may not be deleted or changed in any way without first using this command to turn off the **Red Line** designation.

See the **ENT - CRS - rr** command, for a valid description of cross-connection configurations.

When the network element receives an **ED - CRS - rr** command from the user, the network element will establish a line tributary cross-connection as a **Red Line** service according to the parameter settings in the command.

The established **Red Lined** cross-connections remain in effect until modified by another **ED - CRS - rr** TL1 command, or by the appropriate network element PC-CIT command.

## INPUT PARAMETERS

*modifier* This is the message modifier and may only have the following values: **STS3** or **STS1**.

**STS3** For a non-STs1 capable node, this specifies that an STS-3 line tributary cross-connection be established. For an STS1 capable node, this specifies that an STS-3 line tributary's three constituent STS-1 line tributaries' cross-connections be established.



If this command is denied for any of the constituent STS-1 entities of the STS-3 entity specified by this command, then this entire command will be denied with the same error response as is used for the offending STS-1 entity.

**STS1** This specifies that an STS-1 line tributary cross-connection be established.

For example, provisioning a third STS1-granular cross-connection next to two other STS1-granular cross-connections, such that an STS3-granular cross-connection is established, will result in the STS3-granular cross-connection being physically established and the alarms for the previously provisioned, but not established, STS1-granular cross-connections being cleared.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*src\_aid* Source access identifier. This is the address of the line tributary or low speed interface from which **ED-CRS-rr** is directed.



**NOTE:**

The **all** construct is **not** supported in the **ED-CRS-rr** command.

*dest\_aid* Destination access identifier. This is the address of the line tributary or low speed interface to which the **ED-CRS-rr** command is directed.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*cct* Cross-connection type. This parameter specifies the type of cross-connection being requested may be null or have one of the following values:

**2WAY** This requests that a 2WAY cross-connection between the source and destination be established (this is the default value).

**1WAY** This requests that a 1-way cross-connection between the source and destination be established.

**1WAYDRI** This requests that a 1-way "add" cross-connection between the source low speed interface and destination line tributary be established and that the cross-connection be used as the primary input

at a ring interconnect node for DRI.  
Simultaneously, this requests that a 1-way "through" cross-connection be established in the standby state with the same destination line tributary and the same numbered tributary on the other OC-48 line as the source, and that this standby cross-connection be used as the secondary input at a ring interconnect node for DRI.

**2WAYDRI** This requests that a "1-way-dri" cross-connection between the source low speed interface and destination line tributary be established, and that the cross-connection be used as the primary input at a ring interconnect node for DRI.  
Simultaneously, this requests that a "drop and continue" cross-connection be established between the opposite line tributary and the same low speed interface of the "1-way-dri" cross-connection.

**2WAYDRIPRI** This requests an enhanced version of the **2WAYDRI** cross-connection. Enhanced means that the through portion of the DRI cross-connect involves a Time Slot Interchange (TSI) from the service tributary to the corresponding protection tributary (e.g. sts1-1w-1-3 and sts1-1e-9-3). This cross-connection is entered on the primary node in a DRI architecture to double the number of tributaries available for carrying DRI services by utilizing the protection bandwidth.

**2WAYDRISEC** This requests an enhanced version of a **2WAY** cross-connection. Enhanced here means that the tributary involved in the **2WAY** cross-connection must be associated with protection rather than with service lines. This cross-connection is entered on the secondary node in a DRI architecture to double the number of tributaries available for carrying DRI services by utilizing the protection bandwidth.

If the *cct* value is null, the default value is used.

Because the Dual Ring Interworking cross-connection types are specific to the primary input point of a DRI circuit, the following restrictions apply.

For a *cct*=**1WAYDRI** or **2WAYDRI**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a line tributary.

For a *cct*=**2WAYDRIPRI**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a service line tributary.

For a *cct*=**2WAYDRISEC**, the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a protection line tributary.

*spec\_block* Specific block. This parameter field is used for most basic capabilities of the **ED-CRS-rr** command, as specified in Bellcore GR-199, Issue 1. Parameters set within the specific block are positionally independent and are set using a construct such as: **PARAMETER=va lue** in a comma-separated list. Furthermore, each parameter listed below may appear at most once within the specific block for a single **ED-CRS-rr** command.

**REDLINE** Red Line service indicator. This parameter determines whether or not a cross-connection is designated as **relined** service. This parameter must have one of the following values:

- |          |                                                                                                                  |
|----------|------------------------------------------------------------------------------------------------------------------|
| <b>N</b> | This requests that <b>Red Line</b> service be disabled for the circuit of which this cross-connection is a part. |
| <b>Y</b> | This requests that <b>Red Line</b> service be enabled for the circuit of which this cross-connection is a part.  |

## OUTPUT FORMAT

If the network element fully complies with the edit cross-connection request, the following output message is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following example establishes a **Red Line** service for a **2WAY** (add/drop) cross-connection between STS-1 line tributary ("sts1-1e-6-1") and a low speed interface port ("ls-7a-1") as follows:

```
ed-crs-sts1:LT-PF-2000-3:sts1-1e-6-1,ls-7a-1:123456:::REDLINE=Y;

IP 123456
<
<lf>
LT-PF-2000-3 98-11-26 16:42:11
M 123456 COMPLD
;
```

The following example removes a **Red Line** service from a **1WAY** (drop) cross-connection between STS-1 line tributary ("sts1-1w-8-2") and a low speed interface port ("ls-2b-2") as follows:

```
ed-crs-sts1:LT-PF-2000-13:sts1-1w-8-2,ls-2b-2:789abc::1WAY:REDLINE=N;
```

```
IP 789abc  
<
```

```
<lf>  
    LT-PF-2000-13 98-11-26 16:53:22  
M 789abc COMPLD  
;
```

The following example removes a **Red Line** service from a **1WAY** (add) cross-connection between a low speed interface ("ls-1a-all") and a line tributary ("sts1-1w-1-all") as follows:

```
ed-crs-sts1:LT-PF-2000-3:ls-1a,sts1-1w-1:654321::1WAY:REDLINE=N;
```

```
IP 654321  
<
```

```
<lf>  
    LT-PF-2000-3 98-11-26 16:54:33  
M 654321 COMPLD  
;
```

The following example establishes a **Red Line** service for a **1WAYDRI** (add) cross-connection between the low speed interface ("ls-3b-2") and an east-facing line tributary ("sts1-1e-2-3"), as follows:

```
ed-crs-sts1:LT-PF-2000-3:ls-3b-2,sts1-1e-2-3:887766::1WAYDRI:REDLINE=Y;
```

```
IP 887766
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 98-11-26 16:59:44
```

```
M 887766 COMPLD
```

```
;
```

The following example establishes a **Red Line** service for a **2WAYDRIPRI** cross-connection between low speed interface port ("ls-3a-2") and the service line tributary ("sts1-1e-2-1"), as follows:

```
ed-crs-sts1:LT-PF-2000-3:ls-3a-2,sts1-1e-2-1:123def::REDLINE=Y;
```

```
IP 123def
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 98-11-26 16:59:44
```

```
M 123def COMPLD
```

```
;
```

The following example removes a **Red Line** service from a **2WAYDRISEC** cross-connection between low speed interface port ("ls-6a-3") and the protection line tributary ("sts1-1w-10-1"), as follows:

```
ed-crs-sts1:LT-PF-2000-3:ls-6a-3,sts1-1w-10-1:123def:::REDLINE=N;  
  
IP 123def  
<  
  
<lf>  
    LT-PF-2000-3 98-11-26 16:59:44  
M 123def COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **ED-CRS-rr** command also.

If the network element receives an **ED-CRS-rr** command without a *src\_aid* or *dest\_aid* value or with a *src\_aid* or *dest\_aid* value that does not identify either a single line tributary or a single low speed interface, the following error response is returned:

```
    sid date time  
M ctag DENY  
  IIAC  
  /* Input, Invalid Access Identifier,  
  Source or Destination AID missing or invalid  
  */  
;
```

If the network element receives an **ED-CRS-rr** command with a *pst* or *sst* value setting, the following error response is returned:

```
sid date time
M ctag DENY
INUP
/* Input, Non-null Unimplemented Parameter,
This command does not support PST and SST parameters
*/
;
```

If the network element receives an **ED-CRS-rr** command with a *cct* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid CCT */
;
```



If the network element receives an **ED-CRS-rr** command with a *REDLINE* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid REDLINE */
;
```

If the network element receives an otherwise valid **ED-CRS-rr** command, but for which the *src\_aid* and *dest\_aid* parameters values both specify low speed interfaces, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;
```

If the network element receives an **ED-CRS-rr** command with a *src\_aid* or *dest\_aid* value that does not correspond to the *cct* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
  /* Input, Invalid Access Identifier,
  Source or Destination AID invalid for CCT
  */
;
```

If the network element receives an otherwise valid **ED-CRS-rr** command, but for which the cross-connection cannot be made because the addressed *dest\_aid* (or *src\_aid* in a **2WAY** cross-connection request) is already involved in a different existing cross-connection, **or** because the secondary tributary (intended to set up the standby through cross-connection) is already involved in a different existing cross-connection (e.g., a drop cross-connection to a low speed interface), the following error response is returned:

```
sid date time
M ctag DENY
  SACC
  /* Status, Already Cross-Connected,
  To establish a new cross-connection requires that the existing
  cross-connections associated with the addressed low speed interface or
  tributary be deleted or rolled.
  */
;
```

If the network element receives an otherwise valid **ED-CRS-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the *src\_aid* does not specify a low speed interface, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid SRC_AID */
;
```

If the network element receives an **ED-CRS-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed, LNCTL missing or failed */
;
```

If an otherwise valid **ED-CRS-rr** command is received by a network element which has any TRMTRs or RCVRs which are not STS1TSA capable, but for which the *modifier* is set to **STS1**, and an STS-3 cross-connection has not already been established, the following response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed
  Specified modifier is not supported by the installed hardware.
  An STS-3 cross-connection must be established before an STS-1
  cross-connection.
  */
;
```

If the network element receives an otherwise valid instance of this command, but for which the *modifier*, *src\_aid*, and/or *dest\_aid* parameters values do not all identify entities which carry the same signal type, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid,
  src_aid, and/or dest_aid is inconsistent with modifier
  */
;
```

If this command requests a drop cross-connection to a Port(STS-1) whose associated low speed service slot has another drop cross-connection to one of its Port(STS-1), but from a different high-speed line, the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed
1-way Drop cross-connections destined to low speed ports associated
with the same low speed slot must all drop from the same
high-speed line.
*/
;
```

#### RELATED TL1 MESSAGES

**DLT-CRS-rr**

**ENT-CRS-rr**

**ENT-ROLL-rr**

**RTRV-CRS-rr**

## NAME

**ED-DAT:** Edit Date and Time

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**ED-DAT:***tid::ctag::date[,time][:spec\_block];*

## DESCRIPTION

The **ED-DAT** command is initiated to request the network element to change its system date and time to a given value.



### CAUTION:

*Execution of this command may corrupt performance monitoring data.*



### NOTE:

This command is available to privileged users only.

The activation time of some pending commands may be skipped or repeated as a result of changing the system date or time of the network element. Appropriate actions should be taken to ensure the proper execution of these commands.

Delayed activation is not allowed for this command.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                           |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                   |
| <i>date</i> | Date. This is the requested date in the following format: YY-MM-DD, where YY is the last two digits of the year ranging from 00 to 99; MM is the month of the year ranging from 01 to 12; and DD is the day of the month ranging from 01 to 31.                         |
| <i>time</i> | Time. This is the requested time in the following format: HH-MM-SS, where HH is the hour in a 24 hour format ranging from 00 to 23; MM is the minute ranging from 00 to 59; and SS is the second ranging from 00 to 59. If not specified, <i>time</i> remains the same. |

*spec\_block* Specific parameter block. The system level attributes to be modified are specified inside the *spec\_block*. Parameters within *spec\_block* are specified using a *name=value*, *name=value*, . . . type construct with no constraints on the order of the arrangement of parameters. Constructs such as *name1=value1*, *name2=*, *name3=*, *name4=*, *name5=value5*, . . . are acceptable and in this example. Only the parameters *name1* and *name5* will be attempted to be changed at the network element. If the current value of the parameter *name1* is already *value1* in the above example, then *name1* will not be changed.

For the **ED-DAT** command, the *spec\_block* may contain one or all of more of the following parameters:

- |                |                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------|
| <b>tz</b>      | Standard time zone. The command <b>tz</b> is a string of three or fewer characters.              |
| <b>strtdst</b> | Start daylight saving time. The command <b>strtdst</b> is a date in the following format: MM-DD. |
| <b>stopdst</b> | Stop daylight saving time. The command <b>stopdst</b> is a date in the following format: MM-DD.  |
| <b>dstz</b>    | Daylight saving time zone. The command <b>dstz</b> is a string of three or fewer characters.     |

## OUTPUT FORMAT

If the command request completes successfully, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

**OUTPUT PARAMETERS**

|             |                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier. This is the system name.                                                                                                                                                                                    |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).<br><br>If this message is successful, <i>date</i> equals the input date.                                                                      |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).<br><br>If this message is successful, <i>time</i> equals the input time plus the time (seconds) required to send the response message. |
| M           | This indicates that the output message is generated in response to a manual command.                                                                                                                                           |
| <i>ctag</i> | Correlation tag. The <i>ctag</i> is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                               |
| COMPLD      | This indicates that the command has been completed.                                                                                                                                                                            |

**EXAMPLE INPUT/OUTPUT**

**ed-dat:LT-FT-2000::xyz123::96-01-06,09-30-45;**

IP xyz123  
<

LT-FT-2000 96-01-06,09:30:49  
M xyz123 COMPLD  
;



**ed-dat:LT-PF-2000::xyz123::94-06-06:tz=est,strtddst=04-04,stopdst=10-31;**

```
IP xyz123
<

      LT-PF-2000 94-06-06,09:30:49
M  xyz123 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

If FT-2000 receives an **ED-DAT** command with an incorrectly formatted date or time, the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
/* Input, Data Not Valid, invalid date or time specified */
;
```

The value of DD is also checked for sanity with MM (for example, February 30 can not exist), and for sanity with YY for MM-DD equaling 02-29 for leap years. Also, values of HH $\geq$ 24, MM>59, and/or SS>59 are invalid. If an error of this type occurs, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid date or time specified */
;
```

If the network element receives an **ED-DAT** command with an incorrectly formatted tz, strtdst, stopdst, or dstz *spec\_block* parameter, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid spec_block parameter */
;
```

## RELATED TL1 COMMANDS/MESSAGES

None.

## NAME

**ED-PID:** Edit Private Identifier (Password)

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**ED-PID:***tid:uid:ctag::old\_pid,new\_pid;*

## DESCRIPTION

The **ED-PID** command can be initiated to change a user's private identifier (PID), or password, on the network element.

### ⇒ NOTE:

This command is available to reports-only users, also.

### ⇒ NOTE:

When FT-2000 receives an **ED-PID** command, the password associated with the given login identifier will be changed on the network element provided that:

- The login identifier is currently active on the access channel on which the command is received
- The *old\_pid* provided matches the current password for the login identifier
- The *new\_pid* provided satisfies the password requirements of the network element.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*uid* User identifier. This is the unique, case-sensitive user login identifier for which the **ED-PID** login command is intended.

Grouping and/or ranging of *uid* values for this command are not allowed.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*old\_pid* Old private identifier (password). This is included in the command by the user and must exactly match the current PID for the login identifier.

*new\_pid* New private identifier (password). This is included in the command by the user and is to become the new password for the login identifier. Valid *new\_pid* values consist of case-sensitive strings of six to ten alphabetic, numeric, and symbolic characters where at least two characters are non-alphabetic and at least one is symbolic (white space is ignored). Password strings are transmitted in unencrypted form in the **ED-PID** command; are encrypted when stored in the network element; and are never transmitted from the network element.

**⇒ NOTE:**

The *new\_pid* value must differ from the *old\_pid* value by at least one character.

## OUTPUT FORMAT

If the password change request completes successfully and transitions the state of the login from the "Password\_Expired" state to the "Login\_Active" state, the following normal completion response is returned:

For Releases 5.0 through 7.0:

```
sid date time
M ctag COMPLD
/* AT&T <System>
  <release>
  User Privilege Level: <privilege>
    AT&T - PROPRIETARY
  THIS SOFTWARE CONTAINS INFORMATION OF AT&T
  AND IS NOT TO BE DISCLOSED OR USED EXCEPT
  IN ACCORDANCE WITH APPLICABLE AGREEMENTS.

  NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
  USE OF THIS SOFTWARE IS GOVERNED
  SOLELY AS EXPRESSLY AUTHORIZED IN THE
  RELEVANT AGREEMENT BETWEEN AT&T AND CUSTOMER.
  UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
*/
;
```

For Releases 7.1 and later:

```
sid date time
M ctag COMPLD
/* Lucent Technologies <system>
  <release>
  User Privilege Level: <privilege>
    LUCENT TECHNOLOGIES - PROPRIETARY
    THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
    AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
    WITH APPLICABLE AGREEMENTS.
    NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
    USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
    AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
    LUCENT TECHNOLOGIES AND CUSTOMER.
    UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
  */
;
```

The following string is used for the <system> value: FT-2000 OC-48 Lightwave System. The <release> string is of the form: Release x.y.z-type where x.y.z reflects the actual software release number and type can be ADR for Add/Drop Rings terminals, or RPTR for OC-48 repeater bays. The <privilege> string will have one of the following values reflecting the user's privilege level:

PRIVILEGED  
GENERAL  
REPORTS ONLY

The previous response is provided by an FT-2000 network element only if the **ED-PID** command is being used to update an expired password upon user login (**ACT-USER**). Otherwise, the following response is provided by an FT-2000 network element if the password change request completes successfully.

```
      sid date time  
M    ctag COMPLD  
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following example shows a successful password change operation:

```
ED-PID:LT-PF-2000:PeterPan:123456::soup3r+,8_6oober;  
  
IP 123456  
<  
  
      LT-PF-2000 93-10-26 16:42:11  
M    123456 COMPLD  
;
```

**ERROR RESPONSES**

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **ED-PID** command also.

If the network element receives an **ED-PID** command with a login identifier specified by *uid* that is not currently logged in on the access channel over which the command is received, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity, user ID not logged in */
;
```

If the network element receives an **ED-PID** command with an *old\_pid* value that does not match the currently provisioned *pid* for the associated user login identifier, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity, invalid OLD_PID */
;
```

If the network element receives an **ED-PID** command with a missing *new\_pid* or a *new\_pid* that does not meet the required attributes of a valid user login identifier password, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity, invalid NEW_PID */
;
```

If the network element receives an **ED-PID** command with a *new\_pid* value equal to the *old\_pid* value, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity, NEW_PID same as OLD_PID */
;
```



If the network element receives an **ED-PID** command before the password aging time period has expired, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity,
      insufficient time for password aging */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

**ACT-USER**

**CANC-USER**

**DLT-USER-SECU**

**ENT-USER-SECU**

**RTRV-USER-SECU**

**ED-USER-SECU**

## NAME

**ED-USER-SECU:** Edit User Security

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**ED-USER-SECU:***tid:uid:ctag::[new\_uid],[new\_pid],,  
[uap][:keyword\_block];*

## DESCRIPTION

The **ED-USER-SECU** command is used by an appropriate administrator to edit the security parameters associated with a user.

### ⇒ NOTE:

This command is available to privileged users only.

This command enables a privileged user to edit the login ID, password, and/or user privileges of any nonprivileged user. The privileged user may also edit the login ID and/or password of the other privileged user and alter a temporary visitor login.

## INPUT PARAMETERS

|                |                                                                                                                                                                                                                                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>     | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                   |
| <i>uid</i>     | User identifier. This identifies a user whose password and/or privilege level are to be changed. Its valid values are a case-sensitive alphanumeric string of 1 to 10 characters.                                                                                                                                                               |
| <i>ctag</i>    | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                           |
| <i>new_uid</i> | New user identifier. The valid values are a case-sensitive alphanumeric string of 1 to 10 characters. If omitted in the input format, this parameter is not changed.                                                                                                                                                                            |
| <i>new_pid</i> | New password. The valid values are a case-sensitive alphanumeric string of 6 to 10 alphabetic, numeric and symbolic characters where at least two characters are nonalphabetic and at least one is symbolic (white space is ignored). Any character that is used in the TL1 syntax is not permitted. If omitted, this parameter is not changed. |

Refer to Table 3-12 at the end of this section for a list of valid characters.

*uap*

User access privilege. This has one of the following values: **general** or **reports**. If omitted in the input format, this parameter is not changed.

*keyword\_block*

Keyword parameter block. This parameter field is used for modification of temporary login attributes. Parameters within *keyword\_block* are specified using a name defined construction of: **PARAMETER=va lue** in a comma separated list. For the **ED-USER-SECU** command, the *keyword\_block* may contain neither or both of the following parameters:

**TYPE** Type. If a temporary login is desired, **TYPE** must equal **visitor**.

**visitor** Visitor Login. This indicates that this login is assigned for temporary access to the network element.

**EXPDAT** Expiration date. This is the requested **EXPDAT** in the following format: YY-MM-DD, where YY is the last two digits of the year ranging from 00 to 99; MM is the month of the year ranging from 01 to 12; and DD is the day of the month ranging from 01 to 31. The expiration date *must* be set if **TYPE=visitor**.

## OUTPUT FORMAT

If the network element fully complies with the command request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the *uid* is currently logged into any network element through any of the communication interface ports (DTE, DCE, or X.25), when this command is successfully executed, regardless of altering any or none of the login parameters, the user identified by the *uid* is disconnected and the network element responds to the user who entered the **ED-USER-SECU** with the completion message.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following example changes the current *uid*, **kjlee**, to a *new\_uid*, **ilf**, and assigns **ilf** a *new\_pid* and a *uap*.

```
ed-user-secu:LT-PF-2000:kjlee:123456::ilf,pass12#,,general;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
;
```

The following example assigns the *uid* **kjlee** a temporary login with a *new\_pid* and a *uap*.

```
ED-USER-SECU:LT-PF-2000:kjlee:123456::pass12#,,general:TYPE=visitor,EXPDAT=93-12-31;  
  
IP 123456  
<  
  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to this command also.

If the network element receives an **ED-USER-SECU** command from a user trying to change his or her own *uid* (user identifier) and/or a *uap* value, the following error response is returned:

```
    sid date time  
M ctag DENY  
  PICC  
  /* Privilege, Illegal Command Code */  
;
```

If the network element receives an **ED-USER-SECU** command with an invalid *uid* (user identifier) value, the following error response is returned:

```
      sid date time
M    ctag DENY
      PIUI
      /* Privilege, Illegal User Identity, invalid UID */
      ;
```

If the network element receives an **ED-USER-SECU** command with a *new\_uid* (new user identifier) that matches an existing *uid* (user identifier), other than the one specified in the *uid* field, the following error response is returned:

```
      sid date time
M    ctag DENY
      PIUI
      /* Privilege, Illegal User Identity, duplicate NEW_UID */
      ;
```

If the network element receives an **ED-USER-SECU** command with an invalid *new\_uid* (new user identifier) value, the following error response is returned:

```
sid date time
M ctag DENY
  PIUI
  /* Privilege, Illegal User Identity, invalid NEW_UID */
;
```

If the network element receives an **ED-USER-SECU** command with an invalid *new\_pid* (password) value, the following error response is returned:

```
sid date time
M ctag DENY
  PIUI
  /* Privilege, Illegal User Identity, invalid NEW_PID */
;
```

If the network element receives an **ED-USER-SECU** command with a *uap* (user access privilege) other than **general** or **reports**, or if one **privileged** user tries to make another **privileged** user nonprivileged, or if one privileged user tries to make the other privileged user non-privileged, the following error response is returned:

```
sid date time
M ctag DENY
  PIUC
/* Privileged, Illegal User Code, invalid UAP */
;
```

If the network element receives an **ED-USER-SECU** command with a **TYPE** other than **visitor**, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid TYPE */
;
```



If the network element receives an **ED-USER-SECU** command with an invalid **EXPDAT**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid EXPDAT */
;
```

If the network element receives an **ED-USER-SECU** command without an **EXPDAT** when **TYPE** is specified or without a **TYPE** when **EXPDAT** is specified in the *keyword\_block* parameter, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid keyword_block */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**ED-PID**  
**DLT-USER-SECU**  
**ENT-USER-SECU**  
**RTRV-USER-SECU**

## NAME

**ENT - ASGNMT - DCC:** Enter-Assignment-DCC.

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**ENT - ASGNMT - DCC:***tid:aid:ctag::spec\_block;*

## DESCRIPTION

The **ENT - ASGNMT - DCC** command can be initiated by users to assign a DCC channel to a particular low speed slot or pair of slots. It also sets the orientation of the addressed channel.

## INPUT PARAMETERS

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>aid</i>        | Access Identifier. The <i>aid</i> value specifies the low speed slot command slot address for which DCC assignment is required.<br><br>The command can specify a 1+1 protected OC-3 slot pair by either the A slot or B slot or a 1+1 OC-12 quad pair by either the command slot of the service or protection quad. Refer to Table 3-7 at the end of this section for a list of valid addresses.                                                                                                                                                                                          |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>spec_block</i> | Specific Parameter Block. The system level attributes to be modified are specified inside the <i>spec_block</i> . Parameters within <i>spec_block</i> are specified using a <i>name=value, name=value, ...</i> type construct with no constraints on the order of parameters. Constructs such as <i>name1=value1, name2=, name3=, ...</i> are acceptable and in this example only the parameters <i>name1</i> will be changed at the Network Element. If the current value of the parameter <i>name1</i> is already <i>value1</i> in the above example, <i>name1</i> will not be changed. |

For the **ENT - ASGNMT - DCC** command, the *spec\_block* must contain at least the **DCC\_CHAN** parameter. The following parameters apply to the **ENT - ASGNMT - DCC** command.

**DCC\_CHAN** DCC Channel. The **DCC\_CHAN** specifies the DCC channel address for assignment to low speed slot or Quad command slot.

**ORTN** Orientation. The **ORTN** specifies the orientation of the addressed channel.

If specified in the *spec\_block* at all, it can take one of the following values:

**User** This assigns the specified **DCC\_CHAN** the user-side role in the LAPD protocol.

**Network** This assigns the specified **DCC\_CHAN** the network-side role in the LAPD protocol. This is the original value.

If not specified, **ORTN** will retain its currently provisioned value.

## OUTPUT FORMAT

If the network element fully complies with the **ENT-ASGNMT-DCC** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
;
```

If the **ENT-ASGNMT-DCC** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT-ASGNMT-DCC** command.

### EXAMPLE INPUT/OUTPUT

The following example specifies DCC channel assignment to low speed slot 1a for an FT-2000 system:

**ent-asgnmt-dcc:LT-PF-2000:ls-1a:CTAG:::DCC\_CHAN=1,ORTN=User;**

```
IP CTAG
<

    LT-PF-2000 97-10-26 16:42:11
M  CTAG COMPLD
;
```

The following example specifies DCC channel assignment to OC-12 Quad 3 for an FT-2000 system:

**ent-asgnmt-dcc:LT-PF-2000:ls-3b:CTAG:::DCC\_CHAN=5;**

```
IP CTAG
<

    LT-PF-2000 97-10-26 16:42:11
M  CTAG COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **ENT-ASGNMT-DCC** command.

If the network element receives an **ENT-ASGNMT-DCC** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **ENT-ASGNMT-DCC** command without a *DCC\_CHAN* value, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid spec_block */
;
```

If the network element receives an **ENT-ASGNMT-DCC** command with an invalid *DCC\_CHAN* value, the following error response is returned:

```
      sid date time
M    ctag DENY
      IDNV
      /* Input, Data Not Valid, invalid DCC_CHAN */
      ;
```

If the network element receives an **ENT-ASGNMT-DCC** command with an invalid *ORTN* value, the following error response is returned:

```
      sid date time
M    ctag DENY
      IDNV
      /* Input, Data Not Valid, invalid ORTN */
      ;
```

If the network element receives an otherwise valid **ENT-ASGNMT-DCC** command while the low speed slot or Quad command slot already has a different DCC channel assignment, or the **DCC\_CHAN** is already assigned to another slot or Quad command slot, the following error response is returned:

```
sid date time
M ctag DENY
  SAAS
/* Status, Already Assigned, delete existing assignment before
trying again */
;
```

If the network element receives an **ENT-ASGNMT-DCC** command while the TOHCTL slot is in the AUTO state, the TOHCTL has been removed, or the TOHCTL has failed, the following error response is returned:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed, TOHCTL pack failed/removed */
;
```

If the network element receives a valid **ENT-ASGNMT-DCC** command when an auto turnup test is running and the DCC connections between OC-3 or OC-12 low speed interfaces and the TOHCTL circuit pack are being verified, the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, auto turnup test running */
;
```

The duration of the window during a auto turnup test when the command is denied is about 20 seconds.

## RELATED TL1 COMMANDS/MESSAGES

**DLT-ASGNMT-DCC**

**RTRV-ASGNMT-DCC**



## NAME

**ENT - CID - SECU:** Enter Channel Identifier Security

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**ENT - CID - SECU:***tid:aid:ctag[:::spec\_block];*

## DESCRIPTION

The **ENT - CID - SECU** command can be initiated by a user to set the port security parameters for the X.25, DTE, DCE, and DCC ports of the network element.



### CAUTION:

*Network element access is affected by this command.*



### NOTE:

This command can be executed by privileged users only.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>aid</i>  | Access Identifier. This is the address of the communication ports for which parameters need to be set. A null value is not allowed.                                                   |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

*spec\_block* Specific Parameter Block. This parameter field is used for modification of the port security parameters for the X.25, DTE, DCE, and DCC ports of the network element. Parameters within the *spec\_block* are specified using a name defined construct of: **PARAMETER=va lue** in a comma separated list.

For the **ENT - CID - SECU** command, the *spec\_block* may contain none or some of the following parameters:

|                |                                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>portacc</i> | Port Access. This parameter enables or disables data communications access for the data communications port identified by the <i>aid</i> . This |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|

parameter may only be used when the *aid* value is **dte** or **dcc**. The format for this parameter is "**PORTACC=portacc**".

If provided in the *spec\_block*, it may take the value **enabled** or **disabled**.

If a null value is provided for this parameter, (for example, **PORTACC=**), the *portacc* value will default to **enabled**.

**⇒ NOTE:**

If as a result of this command, the *portacc* for the DTE or DCC port changes from **enabled** to **disabled**, any active session on the specified port will be terminated and the user(s) will be logged out.

When the port access to the DCC port is disabled, users on remote network elements are prevented from doing a CIT remote login to the target network element. Disabling the DCC port does not affect TL1 commands, only CIT access to the target network element via the DCC port is affected. CIT remote login from the target network element to other network elements is not prevented when the DCC port is disabled.

Port access to the DCE port may never be disabled.

*porttype*

Port Type. This parameter determines the protocol used by the network element for the DTE or DCE port. This parameter may only be used when the *aid* value is **dte** or **dce**. The format for this parameter is "**PORTTYPE=porttype**".

If specified in the *spec\_block*, it may have one of the following values. If a null value is provided, *porttype* is unchanged.

**cit** This sets the DTE or DCE port to accept CIT commands.

**tl1** This sets the DTE or DCE port to accept TL1 commands.

⇒ **NOTE:**

If as a result of this command, the *porttype* for the DTE or DCE port changes from/to **cit** to/from **tl1**, any active session on the specified port will be terminated and the user(s) will be logged out.

When the DCE or DTE *porttype* is set to **tl1**, the FT-2000 CIT program will no longer work on the specified port. The user will have to re-provision the *porttype* for the affected port to be **cit** via one of the other CIT accessible ports or by the **ENT-CID-SECU** TL1 command, before the CIT program can be used again.

*baudrate* Baud Rate. This parameter sets the baud rate of the DTE port or DCE port if the *porttype* is **tl1**. The format for this parameter is "**BAUDRATE=baudrate**".

If specified in the *spec\_block*, it may have one of the following values: **1200**, **2400**, **4800**, or **9600**.

If a null value is provided for this parameter, (for example, **BAUDRATE=**), the *baudrate* value will default to **9600**.

*chan* Channel. This parameter sets the channel type of the X.25 port. This parameter may only be used when the *aid* value is **x25**. The format for this parameter is "**CHAN=chan**".

If specified in the *spec\_block*, it may have one of the following values. If a null value is provided, *chan* is unchanged.

**tbl-1** Switched Virtual Channel #1 calling address table entry.

**tbl-2** Switched Virtual Channel #2 calling address table entry.

**tbl-3** Switched Virtual Channel #3 calling address table entry.

**tbl-4** Switched Virtual Channel #4 calling address table entry.

**tbl-5** Switched Virtual Channel #5 calling address table entry.

**tbl-6** Switched Virtual Channel #6 calling address table entry.

**pvc-1** Permanent Virtual Channel #1

**pvc-2** Permanent Virtual Channel #2

*ostype* OS Type. This parameter sets the OS type for the virtual circuit of the X.25 port. The value of the *ostype* parameter determines which, if any TL1 autonomous reports will be provided to the associated channel as identified by the *chan* parameter. All OS types allow command/response TL1 messages. This parameter may only be used when the *aid* value is **x25**. This parameter must be used in conjunction with the *chan* parameter. The format for this parameter is "**OSTYPE=ostype**".

If specified in the *spec\_block*, it may have one of the following values. If a null value is provided, *ostype* is unchanged.

For a *chan* value of **pvc-x**, *ostype* can take one of the following values.

**MT** Maintenance. This provides the identified *chan* with the REPT ALM, REPT ALM ENV, REPT COND, and REPT EVT autonomous TL1 messages. This is the default value for pvc-1.

**MA** Memory Administration. This provides the identified *chan* with the REPT DBCHG autonomous TL1 message.

**TEST** Test. This provides the identified *chan* with no autonomous TL1 messages. This parameter is available starting with FT-2000 ADR Release 8.

**CMDR** Command Response only. This provides the identified *chan* with no autonomous TL1 messages. This is the default value for *pvc-2*.

**OTHR** Other. This provides the identified *chan* with all autonomous TL1 messages.

For a *chan* value of **tbl-x**, *ostype* can take one of the following values.

**MT** Maintenance. This provides the identified *chan* with the REPT ALM, REPT ALM ENV, REPT COND, and REPT EVT autonomous TL1 messages.

**MA** Memory Administration. This provides the identified *chan* with the REPT DBCHG autonomous TL1 message.

**TEST** Test. This provides the identified *chan* with no autonomous TL1 messages. This parameter is available starting with FT-2000 ADR Release 8.

**CMDR** Command Response only. This provides the identified *chan* with no autonomous TL1 messages. This is the default value. This *ostype* will also be used for incoming X.25 SVC DTE calling addresses that do not match any of the user-provisioned X.25 SVC DTE calling addresses. This *ostype* will be used for FT-2000 TL1 CIT NE-NE (peer) remote login, also.

**OTHR** Other. This provides the identified *chan* with all autonomous TL1 messages.

**NONE** None. This provides the identified *chan* with no autonomous TL1 messages.

The *ostype* initial value for **pvc-1** is **MT**. The *ostype* initial value for **pvc-2** is **CMDR**. The *ostype* initial value for all **tbl-x** entries is **NONE**.

*calladdr* Calling Address. This parameter sets the calling address of the OS for a table entry **tbl-x** corresponding to the Switched Virtual Circuit channel of the X.25 port if the *ostype* is other than **NONE**. This parameter may only be used when the *aid* value is **x25**. This parameter must be used in conjunction with the *chan* parameter. The format for this parameter is "**CALLADDR**=*calladdr*".

If specified in the *spec\_block*, its value may be a numeric string of up to a maximum of 15 digits. If a null value is provided, *calladdr* is unchanged.

*tmout* This parameter sets the time out interval for the DCE, DTE, and DCC ports. It has an integer value in the range **0-999** minutes. A value of **0** disables the time out mechanism. When a null value is provided, *tmout* is unchanged. The format for this parameter is "**TMOUT**=*tmout*".

## OUTPUT FORMAT

If the network element fully complies with the **ENT-CID-SECU** request, the following normal completion response is returned.

```
IP ctag
<
    sid date time
M ctag COMPLD
;
```

If the **ENT-CID-SECU** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT-CID-SECU** command.

## EXAMPLE INPUT/OUTPUT

The following example shows a **ENT-CID-SECU** command that provisions security parameters for a **tbl** entry corresponding to a **x25** Switched Virtual Circuit.

```
ENT-CID-SECU:LT-PF-2000:x25:123456:::CHAN=tbl-3,OSTYPE=MA,CALLADDR=0123456789;  
  
IP 123456  
<  
  
      LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a **ENT-CID-SECU** command that provisions security parameters for a DTE port.

```
ENT-CID-SECU:LT-PF-2000:dte:123456:::PORTACC=enabled,PORTTYPE=t11,  
/ERROR  
BAUDRATE=2400,TMOUT=10;  
  
IP 123456  
<  
  
      LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a **ENT-CID-SECU** command that provisions security parameters for a DCE port.

```
ENT-CID-SECU:LT-PF-2000:dce:123456:::PORTTYPE=cit,TMOU=10;  
  
IP 123456  
<  
  
    LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a **ENT-CID-SECU** command that provisions security parameters for a DCC port.

```
ENT-CID-SECU:LT-PF-2000:dcc:123456:::PORTACC=enabled,TMOU=10;  
  
IP 123456  
<  
  
    LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
;
```



## ERROR RESPONSE

Refer to the **ERROR RESPONSE** section of **RTRV-HDR**. The error responses listed there also apply to the **ENT-CID-SECU** command.

If the network element receives an **ENT-CID-SECU** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *tmout spec\_block* parameter, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid TMOUT */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *portacc spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PORTACC */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *porttype spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PORTTYPE */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *baudrate spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid BAUDRATE */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *chan spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid CHAN */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *ostype spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid OSTYPE */
;
```

If the network element receives an **ENT-CID-SECU** command with an invalid *calladdr spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid CALLADDR */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value of **x25** or **dce** and a *portacc spec\_block* parameter, the following error response is returned:

```

      sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, PORTACC does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value of **x25** or **dcc** and a *porttype spec\_block* parameter, the following error response is returned:

```

      sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, PORTTYPE does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with a *baudrate spec\_block* parameter, specified for **PORTTYPE=cit** or for an *aid* value other than **dte** or **dce**, the following error response is returned:

```

    sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, BAUDRATE inconsistent with AID or PORTTYPE */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value other than **x25** and a *chan spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, CHAN does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value other than **x25** and an *ostype spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, OSTYPE does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value other than **x25** and a *calladdr spec\_block* parameter, the following error response is returned:

```

    sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, CALLADDR does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value of **x25** and a *tmout spec\_block* parameter, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, TMOUT does not apply to given AID */
;
```

If the network element receives an **ENT-CID-SECU** command with an *aid* value of **x25** and an *ostype* value of **NONE**, and a *chan* value of **pvc-1** or **pvc-2**, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, OSTYPE does not apply to given CHAN */
;
```



If the network element receives an **ENT-CID-SECU** command with an *aid* value of **x25** and a *calladdr spec\_block* parameter, and a *chan* value of **pvc-1** or **pvc-2**, or an *ostype* of **NONE**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, CALLADDR does not apply to given CHAN or OSTYPE */
;
```

## RELATED TL1 MESSAGES

**RTRV-CID-SECU**

## NAME

**ENT - CRS - rr:** Enter Cross-connection rr

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Releases 5.0 and later:

**ENT - CRS -**

*modifier:tid:src\_aid,dest\_aid:ctag::[cct]:spec\_block[:pst[,sst]];*

For Release 4.1:

**ENT - CRS -**

*modifier:[tid]:src\_aid,dest\_aid:ctag::[cct]:spec\_block[:pst[,sst]];*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Release 4.1, throughout this TL1 command description, the use of the term "low speed interface" implies a single slot when referring to slots equipped with DS3 or STS1E low speed circuit packs.

For Releases 5.0 and 6.0, throughout this TL1 command description, the use of the term "low speed interface" implies a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

For Releases 7.0 and later, throughout this TL1 command description, the use of the term "low speed interface" implies the following:

- A single port when referring to slots equipped with DS3, or STS1E low speed circuit packs
- A single STS-1 tributary within the OC-3 when referring to slots equipped with OC3 low speed circuit packs
- A single slot when referring to slots equipped with DS3, STS1E, OC3 low speed circuit packs
- A single quad when referring to quads equipped with OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, that is, STS-3 or STS-1.

**ENT - CRS - rr** command messages can be initiated by an OS or OS users to request FT-2000 to establish cross-connections in the FT-2000 OC-48 Add/Drop Rings Terminal for 2-Fiber Rings.

Cross-connections can be 1-way, 2-way\* or Dual Ring Interworking (DRI) cross-connections. What is called a *bridge* cross-connection can be established in FT-2000 by superimposing a 1-way cross-connection on another with a different destination but the same source.

The **ENT-CRS-rr** command may also be used to update the termination node TID for a ring circuit without dropping service. That is, if the provisioned ring termination identifiers (see **LOCA** and **LOCZ**, below) in an already established cross-connection must be changed, the **ENT-CRS-rr** command can be used to do so without requiring an explicit delete and enter cycle. Thus, the change can be made without dropping service carried via the cross-connection.\*\*

For Releases 7.0 and later:

The **ENT-CRS-rr** command may also be used to provision the **LOCA**, **locZ**, and **AUDIT** parameters only of STS-1 circuits to, from, or through nodes which don't have STS1 TSA capable hardware, provided that the STS-3 circuit has been established first.

- Use ENT-CRS-ST3 to establish an STS-3 cross-connection.
- Use ENT-CRS-ST3 to assign the appropriate TIDs for the different STS-1 circuits.
- Use ENT-CRS-ST3 to set AUDIT parameter(s) to "no" if necessary to prevent unintended circuit audit alarms.

Although the last two items may occur in either order, the STS-3 cross-connection must be established first.

FT-2000 supports basic ring interworking capabilities and provisioning for interconnecting FT-2000 2-fiber bidirectional line switched rings (BLSRs) with other 2-fiber BLSRs, 4-fiber BLSRs, or path switched rings.

FT-2000 provides Dual Ring Interworking (DRI) support at the EC-1, DS3, or OC-3 interconnect signal rate. For Release 7.1 and later, FT-2000 provides Dual Ring Interworking (DRI) support at the EC-1, DS3, OC-3 (IS-3), or OC-12 interconnect signal rate. The DRI allows a circuit with one termination in one ring and one termination in another ring to survive a failure of the shared node currently carrying service for the circuit. The other ring may be either a path-switched ring, a two fiber BLSR, or a four fiber BLSR. Two nodes must be shared between the two rings.

---

\* In FT-2000, 2-way cross-connections are internally indistinguishable from complementary pairs of 1-way cross-connections. That is, a 2-way cross-connection can be established by using one 2-way cross-connection request or two 1-way cross-connection requests, and can similarly be removed (refer to the **DLT-CRS-rr** description) in one or two steps.

\*\* The ring termination identifiers can be changed for any cross-connection using either the **ENT-CRS-rr** or **ENT-ROLL-rr** commands. In either case the termination identifiers are changed without dropping service carried by the cross-connection.

For a given circuit, one shared node is designated as the "primary" node, and the other shared node is designated as the "secondary" node. The circuit is routed in the direction around the ring such that traffic from the termination arrives at the primary node before arriving at the secondary node.

DRI cross-connections are provisioned unidirectionally. A DRI drop cross-connection consists of a drop cross-connection at the primary node; a through cross-connection from the same tributary at the primary node, and a drop cross-connection from the same tributary at the secondary node.

A DRI add cross-connection consists of:

- A DRI-type cross-connection at the primary node that is composed of a primary 1-way add cross-connection and a secondary 1-way through cross-connection with the same destination line tributary. This combination is established at the primary node using the DRI cross-connection type (see description below). The special DRI ("**1WAYDRI**") cross-connection type links these cross-connections and establishes a monitor of the low-speed port at the primary node. The primary ("add") cross-connection is initially in an active state, and the secondary ("through") cross-connection is initially in a standby state.

**AND**

- A 1-way add cross-connection at the secondary node on to the same tributary. This cross-connection is established at the secondary node using a simple 1-way cross-connection type.

If a failure occurs on the incoming low speed signal at the primary node, a DRI switch is initiated and the cross-connection at the primary node is switched from the primary ("add") cross-connection to the secondary ("through") cross-connection, completing the circuit between the secondary node and the termination of the circuit.

The only restrictions on cross-connections are these:

- a. Cross-connections cannot be made from one low speed slot to another low speed slot .
- b. The only permitted tributary-to-tributary (that is, "through") cross-connection is between same numbered tributaries on the two OC-48 lines.
- c. For Releases 7.0 and later:  
1-way STS-1 Drop cross-connections destined to low speed ports(STS-1) associated with the same low speed slot must all drop from the same high-speed line.

For Releases 7.0 and later:

Cross-connections can only be established between line tributaries and other line tributaries or low speed interfaces which carry the same signal type, for example, STS-1, STS-3. This requirement had to be added when terminology was changed from "STS-3 tributary" to "tributary" and from "low speed slot" to "low speed interface". These changes were made for the STS-1 Granularity Across an STS-48 feature.

For Releases 5.0 and later, the following describe valid cross-connection configurations:

A tributary used as a Source may be cross-connected to one or more of the following sets of destinations:

- a. to the same numbered tributary of the other OC-48 line (specified in a 1-way cross-connection or implied in a 1-way-dri cross-connection).
- b. to one or more low speed interface.

A tributary used as Destination may be cross-connected from exactly one of the following sets of sources:

- a. from the same-numbered tributary of the other OC-48 line
- b. from one low speed interface
- c. from one low speed interface and the companion low speed interface of a low speed interface pair (implied) when the low speed interface pair is operating in the "1+1" protected mode.
- d. from one low speed interface and from the same numbered tributary of the other OC-48 line (implied) in a 1-way-dri arrangement.
- e. from one low speed interface, the companion low speed interface of a low speed interface pair (implied) when the low speed interface pair is operating in the "1+1" protected mode, and from the same numbered tributary of the other OC-48 line (implied) in a 1-way-dri arrangement.

A low speed interface used as a Source may be cross-connected to one or more of the following sets of destinations:

- a. to one or more 1E tributaries (The low speed interface may be specified in a 1-way add cross-connection or implied in a 1-way add cross-connection from a low speed interface pair operating in a 1+1 protected mode.)
- b. to one or more 1W tributaries (The low speed interface may be specified in a 1-way add cross-connection or implied in a 1-way add cross-connection from a low speed interface pair operating in a 1+1 protected mode.)

A low speed interface used as a Destination may be cross-connected from exactly one of the following sets of sources:

- a. from one 1E tributary (The low speed interface may be specified in a 1-way drop cross-connection or implied in a 1-way drop cross-connection to a low speed interface pair operating in a 1+1 protected mode.)
- b. from one 1W tributary (The low speed interface may be specified in a 1-way drop cross-connection or implied in a 1-way drop cross-connection to a low speed interface pair operating in a 1+1 protected mode.)

When FT-2000 receives an **ENT-CRS-rr** command from the OS or user, FT-2000 will establish a line tributary cross-connection according to the parameter settings in the command.

The established cross-connections remain in effect until modified (for example, by another TL1 command **DLT-CRS-rr**, or **ENT-ROLL-rr**, or by the appropriate FT-2000 CIT-PC command).

The **ENT-CRS-rr** command can also be used to modify the source and terminating node TIDs for proper squelching in a BLSR. This can be done by using the command to overwrite an existing command with the same source and destination addresses but with a different source and/or terminating ring location identifier.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is the message modifier and may only have the following values: <b>STS3</b> or <b>STS1</b> (Releases 7.0 and later).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>STS3</b>     | <p>For Releases 4.1 through 6.0:</p> <p>This specifies that an STS-3 line tributary cross-connection be established.</p> <p>For Releases 7.0 and later:</p> <p>For a non-STS1 capable node, this specifies that an STS-3 line tributary cross-connection be established.</p> <p>For an STS1 capable node, this specifies that an STS-3 line tributary's three constituent STS-1 line tributaries' cross-connections be established.</p> <p>If this command is denied for any of the constituent STS-1 entities of the STS-3 entity specified by this command, then this entire command will be denied with the same error response as is used for the offending STS-1 entity.</p> |

**STS1** For Releases 7.0 and later:  
*modifier* set to **STS1** specifies that an STS-1 line tributary cross-connection be established.

For example, provisioning a third STS1-granular cross-connection next to two other STS1-granular cross-connections, such that an STS3-granular cross-connection is established, will result in the STS3-granular cross-connection being physically established and the alarms for the previously provisioned, but not established, STS1-granular cross-connections being cleared.

|                 |                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                             |
|                 | For Release 4.1, if no <i>tid</i> is given, the command is interpreted to be addressed to the gateway network element (GNE), the network element connected directly to the OS via an X.25 link).                                                                                                                                                                                          |
| <i>src_aid</i>  | Source access identifier. This is the source address of the line tributary or low speed interface for which the <b>ENT - CRS - rr</b> command is intended.*                                                                                                                                                                                                                               |
|                 | Refer to Table 3-7 at the end of this section for a list of valid line tributary and low speed interface addresses.                                                                                                                                                                                                                                                                       |
| <i>dest_aid</i> | Destination access identifier. This is the destination address of the line tributary or low speed interface for which the <b>ENT - CRS - rr</b> command is intended.                                                                                                                                                                                                                      |
|                 | Refer to Table 3-7 at the end of this section for a list of valid line tributary and low speed interface addresses.                                                                                                                                                                                                                                                                       |
| <i>ctag</i>     | Correlation tag. This is included in the command by the OS and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages. Valid values for <i>ctag</i> include strings of up to 6 characters comprised of identifiers (alphanumerics begin with a letter) or decimal numerals (a string of decimal digits with an optional non-trailing "."). |
| <i>cct</i>      | Cross-connection type. This parameter specifies the type of cross-connection being requested and, for FT-2000, may be null or have one of the following values:                                                                                                                                                                                                                           |

---

\* Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in FT-2000. While FT-2000 does allow for the use of the *all* construct within the *aid* field of other TL1 commands to provide access to a range of AIDs, the *all* construct is **not** supported in the **ENT - CRS - rr** command.

- 2WAY** This requests that a 2-way cross-connection between the source and destination be established (this is the original value value).
- 1WAY** This requests that a 1-way cross-connection between the source and destination be established.
- 1WAYDRI** This requests that a 1-way "add" cross-connection between the source low speed interface and destination line tributary be established and that the cross-connection be used as the primary input at a ring interconnect node for DRI. Simultaneously, this requests that a 1-way "through" cross-connection be established in the standby state with the same destination line tributary and the same numbered tributary on the other OC-48 line as the source, and that this standby cross-connection be used as the secondary input at a ring interconnect node for DRI.

Because this cross-connection type is specific to the primary input point of a DRI circuit, one restriction on the *cct=1WAYDRI* is that the *src\_aid* **must** identify a low speed interface and the *dest\_aid* **must** indicate a line tributary.

Further, for proper ring protection and squelching of misconnections in the event of ring failures, the **LOCA** and **LOCZ** parameters defined below should identify the **last** nodes "touched" by the DRI circuit (that is, the secondary node, which is the initial "add" point for this unidirectional DRI path, and the terminating node).

For DRI cross-connections, FT-2000 will automatically **switch** to this STANDBY 1-way "through" cross-connection in the event that the primary node senses a failure in the signal entering the primary node from the low speed interface.

If the *cct* value is null, the original value is used.

*spec\_block* Specific block. This parameter field is used for most basic capabilities of the **ENT-CRS-rr** command, as specified in Bellcore TR-199, Issue 1. Parameters set within the specific block are positionally independent and are set using a construct such as **PARAMETER=va lue** in a comma-separated list. Furthermore, each parameter listed below may appear, at most, once within the specific block for a single **ENT-CRS-rr** command.



For each of the parameters that follow, there is listed one or more parameter values. The use of the term "null" in the descriptions implies that the parameter does not appear in the command.

In accordance with the T1X1.5 Draft Standard on Bidirectional Line Switched Rings, in order for ring terminals to correctly switch traffic and/or "squench" potentially misconnected traffic in the event of multiple failures on the ring, the nodes at which a particular signal enters and exits the bidirectional line switched ring must be identified in the cross-connection matrix for the ring nodes. Therefore, the supporting cross-connection messages for 2-fiber bidirectional line switched rings must include identification of the signal entry and exit points on the ring for all nodes which are involved (have cross-connections established) in carrying the traffic through the ring.

These two parameters are called **LOCA** and **LOCZ** and are defined below.

**LOCA** Ring location A. This parameter specifies the ring "source" terminal identifier (TID) and must be included in the **ENT-CRS-rr** command if the *src\_aid* value indicates a line tributary or for cross-connections with a *cct* value of **1WAYDRI**. The value provided must be a valid TID format. It may or may not specify one of the nodes in the ring subnetwork (preprovisioning is allowed). If not, the command will be accepted but will result in an alarm due to this squench map inconsistency. The alarm can then be cleared once all squench map inconsistencies are cleared.

DRI "add" cross-connections (**1WAYDRI**) must always include an explicit **LOCA** specification. This value is used as the "secondary" source node TID, providing the source ring location identifier for the STANDBY "through" cross-connection.

Refer to the **RTRV-HDR INPUT PARAMETERS** section. The character set requirements for *tid* listed there apply to **LOCA** also.

**Important:** In order to properly protect against service outages and/or misconnected traffic in the event of ring failures, the **LOCA** parameter must be set with the correct TID value of the ring source node.

If a DRI cross-connection is being established (which implicitly requests a STANDBY "through" cross-connection to be used to protect ring interconnectivity) for a line tributary, then the secondary DRI add node must be specified to ensure proper ring protection switching operation.

If a **LOCA** value is provided for the new cross-connection and that value is in conflict with other cross-connections with the same line tributary *src\_aid* value, then the **ENT-CRS-rr** command will complete successfully and the **LOCA** value(s) for all other cross-connections with the same *src\_aid* value will be overwritten with the **LOCA** provided in **ENT-CRS-rr** command.

For 2-way cross-connections, there are actually two 1-way cross-connections established internally to FT-2000. By definition, for each of these two cross-connections, the **LOCA** value of one is the **LOCZ** value of the other. FT-2000 uses the **LOCA** and **LOCZ** parameter values for the cross-connection in the order specified (*src\_aid* and *dest\_aid*) in the command for the first cross-connection and reverses the order for the corresponding "mirror image" cross-connection. For other arrangements of **LOCA** and **LOCZ** values, **1WAY** cross-connections should be used.

For Releases 7.0 and later, the **LOCA** parameter is not ignored for cross-connections with a low speed interface as the source because this parameter will be different from the TID of the node establishing the cross-connection for Limited STS-1 Granularity circuits.

**LOCZ** Ring location Z. This parameter specifies the ring "destination" terminal identifier (TID) and must be included in the **ENT-CRS-rr** command if the *dest\_aid* value indicates a line tributary as the cross-connection destination. The value provided must be a valid TID format. It may or may not specify one of the nodes in the ring subnetwork (pre-provisioning is allowed). If not, the command will be accepted but will result in an alarm due to this squelch map inconsistency. The alarm can then be cleared once all squelch map inconsistencies are cleared.

Refer to the **RTRV-HDR INPUT PARAMETERS** section. The character set requirements for *tid* listed there apply to **LOCZ** also.

**Important:** In order to properly protect against service outages and/or misconnected traffic in the event of ring failures, the **LOCZ** parameter must be set with the correct TID value of the ring destination node.

If the signal is bridged at one or more nodes, then the final node at which signals on that line tributary are terminated must be specified to ensure proper ring protection switching operation. This restriction also applies to DRI cross-connections.

DRI cross-connections must always include an explicit **LOCZ** specification.

For 2-way cross-connections, there are actually two 1-way cross-connections established internally to FT-2000. By definition, for each of these two cross-connections, the **LOCA** value of one is the **LOCZ** value of the other. FT-2000 uses the **LOCA** and **LOCZ** parameter values for the cross-connection in the order specified (*src\_aid* and *dest\_aid*) in the command for the first cross-connection and reverses the order for the corresponding "mirror image" cross-connection. For other arrangements of **LOCA** and **LOCZ** values, **1WAY** cross-connections should be used.

The **LOCZ** parameter value in the **ENT-CRS-rr** command is always ignored for all cross-connections with a low speed interface as the destination, provided it is syntactically correct. The **LOCZ** value in this case is always assumed to be the TID of the node establishing the cross-connection.

For Releases 7.0 and later, the **LOCZ** parameter is not ignored for cross-connections with a low speed interface as the destination because this parameter will be different from the TID of the node establishing the cross-connection for Limited STS-1 Granularity circuits.

**EXTRA** Extra traffic indicator. This parameter must be set to a value of *yes* in order for a successful cross-connection assignment of extra traffic\* to be completed. Otherwise, this parameter must be null.

**AUDIT** Audit Indicator. This parameter specifies whether circuit audit is to be performed for the circuit of which this cross-connection is a part. This parameter may be null or may have the following value:

no This requests that circuit audit be disabled for the circuit of which this cross-connection is a part.

yes This requests that circuit audit be enabled for the circuit of which this cross-connection is a part.

If **AUDIT** is null, this command is interpreted as if **AUDIT** was set to *yes*.

*pst* Primary state. The primary state parameter is position defined. This parameter is not used in the **ENT-CRS-rr** command by FT-2000 and must be null. See the **ENT-rr** command description for details on setting the *pst* parameter value and the **RTRV-rr** command description for details on retrieving the current *pst* value.

*sst* Secondary State. The secondary state parameter is position defined. This parameter is not used in the **ENT-CRS-rr** command by FT-2000 and must be null. See the **RTRV-rr** command description for details on retrieving the current *sst* value.

---

\* FT-2000 supports cross-connections of extra traffic (that is, use of protection line tributaries in a 2-fiber ring). In the 2-fiber ring application, extra traffic is preemptible in the event of ring loopback protection switching. In the FT-2000 OC-48 Add/Drop Rings Terminal for 2-Fiber Rings, the protection line tributaries available for extra traffic are the 9th through the 16th STS-3 line tributaries on both the east and west-facing OC-48 lines.

## OUTPUT FORMAT

If network element fully complies with the cross-connection request, the following output message is returned:

```
      sid date time  
M  ctag COMPLD  
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE OUTPUT

All the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

The following example establishes a 2-way (add/drop) cross-connection between a line tributary ("sts3-1e-6") and a low speed interface ("ls-7a"):

```
ent-crs-sts3:LF-PT-2000-3:sts3-1e-6,ls-7a:123456:::loca=LT-FT2000-1;
```

```
IP 123456  
<
```

```
LF-PT-2000-3 93-11-26 16:42:11  
M 123456 COMPLD  
;
```

The following example establishes a 1-way (drop) cross-connection between a line tributary ("sts3-1w-8") and a low speed interface ("ls-2b"):

```
ent-crs-sts3:LF-PT-2000-13:sts3-1w-8,ls-2b:789abc::1waY:loca=LF-PT-2000-4;
```

```
IP 789abc  
<
```

```
LF-PT-2000-13 93-11-26 16:53:22  
M 789abc COMPLD  
;
```

The following example establishes a 1-way (add) cross-connection between a low speed interface ("ls-1a") and a line tributary ("sts3-1w-1"):

```
ent-crs-sts3:LF-PT-2000-3:ls-1a,sts3-1w-1:654321::1Way:locz=LF-PT-2000-7;
```

```
IP 654321  
<
```

```
LF-PT-2000-3 93-11-26 16:54:33  
M 654321 COMPLD  
;
```

The following example establishes a 2-way (add/drop) cross-connection between a low speed interface ("ls-1a") and a line tributary ("sts3-1w-12") for extra traffic (that is, using a protection tributary):

```
ent-crs-sts3:LF-PT-2000-3:ls-1a,sts3-1w-12:654321::2Way:locz=LF-PT-2000-16,extra=yes;
```

```
IP 654321  
<
```

```
LF-PT-2000-3 93-11-26 16:54:33  
M 654321 COMPLD  
;
```

The following example establishes a 2-way (through) cross-connection between a west-facing line tributary ("sts3-1w-2") and the east-facing line tributary ("sts3-1e-2") with the same tributary number:

```
ent-crs-sts3:LF-PT-2000-3:sts3-1w-2,sts3-1e-2:123def:::loca=LF-PT-2000-12,locz=lt-pt-2000-2;
```

```
IP 123def  
<
```

```
LF-PT-2000-3 93-11-26 16:59:44  
M 123def COMPLD  
;
```

The following example establishes a 1-way (add) DRI cross-connection between the low speed interface ("ls-3b") and an east-facing line tributary ("sts3-1e-2"):

```
ent-crs-sts3:LF-PT-2000-3:ls-3b,sts3-1e-2:887766:::1WAYDRI:loca=LF-PT-2000-4,locz=lt-pt-2000-12;
```

```
IP 887766  
<
```

```
LF-PT-2000-3 93-11-26 16:59:44  
M 887766 COMPLD  
;
```



## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to the **ENT-CRS-rr** command.

If the network element receives an **ENT-CRS-rr** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (not supported by FT-2000, delimited by ","), or termination characters (;), the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation */
;
```

If the network element receives an **ENT-CRS-rr** command with the same parameter specified more than once, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

If the network element receives an **ENT-CRS-rr** command with a command code modifier other than **STS3**, the following error response is returned:

```
<cr><lf>
<lf>
    sid date time
M  ctag DENY
    IICM
    /* Input, Invalid Command, modifier must be STS3 */
;
```

If the network element receives an **ENT-CRS-rr** command without a *src\_aid* or *dest\_aid* value or with a *src\_aid* or *dest\_aid* value that does not identify either a single line tributary or a single low speed interface, the following error response is returned:

```
    sid date time
M  ctag DENY
    IIAC
    /* Input, Invalid Access Identifier,
    Source or Destination AID missing or invalid
    */
;
```

If the network element receives an **ENT-CRS-rr** command with a *pst* or *sst* value setting, the following error response is returned:

```

    sid date time
M  ctag DENY
   INUP
   /* Input, Non-null Unimplemented Parameter,
   PST and SST parameters not supported in FT-2000 ENT-CRS-STS3 command
   */
;

```

For Releases 7.0 and later, if the network element receives an **ENT-CRS-rr** command with a *pst* or *sst* value setting, the following error response is returned:

```

    sid date time
M  ctag DENY
   INUP
   /* Input, Non-null Unimplemented Parameter,
   This command does not support PST and SST parameters
   */
;

```

For Releases 5.0 and later, if the network element receives an **ENT-CRS-rr** command with a *cct* value that is not supported by FT-2000, the following error response is returned:

```

    sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid CCT */
;

```

If the network element receives an **ENT-CRS-rr** command with a *cct* value that is not supported by FT-2000, the following error response is returned:

```

    sid date time
M  ctag DENY
   IIDT
   /* Input, Invalid Data, CCT = 2WAY, 1WAY, 1WAYDRI or null
      (default: CCT = 2WAY) */
;

```

For Release 4.1 and later, if the network element receives an **ENT-CRS-rr** command syntactically incorrect *tid* value for either **LOCA** or **LOCZ**, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation,
LOCA and LOCZ values must use valid TID syntax */
;
```

For Releases 5.0 and later, if the network element receives an **ENT-CRS-rr** command with an *EXTRA* value that is not supported by FT-2000, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an **ENT-CRS-rr** command with a *EXTRA* value that is not supported by FT-2000, the following error response is returned:

```

    sid date time
M  ctag DENY
    IIDT
    /* Input, Invalid Data,
    EXTRA = YES or null (set ONLY for cross-connections of extra traffic)
    */
;

```

For Releases 5.0 and later, if the network element receives an **ENT-CRS-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *src\_aid* specifies a line tributary and no **LOCA** parameter value is provided, the following error response is returned:

```

    sid date time
M  ctag DENY
    IDNV
    /* Input, Data Not Valid, invalid LOCA */
;

```

If the network element receives an **ENT-CRS-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *src\_aid* specifies an STS-3 line tributary and no **LOCA** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
no LOCA setting provided for STS-3 tributary source aid
*/
;
```

For Releases 5.0 and later, if the network element receives an **ENT-CRS-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *dest\_aid* specifies a line tributary and no **LOCZ** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LOCZ */
;
```

If the network element receives an **ENT-CRS-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *dest\_aid* specifies an STS-3 line tributary and no **LOCZ** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data,
  no LOCZ setting provided for STS-3 tributary destination aid
  */
;

```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the *src\_aid* and *dest\_aid* parameters values both specify low speed interfaces, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;

```



If the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the *src\_aid* and *dest\_aid* parameters values both specify low speed interfaces, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data,
  Source and Destination AIDs both specify low speed slots
  */
;

```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the *src\_aid* and the *dest\_aid* each specify line tributary numbers for the two AIDs that are not the same, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;

```

If the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the *src\_aid* and the *dest\_aid* each specify STS-3 line tributary numbers for the two AIDs that are not the same, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data,
  TSA only, through tributary cross-connection Source and Destination
  AIDs MUST specify same time slot
  */
;
```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command requesting a cross-connection assignment of extra traffic (STS-3 line tributary or tributaries specified are in the range of time slots 9 through 16 for 2-fiber), but for which the *EXTRA* parameter value is not set to YES, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an otherwise valid **ENT-CRS-rr** command requesting a cross-connection assignment of extra traffic (STS-3 line tributary or tributaries specified are in the range of time slots 9 through 16), but for which the EXTRA parameter value is not set to **yes**, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data,
  attempting "extra traffic" cross-connection assignment,
  override parameter value not set (EXTRA=YES)
  */
;
```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command requesting a normal cross-connection assignment of traffic (STS-3 line tributary or tributaries specified are in the range of time slots 1 through 8 for 2-fiber, but for which the EXTRA parameter value is set to YES, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an otherwise valid **ENT-CRS-rr** command requesting a normal cross-connection assignment of traffic (STS-3 line tributary or tributaries specified are in the range of time slots 1 through 8), but for which the *EXTRA* parameter value is set to **yes**, the following error response is returned:

```
sid date time
M ctag DENY
  IDT
  /* Input, Invalid Data,
  "EXTRA" parameter value MUST be null for normal cross-connection
  assignments
  */
;
```

If the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the cross-connection cannot be made because the addressed *dest\_aid* (or *src\_aid* in a **2WAY** cross-connection request) is already involved in a different existing cross-connection, **or** because the secondary tributary (intended to set up the standby through cross-connection) is already involved in a different existing cross-connection (for example, a drop cross-connection to a low speed interface), the following error response is returned:

```
sid date time
M ctag DENY
  SACC
  /* Status, Already Cross-Connected,
  To establish a new cross-connection requires that the existing
  cross-connections associated with the addressed low speed
  interface or tributary be deleted or rolled. */
;
```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the **LOCA** and **LOCZ** parameters have not been defined, or the **LOCA** parameter does not refer to a TID other than the node at which the cross-connection is being requested, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid LOCA and/or LOCZ */
;
```

If the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the **LOCA** and **LOCZ** parameters have not been defined, or the **LOCA** parameter does not refer to a TID other than the node at which the cross-connection is being requested, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data,
LOCA and LOCZ must be specified for DRI add cross-connection
and LOCA must identify secondary ring interworking node.
*/
;
```

For Releases 5.0 and later, if the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the *src\_aid* does not specify a low speed interface, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC_AID */
;
```

If the network element receives an otherwise valid **ENT-CRS-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the *src\_aid* does not specify a low speed interface, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data
Source AID must indicate low speed slot for ring interworking
primary node DRI cross-connections
*/
;
```

If the network element receives an **ENT-CRS-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed */
;
```

For Releases 5.0 and later, if the network element receives an **ENT-CRS-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed, LNCTL missing or failed */
;
```

For Releases 7.0 and later, if an otherwise valid **ENT-CRS-Irr** command is received by a network element which has any TRMTRs or RCVRs which are not STS1TSA capable, but for which the modifier is set to STS1, and an STS-3 cross-connection has already been established, the following response is returned:

```
sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed,
  Specified modifier is not supported by the installed hardware.
  An STS-3 cross-connection must be established before an STS-1
  cross-connection. */
;
```

For Releases 7.0 and later, if the network element receives an otherwise valid instance of this command, but for which the *modifier*, *src\_aid*, and/or *dest\_aid* parameters values do not all identify entities which carry the same signal type, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid,
  src_aid, and/or dest_aid is inconsistent with modifier
  */
;
```



For releases 5.0 and later, if the network element receives this command with a *modifier* other than **STS3**, the following error response is returned:

```

sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid, invalid modifier */
;

```

For Releases 7.0 and later, if this command requests a drop cross-connection to a Port(STS-1) whose associated low speed service slot has another drop cross-connection to one of its Port(STS-1), but from a different high-speed line, the following error response is returned:

```

sid date time
M ctag DENY
  SROF
  /* Status, Requested Operation Failed
  1-way Drop cross-connections destined to low speed ports
  associated with the same low speed slot must all drop from
  the same high-speed line.
  */
;

```

## RELATED TL1 COMMANDS/MESSAGES

**DLT-CRS-rr**

**RTRV-CRS-rr**

**ENT-ROLL-rr**

## NAME

**ENT - FECOM:** Enter-Far End Communications

Support for this message is available in Release 7.1 through 7.2 (exclusive). It is not available for Releases 8.0 and later.

## INPUT FORMAT

**ENT - FECOM:***tid::ctag[::spec\_block];*

## DESCRIPTION

The **ENT - FECOM** command can be initiated by users to enable/disable remote alarm capabilities over the DCC.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*spec\_block* Specific Parameter Block. The system level attributes to be modified are specified inside the *spec\_block*. Parameters within *spec\_block* are specified using a *name=value, name=value, ...* type construct with no constraints on the order of parameters. Constructs such as *name1=value1, name2=, name3=, name4=, name5=value5, ...* are acceptable and in this example only the parameters *name1* and *name5* will be changed at the Network Element. If the current value of the parameter *name1* is already *value1* in the above example, *name1* will not be changed.

For the **ENT - FECOM** command, the *spec\_block* may contain one or more of the following parameters:

**RAR** Remote Activity Reporting. It has a value ENABLED or DISABLED. The **RAR** is the reporting of activity from other NEs in the ring via the RETRIEVE-NETWORK ALARMS command and the FE ACTY LED is enabled or disabled. Remote Activity Reporting, **RAR** is eliminated as a supported parameter starting with FT-2000 Release 8.0.

**ROA** Remote Office Alarm. It has a value ENABLED or DISABLED. If enabled, then remote office alarms will also cause local alarms (alarm contacts). If disabled,

the remote office alarms will not cause local office alarms. Remote Office Alarm is eliminated as a supported parameter starting with FT-2000 Release 8.0.

## OUTPUT FORMAT

If the network element fully complies with the **ENT - FECOM** request, the following normal completion response is returned.

```
IP ctag
<

sid date time
M ctag COMPLD
;
```

If the **ENT - FECOM** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV - HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT - FECOM** command.

## EXAMPLE INPUT/OUTPUT

The following example shows a command **ENT - FECOM** for an FT-2000 ADR system running Release 7.1:

**ENT - FECOM : LT - PF - 2000 : : CTAG : : RAR=Enabled, ROA=Enabled ;**

```
IP 123456
<

LT-PF-2000 97-10-26 16:42:11
M CTAG COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV - HDR ERROR RESPONSE** section. The error responses listed there also apply to the **ENT - FECOM** command.

If the network element receives a **ENT - FECOM** command with the same parameter specified more than once, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV - FECOM**

## NAME

**ENT-NE-SECU:** Enter-network element-Security

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**ENT-NE-SECU:***tid::ctag::spec\_block;*

## DESCRIPTION



### CAUTION:

*When non-privileged user logins are disallowed using this command, any currently active non-privileged user session will be disconnected immediately.*

This command is available to privileged users only.

The **ENT-NE-SECU** command can be initiated by users to set the global security parameters of the system, such as the password aging period, the login aging period and whether non-privileged logins are allowed.

## INPUT PARAMETERS

- |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>spec_block</i> | Specific Parameter Block. The system level attributes to be modified are specified inside the <i>spec_block</i> . Parameters within <i>spec_block</i> are specified using a <i>name=value, name=value, ...</i> type construct with no constraints on the order of parameters. Constructs such as <i>name1=value1, name2=, name3=, name4=, name5=value5, ...</i> are acceptable and in this example only the parameters <i>name1</i> and <i>name5</i> will be changed at the network element. If the current value of the parameter <i>name1</i> is already <i>value1</i> in the above example, <i>name1</i> will not be changed. |

For the **ENT-NE-SECU** command, the *spec\_block* may contain one or more of the following parameters:

**ALW\_UID** Allow non-privileged user access. This parameter allows or disallows non-privileged user access to the network element. If included in the *spec\_block*, it can take the following values.

**yes** This indicates that non-privileged users may access the network element.

**no** This indicates that non-privileged users may **not** access the network element.

When non-privileged user logins are disallowed using this command, any currently active non-privileged user session will be disconnected immediately.

**PAGE** Password Aging Interval. This parameter specifies the period in days after which the user has to change the password of his or her account. It can take a value between **7** and **999**, or **0**. A **0** value disables the password aging mechanism.

**UOUT** UID Aging Interval. This parameter specifies the period in days during which a user had to login at least once to retain the login. At the end of this interval, the UID is disabled if during this interval it has never been used to set up a session. It can take a value between **7** and **999**, or **0**. A **0** value disables the login aging mechanism.

If the *spec\_block* is null, the currently effective attributes at the network element prevail.

## OUTPUT FORMAT

If the network element fully complies with the **ENT-NE-SECU** request, the following normal completion response is returned.

```
IP ctag
<

    sid date time
M  ctag COMPLD
;
```

If the **ENT-NE-SECU** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT-NE-SECU** command.

## EXAMPLE INPUT/OUTPUT

The following example shows an **ENT-NE-SECU** command that provisions the network element security parameters.

**ent-ne-secu:LT-PF-2000::CTAG::ALW\_UID=Yes,PAGE=60,UOUT=90;**

```
IP CTAG
<

    LT-PF-2000 93-10-26 16:42:11
M  CTAG COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **ENT-NE-SECU** command.

If an **ENT-NE-SECU** command is received with an invalid *alw\_uid* parameter, the following error response is returned:

```
      sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid ALW_UID */
;
```

If an **ENT-NE-SECU** command is received with an invalid *page* parameter, the following error response is returned:

```
      sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid PAGE */
;
```



If an **ENT-NE-SECU** command is received with an invalid *uout* parameter, the following error response is returned:

```
      sid date time
M  ctag  DENY
   IDNV
/* Input, Data Not Valid, invalid UOUT */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-NE-SECU**

## NAME

**ENT-PROT-rr**: Enter Tributary Level Protection Access

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**ENT-PROT**-*modifier*:*tid*:*aid*:*ctag*[::*spec\_block*];

## DESCRIPTION

**ENT-PROT-rr** commands can be initiated by users to alter the value of tributary level protection access attribute and hence create tributary level non-preemptible protection access requests.

## INPUT PARAMETERS

*modifier* This is a signal level modifier for the **ENT-PROT-rr** message and may have the following values:

**STS3** This specifies an STS-3 level protection access request.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access Identifier. This is the address of the tributary for which protection access is desired. The *aid* must be the address of a protection STS-1 or STS-3 tributary.

Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in the network element. The use of the **all** construct within the *aid* value is prohibited for this command.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*spec\_block* Specific Parameter Block. This parameter field is used to enter the new desired value of the protection access attribute associated with the input tributary *aid*. Parameters within the *spec\_block* are specified using a name defined construct of: **PARAMETER=value** in a comma separated list.

For the **ENT-PROT-rr** command, the *spec\_block* may contain only the following parameter.

**PROTACC** Protection Access State Attribute Value. This parameter can take the following values:

*preemptible*

This is the normal value of this attribute and implies that the service tributary associated with *aid* (that is, the service trib with the same number) will be protected in the case of high speed line failures.

*temporary* This value of the attribute implies that the service tributary associated with *aid* will be **NOT** protected in the case of high speed line failures. A condition will be reported by the system to reflect this fact.

*permanent* This value of the attribute implies that the service tributary associated with *aid* will be **NOT** protected in the case of high speed line failures. No condition will be reported by the system in this case.

## OUTPUT FORMAT

If the network element fully complies with the **ENT-PROT-rr** request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the **ENT-PROT-rr** command does not alter the protection access attribute of the input tributary, the network element provides a normal completion response.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **ENT-PROT-rr** command, also.

## EXAMPLE INPUT/OUTPUT

The following example establishes a permanent protection access request on a STS-3 tributary.

```
ENT-PROT-STS3:LT-PF-2000:sts3-1e-13:123456:::PROTACC=permanent;
```

```
IP 123456  
<
```

```
LT-PF-2000 97-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error response section. The error responses listed there also apply to the **ENT-PROT-rr** command.

If the network element receives an **ENT-PROT-rr** command without an *aid* value, or with an *aid* that is not for a single STS-3 tributary or that is for a service tributary, the following error response is returned:

```
sid date time  
M ctag DENY  
IIAC  
/* Input, Invalid Access Identifier, AID missing or  
inconsistent with modifier value */  
;
```

If the network element receives an **ENT-PROT-rr** command with an invalid **PROTACC** value, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid PROTACC */
;
```

If a valid **ENT-PROT-rr** command is received while there is an active high speed switch request, the following error response is returned:

```

sid date time
M ctag DENY
  SSRD
  /* Status, Switch Request Denied, high speed switch request exists */
;
```

If a valid **ENT-PROT-rr** command is received but cannot be honored due to a failure to signal the protection access request throughout the local ring via the DCC, the following error response is returned:

```
sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied, request not signaled due to DCC failure */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-PROT-rr**

**RTRV-STATE**

## NAME

**ENT-PROTN-LINE:** Enter Protection Line.

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**ENT-PROTN-LINE:** *tid::ctag[:wtr];*

## DESCRIPTION

This command can be initiated by users to specify the wait-to-restore line protection switching characteristic for the network element.



### CAUTION:

*Execution of this command may affect service.*

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                          |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                  |
| <i>wtr</i>  | Wait To Restore. This specifies the amount of time that will transpire between when the defect that caused the line protection switch is cleared and when the line protection switch is released. The format for this parameter is " <b>WTR=wtr</b> ". |

If specified, its value must be between **0** and **12** minutes, inclusive. A value of **0** disables the wait-to-restore feature. If a null value is provided, *wtr* is unchanged. If the Wait To Restore parameter is changed while a line is in a Wait To Restore period, the new Wait To Restore value does not affect the current timer. The new Wait To Restore value becomes effective when a subsequent Wait To Restore period begins.

## OUTPUT FORMAT

If the network element fully complies with this command request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to this command.

## EXAMPLE INPUT/OUTPUT

The following example specifies the line protection switching characteristics.

```
ENT-PROTN-LINE:LT-PF-2000::123456::WTR=5;
```

```
IP 123456
<
```

```
LT-PF-2000 98-10-26 16:42:11
M 123456 COMPLD
;
```



## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there also apply to this command.

If the network element receives an **ENT-PROTN-LINE** command with an invalid *wtr* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid WTR */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-PROTN-LINE**

## NAME

**ENT-PROTN-LS:** Enter Protection Low Speed.

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**ENT-PROTN-LS:** *tid::ctag[::wtr];*

## DESCRIPTION

This command can be initiated by users to specify the wait-to-restore low speed protection switching characteristic for the network element.



### CAUTION:

*Execution of this command may affect service.*

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>wtr</i>  | <p>Wait To Restore. This specifies the amount of time that will transpire between when the defect that caused the low speed protection switch is cleared and when the low speed protection switch is released. The format for this parameter is "<b>WTR=wtr</b>".</p> <p>If specified, its value must be between <b>0</b> and <b>12</b> minutes, inclusive. A value of <b>0</b> disables the wait-to-restore feature. If a null value is provided, <i>wtr</i> is unchanged.</p> <p>If the Wait To Restore parameter is changed while a low speed interface is in a Wait To Restore period, the new Wait To Restore value does not affect the current timer. The new Wait To Restore value becomes effective when a subsequent Wait To Restore period begins.</p> |

## OUTPUT FORMAT

If the network element fully complies with this command request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to this command.

## EXAMPLE INPUT/OUTPUT

The following example specifies the low speed protection switching characteristics.

```
ENT-PROTN-LS:LT-PF-2000::123456::WTR=5;

IP 123456
<

LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to this command. If the network element receives an **ENT-PROTN-LS** command with an invalid *wtr* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid WTR */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-PROTN-LS**

## NAME

**ENT-ROLL-rr:** Enter Roll rr

This command is available in FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Releases 5.0 and later:

**ENT-ROLL-**

*modifier:tid:src\_aid,dest\_aid:ctag:new\_src\_aid:[cct]:spec\_block[:pst[,sst]];*

For Release 4.1:

**ENT-ROLL-**

*modifier:[tid]:src\_aid,dest\_aid:ctag:new\_src\_aid:[cct]:spec\_block[:pst[,sst]];*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Release 4.1, throughout this TL1 command description, the use of the term "low speed interface" implies a single slot when referring to slots equipped with DS3 or STS1E low speed circuit packs.

For Releases 5.0 and 6.0, throughout this TL1 command description, the use of the term "low speed interface" implies a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

For Release 7.0, throughout this TL1 command description, the use of the term "low speed interface" implies

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 tributary within the OC-3 when referring to slots equipped with OC3 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, OC3, or OC12 low speed circuit packs.

For Releases 7.1 and later, throughout this TL1 command description the use of the term "low speed interface" implies

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 or STS-3 tributary within the OC-3 or IS-3 when referring to slots equipped with OC3 or IS3 low speed circuit packs, or
- a single STS-1 or STS-3 tributary within the OC-12 when referring to slots equipped with OC12 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, OC3, IS3 or OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, for example, STS-3 or STS-1.

**ENT-ROLL-rr** command messages can be initiated by an OS or OS users to request FT-2000 to roll cross-connections by dropping a previously established cross-connection and establishing a cross-connection with the same destination in the FT-2000 OC-48 Add/Drop-Rings Terminal for 2-Fiber Rings without dropping service. Cross-connections can be 1-way or 1-way Dual Ring Interworking (DRI) only. The 1-way cross-connection may have originally been established as half of a 2-way cross-connection.

The user is advised to be aware that in the context used here, the terminology "dropping service" is intended to mean that if the new cross-connection established as a result of this command provides valid circuit connectivity via the source and destination addresses, then the roll of the cross-connection does not drop service. There may, however, be a small service interruption for the duration of the required cross-connection switch.

The **ENT-ROLL-rr** can be used for multiple reasons:

- a. The operation of ring circuit reconfiguration can make use of the **ENT-ROLL-rr** command to modify existing ring cross-connections, without dropping service. That is, the command may be used to roll an "add" cross-connection to a "through", or vice-versa. One may roll from one "drop" cross-connection to another, using a different line tributary as the cross-connection source. Also one may roll from one "add" cross-connection to another, using a different low speed interface as the cross-connection source.
- b. To update the cross-connection type to establish or disable Dual Ring Interworking (DRI) functionality (see DRI description, below). That is, if the provisioned cross-connection is a simple **1WAY** "add" from a low speed interface to a line tributary, it can be changed to a DRI type of cross-connection (**1WAYDRI**; see *cct* field description, below). Thus, the change can be made without dropping service carried via the cross-connection.

Similarly, a DRI type of cross-connection can be rolled to a simple 1-way "add" cross-connection with the same low speed interface source and line tributary destination.

- c. To update an active secondary DRI "through" cross-connection to a simple 1-way "through" cross-connection (removing the DRI cross-connection completely, including the primary DRI "add" cross-connection in standby).

- d. To update a simple through cross-connection to a DRI cross-connection in which the primary DRI "add" cross-connection is established as active, and the secondary DRI "through" cross-connection is established as standby.

FT-2000 also supports basic ring interworking capabilities and provisioning for interconnecting FT-2000 Bidirectional Line Switched Rings (BLSRs).

Refer to the ENT-CRS-rr command description for details on the restrictions for DRI in the FT-2000 Add/Drop Rings Terminal for 2-fiber rings and in the FT-2000 Large Capacity Terminal for 4-fiber open/closed rings.

The following requirements apply to entering cross-connections to/from low speed interface pairs operating in the 1+1 protection mode.

Low speed interface pairs are defined to be low speed interfaces (1A,1B), (2A,2B), (3A,3B), etc.

A low speed interface pair will operate in a 1+1 protected mode when both low speed interfaces are provisioned to operate in a "1+1" configuration, both low speed interfaces are in the EQ/OC-3 (or equivalent optical circuit pack) state, and the low speed interfaces are **not** individually cross-connected to two or more different tributaries.

To roll a cross-connection to/from a 1+1 protected low speed interface pair, either low speed interface A or slot B of the low speed interface pair may be specified. The cross-connection is rolled regardless which low speed interface the user used when entering the cross-connection or which cross-connection is currently the **active** cross-connection.

When a 1-way cross-connection is rolled from a 1+1 protected low speed interface pair, both the active and standby cross-connections from the low speed interface pair are rolled.

When a 1-way-dri cross-connection is rolled from a 1+1 protected low speed interface pair, both cross-connections from the low speed interface pair and the through cross-connection are rolled.

When FT-2000 receives an **ENT-ROLL-rr** command, FT-2000 will roll to the appropriate line tributary cross-connection according to the parameter settings in the command.

The established cross-connections remain in effect until modified (for example, by another TL1 command DLT-CRS-rr, or **ENT-ROLL-rr**, or by the appropriate FT-2000 PC-CIT command).

If a DRI cross-connection is being rolled over to another cross-connection and the DRI path protection switch is in the auto (AUTO) or manual (MAN) state, FT-2000 will first automatically reset the switch (with interface notifications, as

appropriate, for example, an autonomous REPT EVT message is sent to the OS via TL1), "**before**" performing the cross-connection roll. This is not meant to imply more than one service interruption due to the DRI switch.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is the message modifier and may only have the following value: <b>STS3</b> or <b>STS1</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>STS3</b>     | <p>This specifies that an STS-3 line tributary cross-connection be established.</p> <p>For Releases 7.0 and later:</p> <p>For a non-STs-1 ring node, this specifies that an STS-3 line tributary cross-connection be established. For an STS-1 capable ring node, this specifies that an STS-3 line tributary's three constituent STS-1 line tributaries' cross-connections be established.</p> <p>If this command is denied for any of the constituent STS-1 entities of the STS-3 entity specified by this command, then this command will be denied with the same error response as is used for the offending STS-1 entity.</p> |
| <b>STS1</b>     | <p>For Releases 7.0 and later:</p> <p>This specifies that an STS-1 line tributary cross-connection be established.</p> <p>For example, provisioning a third STS1-granular cross-connection next to two other STS1-granular cross-connections, such that an STS3-granular cross-connection is established, will result in the STS3-granular cross-connection being physically established and the alarms for the previously provisioned, but not established, STS1-granular cross-connections being cleared.</p>                                                                                                                    |
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>src_aid</i>  | Source access identifier. This is the current source address of the line tributary or low speed interface for which the <b>ENT-ROLL-rr</b> command is intended. It identifies the source address of the cross-connection to be taken down as a result of the <b>ENT-ROLL-rr</b> command.                                                                                                                                                                                                                                                                                                                                           |





**NOTE:**

For Release 4.1, the *all* construct is **not** supported in the **ENT-ROLL-rr** command.

Refer to Table 3-7 at the end of this section for a list of valid line tributary and low speed interface addresses.

If the current cross-connection being rolled over is a DRI cross-connection, the *src\_aid* "**must**" indicates the low speed interface used for the primary "add" cross-connection, regardless of the DRI path protection switching state.

*dest\_aid*

Destination access identifier. This is the destination address of the line tributary or low speed interface for which the **ENT-ROLL-rr** command is intended.



**NOTE:**

For Release 4.1, the *all* construct is **not** supported in the **ENT-ROLL-rr** command.

Refer to Table 3-7 at the end of this section for a list of valid line tributary and low speed interface addresses.

*ctag*

Correlation tag. This is included in the command by the OS or user and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages. Valid values for *ctag* include strings of up to 6 characters comprised of identifiers (alphanumerics begin with a letter) or decimal numerals (a string of decimal digits with an optional non-trailing ".").

*new\_src\_aid*

New source access identifier. This is the new source address of the line tributary or low speed interface for which the **ENT-ROLL-rr** command is intended.



**NOTE:**

For Release 4.1, the *all* construct is **not** supported in the **ENT-ROLL-rr** command.

It identifies the source address of the cross-connection to be established as a result of the **ENT-ROLL-rr** command.

Refer to Table 3-7 at the end of this section for a list of valid line tributary and low speed interface addresses.

*cct*

Cross-connection type. This parameter specifies the type of cross-connection being requested to be established and, for FT-2000, may be null or have one of the following values:

- 1WAY** This requests that a 1-way cross-connection between the source and destination be established (this is the original value value).
- 1WAYDRI** This requests that a 1-way cross-connection between the source and destination be established and that the cross-connection be used as the primary input at a ring interconnect node for DRI.

Because the *cct=1WAYDRI* cross-connection type is specific to the primary input point of a DRI circuit, one restriction on the *cct=1WAYDRI* is that the *new\_src\_aid* **must** indicate a low speed interface and the *dest\_aid* **must** indicate a line tributary.

Further, for proper ring protection and squelching of misconnections in the event of ring failures, the **LOCA** and **LOCZ** parameters defined below should identify the **last** nodes "touched" by the DRI circuit (that is, the secondary input node, which is the initial "add" point for this 1-way DRI path, and the 1-way DRI path terminating node).

Simultaneously, an **ENT-ROLL-rr** with a *cct* value of **1WAYDRI** also implicitly requests that a STANDBY 1-way cross-connection be established with the same *dest\_aid* of the line tributary named explicitly in the command **and** a *src\_aid* identifying the same numbered line tributary of the other line.

For DRI cross-connections, FT-2000 will automatically **switch** to this secondary STANDBY 1-way "through" cross-connection in the event that the primary node senses a failure in the signal entering the primary node from the low speed interface.

If the *cct* value is null, the original value value is used.

Two-way cross-connection rolls are not allowed in one command on FT-2000.

*spec\_block* Specific block. This parameter field is used for most basic capabilities of the **ENT-ROLL-rr** command, as specified in Bellcore TR-199, Issue 2. Parameters set within the specific block are positionally independent and are set using a construct such as *PARAMETER=value* in a comma-separated list. Furthermore, each parameter listed below may appear, at most, once within the specific block for a single **ENT-ROLL-rr** command.

For each of the parameters below there is listed one or more parameter values. The use of the term "null" in the descriptions below implies that the parameter does not appear in the command.

In accordance with the T1X1.5 Draft Standard on Bidirectional Line Switched Rings, in order for ring terminals to correctly switch traffic and/or "squench" potentially misconnected traffic in the event of multiple failures on the ring, the nodes at which a particular signal enters and exits the bidirectional line switched ring must be identified in the cross-connection matrix for the ring nodes. Therefore, the supporting cross-connection messages for 2-fiber bidirectional line switched rings must include identification of the signal entry and exit points on the ring for all nodes which are involved (have cross-connections established) in carrying the traffic through the ring. These two parameters are called **LOCA** and **LOCZ** and are defined below.

**LOCA** Ring location A. This parameter specifies the ring "source" terminal identifier (TID) and must be included in the **ENT-ROLL-rr** command if the *src\_aid* value indicates a line tributary or if the cross-connection type parameter value specifies a DRI cross-connection (*cct=1WAYDRI*). The value provided must be a valid TID value for a node on the ring subnetwork. If not, the command will be accepted but will result in an alarm due to this squench map inconsistency. The alarm can then be cleared once all squench map inconsistencies are cleared.

DRI cross-connections (**1WAYDRI**) must always include an explicit **LOCA** specification. This value is used as the "secondary" source node TID, providing the source ring location identifier for the **STANDBY** "through" cross-connection.

For Releases 7.0 and later:

Refer to the **RTRV-HDR INPUT PARAMETERS** section. The character set requirements for *tid* listed there apply to **LOCA** also.

**Important:**

In order to properly protect against service outages and/or misconnected traffic in the event of ring failures, the **LOCA** parameter must be set with the correct TID value of the ring source node.

If a DRI cross-connection is being established (which implicitly requests a STANDBY "through" cross-connection to be used to protect ring interconnectivity) for a line tributary, then the first node at which signals on that line tributary are added (the "secondary" DRI add node) must be specified to ensure proper ring protection switching operation.

If a **LOCA** value is provided for the new cross-connection resulting from the roll, and that value is in conflict with other cross-connections with the same line tributary *src\_aid* value, then the command will complete successfully and the **LOCA** value(s) for all other cross-connections with the same *src\_aid* value will be overwritten with the **LOCA** provided in **ENT-ROLL-rr** command.

The **LOCA** parameter value in the **ENT-ROLL-rr** command is always ignored for all cross-connections with a low speed interface as the source (excluding **1WAYDRI**), provided it is syntactically correct. The **LOCA** value in this case is always assumed to be the TID of the node establishing the cross-connection.

For Releases 7.0 and later, the **LOCA** parameter is not ignored for cross-connections with a low speed interface as the source because this parameter will be different from the TID of the node establishing the cross-connection for Limited STS-1 Granularity circuits.

**LOCZ** Ring location Z. This parameter specifies the ring "destination" terminal identifier (TID) and must be included in the **ENT-ROLL-rr** command if the *dest\_aid* value indicates a line tributary as the cross-connection destination. The value provided must be a valid TID value for a node on the ring subnetwork. If not, the command will be accepted but will result in an alarm due to this squelch map inconsistency. The alarm can then be cleared once all squelch map inconsistencies are cleared.

For Releases 7.0 and later:

Refer to the **RTRV-HDR INPUT PARAMETERS** section. The character set requirements for *tid* listed there apply to **LOCZ** also.

#### **Important**

In order to properly protect against service outages

and/or misconnected traffic in the event of ring failures, the **LOCZ** parameter must be set with the correct TID value of the ring destination node.

If the signal is bridged at one or more nodes, then the final node at which signals on that line tributary are terminated must be specified to ensure proper ring protection switching operation. This restriction also applies to DRI cross-connections. DRI cross-connections must always include an explicit **LOCZ** specification.

The **LOCZ** parameter value in the **ENT-ROLL-rr** command is always ignored for all cross-connections with a low speed interface as the destination, provided it is syntactically correct. The **LOCZ** value in this case is always assumed to be the TID of the node establishing the cross-connection.

The **LOCZ** parameter is not ignored for cross-connections with a low speed interface as the destination because this parameter will be different from the TID of the node establishing the cross-connection for Limited STS-1 Granularity circuits.

**EXTRA**

Extra traffic indicator. This parameter must be set to a value of *yes* in order for a successful cross-connection assignment of extra traffic to be completed. Otherwise, this parameter must be null.

**⇒ NOTE:**

FT-2000 supports cross-connections of extra traffic (for example, use of protection time slots in a 2-fiber ring). In the 2-fiber ring application, extra traffic is preemptible in the event of ring loopback protection switching. In the FT-2000 OC-48 Add/Drop Rings Terminal for 2-Fiber Rings, the protection time slots available for extra traffic are the 9th through the 16th STS-3 line tributaries on both the east and west-facing OC-48 lines.

*pst*

Primary state. The primary state parameter is position defined. This parameter is not used in the **ENT-ROLL-rr** command by FT-2000 and must be null. See the **ENT-rr** command description for details on setting the *pst* parameter value and the **RTRV-rr** command description for details on retrieving the current *pst* value.

*sst* Secondary State. The primary state parameter is position defined. This parameter is not used in the **ENT-ROLL-rr** command by FT-2000 and must be null. See the **RTRV-rr** command description for details on retrieving the current *sst* value.

## OUTPUT FORMAT

If FT-2000 fully complies with the cross-connection request, the following output message is returned to the OS:

```
sid date time  
M ctag COMPLD  
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

### EXAMPLE INPUT/OUTPUT

For Releases 7.0 and later, all the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

The following example rolls a 1-way (through) cross-connection between an STS-3 line tributary ("sts3-1w-6") as the source and an STS-3 line tributary ("sts3-1e-6") as the destination to a 1-way cross-connection with a low speed interface ("ls-7a") as the new source:

```
ent-roll-sts3:LT-FT-2000-3:sts3-1w-6,sts3-1e-6:123456:ls-7a::locz=att-ft-13;
```

```
IP 123456  
<
```

```
LT-FT-2000-3 93-11-26 16:42:11  
M 123456 COMPLD  
;
```

The following example rolls a 1-way (through) cross-connection between an STS-3 line tributary ("sts3-1w-8") as the source and an STS-3 line tributary ("sts3-1e-8") as the destination to a 1-way DRI primary cross-connection with a low speed interface ("ls-2b") as the new primary source and an STS-3 line tributary ("sts3-1w-8") as the secondary source:

```
ent-roll-sts3:LT-FT-2000-3:sts3-1w-8,sts3-1e-8:789abc:ls-2b:1WAYDRI:loca=LT-FT-2000-4,  
locz=lt-pt-2000-1;
```

```
IP 789abc  
<
```

```
LT-FT-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
;
```

The following example rolls a 1-way DRI primary cross-connection between a low speed interface ("ls-6b") as the source and an STS-3 line tributary ("sts3-1e-2") as the destination to a 1-way (add) cross-connection with a low speed interface ("ls-1b") as the new primary source:

```
ent-roll-sts3:LT-FT-2000-13:ls-6b,sts3-1e-2:789abc:ls-1b:1WAY:locz=lt-pt-2000-8;
```

```
IP 789abc  
<
```

```
LT-FT-2000-13 93-11-26 16:53:22  
M 789abc COMPLD  
;
```

The following example rolls a 1-way DRI cross-connection between the implied secondary DRI STS-3 line tributary ("sts3-1w-2"), as the source and an STS-3 line tributary ("sts3-1e-2") as the destination to a 1-way (through) cross-connection with an STS-3 line tributary ("sts3-1w-2") as the new source:

```
ent-roll-sts3:LT-FT-2000-13:ls-6b,sts3-1e-2:789abc:sts3-1w-2:1WAY:locz=lt-pt-2000-8;
```

```
IP 789abc  
<
```

```
LT-FT-2000-13 93-11-26 16:53:22  
M 789abc COMPLD  
;
```

⇒ **NOTE:**

When addressing a DRI cross-connection, the *src\_aid* used "**must**" always indicates a low speed interface and the roll of the cross-connection can be done regardless of the state of the DRI switch.



## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **ENT-ROLL-rr** command also.

If the network element receives an **ENT-ROLL-rr** command with the same parameter specified more than once, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, repeated parameter(s) */
;
```

If the network element receives an **ENT-ROLL-rr** command with a command code modifier other than **STS3**, the following error response is returned:

```
sid date time
M ctag DENY
IICM
/* Input, Invalid Command, modifier must be STS3 */
;
```

If the network element receives an **ENT-ROLL-rr** command without a *src\_aid*, *new\_src\_aid* or *dest\_aid* value or with a *src\_aid*, *new\_src\_aid*, or *dest\_aid* value that does not identify either a single line tributary or a single low speed interface, the following error response is returned to the OS:

```

sid date time
M ctag DENY
  IIAC
  /* Input, Invalid Access Identifier,
  Source or Destination AID missing or invalid
  */
;
```

If the network element receives an **ENT-ROLL-rr** command with a *pst* or *sst* value setting, the following error response is returned:

```

sid date time
M ctag DENY
  INUP
  /* Input, Non-null Unimplemented Parameter,
  PST and SST parameters not supported in FT-2000 ENT-ROLL-STS3 command
  */
;
```

If the network element receives an **ENT-ROLL-rr** command with a *pst* or *sst* value setting, the following error response is returned:

```

sid date time
M ctag DENY
  INUP
  /* Input, Non-null Unimplemented Parameter,
  This command does not support PST and SST parameters
  */
;
```

If the network element receives an **ENT-ROLL-rr** command with a *cct* value that is not supported by FT-2000, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data,
  CCT = 1WAY, 1WAYDRI or null (default: CCT = 1WAY)
  */
;
```

If the network element receives an **ENT-ROLL-rr** command with a *cct* value that is not supported by FT-2000, the following error response is returned:

```

    sid date time
M  ctag DENY
    IDNV
    /* Input, Data Not Valid, invalid CCT */
;

```

If the network element receives an **ENT-ROLL-rr** command syntactically incorrect *tid* value for either **LOCA** or **LOCZ**, the following error response is returned:

```

    sid date time
M  ctag DENY
    IISP
    /* Input, Invalid Syntax or Punctuation,
    LOCA and LOCZ values must use valid TID syntax */
;

```

If the network element receives an **ENT-ROLL-rr** command with a *EXTRA* value that is not supported by FT-2000, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an **ENT-ROLL-rr** command with a *EXTRA* value that is not supported by FT-2000, the following error response is returned:

```
sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data,
  EXTRA = YES or null (set ONLY for cross-connections of extra traffic)
  */
;
```

If the network element receives an **ENT-ROLL-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *src\_aid* or *new\_src\_aid* specifies a line tributary and no **LOCA** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LOCA */
;
```

If the network element receives an **ENT-ROLL-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *src\_aid* or *new\_src\_aid* specifies a line tributary and no **LOCA** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
no LOCA setting provided for STS-3 tributary source aid
*/
;
```

If the network element receives an **ENT-ROLL-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *dest\_aid* specifies a line tributary and no **LOCZ** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid LOCZ */
;
```

If the network element receives an **ENT-ROLL-rr** command with otherwise valid *spec\_block* parameter(s), but for which the *dest\_aid* specifies an STS-3 line tributary and no **LOCZ** parameter value is provided, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data,
no LOCZ setting provided for STS-3 tributary destination aid
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the *src\_aid* or *new\_src\_aid* and *dest\_aid* parameters values both specify low speed interfaces, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the *src\_aid* or *new\_src\_aid* and *dest\_aid* parameters values both specify low speed interfaces, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
Source and Destination AIDs both specify low speed slots
*/
;
```



If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the *src\_aid* or *new\_src\_aid* specifies a line tributary and the *dest\_aid* specifies a line tributary, and the tributary numbers for the two AIDs are not the same, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;
```

If FT-2000 receives an otherwise valid **ENT-ROLL-rr** command, but for which the *src\_aid* or *new\_src\_aid* specifies a line tributary that is identical to the *dest\_aid* line tributary, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC_AID or DEST_AID */
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the *src\_aid* or *new\_src\_aid* specifies a line tributary and the *dest\_aid* specifies a line tributary, and the tributary numbers for the two AIDs are not the same, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
TSA only, through tributary cross-connection Source and Destination AIDs
MUST specify same time slot
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command requesting a cross-connection assignment of extra traffic (that is, *new\_src\_aid* refers to a STS-3 line tributary in the range of STS-3 time slots 9 through 16 for 2-fiber, and pe- or pw-{1-16} for 4-fiber), but for which the *EXTRA* parameter value is not set to YES, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command requesting a cross-connection assignment of extra traffic (line tributary or tributaries specified are in the range of STS-3 time slots 9 through 16) but for which the *EXTRA* parameter value is not set to YES, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
attempting "extra traffic" cross-connection assignment,
override parameter value not set (EXTRA=YES)
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command requesting a normal cross-connection assignment of traffic (that is, *new\_src\_aid* refers to a STS-3 line tributary in the range of time slots 1 through 8 for 2-fiber, and 1e- or 1w-{1-16} for 4-fiber), but for which the *EXTRA* parameter value is set to YES, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid EXTRA */
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command requesting a normal cross-connection assignment of traffic (line tributary or tributaries specified are in the range of STS-3 time slots 1 through 8), but for which the *EXTRA* parameter value is set to YES, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
"EXTRA" parameter value MUST be null for normal cross-connection assignments
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the cross-connection cannot be made because the addressed *dest\_aid* (or *new\_src\_aid* in a 2WAY cross-connection request) is already involved in a different existing cross-connection, the following error response is returned:

```

sid date time
M ctag DENY
SACC
/* Status, Already Cross-Connected,
To establish a new cross-connection requires that the existing
cross-connections associated with the addressed low speed interface or
tributary be deleted or rolled.
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the **LOCA** and **LOCZ** parameters have not been defined, or the **LOCA** parameter does not refer to a TID other than the node at which the cross-connection is being requested, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid LOCA and/or LOCZ */
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the **LOCA** and **LOCZ** parameters have not been defined, or the **LOCA** parameter does not refer to a TID other than the node at which the cross-connection is being requested, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data,
LOCA and LOCZ must be specified for DRI add cross-connection
and LOCA must identify secondary ring interworking node.
*/
;
```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the *new\_src\_aid* does not specify a low speed interface, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid NEW_SRC_AID */
;

```

If the network element receives an otherwise valid **ENT-ROLL-rr** command, but for which the cross-connection cannot be made because *cct* value is **1WAYDRI** and the *src\_aid* does not specify a low speed interface, the following error response is returned:

```

sid date time
M ctag DENY
  IIDT
  /* Input, Invalid Data
  Source AID must indicate low speed slot for ring interworking
  primary node DRI cross-connections
  */
;

```

If the network element receives an **ENT-ROLL-rr** command when one of the following conditions is present:

- the LNCTL slot is in the AUTO state,
- the LNCTL has been removed, or
- the LNCTL has failed,

the following error response is returned:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed, LNCTL missing or failed */
;
```

If the network element receives an **ENT-ROLL-rr** command when the specified cross-connection does not exist, the cross-connection map is not changed and the following error response is returned:

```
sid date time
M ctag DENY
  SNCC
/* Status, Not Cross-Connected, SRC-AID not cross-connected */
;
```

If the network element receives an otherwise valid instance of this command, but for which the *modifier*, *src\_aid*, *new\_src\_aid*, and/or *dest\_aid* parameters values do not all identify entities which carry the same signal, the following error response is returned:

```

    sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid
   src_aid, new_src_aid, and/or dest_aid is inconsistent with modifier
   */
;

```

If the network element receives this command with a *modifier* other than **STS3**, the following error response is returned:

```

    sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid, invalid modifier */
;

```



If an otherwise valid **ENT-ROLL-rr** command is received by a network element which has any TRMTRs or RCVRs which are not STS1TSA capable, but for which the modifier is set to STS1, the following response is returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed,
specified modifier is not supported by the installed hardware.
This node's hardware does not support STS-1 granular
cross-connections.
*/
;
```

If this command requests a drop cross-connection to a Port(STS-1) whose associated low speed service slot has another drop cross-connection to one of its Port(STS-1), but from a different high-speed line, the following error response is returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed
1-way Drop cross-connections destined to low speed ports associated
with the same low speed slot must all drop from the same
high-speed line.
*/
;
```

## RELATED TL1 COMMANDS/MESSAGES

None

## NAME

**ENT - rr**: Enter Attributes for Transmission Object (port[s] or slot[s] or line[s]).

This command is available for FT-2000 OC-48 Releases 3.0 and later.

## INPUT FORMAT

**ENT - modifier:tid:aid:ctag:[gen\_block][:[type]  
[:[spec\_block][:pst[, sst]]]]];**

For Releases 5.0 and later:

**ENT - modifier:tid:aid:ctag:  
[gen\_block][:[type][:[spec\_block][:pst[, sst]]]]];**

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service. Alarm or maintenance thresholds also may be affected by this command.*

**ENT - rr** command messages can be initiated by an OS or OS users to request FT-2000 to provision various parameters of the FT-2000 low speed ports, and slots.

When FT-2000 receives an **ENT - rr** command from the OS, FT-2000 will provision the appropriate low speed port(s) or slot(s) according to the parameter settings in the command.

The low speed port and slot provisioned values remain active until modified (for example, by another TL1 command **ENT - rr** or by the appropriate FT-2000 CIT-PC command).

## INPUT PARAMETERS

- |                 |                                                                                                                                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is a message modifier to the <b>ENT - rr</b> message and may only have the following values:                                      |
| <b>EC1</b>      | This specifies port-related provisioning for ports that support electrical carrier signal level 1 facilities (also known as "STS-1E"). |
| <b>LS</b>       | This specifies slot-related provisioning <i>independently</i> of the type of facilities supported by equipment in those slots.         |
| <b>T3</b>       | This specifies port-related provisioning for ports that support DS3 level facilities.                                                  |

For Releases 5.0, and later:

This is a message modifier to the **ENT-rr** message and may only have the following values:

- EC1** This specifies port-related provisioning for ports that support electrical carrier signal level 1 facilities (also known as "STS-1E").
- LS** This specifies slot-related provisioning *independent* of the type of facilities supported by equipment in those slots.
- OC12** For Releases 7.1 and later:  
This specifies quad-related provisioning for quads that support optical carrier signal level 12 facilities.
- OC48** This specifies high speed line-related provisioning for lines that support optical carrier signal level 48 facilities.
- OC3** This specifies port-related provisioning for ports that support optical carrier signal level 3 facilities.
- STS1** This specifies port-related provisioning for ports that support path trace. Refer to the **ENT-STs1** TL1 command page for a complete description of the FT-2000 capabilities for signal path trace.
- T3** This specifies port-related provisioning for ports that support DS3 level facilities.



**NOTE:**

For Releases 4.1 and 5.0, Note that the use of the **LS** command modifier in this instance is "**not**" included in TR-199, Issue 2. FT-2000 supports this modifier however, as a user-friendly means of provisioning and retrieving low speed slot parameters.

*tid*

Target identifier. This is the name of the network element to which the command is addressed.

For Release 4.1, if no *tid* is given, the command is interpreted to be addressed to the Gateway Network Element (GNE) - the network element connected directly to the OS via an X.25 link.

*aid*

Access identifier. This is the address of the **T3** or **EC1** low speed port or slot, or **LS** slot for which the **ENT-rr** command is intended.

For Releases 7.1 and later, this is the address of the **T3**, **EC1**, **OC3** (IS-3) or **OC12** low speed port or slot, or **LS** slot, or **OC48** line for which the **ENT-rr** command is intended. The value for an **EC1** low speed *port* address must be **ALL**.

Refer to Table 3-7 at the end of this section for a list of valid low speed port and slot addresses.

Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in FT-2000. The FT-2000 *aid* structure, however, does allow for a narrowly focused commands or more widely encompassing, by allowing the use of the **all** construct within the input *aid*.

- ctag* Correlation tag. This is included in the command by the OS and is repeated by the network element in the response to allow the OS to associate the command and response messages.
- gen\_block* General block. This optional parameter field provides the capability to extend the usefulness of the **ENT-rr** command beyond the limits of those fields specified in Bellcore TR-199, Issue 1. For FT-2000 applications, the general block must be null.
- type* Type. This parameter must be be null for FT-2000.
- spec\_block* Specific block. This optional parameter field is used for most basic capabilities of the **ENT-rr** command, as specified in Bellcore TR-199, Issue 2. Parameters set within the specific block are positionally independent and are set using a construct such as **PARAMETER=value** in a comma-separated list. The specific block may have zero or more of the following parameters set within it. Furthermore, each parameter listed below may appear, at most, once within the specific block for a single **ENT-rr** command.

For each of the parameters below there is listed one or more parameter values. Unless stated otherwise, for each sub-list of values, the first entry is the network element original value which is used unless overridden through TL1 or PC-CIT provisioning. If a particular parameter does not appear in the *spec\_block*, its value remains unchanged as a result of the **ENT-rr** command. The use of the term "null" in the descriptions below, implies that the parameter does not appear in the command.

**FMT** DS3 format. This parameter may be used only when the *modifier* is **T3**. If included in the *spec\_block* at all, the **FMT** parameter must be set to **ASYN** for FT-2000.

**ASYN** All FT-2000 DS3 low speed interfaces operate in asynchronous, M13 format.

It is expected that, normally, the **FMT** parameter would not be explicitly set.

**LINECDE** DS3 line coding. This parameter may be used only when the *modifier* is **T3**. The value of the **LINECDE** parameter is used in combination with the values of the **OMODE**, and **PBIT** parameters to determine the FT-2000 VMR mode.

**⇒ NOTE:**

The allowed FT-2000 VMR modes are *Violation Monitor and Removal (VMR)*; *Violation Monitor only (VM)*; *Clear Channel with DS3 AIS insertion (CC w/ AIS)*; or *Clear Channel without DS3 AIS insertion (CC w/o AIS)*.

If included in the *spec\_block* at all, **LINECDE** may be set to one of the following values:

**B3ZS** Bipolar with 3 Zero Substitution. In order to operate the DS3 port(s) addressed by the *aid* monitoring P-bit violations (either VMR or VM mode), the **LINECDE** parameter must be set to B3ZS.

**CCHAN** Clear channel. In order to operate the DS3 port(s) addressed by the *aid* in clear channel mode (either CC w/ AIS or CC w/o AIS mode), the **LINECDE** parameter must be set to CCHAN.

**AU4MAP** AU4 Mapping. For Releases 7.1 and later, this parameter may be used only when the *modifier* is **OC3** or **OC12**. If included in the *spec\_block* at all, the **AU4MAP** parameter may be set to one of the following values:

**SONET** The S-bit in the output direction of the OC3 slot(s) or OC12 quad(s) addressed by the *aid* is set to "0". This indicates that the OC3 slot(s) is provisioned to carry OC-3 or OC-3c traffic or that the OC12 quad(s) is provisioned to carry OC-12 or OC-12c traffic.

**SDH** The S-bit in the output direction of the OC3 slot(s) or OC12 quad(s) addressed by the *aid* is set to "1". This indicates that the OC3 slot(s) or OC12 quad(s) is provisioned to carry AU4 traffic.

SONET is the default state for low speed slots and quads.

This parameter is also applicable for IS-3 slots when the *modifier* is **OC3**. SONET is the original value state for FT-2000 low speed slots.

For Releases 7.0 and later:

Starting in FT-2000 Release 7.0, setting the *AU4MAP* parameter to SONET also provisions the optical low speed interface to use the "SONET" compliant algorithm for protection switch state signaling using K2 bits 6-8. Setting the *AU4MAP* parameter to SDH also provisions the optical low speed interface to use the ITU compliant algorithm for protection switch state signaling using K2 bits 6-8.

**NTFCNCDE** Notification code. For Release 4.1, the **NTFCNCDE** parameter is used to set the alarm level of facility failures serviced by the addressed (*aid*) and may be used only when the *modifier* is **T3** or **EC1**.

For Releases 5.0, and later, the **NTFCNCDE** parameter is used to set the alarm level of facility failures serviced by the addressed (*aid*) and may be used only when the *modifier* is **T3**, **EC1**, or **OC3**.

The *NTFCNCDE* parameter sets the alarm level for Service Affecting (SA) conditions only.

For Releases 7.0 and later, if included in the *spec\_block* at all, **NTFCNCDE** may have one of the following values:

- CR** Critical. If provisioned as **CR**, a facility failure on the addressed port will result in an autonomous REPT ALM message with a notification code of CR being generated and sent to the user.
- MJ** Major. If provisioned as **MJ**, a facility failure on the addressed port will result in an autonomous REPT ALM message with a notification code of MJ being generated and sent to the user.
- MN** Minor. If provisioned as **MN**, a facility failure on the addressed port will result in an autonomous REPT ALM message with

**TL1 Command/Response Message**

a notification code of MN being generated and sent to the user.

**NA** Not alarmed. If provisioned as **NA**, a facility failure on the addressed port will result in an autonomous REPT EVT message being generated and sent to the user.

**NR** Not reported. If provisioned as **NR**, a facility failure on the addressed port will result in no autonomous message being generated and sent to the user. If this condition remains active when an appropriate **RTRV-COND** TL1 message is received by the network element, it will be reported in the response.

**NO** Not indicated. If provisioned as **NO**, a facility failure on the addressed port will result in no failure indication being generated whatsoever for the underlying failure condition. No report, autonomous or otherwise will be generated and sent to the user.

**FENTFCNCDE** For Releases 7.1 and later, this parameter is also applicable for IS-3 slots when the *modifier* is **OC3**.

**OC12FRMLGX** From OC12 Protection Mode. For Releases 7.1 and later, this parameter may be used only when the *modifier* is **OC12**.

If included in the *spec\_block* at all, the **OC12FRMLGX** parameter may be set to one of the following values:

**0x1** This sets the protection mode of the OC12 signal coming from the OC12 cross-connect to unprotected.

**1+1** This sets the protection mode of the OC12 signal coming from the OC12 cross-connect to 1+1 protected.

**0x1** is the default state for low speed quads.

**OC12TOLGX** From OC48 Protection Mode. For Releases 7.1 and later, this parameter may be used only when the *modifier* is **OC12**.

If included in the *spec\_block* at all, the **OC12TOLGX** parameter may be set to one of the following values:

- 0x1** This sets the protection mode of the OC12 signal going to the OC12 cross-connect to unprotected.
- 1+1** This sets the protection mode of the OC12 signal going to the OC12 cross-connect to 1+1 protected.

**0x1** is the default state for low speed quads.

**OC12TDIR** For Releases 7.1 and later, OC12 Timing Direction. This parameter may be used only when the *modifier* is **OC12**.

If included in the *spec\_block* at all, the **OC12TDIR** parameter may be set to one of the following values:

- 1W** This specifies that the OC12 quad gets its timing reference from 1W direction.
- 1E** This specifies that the OC12 quad gets its timing reference from 1E direction.

**SYNCMSG** For Releases 7.1 and later, Synchronization Messaging. This parameter determines whether synchronization messaging is provided on the optical interfaces. This parameter is only valid when the *modifier* is **OC48**, **OC12**, and **OC3**.

If included in the *spec\_block* at all, the **SYNCMSG** parameter may be set to one of the following values:

**ENABLED** This indicates that synchronization messages are to be transmitted on the optical interface identified by the *modifier*.

This is the initial value of **SYNCMSG** on all optical interfaces.

**DISABLED** This indicates that synchronization messages are not to be transmitted on the optical interface identified by the



*modifier*.

**OC3FRMLGX** From OC3 Protection Mode. For Releases 5.0 and 6.0, this parameter may be used only when the *modifier* is **OC3**.

If included in the *spec\_block* at all, the **OC3FRMLGX** parameter may be set to one of the following values:

- 0x1 This sets the protection mode of the OC3 signal coming from the OC3 cross-connection to unprotected.
- 1+1 This sets the protection mode of the OC3 signal coming from the OC3 cross-connection to 1+1 protected.

0x1 is the original value state for FT-2000 low speed slots.

**OC3TOLGX** From OC48 Protection Mode. For Releases 5.0 and 6.0, this parameter may be used only when the *modifier* is **OC3**.

If included in the *spec\_block* at all, the **OC3TOLGX** parameter may be set to one of the following values:

- 0x1 This sets the protection mode of the OC3 signal going to the OC3 cross-connection to unprotected.
- 1+1 This sets the protection mode of the OC3 signal going to the OC3 cross-connection to 1+1 protected.

0x1 is the original value state for FT-2000 low speed slots.

**OMODE** DS3 output mode. This parameter may be used only when the *modifier* is **T3**. The value of the **OMODE** parameter is used in combination with the values of the **PMMODE**, **LINECDE** and **PBIT** parameters to determine the FT-2000 VMR mode. **LINECDE** and **PBIT** parameters to determine the FT-2000 VMR mode.

If included in the *spec\_block* at all, **OMODE** may be set to one of the following values:

- NORM** In order to operate the DS3 port(s) addressed by the *aid* monitoring P-bit violations or in clear channel without AIS insertion (VMR, VM or CC w/o AIS), the **OMODE** parameter must be set to **NORM**.
- AIS** In order to operate the DS3 port(s) addressed by the *aid* in clear channel mode with DS3 AIS insertion (CC w/ AIS), the **OMODE** parameter must be set to **AIS**.

**PBIT** DS3 P-bit monitoring. This parameter may be used only when the *modifier* is **T3**. The value *PBIT* parameter is used in combination with the values of the *PMMODE*, *LINECDE* and *OMODE* parameters to determine the FT-2000 VMR mode.

If included in the *spec\_block* at all, *PBIT* may be set to one of the following values. *PMMODE*, *LINECDE* and *OMODE* must also be set (even if they do not change):

- ON** In order to operate the DS3 port(s) addressed by the *aid* monitoring and correcting P-bit violations (VMR), the **PBIT** parameter must be set to **ON**.
- OFF** In order to operate the DS3 port(s) addressed by the *aid* in monitoring P-bit violations or in clear channel (VM, CC w/ AIS or CC w/o AIS), the **PBIT** parameter must be set to **OFF**.

*PBIT*

Parity bit error correction.

For Releases 7.1 and later, this parameter may be used only when the *modifier* is **T3**.

The value *PBIT* parameter is used in combination with the

values of the *PMMODE*,  
*LINECDE* and *OMODE* parameters  
to determine the FT-2000 VMR mode.

.P

If included in the *spec\_block* at all,

*PBIT* may be set to one of the following values.  
*PMMODE*, *LINECDE* and *OMODE* must also be set  
(even if they do not change):

.VL 8

.LI **ON**

In order to operate the DS3 port(s) addressed by the *aid* monitoring and correcting parity violations (VMR),

the *PBIT* parameter must be set to **ON**.

.LI **OFF**

In order to operate the DS3 port(s) addressed by the *aid* in monitoring parity violations or in clear channel

(VM, CC w/ AIS or CC w/o AIS),

the *PBIT* parameter must be set to **OFF**.

.LE

*PMODE*

Performance Monitoring Mode. This parameter may be used only when the *modifier* is **T3**. The value of the *PMODE* parameter is used in combination with the values of the *LINECDE*, *OMODE*, and *PBIT* parameters to determine the FT-2000 VMR mode.

If included in the *spec\_block* at all, *PMODE* may be set to one of the following values and *LINECDE*, *PBIT*, and *OMODE* must also be set (even if they do not change):

**P** To use the P-Bit method of calculating DS3 parity errors, the *PMODE* parameter must be set to P.

**FM** To use the F&M Bit method of calculating DS3 parity errors, the *PMODE* must be set to FM.

Table 3-2 illustrates the valid combinations of *LINECDE*, *OMODE* and *PBIT* values used to set the four VMR modes of the FT-2000.

**Table 3-2. FT-2000 DS3 Port VMR Provisioning  
(using ENT - T3)**

| VMR Mode          | <i>LINECDE</i> | <i>OMODE</i> | <i>PBIT</i> |
|-------------------|----------------|--------------|-------------|
| <b>VMR</b>        | <b>B3ZS</b>    | <b>NORM</b>  | <b>ON</b>   |
| <b>VM</b>         | <b>B3ZS</b>    | <b>NORM</b>  | <b>OFF</b>  |
| <b>CC w/ AIS</b>  | <b>CCHAN</b>   | <b>AIS</b>   | <b>OFF</b>  |
| <b>CC w/o AIS</b> | <b>CCHAN</b>   | <b>NORM</b>  | <b>OFF</b>  |

Table 3-3 illustrates the valid combinations of *LINECDE*, *OMODE*, *PBIT*, *PMODE* values used to set the four VMR modes of the FT-2000.

**Table 3-3. Valid Combinations of *LINECDE*,  
*OMODE*, *PBIT*, *PMODE* to Set the Four  
VMR Modes**

| VMR Mode   | <i>LINECDE</i> | <i>OMODE</i> | <i>PBIT</i> | <i>PMODE</i> |
|------------|----------------|--------------|-------------|--------------|
| VMR (p)    | B3ZS           | NORM         | ON          | P            |
| VMR (fm)   | B3ZS           | NORM         | ON          | FM           |
| VM (p)     | B3ZS           | NORM         | OFF         | P            |
| VM (fm)    | B3ZS           | NORM         | OFF         | FM           |
| CC w/AIS   | CCHAN          | AIS          | OFF         | N/A          |
| CC w/o AIS | CCHAN          | NORM         | OFF         | N/A          |

**PRTY**

Protection switching priority. This parameter may be used only when the *modifier* value is **LS**, specifying a low speed slot.

If included in the *spec\_block* at all, **PRTY** may be set to one of the following values:

- 1 This sets the low speed switching priority of the addressed low speed slot to Low.
- 2 This sets the low speed switching priority of the addressed low speed slot to HIGH.

**SDTHR**

Signal degrade threshold.

For Releases 5.0 through 7.0:

This parameter is used to set the signal degrade threshold in terms of Bit Error Rate (BER) for the OC3, EC1 or DS3 port(s) addressed by the *aid* and may be used only when the *modifier* is **OC3**, **EC1** or **T3**.

If included in the *spec\_block* at all, **SDTHR** may have one of the following values:

- 6 This sets the signal degrade threshold at a BER of  $10^{-6}$ .
- 3 This sets the signal degrade threshold at a BER of  $10^{-3}$ .

For Releases 7.1 and later:

This parameter is used to set the signal degrade threshold in terms of Bit Error Rate (BER) for the OC48, OC12, OC3, IS3, EC1 or DS3 port(s) addressed by the *aid* and may be used only when the *modifier* is **OC48**, **OC12**, **OC3** (IS-3), **EC1** or **T3**.

The **SDTHR** parameter is also applicable for IS-3 slots when the *modifier* is **OC3**.

If included in the *spec\_block* at all, **SDTHR** may have one of the following values:

- 9 This sets the signal degrade threshold at a BER of  $10^{-9}$ . This value is applicable to optical interfaces only.

- 8 This sets the signal degrade threshold at a BER of  $10^{-8}$ . This value is applicable to optical interfaces only.
- 7 This sets the signal degrade threshold at a BER of  $10^{-7}$ . This value is applicable to optical interfaces only.
- 6 This sets the signal degrade threshold at a BER of  $10^{-6}$ . This value is applicable to all interfaces.
- 5 This sets the signal degrade threshold at a BER of  $10^{-5}$ . This value is applicable to optical interfaces only.
- 3 This sets the signal degrade threshold at a BER of  $10^{-3}$ . This value is applicable to electrical low speed interfaces only.

**pst**

Primary state. This parameter is used to set the primary state of the FT-2000 DS3 or EC-1 port(s) addressed by the *aid* field for the purpose of defining the signal monitoring state of the port in the *demux* (that is, from the OC-48 fiber toward the cross-connection) direction **only**. The primary state parameter is position defined.

FT-2000 allows for user provisioning of two basic states: AUTO and NMON. When an FT-2000 low speed port is provisioned in the AUTO state, it will automatically transition to the in-service (IS) state upon any detection on the low speed port of a valid input in the *demux* direction. AUTO is the original value state for FT-2000 low speed ports. When an FT-2000 low speed port *pst* is provisioned in the NMON state, the monitoring of incoming signals is disabled in the *demux* direction. The port exits this state to the AUTO state through either another ENT-rr command or via the appropriate CIT command (for example, SET-STATE-rr or UPDATE). The *pst* may be null or have one of the following two values:

**OOS-MA-AS** Out of service, memory administration, assigned. This *pst* value places the port(s) in the AUTO state (in the terminology of FT-2000). This is the original value *pst* value.

**00S** Out of service ("*for Memory Administration*" implied). This *pst* value places the port(s) in the NMON state (in the terminology of FT-2000).

A (nonprovisionable) third primary port state is supported by FT-2000, **IS** ("in service"). FT-2000 low speed ports in the AUTO will automatically transition to the IS state upon detecting a valid incoming signal (from the OC-48 fiber) of the facility type they support.

**sst** Secondary state. This parameter is used to set the secondary state of the FT-2000 DS3 or EC-1 port(s) addressed by the *aid* field for the purpose of defining the signal monitoring state of the port in the *mux* (that is, from the cross-connection toward the OC-48 fiber) direction **only**. The secondary state parameter is position defined.

FT-2000 allows for user provisioning of two basic states: AUTO and NMON. When an FT-2000 low speed port *sst* is provisioned in the AUTO state, it will automatically transition to the in-service (IS) state upon any detection on the low speed port of a valid input in the *mux* direction. AUTO is the original value state for FT-2000 low speed ports. When an FT-2000 low speed port *sst* is provisioned in the NMON state, the monitoring of incoming signals is disabled in the *mux* direction. The port exits this state to the AUTO state through either another **ENT-rr** command or via the appropriate CIT command (for example, **SET-STATE-rr** or **UPDATE**). The *sst* may be null or have one of the following two values:

**00S-MA-AS** Out of service, memory administration, assigned. This *sst* value places the port(s) in the AUTO state (in the terminology of FT-2000). This is the original value *sst* value.

**00S** Out of service ("*for Memory Administration*" implied). This *sst* value places the port(s) in the NMON state (in the terminology of FT-2000).

A (nonprovisionable) third primary port state is supported by FT-2000, **IS** ("in service"). FT-2000 low speed ports in the AUTO will automatically transition to the IS state upon detecting a valid incoming signal (from the cross-connection) of the facility type they support.

## OUTPUT FORMAT

If the network element fully complies with the provisioning request, the following output message is returned to the OS:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

|             |                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier (or Target identifier, <i>tid</i> ). This is the system name.                                                                                                |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                               |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                                        |
| M           | This indicates the output message is generated in response to a manual command.                                                                                                |
| <i>ctag</i> | Correlation tag. This is included in the command by the OS and repeated by the network element in the response to allow the OS to associate the command and response messages. |
| COMPLD      | This indicates that the command has been completed.                                                                                                                            |



## EXAMPLE OUTPUT

The following example sets the FT-2000 low speed (DS3) port "ls-7a-1" provisioning as follows:

- Signal Degrade Threshold of  $10^{-3}$
- DS3 Failure Alarm Level of MN
- VMR Mode of CC w/o AIS
- Primary State of NMON
- Secondary State of NMON.

```
ent-t3:LT-FT-2000:ls-7a-1:123456::SDTHR=-3,NTFCNCDE=MN,
PBIT=off,omode=norm,Linecde=CChan:oos,oos;
```

```
IP 123456
<
```

```
LT-FT-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

The following example sets the FT-2000 low speed (EC1) slot "ls-2b" provisioning as follows:

- Protection Switching Priority of HIGH

```
ent-ls:LT-FT-2000:ls-2b:7890AbC:::PRTY=2;
```

```
IP 7890AbC
<
```

```
LT-FT-2000 93-10-26 16:45:23
M 7890AbC COMPLD
;
```

For Release 5.0:

The following example sets the low speed (OC3) slot "ls-7a" provisioning as follows:

- Signal Degrade Threshold of  $10^{-8}$
- OC3 Failure Alarm Level of **MJ**
- **1+1** protection mode in the transmit (from OC-48) direction
- **1+1** protection mode in the receive (from OC-3) direction.

```
ent-oc3:LT-PF2000:ls-7a:123456:::SDTHR=-8,NTFCNCDE=MJ,  
OC3FRMLGX=1+1,OC3TOLGX=1+1;
```

```
IP 123456  
<
```

```
LT-PF2000 94-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Release 6.0:

The following example sets the low speed (OC3) slot "ls-7a" provisioning as follows:

- Signal Degrade Threshold of  $10^{-8}$
- OC3 Failure Alarm Level of **NO**
- **1+1** protection mode in the transmit (from OC-48) direction
- **1+1** protection mode in the receive (from OC-3) direction.

```
ent-oc3:LT-PF2000:ls-7a:123456:::SDTHR=-8,NTFCNCDE=NO,  
OC3FRMLGX=1+1,OC3TOLGX=1+1;
```

```
IP 123456  
<
```

```
LT-PF2000 95-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Release 7.1:

The following example sets the low speed (OC12) quad "ls-7b" provisioning as follows:

- Signal Degrade Threshold of  $10^{-8}$
- **1+1** protection mode in the transmit (from OC-48) direction
- **1+1** protection mode in the receive (from OC-12) direction
- OC12 Timing Direction of **1E**
- Disables transmission of synchronization messages on the OC-12 interface
- A port state of NMON in the add (from OC-12) direction.

```
ent-oc12:LT-PF2000:ls-7b:123456:::SDTHR=-8,OC12FRMLGX=1+1,  
OC12TOLGX=1+1,OC12TDIR=1E,SYNCMSG=DISABLED:,OOS;
```

```
IP 123456  
<
```

```
LT-PF2000 97-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The requirements listed there also apply to the **ENT-rr** command.

In addition to the non-message-specific error responses listed in the **RTRV-HDR ERROR RESPONSES** description, the following error responses are listed in the order and priority that the network element checks for each condition.

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (not supported by FT-2000, delimited by ","), or termination characters (;), the following error response is returned:

```

sid date time
M ctag DENY
  IISP
  /* Input, Invalid Syntax or Punctuation */
;
```

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with the same parameter specified more than once, the following error response is returned:

```

sid date time
M ctag DENY
  IISP
  /* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with a command code modifier other than **EC1**, **LS**, or **T3**, the following error response is returned:

```

sid date time
M ctag DENY
IICM
/* Input, Invalid Command, modifier must be EC1, LS or T3 */
;
```

For Releases 4.1 and later:

If FT-2000 receives an **ENT-rr** command without an *aid* value or with an *aid* value that is invalid for the *modifier* provided, the following error response is returned:

```

sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier, AID missing or
inconsistent with modifier value */
;
```

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with a *type* value that is other than null, the following error response is returned:

```
sid date time
M ctag DENY
  INUP
  /* Input, Non-null Unimplemented Parameter, TYPE must be null */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *NTFCNCDE* value that is not supported by network element, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid NTFCNCDE */
;
```

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with a NTFNCNDE value that is not supported by network element, the following error response is returned:

```

      sid date time
M    ctag DENY
      IIDT
      /* Input, Invalid Data, NTFNCNDE = CR, MJ, MN, NA, NR or null */
      ;

```

For Releases 6.0 through 7.0:

If the network element receives an **ENT-rr** command with a NTFNCNDE value of **NO** but the modifier is not **OC3**, the following error response is returned:

```

      sid date time
M    ctag DENY
      IDNV
      /* Input, Data Not Valid, NTFNCNDE inconsistent with modifier */
      ;

```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *SDTHR* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SDTHR */
;
```

For Releases 4.1 and later:

If the network element receives an **ENT-rr** command with a *SDTHR* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IIDT
/* Input, Invalid Data, SDTHR = -6, -3 or null */
;
```



If the network element receives an **ENT-rr** command with a *FMT* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, FMT = ASYNC or null */
;
```

If the network element receives an **ENT-rr** command with a *LINECDE* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, LINECDE = B3ZS, CCHAN or null */
;
```

If the network element receives an **ENT-rr** command with a *OMODE* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, OMODE = NORM, AIS or null */
;
```

If the network element receives an **ENT-rr** command with a *PBIT* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, PBIT = ON, OFF or null */
;
```

If the network element receives an **ENT-rr** command with a *PRTY* value that is not supported by the network element, the following error response is returned:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, PRTY = 1, 2 or null */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *FMT* value that is not supported by the network element, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid FMT */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *LINECDE* value that is not supported by the network element, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LINECDE */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *OMODE* value that is not supported by the network element, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid OMODE */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *PBIT* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PBIT */
;
```

For Releases 7.1 and later:

If the network element receives an **ENT-rr** command with a *PMODE* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PMODE */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *PRTY* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PRTY */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *primary state* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PST */
;
```

If the network element receives an **ENT-rr** command with a *primary state* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, PST = OOS-MA-AS, OOS or null */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with a *secondary state* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SST */
;
```

If the network element receives an **ENT-rr** command with a *secondary state* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, SST = OOS-MA-AS, OOS or null */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with otherwise valid *spec\_block* parameter(s), but for which, the *modifier* and parameter are not in agreement, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, parameter settings inconsistent with
modifier value */
;
```



If the network element receives an **ENT-rr** command with otherwise valid *spec\_block* parameter(s), but for which, the *modifier* and parameter are not in agreement, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, parameter settings inconsistent with
modifier value */
;
```

If the network element receives an **ENT-LS** command with non-null *pst* and/or *sst* parameter(s), the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, parameter settings inconsistent with
modifier value */
;
```

If the network element receives an **ENT-T3** command with otherwise valid *spec\_block* parameter(s), but for which, the *LINECDE*, *OMODE* and *PBIT* parameter values are incompatible in setting the DS3 port VMR mode, the following error response is returned:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data, incompatible VMR setting (LINECDE, OMODE, PBIT) */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-T3** command with otherwise valid *spec\_block* parameter(s), but for which, the *LINECDE*, *OMODE* and *PBIT* parameter values are incompatible in setting the DS3 port VMR mode, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid VMR setting */
;
```

If the network element receives an **ENT-T3** command with a *PTHRFICDE* value that is not supported by network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PTHRFIGDE */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with an *OC3TOLGX* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid OC3TOLGX */
;
```

For Releases 7.1 and later:

If the network element receives an **ENT-rr** command with an *OC12TOLGX* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid OC12TOLGX */
;
```

For Releases 7.1 and later:

If the network element receives an **ENT-rr** command with an *OC12TDIR* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid OC12TDIR */
;
```

For Releases 7.1 and later:

If the network element receives an **ENT-rr** command with an *SYNCSMSG* value that is not supported by the network element, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid SYNCSMSG */
;

```

If the network element receives an **ENT-LS** or **ENT-OC3** command with non-null *pst* and/or *sst* parameter(s), the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, parameter settings inconsistent with
      modifier value */
;

```

For Releases 7.1 and later:

If the network element receives an **ENT-OC3** or an **ENT-OC12** command with a non-null *pst* parameter, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, parameter settings inconsistent with
  modifier value */
;
```

For Releases 7.1 and later:

If the network element receives an **ENT-LS** or **ENT-OC48** command with non-null *pst* and/or *sst* parameter(s), the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, parameter settings inconsistent with
  modifier value */
;
```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with an *AU4MAP* value that is not supported by the network element, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid AU4MAP */
;

```

For Releases 5.0 and later:

If the network element receives an **ENT-rr** command with an *OC3FRMLGX* value that is not supported by the network element, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid OC3FRMLGX */
;

```

For Releases 7.1 and later:

If the network element receives an **ENT-rr** command with an *OC12FRMLGX* value that is not supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid OC12FRMLGX */
;
```

## RELATED TL1 COMMANDS/MESSAGES

RTRV-rr



## NAME

**ENT-STS1:** Enter STS1 (Path Trace)

This command is available for FT-2000 OC-48 Releases 6.0, and later.

## INPUT FORMAT

```
ENT-modifier:tid:aid:ctag[:[gen_block]
[:[type]:[spec_block][:pst[,sst]]]]];
```

## DESCRIPTION

**ENT-STS1** commands can be initiated by users to assign user-settable strings to the transmit and expected receive path trace fields (J1 byte) of a SONET path terminating signal.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **ENT-rr** message and may have either the following value or one of the *modifier* values valid for the **ENT-rr** message.

**STS1** This specifies port-related provisioning for ports that support path trace.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the DS3 signal for which the path trace is to be assigned.

Refer to Table 3-7 at the end of this section for a list of valid *port* addresses.



### NOTE:

Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in the network element. The network element's *aid* structure, however, does allow for a narrowly focused command (single slot selectivity) or a more widely encompassing command, by allowing the use of the **all** construct within the input *aid*.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*gen\_block* General block. This optional parameter field provides the capability to extend the usefulness of the **ENT-STS1** command beyond the limits of those fields specified in Bellcore TR-199, Issue 2.

The general block must be null.

*type* Type. This parameter must be null.

*spec\_block* Specific parameter block. This parameter field is used to enter the user-settable strings to the transmit and receive path trace fields of a SONET path terminating signal. Parameters within the *spec\_block* are specified using a name defined construct of **PARAMETER=value** in a comma separated list.

For the **ENT-STS1** command, the *spec\_block* may contain zero or more of the following parameters:

Furthermore, each parameter listed below may appear, at most, once within the *spec\_block* for a single **ENT-STS1** command.

**EXPTRC** Expected incoming path trace message. This indicates the expected path trace (J1) byte content. The **EXPTRC** is a string of up to 62 ASCII alphanumeric and special characters as specified below.

An **EXPTRC** of less than 62 characters is padded out to the right to 62 characters with HEX 00 (null) characters.

A null value of **EXPTRC**, such as **EXPTRC=**, original values to the network element transmitting 62 HEX 00 (null) characters.

The user is allowed to enter any combination of up to 62 ASCII characters as the **EXPTRC**. The allowed ASCII characters are letters "A" through "Z" and "a" through "z", numbers "0" through "9", and special characters: "#" (pound), "\$" (dollar), "%" (percent), "&" (ampersand), "\*" (asterisk), "(" (open parenthesis), ")" (close parenthesis), "+" (plus), "|" (pipe), "-" (hyphen), "[" (open square bracket), "]" (close square bracket), "{" (open bracket), "}" (close bracket), "'" (apostrophe), "" (grave accent), "." (period), "/" (slash), "<" (less than), and ">" (greater than).

**TRC** Outgoing Path trace message. This identifies the path trace message to be transmitted. The **TRC** is a string of up to 62 ASCII alphanumeric and special characters as specified below.

A **TRC** of less than 62 characters is padded out to the right to 62 characters with HEX 00 (null) characters.

A null value of **TRC**, such as **TRC=**, results in no change to the previously provisioned value.

The user is allowed to enter any combination of up to 62 ASCII characters as the **TRC**. The allowed ASCII characters are letters "A" through "Z" and "a" through "z", numbers "0" through "9", and special characters: "#" (pound), "\$" (dollar), "%" (percent), "&" (ampersand), "\*" (asterisk), "(" (open parenthesis), ")" (close parenthesis), "+" (plus), "|" (pipe), "-" (hyphen), "[" (open square bracket), "]" (close square bracket), "{" (open bracket), "}" (close bracket), "'" (apostrophe), "" (grave accent), "." (period), "/" (slash), "<" (less than), and ">" (greater than).

If there is no *spec\_block* entry, the currently effective path trace strings provisioned in the network element prevail.

*pst* Primary state. This parameter must be be null.

*sst* Secondary state. This parameter must be be null.

## OUTPUT FORMAT

If the network element fully complies with the **ENT-STS1** request, the following normal completion response is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the **ENT-STS1** command does not alter the existing path trace strings, the network element provides a normal completion response.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT-STS1** command.

### EXAMPLE INPUT/OUTPUT

The following example provisions the outgoing path trace message.

```
ENT-ST51:LT-PF-2000:ls-1a-2:123456:::TRC=\ProvisionedOutgoingTrace  
yzabcdefghijklmnopqrstuvwxy\;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example provisions the incoming path trace message.

```
ENT-ST51:LT-PF-2000:ls-5b-1:123456:::EXPTRC=\ProvisionedExpectedTrace  
yzabcdefghijklmnopqrstuvwxy\;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error response section. The error responses listed there also apply to the **ENT-STS1** command.

If the network element receives an **ENT-STS1** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **ENT-STS1** command with a *type* value that is other than null, the following error response is returned:

```
sid date time
M ctag DENY
  INUP
/* Input, Non-null Unimplemented Parameter, TYPE must be null */
;
```

If the network element receives an **ENT-STS1** command with otherwise valid *spec\_block* parameter(s), but for which the *modifier* and parameter are not in agreement (for example, setting DS3 parameter, **PBIT** in an **ENT-STS1** command), the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, parameter settings inconsistent with
   modifier value */
;
```

If an **ENT-STS1** command is received with an invalid **EXPTRC** value, including missing leading and/or trailing escaped quotes (\") and/or more than 64 characters in the string, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid spec_block parameter */
;
```

If an **ENT-STS1** command is received with an invalid **TRC** value, including missing leading and/or trailing escaped quotes (\") and/or more than 64 characters in the string, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid spec_block parameter */
;
```

If FT-2000 receives an **ENT-STS1** command with non-null *pst* and/or *sst* parameter(s), the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, parameter settings inconsistent with
modifier value */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-PTHTRC-rr**



## NAME

**ENT - SYCN:** Enter Synchronization

Support for this command is available in Releases 7.1 and later.

## INPUT FORMAT

**ENT - SYCN:***tid::ctag[:::spec\_block];*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

This command provisions the synchronization mode, the synchronization source, the DS1 signal format of the external timing reference inputs and outputs, the DS1 signal line code of the external timing reference inputs, the equalization of the DS1 signal for the external timing reference outputs, and whether output synchronization messaging is enabled or disabled for the network element.

For Release 7.2 and later: This command also provisions whether auto-reconfiguration of the timing reference is allowed for the network element.

Use of this command may affect timing for other network elements of the timing network.

This command is available to privileged users only.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                          |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                  |
|             | Specific Parameter Block. This parameter field is used for the provisioning of synchronization attributes. Parameters within the <i>spec_block</i> are specified using a name defined construct of: <b>PARAMETER=va lue</b> in a comma separated list. |

For the **ENT-SYNCN** command, the *spec\_block* may contain none, one, or more of the following parameters:

**syncnmod** Synchronization Mode. This sets the synchronization mode of the network element. It can assume one of the following values:

*FRNG* Free Running. In this mode, the network element derives timing from the internal stratum 3 oscillator. This internal timing is used to time all synchronous outgoing signals.

*THRU* Through timed. In this mode, the network element derives timing from both high speed lines independently. Timing received from one direction is used to time the transmitted high speed signal in the same direction and the low speed interfaces that are dropped from the incoming high speed signal. For example, in the east to west direction, timing is derived from the high speed signal coming from the east on *RCVR 1E* and used to time the high speed signal going to the west *TRMTR 1W* and any low speed signals dropping from *RCVR 1E*. The converse occurs for the west to east direction.

*EXT* Externally timed. In this mode, the network element derives timing from either the primary or secondary DS1 timing reference input. Timing received from the primary or secondary DS1 timing reference is used to to time all synchronous outgoing signals.

This is the initial value for **syncnmod**.

For Release 7.2 and later:

It can assume one of the above or the following value:

**LINE** Line timed. In this mode, the network element derives timing from one incoming high speed line. Timing received from the specified high speed line is used to time all synchronous outgoing signals.

**src**

For Release 7.2 and later:  
Synchronization source. This parameter selects the line from which the system timing and/or the DS1 synchronization output timing will be derived when the synchronization mode, *syncnmod*, is line timed, **LINE**. This parameter must be used in conjunction with the *syncnmod* parameter when the **SYNCNMOD=LINE**.

If included in the *spec\_block*, *src* may have one of the following values:

- 1E** This chooses the East line as the synchronization source.
- 1W** This chooses the West line as the synchronization source.
- auto** Autoreconfiguration allows the system to choose the best timing source to use when it is provisioned for Line Timing. Automatic Protection Switching takes place to the standby timing source when the active source fails. The switch is nonrevertive, and there will not be an automatic switch back when the failed source becomes good.

When when this parameter is chosen, the system automatically reconfigures between line timing sources *1E* and *1W*.

*pds1\_iof*

Primary DS1 Input and Output format. This selects the DS1 signal format for the primary DS1 timing reference. If included in the *spec\_block*, it may have one of the following values.

- SF** This sets the DS1 signal format to Super Frame.
- ESF** This sets the DS1 signal format to Extended Super Frame.

**pds1\_iof**

Primary DS1 Input and Output format. This selects the DS1 signal format for the primary DS1 timing reference. If included in the *spec\_block*, it may have one of the following values.

*SF* This sets the DS1 signal format to Super Frame.

*ESF* This sets the DS1 signal format to Extended Super Frame.

**sds1\_iof** Secondary DS1 Input and Output format. This selects the DS1 signal format for the secondary DS1 timing reference. If included in the *spec\_block*, it may have one of the following values.

*SF* This sets the DS1 signal format to Super Frame.

*ESF* This sets the DS1 signal format to Extended Super Frame.

**pds1\_iloc** Primary DS1 Input Line Code. This selects the DS1 line code for the primary DS1 timing reference input. If included in the *spec\_block*, it may have one of the following values.

*AMI* This sets the DS1 line code to Alternate Mark Inversion.

*B8ZS* This sets the DS1 line code to Bipolar 8 Zero Substitution.

**sds1\_iloc** Secondary DS1 Input Line Code. This selects the DS1 line code for the secondary DS1 timing reference input. If included in the *spec\_block*, it may have one of the following values.

*AMI* This sets the DS1 line code to Alternate Mark Inversion.

*B8ZS* This sets the DS1 line code to Bipolar 8 Zero Substitution.

**ds11\_equ** DS1 OUT 1 Equalization. This selects the equalization level for the DS1 timing reference from the TG3 circuit pack in slot TG3-1. If included in the *spec\_block*, it may have one of the following values.

*20* This sets the maximum cable length for 600 Type cable at 130 feet or for 1249 Type cable at 90 feet.

This is the initial value.

40 This sets the maximum cable length for 600 Type cable at 260 feet or for 1249 Type cable at 180 feet.

60 This sets the maximum cable length for 600 Type cable at 390 feet or for 1249 Type cable at 270 feet.

80 This sets the maximum cable length for 600 Type cable at 520 feet or for 1249 Type cable at 360 feet.

100 This sets the maximum cable length for 600 Type cable at 660 feet or for 1249 Type cable at 450 feet.

**ds12\_equ** DS1 OUT 2 Equalization. This selects the equalization level for the DS1 timing reference from the TG3 circuit pack in slot TG3-2. If included in the *spec\_block*, it may have one of the following values.

20 This sets the maximum cable length for 600 Type cable at 130 feet or for 1249 Type cable at 90 feet.

This is the initial value.

40 This sets the maximum cable length for 600 Type cable at 260 feet or for 1249 Type cable at 180 feet.

60 This sets the maximum cable length for 600 Type cable at 390 feet or for 1249 Type cable at 270 feet.

80 This sets the maximum cable length for 600 Type cable at 520 feet or for 1249 Type cable at 360 feet.

100 This sets the maximum cable length for 600 Type cable at 660 feet or for 1249 Type cable at 450 feet.

## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the requested command does not alter the existing condition, the network element shall respond with the COMPLD message.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

```
ent-syncn:LT-PF-2000::123456::SYCNMOD=EXT,PDS1_IOF=SF,
SDS1_IOF=SF,DS11_EQU=40,DS12_EQU=40;

IP 123456
<
LT-PF-2000 97-03-22 16:12:11
M 123456 COMPLD
;
```

For Release 7.2 and later:

This example sets the synchronization mode of the network element to line timing, chooses west high speed line as the timing source and thereby disables synchronization reconfiguration.

```
ent-syncn:LT-PF-2000::123456::syncnmod=line,src=1W;
```

```
IP 123456  
<  
    LT-PF-2000 97-03-22 16:12:11  
M 123456 COMPLD  
;
```

For Release 7.2 and later:

This example sets the synchronization mode of the network element to line timing, and enables synchronization reconfiguration.

```
ent-syncn:LT-PF-2000::123456::syncnmod=line,src=auto;
```

```
IP 123456  
<  
    LT-PF-2000 97-03-22 16:12:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

If the network element receives an **ENT-SYNCN** command with an invalid **syncnmod**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SYNCNMOD */
;
```

If the network element receives an **ENT-SYNCN** command with an invalid **pds1\_iof**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid PDS1_IOF */
;
```



If the network element receives an **ENT-SYNCN** command with an invalid **sds1\_iof**, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SDS1_IOF */
;
```

If the network element receives an **ENT-SYNCN** command with an invalid **sds1\_ilc**, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SDS1_ILC */
;
```

If the network element receives an **ENT-SYNCN** command with an invalid **ds11\_equ**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DS11_EQU */
;
```

If the network element receives an **ENT-SYNCN** command with an invalid **ds12\_equ**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DS12_EQU */
;
```

For Release 7.2 and later:

If the network element receives an **ENT-SYNCN** command with an invalid *src*, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SRC */
;
```

If the network element receives an **ENT-SYNCN** command with an otherwise valid *src* parameter while the node is in any other *syncnmod* than **LINE**, the following error response is returned:

```
sid date time
M ctag DENY
SNVS
/* Status, Not in Valid State, SYNCNMOD must be LINE */
;
```

## RELATED TL1 MESSAGES

### RTRV-SYNCN

## NAME

**ENT-SYS:** Set network element name and other system level parameters

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**ENT-SYS:***[tid]:[aid]:ctag[::spec\_block];*

For Releases 5.0 and later:

**ENT-SYS:***tid:aid:ctag[::spec\_block];*

## DESCRIPTION

For Releases 4.1 through 7.2:



### CAUTION:

*Changing the **dsne** parameter will cause the X.25 link to be reset and all active TL1 logins will be automatically dropped. All established SVCs on the affected X.25 link will have to be reestablished. Also, the operation of other nodes in the ring may be affected.*

For Releases 6.0 through 7.2:



### CAUTION:

*Changing both the **x25ps** and **dsne** parameters at the same time will cause the X.25 link to be reset and all active TL1 logins will be automatically dropped. All established SVCs on the affected X.25 link will have to be reestablished. Also, the operation of other nodes in the ring may be affected.*

For Releases 8.0 and later:



### CAUTION:

*Changing the **x25ps** parameter associated with a currently active X.25 interface will reset that X.25 interface. This will result in all active TL1 logins being automatically dropped. All established SVCs on the affected X.25 link will have to be reestablished. Also, the operation of other nodes in the ring may be affected.*

For Release 4.1, the **ENT-SYS** command can be initiated by users to modify system attributes associated with the network element at the system level, but is not associated with any particular facility or equipment unit. When this command is successfully executed, only the attributes specified in the command will be changed; those NE level attributes not in the command will remain as before. Moreover, the command will be executed only when the entered command

actually modifies the attributes at the network element. System level attributes remain in effect until modified (for example, by another execution of the TL1 command **ENT-SYS** or by the appropriate CIT command) or until overridden by system initialization.:w

For Release 4.1, this command is available to all users.

For Releases 5.0 and later, this command is available to privileged users only.

For Release 5.0, the **ENT-SYS** command can be initiated by users to modify system attributes associated with the network element at the system level or CIT port attributes, but is not associated with any particular facility or equipment unit. Only the attributes specified in the command will be changed; those attributes not in the command will remain as before.

For Release 5.0, FT-2000 OC48, the system level parameters of this command are available only to privileged users for all CIT, DCC, or TL1 ports on the network element. The CIT port parameters are available to privileged and general users, but not to "reports-only" users.

For Release 6.0, the **ENT-SYS** command can be initiated by users to modify system attributes associated with the network element at the system level or X.25 or CIT port attributes, but is not associated with any particular facility or equipment unit. Only the attributes specified in the command will be changed; those attributes not in the command will remain as before.

For Release 6.0 and later, the system level and X.25 port parameters of this command are available to privileged users only. The CIT port parameters are available to privileged and general users, but not to "reports-only" users.

For Release 7.0 and later, the **ENT-SYS** command can be initiated by users to modify system attributes associated with the network element at the system level or X.25 attributes, but is not associated with any particular facility or equipment unit. Only the attributes specified in the command will be changed; those attributes not in the command will remain as before.

For Release 5.0, when a network element receives an **ENT-SYS** command from a user, the network element will modify its system level or CIT port attributes with the received attributes if the received attributes are different from the currently effective attributes at the system.

System level attributes remain in effect until modified (for example, by another execution of the TL1 command **ENT-SYS** or by the appropriate CIT command) or until overridden by system initialization.

For Releases 6.0 and later, when a network element receives an **ENT-SYS** command from a user, the network element will modify its system level or X.25 or CIT port attributes with the received attributes if the received attributes are different from the currently effective attributes at the system.

For Releases 6.0 through 7.2, if the command requests a change in the **dsne** designation, both OHCTLs will restart their program.

System level attributes remain in effect until modified (for example, by another execution of the TL1 command **ENT-SYS** or by the appropriate CIT command) or until overridden by system initialization.

## INPUT PARAMETERS

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                                                               |                |                                                                            |                       |                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------|
| <i>tid</i>            | <p>Target identifier. This is the name of the network element to which the command is addressed.</p> <p>In Release 4.1, if no <i>tid</i> is given, the command is interpreted to be addressed to the local network element.</p> <p>For Release 5.0 and later, a <i>tid</i> value must be supplied or the command request will be denied.</p>                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                                                               |                |                                                                            |                       |                                                                                          |
| <i>aid</i>            | <p>Access identifier.</p> <p>For Release 4.1:<br/>The <i>aid</i> value must be only one of the following values:<br/><b>system</b> or null This specifies that system parameters are to be modified. The default is <b>system</b>.</p> <p>For Releases 5.0 and later:<br/>The <i>aid</i> value must be only one of the following values:</p> <table><tr><td><b>cit-dce</b></td><td>This specifies that the Data Communications Equipment port is to be modified.</td></tr><tr><td><b>cit-dte</b></td><td>This specifies that the Data Terminating Equipment port is to be modified.</td></tr><tr><td><b>system</b> or null</td><td>This specifies that system parameters are to be modified. The default is <b>system</b>.</td></tr></table> | <b>cit-dce</b> | This specifies that the Data Communications Equipment port is to be modified. | <b>cit-dte</b> | This specifies that the Data Terminating Equipment port is to be modified. | <b>system</b> or null | This specifies that system parameters are to be modified. The default is <b>system</b> . |
| <b>cit-dce</b>        | This specifies that the Data Communications Equipment port is to be modified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                                                               |                |                                                                            |                       |                                                                                          |
| <b>cit-dte</b>        | This specifies that the Data Terminating Equipment port is to be modified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                                                                               |                |                                                                            |                       |                                                                                          |
| <b>system</b> or null | This specifies that system parameters are to be modified. The default is <b>system</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                                               |                |                                                                            |                       |                                                                                          |
| <i>ctag</i>           | <p>Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                                                               |                |                                                                            |                       |                                                                                          |
| <i>spec_block</i>     | <p>Specific Parameter Block. The system level attributes to be modified are specified inside the <i>spec_block</i>. Parameters within <i>spec_block</i> are specified using a <i>name=value, name=value, ...</i> type construct with no constraints on the order of parameters. Constructs such as <i>name1=value1, name2=, name3=, name4=, name5=value5, ...</i> are acceptable and in this example only the parameters <i>name1</i> and <i>name5</i> will be changed at the network element. If the current value of the parameter <i>name1</i></p>                                                                                                                                                                                        |                |                                                                               |                |                                                                            |                       |                                                                                          |

is already *value1* in the above example, *name1* will not be changed.

For the **ENT-SYS** command, the *spec\_block* may contain one or more of the following parameters:

**new\_tid** New Target Identifier. The **new\_tid** is the new name of the network element to which the command is addressed.

For Release 7.0, refer to the **RTRV-HDR INPUT PARAMETERS** section. The character set requirements for *tid* listed there apply to the **new\_tid**, also.

**nid** Node Identifier. For Releases 4.1 through 5.0, the **nid** is the Self Healing Ring address of the network element. The **nid** must be an integer between 0 and 15.

**dsne** Directory Service-Network Element. For Releases 4.1 through 7.2, **dsne** has a value of *yes* or *no*. *yes* indicates that the system specified by the *tid* is a Directory Service-Network Element (DS-NE).

For Releases 6.0 through 7.2, changing the **dsne** parameter may affect the operation of other nodes in the ring.

**gne** Gateway Network Element. For Releases 4.1 through 5.0, **gne** has a value of *yes* or *no*. *yes* indicates that the system specified by the *tid* is a Gateway Network Element.

The default value for this parameter is *no*. The **gne** must be set to *yes* to enable the physical TL1/X.25 interface. When TL1 is used, only one network element in the subnetwork may be designated as the **gne**; otherwise TL1 messages will be lost.

**agne** For Releases 6.0 through 7.2, Alarm Gateway Network Element, **agne** has a value of *yes* or *no*. *yes* indicates that the system specified by the *tid* is an Alarm Gateway Network Element.

The default value for this parameter is *no*. For proper operation of the NE status features, at least one NE in each Alarm Group must be designated as an **agne**.

**almgrp** For Releases 6.0 through 7.2, **Alarm Group** [also known as SONET Maintenance Sub-Branch or SMSB] has an integer value between 0 and 255 (inclusive.) 0 indicates that the local NE does not exchange remote alarm information with any other NEs. Any other value for **Alarm Group** means that the local NE will exchange remote alarm information with all other NEs in the maintenance subnetwork which share the same **Alarm Group** value. All NEs in the given DCC domain (subnetwork), whether nearby or not, that have the same AG number are members of the same group. The default will be 255.

**x25ps** X.25 Packet Size. For Releases 6.0 and later, **x25ps** may be set to a value of 256 or 128. This parameter determines the TL1 packet size for the X.25 interface. The default is 256.

⇒ **NOTE:**

Changing the X.25 Packet Size parameter at an NE with an active X.25 link will cause that X.25 link to be reset and all active TL1 logins will be automatically dropped. All established SVCs on the affected X.25 link will have to be reestablished.

**protocol** Protocol. For Release 5.0 through 7.1, this parameter changes the **cit-dce** or **cit-dte** protocol from TL1 to CIT-PC and may only be set to *cit*.

If the *spec\_block* is null, the currently effective attributes at the network element system prevails.



## OUTPUT FORMAT

If network element fully complies with the command request, the following message is returned to the OS:

```
      sid date time  
M ctag COMPLD  
;
```

If **new\_tid** is specified in the *spec\_block* of the input command, the *sid* assumes the value of **new\_tid**.

If the **ENT-SYS** command does not alter the existing system level attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above). An example of this is when the system addressed by the *tid* is the same as the *new\_tid* in the *spec\_block* of an **ENT-SYS** command.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

### EXAMPLE INPUT/OUTPUT

For Releases 4.1 through 5.0, the following example shows a command to modify the **system** name to 1-BROAD-STREET-CO and make the network element the GNE:

**ent-sys:LT-PF-2000:system:123456:::new\_tid=1-BROAD-STREET-CO, gne=yes;**

```
IP 123456
<

1-BROAD-STREET-CO 93-10-26 16:42:11
M 123456 COMPLD
;
```

For Releases 5.0 through 7.1, the following example shows a command to modify the **cit-dce protocol**:

**ent-sys:LT-PF-2000:cit-dce:123456:::protocol=cit;**

```
IP 123456
<

LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

For Releases 4.1 through 7.2, the following example shows a command to modify the **system** name to 1-BROAD-STREET-CO and make the network element the DS-NE:

**ent-sys:LT-PF-2000:system:123456:::new\_tid=1-BROAD-STREET-CO,dsne=yes;**

```
IP 123456
<

1-BROAD-STREET-CO 93-10-26 16:42:11
M 123456 COMPLD
;
```

Note that changing the **dsne** designation causes the system to restart the program, thus the response to the command may be incomplete.

For Releases 6.0 and later, the following example shows a command to modify the X.25 Packet Size:

**ent-sys:LT-PF-2000:::123456:::x25ps=128;**

```
IP 123456
<

LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

For Releases 6.0 through 7.2, the following example shows a command to alter the alarm group (SMSB) from its original value of 255 and to make the local NE an AGNE.

**ent-sys:LT-PF-2000::123456:::almgrp=248,agne=yes;**

```
IP 123456
<

LT-PF-2000 93-10-26 16:42:11TT

M 123456 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** "ERROR RESPONSE" section. The error responses listed there also apply to the **ENT-SYS** command.

If a network element receives an **ENT-SYS** command with a **new\_tid** value that is not valid, the following error response is returned:

```
sid date time
M ctag DENY
IITA
/* Input, Invalid Target Identifier, invalid NEW_TID */
;
```

For Releases 4.1 through 5.0, if a network element receives an **ENT-SYS** command with a **nid** value that is not valid, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input Data Not Valid, invalid NID */
;
```

For Releases 4.1 through 7.2, if a network element receives an **ENT-SYS** command with a **dsne** value other than **yes** or **no**, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input Data Not Valid, invalid DSNE */
;
```

For Releases 6.0 through 7.2, if a network element receives an **ENT-SYS** command with an **almgrp** value that is not an integer between 0 and 255, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid ALMGRP */
;
```

For Releases 6.0 through 7.2, if a network element receives an **ENT-SYS** command with an **agne** value other than **yes** or **no**, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid AGNE */
;
```

For Releases 4.1 through 5.0, if a network element receives an **ENT-SYS** command with a **gne** value other than yes or no, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input Data Not Valid, invalid GNE */
;
```

For Release 6.0 and later, if a network element receives an **ENT-SYS** command with a **x25ps** value other than 256 or 128, the following error response is returned:

```

      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid X25PS */
;
```

If a network element that does not support **protocol** mode setting receives an **ENT-SYS** command with a **protocol** attribute, the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid spec_block parameter */
;
```

For Releases 6.0 and later, if a network element that does not support **gne** receives an **ENT-SYS** command with a **gne** parameter, the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid spec_block parameter */
;
```



For Release 4.1 only, if a network element that does not support **x25ps** receives an **ENT-SYS** command with a **x25ps** parameter, the following error response is returned:

```

sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid, invalid spec_block parameter */
;
```

For Releases 5.0 through 7.1, if a network element receives an **ENT-SYS** command with a **protocol** value other than **cit**, the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid PROTOCOL */
;
```

If an **ENT-SYS** command is received with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If a network element receives an **ENT-SYS** command with a *spec\_block* parameter attribute that does not match the *aid*, or that parameter is not supported by the particular software release in the receiving system, the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid spec_block parameter */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-SYS**

**SET-SID**

**ENT-CID-SECU**

## NAME

**ENT - ULSDCC - L3:** Enter Upper Layer Stack DCC - Layer 3

This command is available starting in FT-2000 ADR Release 8.0.

## INPUT FORMAT

**ENT - ULSDCC - L3:***tid*[:*aid*]:*ctag*::[:*spec\_block*];

## DESCRIPTION



### CAUTION:

*Errors in provisioning this command to change the NSAP address of the target NE may disrupt DCC communications, including possible isolation of the target NE and could result in silent failures. Command parameters should only be changed by users who are authorized to provision the SONET subnetwork for subnetwork partitioning purposes.*



### CAUTION:

*When this command changes one of the fields of the Layer 3 NSAP address, it will cause the target Network Element to restart its program. This action will erase all of the performance monitoring data, the history file and any data in the Tarp Data Cache and the Loop Detection Buffer and all active OSI applications will be terminated. If possible, the Network Element will reinitialize the date and time. Otherwise, the date and time will assume original values.*



### CAUTION:

*When this command changes one of the fields of the Layer 3 NSAP address, when it enables the target NE as a Level 2 IS, or when it disables an NE as a Level 2 IS that has previously been provisioned as a Level 2 IS, it will cause the target Network Element to reset its controllers. This action will erase all of the performance monitoring data, the history file and any data in the Tarp Data Cache and the Loop Detection Buffer and all active OSI applications will be terminated. If possible, the Network Element will reinitialize the date and time. Otherwise, the date and time will assume original values.*

**ENT - ULSDCC** commands are used to provision parameters of Layers 3 through 7 of the Open Systems Interconnection (OSI) 7-layer protocol stack. This stack refers to the OSI reference model which is a logical structure for network operations. This model defines a standard communication protocol between network elements as specified by the International Standards Organization (ISO).

**ENT - ULSDCC - L3** is used to provision the user-settable parameters in Layer 3 of the OSI stack. Layer 3 parameters include user-settable fields of the Network Services Access Point (NSAP) address and enable/disable Level 2 Intermediate System (IS) capability.

All Layer 3 parameters that can be provisioned using **ENT - ULSDCC - L3** that are needed for the operation of the Network Element have original values. Hence, it is not necessary to provision these parameters for the NE to operate in a network.

The NSAP address is a 20-byte address required by OSI to provide unique identification within the OSI network and consists of a number of fields, some of which are pre-defined and some of which are user-settable. The structure of the NSAP is shown in the following display.

NSAP Structure

| NSAP Field:          | AFI               | IDI | IDI PAD | DFI | Organization ID    | RES  | RD   | Area | System Identifier | SEL |
|----------------------|-------------------|-----|---------|-----|--------------------|------|------|------|-------------------|-----|
| Bytes:               | 1                 | 2   |         | 1   | 3                  | 2    | 2    | 2    | 6                 | 1   |
| Default Value: (hex) | 39                | 840 | F       | 80  | 000000             | 0000 | 0000 | 0000 | none              | 00  |
|                      | not provisionable |     |         |     | user provisionable |      |      |      | not provisionable |     |

The AFI, IDI, IDI PAD and DFI (DSP Format Identifier) fields are not user provisionable. Together, they form the Initial Domain Part (IDP) of the NSAP. They are always stored as Binary Coded Decimal values of "39" hex, "840" hex, "F" hex and "80" hex respectively to indicate that the ISO DCC syntax shall be used.

The Organization ID, Reserved (RES), Routing Domain (RD) and Area fields are user provisionable when changing the NSAP of the target NE (i.e., the NE identified by the *tid* parameter)\*.

**⇒ NOTE:**

Changing any of these NSAP fields changes the NE's area address. Only the Area field should be changed typically, and then only to partition a subnetwork

---

\* The System Identifier field is provisionable when entering a TARP Manual Adjacency NSAP and when entering an NSAP into the TARP Data Cache (TDC) using **ENT - ULSDCC - L4** but it is not provisionable when setting the NSAP of the target NE in this command.

The Organization ID field is a three-byte (6-digit hexadecimal) field that may be used to identify the network service provider and is assigned by ANSI.

The Reserved field is currently not used and has a original value of "0000" hex. The Routing Domain field is a two-byte (4-digit hexadecimal) field that may be used to distinguish different routing domains.

The Area field, two-byte (4-digit hexadecimal) field that is intended to be used to assign NEs to different areas in a partitioned subnetwork. A partitioned subnetwork consists of NEs in multiple areas connected by level 2 intermediate systems (ISs).

Each NE is programmed with a unique System Identifier at the factory. This six byte (12-digit hexadecimal) field of the NSAP guarantees that the NSAP for each NE is unique.

The Select (SEL) field is currently not user provisionable. Its purpose is to differentiate multiple NSAP addresses associated with the same End System. Its value is not fixed but is automatically set in a PDU according to its usage. It is set to "AF" hex when TARP is run over CLNP. It has a value of "1D" hex when TP4 is run over CLNP. It may be set to "00" hex for other uses. When retrieved and displayed, it will always be shown as "00" hex.

#### ⇒ NOTE:

This command is available to privileged users only.

### INPUT PARAMETERS

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>aid</i>        | Access identifier. The <i>aid</i> value may be <b>ALL</b> or null. Specifying the <i>aid</i> optional.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>spec_block</i> | Specific Parameter Block. The parameters to be modified are specified inside the <i>spec_block</i> . Parameters within <i>spec_block</i> are specified using <i>name=value</i> , <i>name=value</i> , ... with no constraints on the order of the arrangement of parameters. Constructs such as <i>name1=value1</i> , <i>name2=</i> , <i>name3=value3</i> , ... are acceptable, and in this example only the parameters <i>name1</i> and <i>name3</i> will be attempted to be changed. If the current value of the parameter <i>name1</i> is already <i>value1</i> in the above |

example, then *name1* will not be changed. If a null value is provided for a parameter, (e.g. *name=*), the value will not be changed.

Any *spec\_block* parameter may appear only once in the command line. If the same parameter is in the command line more than once, the command is denied and an error message is returned.

If the *spec\_block* is null, the current attributes at the Network Element remain in effect.

The *spec\_block* may contain one or more of the following parameters:

**L3ORG** NSAP Organization ID field.

This is a 3 byte (6-digit hexadecimal) field used to provision into the NSAP address the allocated Network Service Provider Company Code assigned by the ANSI-administered USA Registration Authority for OSI Organization Names.

**L3RES** NSAP Reserved field.

This is a 2 byte (4-digit hexadecimal) field that currently has not been assigned a specific purpose by the SONET standards. Until the standard use of this field has been defined, users should not assign a value that is different from the original value.

The original value for this parameter is "0000" hex.

**L3RD** NSAP Routing Domain.

This NSAP field identifies a unique Routing Domain within an administrative domain.

Standard use of the NSAP Routing Domain field has not been defined in the SONET standards. Until the standard use of this field has been defined, users should not assign a value that is different from the original value.

The format for this parameter is "**L3RD**=*l3rd*" where *l3rd* is the 2 byte (4-digit hexadecimal) NSAP Routing Domain field of the target network element. The original value for this parameter is "0000" hex.

- L3AREA** NSAP Area field of the target network element.
- This field identifies the Area within the Routing Domain to which the NSAP address belongs.
- The format for this parameter is "**L3AREA=***l3area*" where *l3area* is the 2 byte (4-digit hexadecimal) NSAP Area field of the target network element. The original value for this parameter is "0000" hex.
- L3LV2IS** Enable or Disable the network element specified by the *tid* parameter as a Level 2 IS. The format for this parameter is "**L3LV2IS=***l3lv2is*".
- This parameter may take the value **enable** or **disable**.
- The original value of *l3lv2is* is **disable**.

## OUTPUT FORMAT

If the Network Element fully complies with the request, the following completion message is returned and the target NE is reset:

```
IP ctag
<
  sid date time
M ctag COMPLD
;
```

If the requested command provisions parameters that have the same values as those currently provisioned, the command does not alter the existing parameter values and the Network Element responds with a COMPLD message.

If the Network Element fully complies with the request, and the command is used to provision one or more of the NSAP fields on the target NE to the same values as those currently provisioned, the NSAP fields are not changed and the target NE does not reset.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

The following example shows the provisioning of NSAP field on the target NE.

```
ENT-ULSDCC-L3:LT-PF-2000:all:123456:::l3org=000000;  
IP 123456  
<  
    LT-PF-2000 98-03-22 16:12:11  
M 123456 COMPLD  
;
```



The following example shows the provisioning of the Level 2 IS parameter and the provisioning of the NSAP AREA field, resulting in the resetting of the target NE. :

```
ENT-ULSDCC-L3:LT-PF-2000::192837:::l3lv2is=enable,l3area=3FE7;
IP 123456
<
LT-PF-2000 98-04-23 13:12:16
M 192837 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command. If an error is detected in any of the command parameters, the entire command is denied; there is no partial completion of the command. If there are errors in more than one command parameter, an error is detected and reported in only one of the parameters. The parameter for which the error is detected may not be the first parameter in the command that is in error. The Network Element returns the following error response if the *aid* value is missing, or invalid.

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

Any parameter may be in the *spec\_block* only once and may not be repeated. The Network Element returns the following error response if a parameter is repeated in the *spec\_block*

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

The Network Element returns the following error response if the **L3ORG** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L3ORG */
;
```

The Network Element returns the following error response if the **L3RES** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L3RES */
;
```

The Network Element returns the following error response if the **L3RD** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L3RD */
;
```

The Network Element returns the following error response if the **L3AREA** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L3AREA */
;
```

The Network Element returns the following error response if the **L3LV2IS** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L3LV2IS */
;
```

## RELATED TL1 MESSAGES

**RTRV-ULSDCC-L3**

## NAME

**ENT - ULSDCC - L4:** Enter Upper Layer Stack DCC Layer 4

This command is available starting in FT-2000 Release 8.0.

## INPUT FORMAT

**ENT - ULSDCC - L4:***tid:[aid]:ctag::[spec\_block];*

## DESCRIPTION

**ENT - ULSDCC** commands are used to provision parameters of Layers 3 through 7 of the Open Systems Interconnection (OSI) 7-layer protocol stack. This stack refers to the OSI reference model which is a logical structure for network operations. This model defines a standard communication protocol between SONET Network Elements as specified by the International Standards Organization (ISO).

**ENT - ULSDCC - L4** is used to provision the user-settable parameters in Layer 4 of the OSI stack. User-settable Layer 4 parameters include TARP Manual Adjacencies, the TARP PDU lifetime parameter, TARP timers, TARP Loop Detection Buffer and TARP Data Cache parameters, and TARP Data Cache entries.

All Layer 4 parameters that can be provisioned using **ENT - ULSDCC - L4** that are needed for the operation of the Network Element have original values. Hence, it is not necessary to provision these parameters for the NE to operate in a network.

Provisioning TARP Manual Adjacencies and entries into the TARP Data Cache (TDC) require the entry of an NSAP address. The NSAP address is a 20-byte address required by OSI to provide unique identification within the OSI network and consists of a number of fields, some of which are pre-defined and some of which are user-settable. The structure of the NSAP is shown in the following display.

NSAP Structure

| NSAP Field:          | AFI               | IDI | IDI PAD | DFI ID | Organization       | RES  | RD   | Area | System Identifier | SEL |
|----------------------|-------------------|-----|---------|--------|--------------------|------|------|------|-------------------|-----|
| Bytes:               | 1                 | 2   |         | 1      | 3                  | 2    | 2    | 2    | 6                 | 1   |
| Default Value: (hex) | 39                | 840 | F       | 80     | 000000             | 0000 | 0000 | 0000 | none              | 00  |
|                      | not provisionable |     |         |        | user provisionable |      |      |      | not provisionable |     |

The AFI, IDI, IDI PAD and DFI (DSP Format Identifier) fields are not user provisionable. Together, they form the Initial Domain Part (IDP) of the NSAP. They are always stored as Binary Coded Decimal values of "39" hex, "840" hex, "F" hex and "80" hex respectively to indicate that the ISO DCC syntax shall be used.

The Organization ID, Reserved (RES), Routing Domain (RD), Area, and System Identifier fields are provisionable when entering a TARP Manual Adjacency NSAP and when entering an NSAP into the TARP Data Cache (TDC).

The Organization ID field is a three-byte (6-digit hexadecimal) field that may be used to identify the network service provider and is assigned by ANSI.

The Reserved field is currently not used and has a original value of "0000" hex.

The Routing Domain field is a two-byte (4-digit hexadecimal) field that may be used to distinguish different routing domains.

The Area field, two-byte (4-digit hexadecimal) field that is intended to be used to assign NEs to different areas in a partitioned subnetwork. A partitioned subnetwork consists of NEs in multiple areas connected by level 2 intermediate systems (ISs).

Each NE is programmed with a unique System Identifier at the factory. This six-byte (12-digit hexadecimal) field of the NSAP guarantees that the NSAP for each NE is unique.

The Select (SEL) field is currently not user provisionable. Its purpose is to differentiate multiple NSAP addresses associated with the same End System. Its value is not fixed but is automatically set in a PDU according to its usage. It is set to "AF" hex when TARP is run over CLNP. It has a value of "1D" hex when TP4 is run over CLNP. It may be set to "00" hex for other uses. When retrieved and displayed, it will always be shown as "00" hex.

⇒ **NOTE:**

This command is available to privileged users only.

**INPUT PARAMETERS**

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>aid</i>        | Access identifier. The <i>aid</i> value may be <b>ALL</b> or null. Specifying the <i>aid</i> optional.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>spec_block</i> | Specific Parameter Block. The parameters to be modified are specified inside the <i>spec_block</i> . Parameters within <i>spec_block</i> are specified using <i>name=value</i> , <i>name=value</i> , ... with no constraints on the order of the arrangement of parameters. Constructs such as <i>name1=value1</i> , <i>name2=</i> , <i>name3=value3</i> , ... are acceptable, and in this example only the parameters <i>name1</i> and <i>name3</i> will be attempted to be changed. If the current value of the parameter <i>name1</i> is already <i>value1</i> in the above example, then <i>name1</i> will not be changed. If a null value is provided for a parameter, (e.g. <i>name=</i> ), the value will not be changed. |

Any *spec\_block* parameter may appear only once in the command line. If the same parameter is in the command line more than once, the command is denied and an error message is returned.

If the *spec\_block* is null, the current attributes at the Network Element remain in effect.

The *spec\_block* may contain one or more of the following parameters:

|               |                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>L4TLIF</b> | This parameter sets the TARP lifetime parameter in TARP PDUs originated by the target NE (i.e., the NE identified by the <i>tid</i> parameter). The TARP lifetime specifies the maximum number of hops allowed for a TARP PDU. When this number of hops is exceeded, the TARP PDU will not be forwarded. The format for this parameter is " <b>L4TLIF=l4tlif</b> ". |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

This parameter may have a value in the range from **1** to **65535**. An error message will be returned if a value of **0** is entered.

The original value of *l4tLif* is **100**.

Manually specifying a Network Element to be logically adjacent to the target network element, i.e., the NE indicated by the *tid* parameter, for TARP propagation purposes requires the specification of the adjacent NE's NSAP address. The NSAP, which is 20 bytes long (40-digit hexadecimal), is composed of a number of separate fields, most of which have default values. Thus, to simplify the entry of the NSAP address, the NSAP is entered via a number of separate TARP Manual Adjacency NSAP parameters.

The following parameters, **L4AJORG**, **L4AJRES**, **L4AJRD**, **L4AJAREA** and **L4AJSYS**, are used to specify the user settable NSAP fields required to enter a TARP Manual Adjacency. The complete NSAP is entered into a list of entered TARP Manual Adjacencies.

Multiple TARP Manual Adjacencies are entered using multiple occurrences of **ENT-ULSDCC-L4**. The maximum number of TARP Manual Adjacencies is 2.

The NSAP System ID field, **L4AJSYS**, which is unique for each NE, is the only parameter that is required to enter a TARP Manual Adjacency. This parameter does not have a default value. If this parameter is specified, then any of the other user settable NSAP field parameters that are not specified and NSAP fields that are not settable by the user (the NSAP *IDP*, *DFI* and *SEL* fields) are set to their appropriate values in the TARP Manual Adjacency list. For the *IDP* and *DFI* fields, these values are the equivalent NSAP fields of the target NE. Since the *SEL* field may take different values depending on its use, it is set to "00" hex in the TARP Manual Adjacency list and is displayed as "00" hex. If one or more TARP Manual Adjacency provision parameters are specified but **L4AJSYS** is not specified, then a TARP Manual Adjacency is not entered, and an error message is returned.

 **NOTE:**

When using this command to enter or change the NSAP address of a TARP Manual Adjacency, there is syntax checking but no validation checking of the entered data. An incorrectly entered NSAP address field for a TARP Manually Adjacency will result in failure of TARP propagation with that NE from the target NE.



- L4AJORG** This parameter is used to provision the NSAP Organization ID field of the TARP Manual Adjacency.
- If **L4AJORG** is specified, then **L4AJSYS** must also be specified for the TARP Manual Adjacency to be entered.
- The format for this parameter is "**L4AJORG**=*l4ajorg*" where *l4ajorg* is the 3 byte (6-digit hexadecimal) NSAP Organization ID field of the TARP Manual Adjacency. The default value for this parameter is value of the NSAP Organization ID of the target NE.
- L4AJRES** This parameter is used to provision the NSAP Reserved field of the TARP Manual Adjacency.
- If **L4AJRES** is specified, then **L4AJSYS** must also be specified for the TARP Manual Adjacency to be entered.
- The format for this parameter is "**L4AJRES**=*l4ajres*" where *l4ajres* is the 2 byte (4-digit hexadecimal) NSAP Reserved field of the TARP Manual Adjacency. The default value for this parameter is value of the NSAP Reserved of the target NE.
- L4AJRD** This parameter is used to provision the NSAP Routing Domain field of the TARP Manual Adjacency.
- If **L4AJRD** is specified, then **L4AJSYS** must also be specified for the TARP Manual Adjacency to be entered. The format for this parameter is "**L4AJRD**=*l4ajrd*" where *l4ajrd* is the 2 byte (4-digit hexadecimal) NSAP Routing Domain field of the TARP Manual Adjacency. The default value for this parameter is value of the NSAP Routing Domain of the target NE.
- L4AJAREA** This parameter is used to provision the NSAP Area field of the TARP Manual Adjacency.
- If **L4AJAREA** is specified, then **L4AJSYS** must also be specified for the TARP Manual Adjacency to be entered.
- The format for this parameter is

"**L4AJAREA**=*l4ajarea*" where *l4ajarea* is the 2 byte (4-digit hexadecimal) NSAP Area field of the TARP Manual Adjacency. The default value for this parameter is the value of the NSAP Area of the target NE.

**L4AJSYS** This parameter is used to provision the NSAP System Identifier field of the TARP Manual Adjacency.

**L4AJSYS** must be specified for the TARP Manual Adjacency to be entered. There is no default value.

The format for this parameter is "**L4AJSYS** =*l4ajsys*" where *l4ajsys* is the 6 byte (12-digit hexadecimal) NSAP System Identifier field of the TARP Manual Adjacency. There is no default value.

**L4T1TM** This parameter is used to provision the TARP Timer T1. T1 is the maximum time waiting for a response to a TARP Type 1 request PDU (search within the area). The format for this parameter is "**L4T1TM**=*l4t1tm*".

This parameter may have a value in the range from **1** to **3600** seconds.

The original value of **L4T1TM** is **15** seconds.

**L4T2TM** This parameter is used to provision the TARP Timer T2. T2 is the maximum time waiting for a response to a TARP Type 2 request PDU (search outside of the area). The format for this parameter is "**L4T2TM**=*l4t2tm*".

This parameter may have a value in the range from **1** to **3600** seconds.

The original value of **L4T2TM** is **25** seconds.

**L4T3TM** This parameter is used to provision the TARP Timer T3. T3 is the maximum time waiting for a response to an Address Resolution request (Type 5, i.e., requesting the TID when the NSAP address is known). The format for this parameter is "**L4T3TM**=*l4t3tm*".

This parameter may have a value in the range from **1** to **3600** seconds.

The original value of **L4T3TM** is **40** seconds.

**L4T4TM** This parameter is used to provision the TARP Timer T4. Timer T4 starts when T2 expires. It is used for error recovery. The format for this parameter is "**L4T4TM=***l4t4tm*".

This parameter may have a value in the range from **1** to **3600** seconds.

The original value of **L4T4TM** is **20** seconds.

**L4LFTM** This parameter is used to provision the TARP Loop Detection Buffer Flush Timer. This parameter sets the time period for flushing the TARP Loop Detection Buffer. The format for this parameter is "**L4LFTM=***l4eftm*".

This parameter may have a value in the range from **1** to **1440** minutes.

The original value of **L4LFTM** is **5** minutes.

**L4ETDC** This parameter is used to Enable or Disable the TARP Data Cache. The format for this parameter is "**L4ETDC=***l4etdc*".

This parameter may take the value **enable** or **disable**. The original value is **enable**.

When this parameter is used to enable the TARP Data Cache, the TARP Data Cache shall be flushed.

**⇒ NOTE:**  
Since this parameter results in the flushing of the TARP Data Cache, manual entries should not be put into the TARP Data Cache in the same instance of **ENT-ULSDCC-L4**.

**⇒ NOTE:**  
If it is necessary to flush the TARP Data Cache and the TARP Data Cache has previously been provisioned as "enabled", executing **ENT-ULSDCC-L4** with "**L4ETDC=***enable*" will have no effect since it will appear as an attempt to provision a parameter to it's current value. To flush the TARP Data Cache, it must first be

provisioned to "disable", then provisioned again to "enable".

Flushing the TARP Data Cache using this command will remove all entries, including entries that were manually entered. Flushing the TARP Data Cache using this command will remove all system entries. Entries that were manually entered will not be removed. However, when the TARP Data Cache is flushed as a result of a controller reset or initialization, all entries, including entries that were manually entered, are removed.

The following set of parameters are used to enter data manually into the TARP Data Cache. An entry in a TARP Data Cache consists of three parameters: The NSAP address, the Target Identifier (TID) and the address type of a Network Element. the NSAP, which is 20 bytes (40-digit hexadecimal), is composed of a number of separate fields, most of which have default values. Thus, to simplify the entry of the NSAP address, the NSAP is entered via a number of separate TDC NSAP parameters. The following parameters, **L4TDCORG**, **L4TDCRES**, **L4TDCRD**, **L4TDCAREA** and **L4TDCSYS**, are used to specify the user settable NSAP fields required to enter data into the TARP Data Cache.

The NSAP System ID field, **L4TDCSYS**, which is unique for each NE, is the only parameter required to specify the NSAP portion of a TARP Data Cache entry. This parameter does not have a default value.

If this parameter is specified, then any of the other user settable NSAP field parameters that are not specified and NSAP fields that are not settable by the user (the NSAP *IDP*, *DFI* and *SEL* fields) are set to their appropriate values in creating the NSAP portion of the TARP Data Cache entry. For the *IDP* and *DFI* fields, these values are the equivalent NSAP fields of the target NE. Since the *SEL* field may take different values depending on its use, it is set to "00" hex in the TARP Data Cache NSAP entry and is displayed as "00" hex.

If one or more TARP Data Cache provisioning parameters are specified but **L4TDCSYS** is not specified, then an entry is not made into the TARP Data Cache and an error message is returned.

Along with the TDC NSAP parameters, the parameter **L4TDCTID** is required to enter a set of data into the TDC. Both the NSAP parameters and **L4TDCTID** need to be specified for the action to be taken. These parameters enter a single row of data into the TDC. Multiple rows of data are entered using

multiple occurrences of **ENT-ULSDCC-L4**.

If the set of specified NSAP and the Target Identifier (TID, as specified by the **L4TDCTID** parameter) does not already exist in the TDC, then the data is added to the TDC. If the NSAP-TID pair already exist in the TDC, then no action is taken.

The TDC stores three parameters for each entry, the NSAP, TID and the TARP address type (identified as "tar-pro" in Bellcore GR253). The address type is not user provisionable and it is not included in the parameter set for this command. When entering an entry in the TDC, the address type field is set to its default value ('FE' hex).

The TARP Data Cache is a circular buffer with a maximum number of entries. The maximum is 110 entries. When a new entry with a unique TID would result in the maximum number being exceeded, the latest entry replaces the oldest entry. Thus, while there is no limit on the number of entries that may be manually entered, new entries may be displacing older entries without any error notification.

**L4TDCORG** This parameter is used to provision the NSAP Organization ID field of the network element to be manually entered into the TARP Data Cache.

If **L4TDCORG** is specified, then **L4TDCSYS** and **L4TDCTID** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is "**L4TDCORG**=*l4tdcorg*" where *l4tdcorg* is the 3 byte (6-digit hexadecimal) NSAP Organization ID field of the network element to be manually entered into the TARP Data Cache. The default value for this parameter is the NSAP Organization ID field of the target NE.

**L4TDCRES** This parameter is used to provision the NSAP Reserved field of the network element to be manually entered into the TARP Data Cache.

If **L4TDCRES** is specified, then **L4TDCSYS** and **L4TDCTID** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is "**L4TDCRES**=*l4tdcres*" where *l4tdcres* is the 2 byte (4-digit hexadecimal) NSAP Reserved field of

the network element to be manually entered into the TARP Data Cache. The default value for this parameter shall be the NSAP Reserved field of the target NE.

**L4TDCRD** This parameter is used to provision the NSAP Routing Domain field of the network element to be manually entered into the TARP Data Cache.

If **L4TDCRD** is specified, then **L4TDCSYS** and **L4TDCTID** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is "**L4TDCRD**=*l4tdcrd*" where *l4tdcrd* is the 2 byte (4-digit hexadecimal) NSAP Reserved field of the network element to be manually entered into the TARP Data Cache. The default value for this parameter shall be the NSAP Routing Domain field of the target NE.

**L4TDCAREA** This parameter is used to provision the NSAP Area field of the network element to be manually entered into the TARP Data Cache.

This NSAP field identifies the Area within the Routing Domain to which the NSAP address belongs.

If **L4TDCAREA** is specified, then **L4TDCSYS** and **L4TDCTID** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is "**L4TDCAREA**=*l4tdcare*a" where *l4tdcare*a is the 2 byte (4-digit hexadecimal) NSAP Area field of the network element to be manually entered into the TARP Data Cache. The default value for this parameter shall be the NSAP Area of the target NE.

**L4TDCSYS** This parameter is used to provision the NSAP System Identifier field of the network element to be manually entered into the TARP Data Cache.

**L4TDCSYS** must be specified for the entry to be made in the TARP Data Cache.

If **L4TDCSYS** is specified, then **L4TDCTID** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is

"**L4TDCSYS**=*l4tdcsys*" where *l4tdcsys* is the 6 byte (12-digit hexadecimal) NSAP System Identifier field of the network element to be manually entered into the TARP Data Cache. There is no default value.

**L4TDCTID** This parameter is used to provision the Target Identifier (TID) portion of a TARP Data Cache entry for manually entering data into the TARP Data Cache (TDC).

**L4TDCTID** must be specified for the entry to be made in the TARP Data Cache.

If **L4TDCTID** is specified, then **L4TDCSYS** must also be specified for the entry to be made in the TARP Data Cache.

The format for this parameter is

"**L4TDCTID**=*l4tdctid*" where *l4tdctid* is the Target Identifier of the network element associated with the TDC NSAP address parameters that are specified. **L4TDCTID** has a maximum of 20 characters. There is no default value.

## OUTPUT FORMAT

If the Network Element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the requested command provisions parameters that have the same values as those currently provisioned, the command does not alter the existing parameter values and the Network Element responds with a COMPLD message.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

The following example shows the provisioning of a TARP Manual Adjacency on the target NE:

```
ENT-ULSDCC-L4:LT-PF-2000::123456:::l4ajsys=08006A112345;
LT-PF-2000 98-04-23 13:12:16
M 123456 COMPLD
;
```



The following example shows the provisioning of multiple parameters on the target NE:

```
ENT-ULSDCC-L4:LT-PF-2000::987654:::l4tlif=50,l4tdcsys=08006A154321,l4tdctid=LT-PF2001;
/f(COLT-PF-2000 98-04-23 13:12:16
M 987654 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command. If an error is detected in any of the command parameters, the entire command is denied; there is no partial completion of the command. If there are errors in more than one command parameter, an error is detected and reported in only one of the parameters. The parameter for which the error is detected may not be the first parameter in the command that is in error. The Network Element returns the following error response if the *aid* value is missing, or invalid.

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

Any parameter may be in the *spec\_block* only once and may not be repeated. The Network Element returns the following error response if a parameter is repeated in the *spec\_block*

```

sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

The Network Element returns the following error response if the **L4TLIF** value is invalid.

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TLIF */
;
```

The Network Element returns the following error response if the **L4AJORG** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4AJORG */
;
```

The Network Element returns the following error response if the **L4AJRES** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4AJRES */
;
```

The Network Element returns the following error response if the **L4AJRD** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4AJRD */
;
```

The Network Element returns the following error response if the **L4AJAREA** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4AJAREA */
;
```

The Network Element returns the following error response if the **L4AJSYS** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4AJSYS */
;
```

If **L4AJORG**, **L4AJRES**, **L4AJRD** and/or **L4AJAREA** are specified without specifying **L4AJSYS** the Network Element returns the following error response if

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, L4AJSYS is required to specify the TARP Manual
Adjacent NSAP */
;
```

If the **L4AJSYS** specified is the same as the NSAP SYSTEM ID field of the local the Network Element, the command is denied and the following error response is returned:

```
sid date time
M ctag DENY
SDNC
/* Status, Data Not Consistent */
/* Local SYSID is not valid for TARP Manual Adjacencies */
;
```

If the TARP Manual Adjacencies list has the maximum number of entries and if **L4AJSYS** is specified, the command is denied and the following error response is returned:

```
sid date time
M ctag DENY
SLEM
/* Status, List Exceeds Maximum */
/* Maximum Number of TARP Manual Adjacencies Already Exists */
;
```

The Network Element returns the following error response if the **L4T1TM** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4T1TM */
;
```

The Network Element returns the following error response if the **L4T2TM** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4T2TM */
;
```

The Network Element returns the following error response if the **L4T3TM** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4T3TM */
;
```

The Network Element returns the following error response if the **L4T4TM** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4T4TM */
;
```



The Network Element returns the following error response if the **L4LFTM** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4LFTM */
;
```

The Network Element returns the following error response if the **L4TDCORG** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCORG */
;
```

The Network Element returns the following error response if the **L4TDCRES** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCRES */
;
```

The Network Element returns the following error response if the **L4TDCRD** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCRD */
;
```

The Network Element returns the following error response if the **L4TDCAREA** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCAREA */
;
```

The Network Element returns the following error response if the **L4TDCSYS** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCSYS */
;
```

If **L4TDCORG**, **L4TDCRES**, **L4TDCRD** and/or **L4TDCAREA** are specified without specifying **L4TDCSYS** the Network Element returns the following error response:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, L4TDCSYS is required to specify the TDC NSAP */
;
```

If either **L4TDCSYS** is specified without specifying **L4TDCTID** or **L4TDCTID** is specified without specifying **L4TDCSYS**, the Network Element returns the following error response:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, both L4TDCSYS and L4TDCTID are required*/
;
```

The Network Element returns the following error response if the **L4TDCTID** syntax is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4TDCTID */
;
```

The Network Element returns the following error response if the **L4ETDC** value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid L4ETDC */
;
```

## RELATED TL1 MESSAGES

**RTRV-ULSDCC-L4**

**DLT-ULSDCC-L4**

## NAME

**ENT-USER-SECU:** Enter User Security

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**ENT-USER-SECU:***tid:uid:ctag::pid,,uap[:keyword\_block];*

## DESCRIPTION

The **ENT-USER-SECU** command is used by an appropriate administrator to enter the security parameters associated with a user.

### ⇒ NOTE:

This command is available to privileged users only.

## INPUT PARAMETERS

|                      |                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>           | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                    |
| <i>uid</i>           | This is the user identifier of a user. Its valid values are a case-sensitive alphanumeric string of 1 to 10 characters.                                                                                                                                                                                                                                                                          |
| <i>ctag</i>          | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                            |
| <i>pid</i>           | Password. This is a case-sensitive string containing a minimum of 6 and a maximum of 10 alphabetic, numeric, and symbolic characters where at least two characters are nonalphabetic and at least one is symbolic (white space is ignored). Any character that is used in the TL1 syntax is not permitted.<br><br>Refer to Table 3-12 at the end of this section for a list of valid characters. |
| <i>uap</i>           | User access privilege. This has one of the following values: <b>general</b> or <b>reports-only</b> . <b>Privileged</b> is not allowed for this parameter since privileged users cannot be created in the NE.                                                                                                                                                                                     |
| <i>keyword_block</i> | Keyword parameter block. Temporary login attributes to be modified are specified inside this parameter block. Parameters within <i>keyword_block</i> are specified using <i>name=value, name=value, ...</i> type construct with no constraints on the order of the arrangement of parameters.                                                                                                    |

Constructs such as *name1=value1*, *name2=,...* are acceptable and in this example only the parameter *name1* will be attempted to be changed at the network element. If the current value of the parameter *name1* is already *value1* in the above example, *name1* will not be changed.

For the **ENT-USER-SECU** command, the *keyword\_block* may contain neither or both of the following parameters:

**TYPE** Login type. If a temporary login is desired, **TYPE** must equal **visitor**.

**visitor** Visitor Login. This indicates that this login is assigned for temporary access to the network element.

**EXPDAT** Expiration date. This is the requested expiration date in the following format: YY-MM-DD, where YY is the last two digits of the year ranging from 00 to 99, MM is the month of the year ranging from 01 to 12, and DD is the day of the month ranging from 01 to 31.

The **EXPDAT** parameter must be set if **TYPE=visitor**.

## OUTPUT FORMAT

If FT-2000 fully complies with the enter user security request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

**EXAMPLE INPUT/OUTPUT**

**ENT-USER-SECU:LT-FT-2000:kjlee:123456::pass12#,,general;**

IP 123456

<

LT-PF-2000 93-10-26 16:42:11

M 123456 COMPLD

;

**ENT-USER-SECU:LT-PF-2000:kjlee:123456::pass12#,,general:TYPE=visitor,EXPDAT=93-12-31;**

IP 123456

<

LT-PF-2000 93-10-26 16:42:11

M 123456 COMPLD

;



## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **ENT-USER-SECU** command also.

If FT-2000 receives an **ENT-USER-SECU** command from a user trying to enter his or her own *uid* (user identifier) and/or a *uap* value, the following error response is returned:

```
      sid date time
M  ctag DENY
   PICC
   /* Privilege, Illegal Command Code */
;
```

If FT-2000 receives an **ENT-USER-SECU** command with an existing *uid* (user identifier) that is not that users' own *uid*, the following error response is returned:

```
      sid date time
M  ctag DENY
   PIUI
   /* Privilege, Illegal User Identity */
;
```

If FT-2000 receives an **ENT-USER-SECU** command when it already has reached its maximum user logins (102 for FT-2000), the following error response is returned:

```
      sid date time
M  ctag DENY
   SLEM
   /* Status, List Exceeds Maximum */
;
```

For Release 5.0, if FT-2000 receives an **ENT-USER-SECU** command with an invalid *uid* (user id) value, the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid UID */
;
```

For Release 6.0 and later, if the network element receives an **ENT-USER-SECU** command with an invalid *uid* (user id) value, the following error response is returned:

```
sid date time
M ctag DENY
  PIUI
/* Privilege, Illegal User Identity, invalid UID */
;
```

For Release 5.0, if FT-2000 receives an **ENT-USER-SECU** command with an invalid *pid* (password) value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid PID */
;
```

For Release 6.0 and later, if the network element receives an **ENT-USER-SECU** command with an invalid *pid* (password) value, the following error response is returned:

```
sid date time
M ctag DENY
  PIUI
  /* Privilege, Illegal User Identity, invalid PID */
;
```

For Release 5.0, if FT-2000 receives an **ENT-USER-SECU** command with an invalid *uap* (user access privilege) value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid UAP */
;
```

For Release 6.0 and later, if the network element receives an **ENT-USER-SECU** command with an invalid *uap* (user access privilege) value, the following error response is returned:

```
sid date time
M ctag DENY
  PIUC
  /* Privilege, Illegal User Code, invalid UAP */
;
```

If FT-2000 receives an **ENT-USER-SECU** command with a **TYPE** other than **visitor**, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid TYPE */
;
```

If FT-2000 receives an **ENT-USER-SECU** command with an invalid **EXPDAT**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid EXPDAT */
;
```

If FT-2000 receives an **ENT-USER-SECU** command without an **EXPDAT** when **TYPE** is specified in the *keyword\_block* parameter, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid keyword_block */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**DLT-USER-SECU**

**ED-USER-SECU**

**RTRV-USER-SECU**

## NAME

**INH-MSG:** Inhibit Message

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**INH-MSG**-*modifier:tid:aid:ctag[:,, ]*;

## DESCRIPTION



### CAUTION:

*This command will suppress autonomous indications of failures at office alarms, parallel telemetry, and/or X.25 based OS interfaces.*

The **INH-MSG** command is initiated by a user to inhibit transmission of autonomous TL1 messages, office alarms, and/or parallel telemetry from a network element.

When a network element receives an **INH-MSG** command, the network element inhibits transmission of all of its autonomous messages, except office alarms, and/or parallel telemetry, if autonomous message and alarm reporting has not already been inhibited.



### NOTE:

This command is available to privileged users only.

When autonomous message reporting to the user is inhibited, the network element reports an abnormal status condition in an autonomous **REPT EVT** message.

This **REPT EVT** message, containing the abnormal status condition report, would be the last autonomous message sent before the **INH-MSG** command takes effect.

While autonomous message reporting is inhibited, the network element continues to respond fully to all command messages, specifically **RTRV-ALM** and **RTRV-COND**.

All new autonomous messages are inhibited. All autonomous messages that are in queue prior to the normal completion of the **INH-MSG** command are reported.

## INPUT PARAMETERS

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------|
| <i>modifier</i>    | Modifier. The value for this parameter must be <b>EQPT</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <i>tid</i>         | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <i>aid</i>         | Access identifier. The original value value is <b>all</b> , or value may be one of the following: <table><tr><td><b>office alms</b></td><td>This specifies that reporting of office alarms is to resume on the network element.</td></tr><tr><td><b>par tlm</b></td><td>For Releases 5.0 through 7.2, this specifies reporting of alarms over the parallel telemetry is to resume on the network element.</td></tr><tr><td><b>tl1</b></td><td>This specifies that autonomous message reporting is to resume on all TL1 ports on the network element.</td></tr><tr><td><b>all</b> or null</td><td>This specifies that reporting of all of the above parameters is to resume on the network element.</td></tr></table> | <b>office alms</b> | This specifies that reporting of office alarms is to resume on the network element. | <b>par tlm</b> | For Releases 5.0 through 7.2, this specifies reporting of alarms over the parallel telemetry is to resume on the network element. | <b>tl1</b> | This specifies that autonomous message reporting is to resume on all TL1 ports on the network element. | <b>all</b> or null | This specifies that reporting of all of the above parameters is to resume on the network element. |
| <b>office alms</b> | This specifies that reporting of office alarms is to resume on the network element.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <b>par tlm</b>     | For Releases 5.0 through 7.2, this specifies reporting of alarms over the parallel telemetry is to resume on the network element.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <b>tl1</b>         | This specifies that autonomous message reporting is to resume on all TL1 ports on the network element.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <b>all</b> or null | This specifies that reporting of all of the above parameters is to resume on the network element.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |
| <i>ctag</i>        | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                                                     |                |                                                                                                                                   |            |                                                                                                        |                    |                                                                                                   |

## OUTPUT FORMAT

If the network element fully complies with the **INH-MSG-EQPT** request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the network element receives an **INH-MSG-EQPT** command from a user when transmission of all autonomous messages, office alarms, and/or parallel telemetry had already been enabled, the network element provides a normal completion response.



## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
inh-msg-eqpt:LT-OLS-2000:all:123xyz;
```

```
IP 123xyz  
<
```

```
LT-OLS 96-01-06,09:30:49  
M 123xyz COMPLD  
;
```

```
inh-msg-eqpt:LT-PF-2000:all:123xyz;
```

```
IP 123xyz  
<
```

```
LT-FT-2000 93-06-06,09:30:49  
M 123xyz COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **INH-MSG** command also.

If an **INH-MSG** command is received with an invalid *aid* value, the following error response is returned:

```
      sid date time  
M  ctag DENY  
    IIAC  
    /* Input, Invalid Access Identifier */  
;
```

## RELATED TL1 MESSAGES

**ALW-MSG**

REPT EVT

## NAME

**INIT-REG:** Initialize Register

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**INIT-REG-modifier:tid:[aid]:ctag::,,,tmper[, ,];**

## DESCRIPTION



### CAUTION:

*Performance monitoring data collected to date for the selected register(s) will be deleted as a result of this command.*

The **INIT-REG** command is initiated by a user to initialize all *current* day and/or all *current* 15-minute performance-monitoring (PM) storage registers.

PM registers for previous day and previous 15-minute time periods are not affected by this command.

## INPUT PARAMETERS

*modifier* Modifier. The *modifier* value must be **ALL**.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. Because all current daily and/or 15-minute PM registers are initialized, the *aid* value must be **all** (default = all) or null.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*tmper* Time period. This requests that PM registers for a specified time interval be initialized. This parameter may have one of the following values:

**15-MIN** This requests that 15-minute PM registers be initialized.

**1-DAY** This requests that daily PM registers be initialized.

**ALL** This requests that all PM registers be initialized.

## OUTPUT FORMAT

If the network element fully complies with the initialize register request, the following normal completion response is returned:

```
      sid date time  
M  ctag COMPLD  
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
INIT-REG-ALL:LT-PF-2000:all:123456:,,,,15-MIN;  
  
IP 123456  
<  
  
      LT-FT-2000 93-06-06,09:30:49  
M  123xyz COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **INIT-REG** command also.

If an **INIT-REG** command is received with any command code modifier other than **ALL**, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If an **INIT-REG** command is received with an invalid *aid* value (that is, anything other than **all** or null), the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If an **INIT-REG-ALL** command is received with an invalid *tmper* value (that is, anything other than **15-MIN**, **1-DAY**, or **all**), the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid TMPER */
;
```

## RELATED TL1 MESSAGES

**RTRV-PM**

**SET-TH**

**RTRV-TH**

## NAME

**INIT-SYS:** Initialize System

This command is available in FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

For Releases 5.0 through 7.0:

**INIT-SYS:***tid:aid:ctag;*

For Releases 7.1 and later:

**INIT-SYS:***tid:aid:ctag::ph;*

## DESCRIPTION

The **INIT-SYS** command with the *ph* parameter set to 9 initializes the system. The **INIT-SYS** command with the *ph* parameter set to 3 resets the system. Initializing the system initializes the provisionable parameters to their original values whereas resetting the system resets the software without changing the provisioned parameters values.



### CAUTION:

*Execution of this command may affect service.*

The command **INIT-SYS** should NOT be used on an in-service system when the **ph** is set to 9 (equivalent in effect and behavior to the CIT *init-sys* command). With the *ph* set to the highest level, the highest phase of initialization takes place; with this setting, this command should only be used at the end of system installation before system turnup. Execution of this command at any network element will also affect the OS communication with that network element and all OS users logged into that network element will be logged out.

With the phase set to the highest level (9), this command initializes provisionable parameters to their original values. The time and date parameters are not affected by this command.

To reset the system, the **INIT-SYS** command can be used with the phase parameter set to 3. This command with the phase set to 3 has exactly the same effect as the **reset** command from the network element native User Interface since it resets the system software without changing parameters.

Reset clears the history log and performance monitoring data. In Releases 8.0 and later, reset also clears the TARP Data Cache and Long Detection Buffer.

Protection switches will be frozen until the reset is completed.

⇒ **NOTE:**

After entering the **INIT-SYS** command, with the phase set to the highest level (9), the system will show transient DCC failures that are recorded in the Alarm and History reports. This is a normal, expected system behavior.

This command is available to privileged users for both initializing the system when the phase value is set to 9 and for resetting the system when the phase value is set to 3.

This command is available to general users only for resetting the system when the phase value is set to 3 and NOT for initializing the system. If a general user attempts to initialize the system by setting the phase value to 9, the command is denied.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed. The <i>tid</i> is a required parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <i>aid</i>  | Access identifier. <i>aid</i> is a required parameter and can have only one value, <b>all</b> for both system initialization ( <i>ph</i> =9) and system reset ( <i>ph</i> =3).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>ctag</i> | Correlation tag. This is included in the command by the TL1 user and is repeated by the network element in the response to allow the TL1 user to associate the command and response messages. The <i>ctag</i> is a required parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>ph</i>   | Phase. This field specifies the level of the system initialization. This parameter must be one of the following values: <ul style="list-style-type: none"> <li><b>9</b> This is the highest phase of initialization and specifies an initialization of system parameters and a start of systems software. This command with <i>ph</i>=9 is used only at the end of installation of a new system and is never used on an in-service system.</li> <li><b>3</b> This is an interim level of initialization that resets the system software without affecting the setting of parameters. It does cause the history and performance monitoring data to be lost.</li> </ul> |

A general user is allowed to select a phase value of **3** only whereas a privileged user is allowed to select a phase value of **3** or **9**.



## OUTPUT FORMAT

Refer to the **RTRV-HDR OUTPUT FORMAT** section. The requirements listed there apply to the **INIT-SYS** command also.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The parameters listed there apply to the **INIT-SYS** command also.

## EXAMPLE INPUT/OUTPUT

### ⇒ NOTE:

Since a full system initialization (phase parameter set to 9) initializes the SYSCTL or the entire system, it will drop all user sessions including the one on the X.25 interface, and COMPLD message may or may not be conveyed back to the TL1 user.

### ⇒ NOTE:

Since a full system initialization occurs in the entire system, it will drop all user sessions including the one on the X.25 interface.

The following example initializes the system:

```
init-sys:LT-PF-2000:all:123456::9;  
IP 123456  
  
<  
  
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

### ⇒ NOTE:

Since a full system initialization occurs in the entire system, it will drop all user sessions including the one on the X.25 interface.

The following example resets the system:

```
init-sys:LT-PF2000:all:123456::3;  
IP 123456  
<  
    LT-PF2000 96-10-26 16:42:11  
M 123456 COMPLD  
;
```

 **NOTE:**

Since a full system reset occurs in the entire system, it will drop all user sessions including the one on the X.25 interface.

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The requirements listed there apply to the **INIT-SYS** command also.

If the network element receives an **INIT-SYS** command without an *aid* or with an *aid* field other than **all**, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier, AID is missing,
  wrong or inconsistent with modifier */
;
```

For Releases 7.1 and later, if the network element receives an **INIT-SYS** command with a missing or unsupported *ph* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid or missing PH */
;
```

For Releases 7.1 and later, if the network element receives an **INIT-SYS** command with a *ph* value of **9** from a general user, the following error response is returned:

```
sid date time
M ctag DENY
PICC
/* Privilege, Illegal Command Code, unallowed PH value for a general user */
;
```

If the Network Element receives an **INIT-SYS** command while SW download to this Network Element from another Network Element is in progress, the following error response is returned:

```
sid date time
M ctag DENY
SARB
/* Status, All Resources Busy
The system is not able to access the original parameter values
in SYSMEM because a software download is currently in progress.
Please try again later.
/
;
```

For Releases 7.1 and later, if the network element receives an **INIT-SYS** command with **ph=9** while a remote software copy from the network element to another network element is in progress, the following error response is returned:

```
sid date time
M ctag DENY
SARB
/* Status, All Resources Busy
   The system is not able to access the software programs and data
   in SYSMEM because a remote software copy from the network element
   to another network element is currently in progress.
   Please try again later.
*/
;
```

For Releases 7.1 and later, if an **INIT-SYS** command with **ph=3** is received while a remote software copy from the network element to another network element is in progress, the **INIT-SYS** command is completed with a normal completion response. However, the remote software copy to the other network element is disrupted and the other network element could be left in an unknown state. If the network element receives an **INIT-SYS** command while the SYSMEM is corrupted with bad checksum, the command shall be denied and the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed
   The execution of this command stopped because of
   a hardware problem in SYSMEM.
*/
;
```

For Releases 7.1 and later, if the network element receives an **INIT-SYS** command with **ph=9** while SW download to this network element from another network element is in progress, the following error response is returned:

```
sid date time
M ctag DENY
SARB
/* Status, All Resources Busy
   The system is not able to access the software programs and data
   in SYSMEM because a software download is currently in progress.
   Please try again later.
*/
;
```

If the network element receives an **INIT-SYS** command while the SYSCTL and SYSMEM have incompatible software versions, the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed
   The execution of this command stopped because SYSCTL and SYSMEM
   have incompatible software versions.
*/
;
```

For Releases 7.1 and later, if the network element receives an **INIT-SYS** command with *ph=9* while the SYSCTL and SYSMEM have incompatible software versions, the following error response is returned:

```
sid date time
M ctag DENY
SR0F
/* Status, Requested Operation Failed
   The execution of this command stopped because SYSCTL and SYSMEM
   have incompatible software versions.
*/
;
```

#### RELATED TL1 MESSAGES

None

## NAME

**OPR-ACO:** Operate Alarm Cutoff

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**OPR-ACO** - *modifier:tid:[aid]:ctag*;

## DESCRIPTION

The **OPR-ACO** command is initiated to request FT-2000 to operate the alarm cutoff (ACO) to silence the audible office alarms. Alarms remain silent until a new alarm condition arises.

### ⇒ NOTE:

This command is available to reports-only users, also.

### ⇒ NOTE:

For Release 8.0 and later, remote office alarms are no longer supported. Thus **OPR-ACO** serves to cut off local office alarms only.

If this command is executed while there is an active alarm condition in the system, it will:

- Silence active audible office alarms
- Light the ACO LED on the user panel

This command is equivalent to pushing the ACO button on the user panel, or prior to Release 8.0, activating the TBOS ACO control point.

## INPUT PARAMETERS

*modifier* Modifier. The *modifier* value must be **ALL**.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. Because the ACO function applies to the whole system, the *aid* value must be **all** or null (original value = **all**).

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.



## OUTPUT FORMAT

If the network element fully complies with the operate ACO request, the following normal completion response is returned:

```
      sid date time  
M  ctag COMPLD  
;
```

If the network element receives a valid **OPR-ACO** command but no alarm condition exists or existing alarms have already been cut off by a previous **OPR-ACO** command, the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
OPR-ACO:LT-PF-2000:all:123456;  
  
IP 123456  
<  
  
      LT-PF-2000 93-10-26 16:42:11  
M  123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **OPR-ACO** command also.

If FT-2000 receives an **OPR-ACO** command with a command code modifier other than **ALL**, the following error response is returned:

```
      sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid, invalid modifier */
;
```

If FT-2000 receives an **OPR-ACO** command with an invalid *aid* value (that is, anything other than **ALL** or null), the following error response is returned:

```
      sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid Access Identifier */
;
```

## RELATED TL1 MESSAGES

none

## NAME

**OPR-EXT-CONT:** Operate-External-Control

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**OPR-EXT-CONT:***tid:aid:ctag::dur*];

## DESCRIPTION

The **OPR-EXT-CONT** command can be initiated by users to operate an external miscellaneous discrete control, such as a relay activation, a fan, a light or sprinkler. Bellcore's description of this command utilizes the *conttype* parameter to enable the operation of multiple controls of the same type (for example, all sprinklers) to be operated. PF-2000 products implement this TL1 command without associated types but only with physical locations. Thus the *conttype* parameter has no meaning for PF-2000 products and is not included in the Lucent version of this TL1 command. The *aid* value cannot be null and cannot be **cont-all**. FT-2000 controls can be operated continuously or momentarily.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                |
| <i>aid</i>  | Access identifier. The <i>aid</i> identifies the external miscellaneous discrete control for which a description is being provisioned. The <i>aid</i> value cannot be null and cannot be <b>cont-all</b> .                                   |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                        |
| <i>dur</i>  | FT-2000 can operate remote controls either continuously ( <i>dur</i> = <b>conts</b> ) or momentarily ( <i>dur</i> = <b>mntry</b> ). Default value is <b>mntry</b> when parameter is null. The duration for the momentary operation is 300ms. |

## OUTPUT FORMAT

If the network element fully complies with the **OPR-EXT-CONT** request, the following normal completion response is returned.

```
LT-PF-2000 94-06-01 12:23:46  
M 123456 COMPLD  
;
```

If the **OPR-EXT-CONT** command does not alter the existing attributes, that is, the control referenced by the *aid* is already being operated, the network element will not deny the command. The system will respond with the completion message shown above.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **OPR-EXT-CONT** command, also.

## EXAMPLE INPUT/OUTPUT

The following example shows a command for a FT-2000 system to operate discrete control 1:

```
opr-ext-cont:LT-PF-2000:cont-1:123456::conts;  
IP 123456  
  
<  
  
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **OPR-EXT-CONT** command, also. If an **OPR-EXT-CONT** command is received with an invalid access identifier, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If an **OPR-EXT-CONT** command is received with an invalid duration parameter, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IDNV
/* Input, Data Not Valid, invalid DUR */
;
```

## RELATED TL1 MESSAGES

**RTRV-ATTR-CONT**

**SET-ATTR-CONT**

## NAME

**OPR-LPBK-rr**: Operate Low-Speed (LS) Terminal and Facility Loopbacks.

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**OPR-LPBK-modifier:tid:aid:ctag[::]**;

For Release 5.0, and later:

**OPR-LPBK-modifier:tid:aid:ctag[:],,lpbktype]**;

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

This command can be initiated by a user to request the network element to operate a manual terminal loopback at the specified LS interface toward the HS OC-n fiber interface or, for Releases 5.0 and 6.0, a facility loopback at the specified OC-3 LS interface. This command will be used during preservice testing of facilities and during fault diagnostics.



### NOTE:

This command is available to all general users.

This command can be initiated by a user to request the network element to operate a manual terminal or facility loopback at the specified LS interface. This command will be used during pre-service testing of facilities and during fault diagnostics.

In the case of FT-2000, facility loopback is only allowed at an OC-3 or IS-3 LS interface.

This command executes a loopback on an OC-12 quad in the "from OC-12" direction only.

When the network element receives an **OPR-LPBK-rr** command from the user without specifying *lpbktype*, the network element will operate a terminal or facility loopback on the specified LS interface.

The loopback request remains active until released; for example, by the TL1 command **RLS-LPBK-rr** command, or by the appropriate network element craft interface device (CID) command, or until overridden by a network element reset or initialization.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | <p>This is a required modifier to the <b>OPR-LPBK</b> message and may only have the following values:</p> <p><b>T3</b> This requests a loopback on a DS3 LS interface.</p> <p><b>EC1</b> This requests a loopback on an EC1 LS interface.</p> <p><b>OC3</b> This requests a terminal or facility loopback at the addressed OC-3 LS interface.</p> <p><b>OC12</b> For Releases 7.1 and later:<br/>This requests a facility loopback at the addressed OC-12 LS interface. This command executes a loopback on an OC-12 quad in the "from OC-12" direction only.</p> |
| <i>tid</i>      | <p>Target identifier. This is the name of the network element to which the command is addressed. The <i>tid</i> is a required parameter.</p>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>aid</i>      | <p>Access identifier.</p> <p>For Releases 5.0 through 7.0:<br/>The <i>aid</i> determines the DS3 or EC-1 low speed port, or OC-3 slot for which the loopback is being requested.</p> <p>For Releases 7.1 and later:<br/>Access identifier. The <i>aid</i> determines the DS3 or EC-1 low speed port, OC-3 slot, or OC-12 quad for which the loopback is being requested.</p> <p>Refer to Table 3-7 at the end of this section for a list of valid addresses.<br/><b>ALL</b> is not allowed in the <i>aid</i> value for the <b>OPR-LPBK-rr</b> command.</p>        |
| <i>ctag</i>     | <p>Correlation tag. This is included in the command by the TL1 user and is repeated by the network element in the response to allow the TL1 user to associate the command and response messages. The <i>ctag</i> is a required parameter.</p>                                                                                                                                                                                                                                                                                                                     |
| <i>lpbktype</i> | <p>For Releases 5.0, and later, this is an optional parameter. But when this parameter is used, the two ":"s and three ","s between the <i>ctag</i> and <i>lpbktype</i> are required. This parameter indicates the type of the loopback being operated. Valid values of type are:</p> <p><b>FACILITY</b> Facility loopback (signal is looped back toward the facility).</p>                                                                                                                                                                                       |

**TERMINAL** Terminal loopback (signal is looped back toward the HS fiber of the terminal). This is the original value value. Terminal loopback is not supported for OC-12 (Release 7.0).

This parameter is allowed only when the *modifier* is **OC3**.

## OUTPUT FORMAT

Refer to the **RTRV-HDR OUTPUT FORMAT** section. The requirements listed there apply to the **OPR-LPBK-rr** command also.

If the requested loopback command does not alter the existing loopback condition, the network element shall not DENY the command. Instead the network element shall respond with a COMPLD message.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The requirements listed there also apply to the **OPR-LPBK-rr** command.

## EXAMPLE INPUT/OUTPUT

The following example requests a DS3 loopback:

```
opr-lpbk-t3:LT-PF-2000:ls-1a-1:123456::;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```



For Releases 5.0 and later, the following example requests an OC-3 facility loopback:

```
opr - lpbk-oc3:LT-PF-2000:ls-1a:123456::,,facility;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 7.1 and later,  
the following example requests an IS-3 terminal loopback:

```
opr - lpbk-oc3:LT-PF-2000:ls-3a:123456;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 7.1 and later, the following example requests an OC-12 facility loopback at OC-12 quad 1:

```
opr-lpbk-oc12:LT-PF-2000:ls-1b:123456::,,facility;
IP 123456
<
    LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** "ERROR RESPONSES" section. The error responses listed there also apply to the **OPR-LPBK-rr** command.

If the network element receives an **OPR-LPBK** command without an *aid* or with an *aid* other than that supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier, AID is missing,
   wrong or inconsistent with modifier */
;
```

If the network element receives an **OPR-LPBK** with an otherwise valid *aid* value but the command could not be completed by the network element, the following error response is returned:

```

sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed */
;
```

For Releases 5.0 and later, if the network element receives an **OPR-LPBK-rr** command, where *rr* is **EC1** or **T3**, with an otherwise valid *aid* value but with the *lpbktype* parameter, then the following error response is returned:

```

sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid */
;
```

For Releases 5.0 and later, if the network element receives an **OPR-LPBK-rr** command, where *rr* is **OC3** or **OC12**, with an otherwise valid *aid* value but with an invalid *lpbktype* parameter value, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LPBKTYPE */
;
```

For Releases 7.1 and later, if the network element receives an **OPR-LPBK-rr** command, where *rr* is **OC12**, with an otherwise valid *aid* value but with an invalid *lpbktype* parameter value, or a *lpbktype* parameter value of **TERMINAL**, the following error response is returned:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LPBKTYPE */
;
```

For Releases 5.0 and later, if the network element receives a **OPR-LPBK-rr** command with a valid *aid* value but the command could not be completed by the network element because there is the other type of loopback active at that *aid*, the following error response is returned:

```
sid date time
M ctag DENY
  SAOP
/* Status, Already OPerated
   The addressed entity already has a loopback active in the
   opposite direction. The active loopback must be released
   before the requested loopback can be operated.
*/
;
```

## RELATED TL1 MESSAGES

**RLS-LPBK-rr**

## NAME

**OPR-PROTNSW-OC12:** Operate OC-12 Low Speed Optical Line Protection Switch

Support for this command is available in Release 7.1 and later.

## INPUT FORMAT

**OPR-PROTNSW-OC12:***tid:aid:ctag::sc[:dirn];*

## DESCRIPTION

The **OPR-PROTNSW-OC12** message can be initiated by a user to request the network element to operate a manual or forced switch or to lockout, or inhibit protection switching on a 1+1 (protected) OC-12 Optical Interface.

When FT-2000 receives an **OPR-PROTNSW-OC12** command, the network element will operate the protection switching request on the specified 1+1 (protected) OC-12 Optical Interface. The forced, lockout and inhibit, but *not* manual protection switching requests remain active until released (for example, by TL1 command **RLS-PROTNSW-OC12** or by the appropriate FT-2000 PC-CIT command) or until overridden by a higher priority external ("*non-auto*") protection switching request.

Manual switches stay in effect until overridden by another manual or higher priority external ("*non-auto*") protection switching request (for example, by TL1 command **OPR-PROTNSW-OC12** with an *sc* value of MAN or by the appropriate FT-2000 PC-CIT command) or until overridden by automatic protection switching. FT-2000 OC-12 Optical Interfaces can be provisioned for the following:

1. 1+1 unidirectional, non-revertive protection switching; and
2. 0x1 (unprotected) operation.

The **OPR-PROTNSW-OC12** command is only applicable when the OC-12 Optical Interface is provisioned as 1+1.

An **OPR-PROTNSW-OC12** command affects the selection of one of the addressed pair of incoming low speed OC-12 signals. It does not affect which of the pair of *transmitted* OC-12 signals is selected by the far end.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **OPR-PROTNSW** message and may only have the following value: **OC12**.

**OC12** This requests a protection switch of a 1+1 (protected) OC-12 Optical Interface.

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>aid</i>  | Access identifier. This is the slot address of either of the 1+1 (protected) low speed OC-12 Optical Interfaces for which the <b>OPR-PROTNSW-OC12</b> command is intended. Refer to Table 3-7 at the end of this section for a list of valid low speed slot addresses.<br><br>Grouping and/or ranging of <i>aid</i> values (or any other TL1 input parameter) is not allowed in FT-2000. While FT-2000 does allow for the use of the <b>all</b> construct within the <i>aid</i> field of other TL1 commands to provide access to a range of AIDs, the <b>all</b> construct is <i>not</i> supported in the <b>OPR-PROTNSW-OC12</b> command. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>sc</i>   | Switch command. This specifies the type of protection switching that is to be initiated on the OC-12 Optical Interface pair identified in the <i>aid</i> parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

The terminology used in the descriptions for the allowed values of *sc*, is used as follows:

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1+1 | Terminology for various "lines" in a 1+1 protected system are defined as:<br><br><div> <p><b>protection</b> This is the receive/transmit optical OC-12 Optical Interface that carries the SONET APS channel. In FT-2000, this is assumed to be the higher-numbered (that is, the "B" slot of the "A" and "B" pair) slot of the pair.</p> </div> <div> <p><b>service</b> This is the receive/transmit optical OC-12 Optical Interface that is not carrying the SONET APS channel. In FT-2000, this is assumed to be the lower-numbered (that is, the "A" slot of the "A" and "B" slot pair) slot of the pair.</p> </div> <div> <p><b>active</b> The optical (receive) line currently selected by the receiving end is said to be the active line.</p> </div> <div> <p><b>standby</b> The optical (receive) line not currently selected by the receiving end is said to be the standby line.</p> </div> |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The *sc* parameter may have one of the following values: **INH**, **LOCKOUT**, **FRCD**, **MAN**.

|            |                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>INH</b> | This requests that protection switching be inhibited, freezing the protection switching mechanism so that the current <b>active</b> line |
|------------|------------------------------------------------------------------------------------------------------------------------------------------|

remains selected (until released - for example, **RLS-PROTNSW-OC12**) regardless of any subsequent failures or switch requests. A switch inhibit is of higher priority than auto switch requests. If the active line is in a signal fail or signal degrade condition, the switch inhibit may be service affecting.

**LOCKOUT**

This requests switching lockout, preventing selection of the locked out line. The lockout switch request will remain active until released, or until an inhibit request is accepted.

This will prevent a switch to the **protection** line. If the **protection** line is currently selected, service will be switched to the **service** line unless there is an existing inhibit protection switching request. A switch lockout is of higher priority than auto switch requests. If the service line is in a signal fail or signal degrade condition, the switch lockout may be service affecting.

**FRCD**

This requests a forced protection switch, forcing selection of a line. The forced switch request will remain active until released, or until an inhibit, or lockout, request is accepted.

The **standby** line is selected unless there is an existing inhibit or lockout protection switching request. A forced switch is of higher priority than auto switch requests. If the line being switched to is in a signal fail or signal degrade condition, the forced switch may be service affecting.

**MAN**

This requests a manual protection switch.

The **standby** line is selected provided the **standby** line is good and there are no existing (standing condition) protection switching requests. For reporting purposes and status retrieval (for example, RTRV-COND), manual switches are treated and reported as transient conditions (TC).

In order for the command to be successfully completed, the selected OC-12 slot pair must be provisioned for 1+1 protection switching operation.

*dirn*

Direction. This provides the direction of transmission in which the switching command is to be initiated relative to the OC-12 Optical Interface identified by the *tid* and *aid*. This parameter may be



null or may have the following value:

**RCV** Unidirectional switch, receive direction only

If the *dirn* value is null, the value will default to: **RCV**.

## OUTPUT FORMAT

If FT-2000 fully complies with the protection switching request, the following output message is returned:

```
      sid date time  
M  ctag COMPLD  
;
```

If the protection switching request contained within the command does not alter the existing protection switching state or priority, FT-2000 will not deny the command. Instead the system will respond with the completion message (shown above). An example of this is when the protection line is locked out, and a request is made for lockout of protection.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following example shows a request for a manual protection switch:

```
opr-protnsw-oc12:LT-FT-2000:ls-7a:123456::MAN:RCV;  
IP 123456  
<  
LT-FT-2000 96-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a request for a forced protection switch:

```
opr-protnsw-oc12:LT-FT-2000:ls-7a:123456::FRCD:RCV;  
IP 123456  
<  
LT-FT-2000 96-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a request to inhibit protection switching:

```
opr-protnsw-oc12:LT-FT-2000:ls-1a:aBc123::inh;  
  
IP aBc123  
<  
    LT-FT-2000 96-10-26 17:33:18  
M aBc123 COMPLD  
;
```

The following example shows a request to lockout protection switching:

```
opr-protnsw-oc12:LT-FT-2000:ls-1a:aBc123::lockout;  
  
IP aBc123  
<  
    LT-FT-2000 96-10-26 17:33:18  
M aBc123 COMPLD  
;
```

## ERROR RESPONSES

In addition to the non-message-specific error responses listed in the **RTRV-HDR ERROR RESPONSES** description, the following error responses are also provided, as specified.

If the network element receives an **OPR-PROTNSW-OC12** command without an *aid* value or with an *aid* value that is invalid for a 1+1 protected OC-12 low speed slot, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **OPR-PROTNSW-OC12** command with a *sc* value that is not supported by the network element for 1+1 protected OC-12 operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SC */
;
```

If the network element receives an **OPR-PROTNSW-OC12** command with a *dirn* value that is not valid for unidirectional OC-12 1+1 (protected) operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid DIRN */
;
```

If the network element receives an **OPR-PROTNSW-OC12** command with an otherwise valid *aid* value but for which the command is directed at a slot implementing 0x1 (unprotected) protection switching operation, or is directed to the service slot and the protection slot is unequipped (slot in AUTO state), the following error response is returned:

```
sid date time
M ctag DENY
  ENPS
  /* Equipage, Not equipped with Protection Switching,
    inconsistent with provisioned configuration */
;
```

If the network element receives an **OPR-PROTNSW-OC12** command with an otherwise valid *aid* value but for which the command is directed to an unequipped slot (slot in AUTO state), or a slot equipped with anything other than OC12 circuit packs, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, AID value inconsistent with current equipage */
;
```

If the network element receives a valid **OPR-PROTNSW-OC12** command, but for which, the command cannot be executed because of a hardware problem, the following error response is returned:

```
sid date time
M ctag DENY
SPFA
/* Status, Protection unit FAiled,
hardware problem with protection switching mechanism. */
;
```

If the network element receives an **OPR-PROTNSW-OC12** command with an otherwise valid *sc* value that would change the protection switching state and/or priority, but for which, an equal or higher priority protection switching request already exists, the following error response is returned:

```
sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied,
Equal or higher-priority switch request exists
*/
;
```

#### RELATED TL1 COMMANDS/MESSAGES

**OPR-PROTNSW-OC3**

**OPR-PROTNSW-OC48**

**RLS-PROTNSW-OC3**

**RLS-PROTNSW-OC12**

**RLS-PROTNSW-OC48**

## NAME

**OPR-PROTNSW-OC3:** Operate OC-3 Low Speed Optical Line Protection Switch

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**OPR-PROTNSW-OC3:***tid:aid:ctag::sc[:dirn];*

## DESCRIPTION

**OPR-PROTNSW-OC3** command messages can be initiated by an user to request FT-2000 to operate a manual or forced switch or to lockout, or inhibit protection switching on a 1+1 (protected) OC-3 low speed optical Optical Interface.

When FT-2000 receives an **OPR-PROTNSW-OC3** command, FT-2000 will operate the protection switching request on the specified 1+1 (protected) OC-3 Optical Interface.

The forced, lockout and inhibit, but *not* manual protection switching requests remain active until released (for example, by TL1 command **RLS-PROTNSW-OC3** or by the appropriate FT-2000 CIT-PC command) or until overridden by a higher priority external ("*non-auto*") protection switching request.

Manual switches stay in effect until overridden by another manual or higher priority external ("*non-auto*") protection switching request (for example, by TL1 command **OPR-PROTNSW-OC3** with an *sc* value of **MAN** or by the appropriate FT-2000 CIT-PC command) or until overridden by automatic protection switching.

FT-2000 OC-3 Optical Interfaces can be provisioned for:

1. 1+1 unidirectional, non-revertive protection switching; and
2. 0x1 (unprotected) operation.

The **OPR-PROTNSW-OC3** command is only applicable when the OC-3 Optical Interface is provisioned as above.

An **OPR-PROTNSW-OC3** command affects the selection of one of the addressed pair of incoming low speed OC-3 signals. It does not affect which of the pair of *transmitted* OC-3 signals is selected by the far end.

For Releases 7.1 and later, when FT-2000 receives an **OPR-PROTNSW-OC3** command, FT-2000 will operate the protection switching request on the specified 1+1 (protected) OC-3/IS-3 Optical Interface. FT-2000 OC-3/IS-3 Optical Interfaces can be provisioned for:

1. 1+1 unidirectional, non-revertive protection switching; and
2. 0x1 (unprotected) operation.



The **OPR-PROTNSW-OC3** command is only applicable when the OC-3/IS-3 Optical Interface is provisioned as above.

An **OPR-PROTNSW-OC3** command affects the selection of one of the addressed pair of incoming low speed OC-3/IS-3 signals. It does not affect which of the pair of *transmitted* OC-3/IS-3 signals is selected by the far end.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **OPR-PROTNSW** message and may only have the following value: **OC3**.

**OC3** For Releases 5.0 through 7.0:

The modifier set to **OC3** requests a protection switch of a 1+1 (protected) OC-3 Optical Interface.

For Releases 7.1 and later:

The **OC3** modifier is also applicable for a protection switch of a 1+1 (protected) OC-3/IS-3 Optical Interface.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

The *tid* is always required.

*aid* Access identifier. This is the slot address of either of the 1+1 (protected) low speed OC-3 Optical Interfaces for which the **OPR-PROTNSW-OC3** command is intended.

Refer to Table 3-7 at the end of this section for a list of valid low speed slot addresses.

Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in FT-2000. While FT-2000 does allow for the use of the **all** construct within the *aid* field of other TL1 commands to provide access to a range of AIDs, the **all** construct is *not* supported in the **OPR-PROTNSW-OC3** command.

*ctag* Correlation tag. This is included in the command by an user and is repeated by FT-2000 in the response to allow the user to associate the command and response messages.

*sc* Switch command.

This specifies the type of protection switching that is to be initiated on the OC-3 Optical Interface pair identified in the *aid* parameter.

The terminology used in the descriptions for the allowed values of *sc*, is used as follows:

- 1+1 Terminology for various "lines" in a 1+1 protected system are defined as follows:
- protection** This is the receive/transmit optical OC-3 Optical Interface that carries the SONET APS channel. In FT-2000, this is assumed to be the higher-numbered (that is, the "B" slot of the "A" and "B" pair) slot of the pair.
  - service** This is the receive/transmit optical OC-3 Optical Interface that is not carrying the SONET APS channel. In FT-2000, this is assumed to be the lower-numbered (that is, the "A" slot of the "A" and "B" slot pair) slot of the pair.
  - active** The optical (receive) line currently selected by the receiving end is said to be the active line.
  - standby** The optical (receive) line not currently selected by the receiving end is said to be the standby line.

For Releases 7.1 and later:

This specifies the type of protection switching that is to be initiated on the OC-3/IS-3 Optical Interface pair identified in the *aid* parameter.

The terminology used in the descriptions for the allowed values of *sc*, is used as follows:

- 1+1 Terminology for various "lines" in a 1+1 protected system are defined as:
- protection** This is the receive/transmit optical OC-3/IS-3 Optical Interface that carries the SONET APS channel. In FT-2000, this is assumed to be the higher-numbered (that is, the "B" slot of the "A" and "B" pair) slot of the pair.
  - service** This is the receive/transmit optical OC-3/IS-3 Optical Interface that is not carrying the SONET APS channel. In FT-2000, this is assumed to be the lower-numbered (i.e., the "A" slot of the "A" and "B" slot pair) slot of the pair.
  - active** The optical (receive) line currently selected by the receiving end is said to be the active line.

***standby*** The optical (receive) line not currently selected by the receiving end is said to be the standby line.

The *sc* parameter may have one of the following values:  
**INH, LOCKOUT, FRCD, MAN.**

**INH** This requests that protection switching be inhibited, freezing the protection switching mechanism so that the current ***active*** line remains selected (until released - e.g., **RLS-PROTNSW-OC3**) regardless of any subsequent failures or switch requests. A switch inhibit is of higher priority than auto switch requests. If the active line is in a signal fail or signal degrade condition, the switch inhibit may be service affecting.

**LOCKOUT** This requests switching lockout, preventing selection of the locked out line. The lockout switch request will remain active until released, or until an inhibit request is accepted.

This will prevent a switch to the ***protection*** line. If the ***protection*** line is currently selected, service will be switched to the ***service*** line unless there is an existing inhibit protection switching request. A switch lockout is of higher priority than auto switch requests. If the service line is in a signal fail or signal degrade condition, the switch lockout may be service affecting.

**FRCD** This requests a forced protection switch, forcing selection of a line. The forced switch request will remain active until released, or until an inhibit or lockout request is accepted.

The ***standby*** line is selected unless there is an existing inhibit or lockout protection switching request. A forced switch is of higher priority than auto switch requests. If the line being switched to is in a signal fail or signal degrade condition, the forced switch may be service affecting.

**MAN** This requests a manual protection switch.

The **standby** line is selected provided the **standby** line is good and there are no existing (standing condition) protection switching requests. For reporting purposes and status retrieval (for example, RTRV-COND), manual switches are treated and reported as transient conditions (TC).

In order for the command to be successfully completed, the selected OC-3 slot pair must be provisioned for 1+1 protection switching operation.

*dirn* Direction.

For Releases 5.0 through 7.0, this provides the direction of transmission in which the switching command is to be initiated relative to the OC-3 Optical Interface identified by the *tid* and *aid*. This parameter may be null or may have the following value:

**RCV** Unidirectional switch, receive direction only

If the *dirn* value is null, the value will original value to:  
**RCV**.

For Releases 7.1 and later, this provides the direction of transmission in which the switching command is to be initiated relative to the OC-3/IS-3 Optical Interface identified by the *tid* and *aid*. This parameter may be null or may have the following value:

**RCV** Unidirectional switch, receive direction only

If the *dirn* value is null, the value will default to: RCV.

## OUTPUT FORMAT

If FT-2000 fully complies with the protection switching request, the following output message is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the protection switching request contained within the command does not alter the existing protection switching state or priority, FT-2000 will not deny the command. Instead the system will respond with the completion message (shown above). An example of this is when the protection line is locked out, and a request is made for lockout of protection.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section of the **RTRV-HDR** command.

### EXAMPLE INPUT/OUTPUT

The following example shows a manual protection switch command requested of an FT-2000:

```
opr-protnsw-oc3:LT-FT-2000:ls-7b:123456::MAN:RCV;
```

```
IP 123456  
<
```

```
LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a inhibit protection switch command requested of an FT-2000:

```
opr-protnsw-oc3:LT-FT-2000:ls-1b:aBc123::inh;
```

```
IP aBc123  
<
```

```
LT-FT-2000 93-10-26 17:33:18  
M aBc123 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **RLS-PROTNSW** command, also.

In addition to the non-message-specific error responses listed in **RTRV-HDR**, the following error responses are also provided, as specified.

If FT-2000 receives an **OPR-PROTNSW-OC3** command without an *aid* value or with an *aid* value that is invalid for a FT-2000 1+1 protected OC-3 low speed slot, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with a *sc* value that is not supported by FT-2000 for 1+1 protected OC-3 operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SC */
;
```

For Releases 7.1 and later, if FT-2000 receives an **OPR-PROTNSW-OC3** command with an *sc* value that is not supported by FT-2000 for 1+1 protected OC-3/IS-3 operation, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SC */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with a *dirn* value that is not valid for unidirectional OC-3 1+1 (protected) operation, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```



For Releases 7.1 and later, if FT-2000 receives an **OPR-PROTNSW-OC3** command with a *dirn* value that is not valid for unidirectional OC-3/IS-3 1+1 (protected) operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid DIRN */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with an otherwise valid *aid* value but for which the command is directed at a slot implementing 0x1 (unprotected) protection switching operation, or is directed to the service slot and the protection slot is unequipped (slot in AUTO state), the following error response is returned:

```
sid date time
M ctag DENY
  ENPS
  /* Equipage, Not equipped with Protection Switching, inconsistent with
  provisioned configuration */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with an otherwise valid *aid* value but for which the command is directed to an unequipped slot (slot in AUTO state), or a slot equipped with anything other than OC3 circuit packs, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid,
AID value inconsistent with current equipage */
;
```

If FT-2000 receives a valid **OPR-PROTNSW-OC3** command, but for which the command cannot be executed because of a hardware problem, the following error response is returned:

```
sid date time
M ctag DENY
SPFA
/* Status, Protection unit FAiled,
hardware problem with protection switching mechanism. */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with an otherwise valid *sc* value that would change the protection switching state and/or priority, but for which an equal or higher priority protection switching request already exists, the following error response is returned:

```
sid date time
M ctag DENY
  SSRD
  /* Status, Switch Request Denied,
  Equal or higher-priority switch request exists
  */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC3** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (,), or termination characters (;), the following error response is returned:

```
sid date time
M ctag DENY
  IISP
  /* Input, Invalid Syntax or Punctuation */
;
```

## RELATED TL1 COMMANDS/MESSAGES

### RLS-PROTNSW-OC3

## NAME

**OPR-PROTNSW-OC48:** Operate OC-48 Line Protection Switch

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**OPR-PROTNSW-OC48:***[tid]:aid:ctag::sc[:dirn];*

For Releases 5.0 and later:

**OPR-PROTNSW-OC48:***tid:aid:ctag::sc[:dirn];*

## DESCRIPTION

**OPR-PROTNSW-OC48** command messages can be initiated by a user to request FT-2000 to operate a manual or forced loopback protection switch or to lockout loopback protection switching in Add/Drop Rings applications (for Two Fiber Bidirectional Line Switched Rings, or "2f BLSRs").

### ⇒ NOTE:

FT-2000 Two Fiber Bidirectional Line Switched Ring (2f BLSR) applications use loopback protection switching, where each high speed span supports two routes: a bidirectional service route and a bidirectional protection route. STS-3 line tributaries numbers 1 through 8 are assigned to service and STS-3 line tributaries numbers 9 through 16 are assigned to protection.

The ring automatically protects against unidirectional, bidirectional and multiple transmission failures (for example, node failures). To do so, the ring uses a loopback mechanism where the service route is looped back onto the protection route in the direction opposite the failure.

FT-2000 does provide the user capability to access the protection route from any ring node to any other ring node on a per STS-3 line tributary basis to provide low priority traffic. Such traffic will be dropped in all loopback protection switching cases, except when loopback protection switching is locked out.

For Release 4.1, this command is invoked with a modifier of *OC48*. Refer to **OPR-PROTNSW-rr** for usage of **OPR-PROTNSW** with other modifiers, including invalid modifiers.

When FT-2000 receives an **OPR-PROTNSW-OC48** command, FT-2000 will operate the protection switching request on the specified OC-48 line. The external protection switching requests remain active until released (for example, by TL1 command **RLS-PROTNSW-OC48** or by the appropriate FT-2000 CIT-PC command) or until overridden by a higher priority protection switching request.

In Add/Drop Rings applications, FT-2000 provides capabilities for bidirectional, revertive loopback protection switching.

Thus, an **OPR-PROTNSW-OC48** command will affect the selection of *both the incoming and transmitted* signals at the near and far ends.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **OPR-PROTNSW** message and may only have the following values: **OC48**.

**OC48** This requests a high speed loopback protection switch. This command request is fully described in this TL1 command page.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

For Release 4.1, if no *tid* is given, the command is interpreted to be addressed to the Gateway network element (GNE - the network element connected directly to the OS via an X.25 link).

For Release 5.0 and later, the *tid* is always required.

*aid* Access identifier. This is the address of the OC-48 line facility for which the **OPR-PROTNSW-OC48** command is intended.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

The allowed *aid* value of each individual protection switching command is a function of the type of protection switching currently being operated by the FT-2000 system and the actual switch command request (see *sc*, below).

*ctag* Correlation tag. This is included in the command by the user and is repeated by FT-2000 in the response to allow the user to associate the command and response messages.

*sc* Switch command. This required parameter is the switch command that is to be initiated on the OC-48 line identified in the *aid* parameter.

The terminology used in the descriptions for the allowed values of *sc*, is used as follows:

**BLSR** In BLSR Add/Drop Rings Terminal applications, STS-3 line tributaries numbers 1 through 8 on each line (east and west) are assigned for the **service route**, and STS-3 line tributaries numbers 9 through 16 on each line are assigned for the **protection route**. For protection switching, communications are accomplished using the SONET APS channel.

The *sc* parameter may have one of the following values: **INH**, **LOCKOUT**, **FRCD**, and **MAN**.

**INH** **INH** requests that protection switching be inhibited, freezing the protection switching mechanism so that the current active line remains selected regardless of any subsequent failures or switch requests. A switch inhibit is of higher priority than auto switch requests. If the active line is in a signal fail or signal degrade condition, the switch inhibit may be service affecting.

**LOCKOUT** **LOCKOUT** requests switching lockout, preventing selection of the locked out line. The lockout switch request will remain active until released, or until an inhibit request is accepted.

In BLSR Add/Drop Rings Terminals, this will prevent use of the **protection route** for any protection switching activity for any span on the entire ring. If any service traffic is currently accessing the protection route, the traffic will switch back to the service route. The *aid* may identify **either** or **both** (using the **line-all** AID construct) high speed line(s). A switch lockout is of higher priority than auto switch requests. If the service line is in a signal fail or signal degrade condition, the switch lockout may be service affecting.

**FRCD** This requests a forced protection switch, forcing selection of a line. The forced switch request will remain active until released, or until an inhibit, or lockout request is accepted.

In BLSR Add/Drop Rings Terminals, a loopback of the service route onto the protection route is selected unless there is an existing lockout protection switching request. The *aid* must

identify the **affected** line. A forced switch is of higher priority than auto switch requests. If the line being switched to is in a signal fail or signal degrade condition, the forced switch may be service affecting.

**MAN** **MAN** requests a manual protection switch.

In BLSR Add/Drop Rings Terminals, the **service** route is looped back onto the **protection** route is selected provided the **protection** route is good and there are no existing (standing condition) protection switching requests. The **aid** must identify the **affected** line. In BLSR Add/Drop Rings Terminals, for reporting purposes and status retrieval (for example, **RTRV - COND**), manual switches are treated and reported as standing conditions (SC).

In order for the command to be successfully completed, the **sc** must be in agreement with the protection switching operation of the FT-2000 system, as defined above.

For example, an **sc** value of **INH** is not allowed in FT-2000 1x1 BLSR protection switching schemes.

**dirn** Direction. This provides the direction of transmission in which the switching command is to be initiated relative to the OC48 line identified by the **tid** and **aid**. This parameter may be null or may have the following values:

**RCV** Unidirectional switch, receive direction only

**BTH** Bidirectional switch (transmit and receive directions)

If the **dirn** value is null, the value will original value to: **BTH** if the system is operating with bidirectional switching mode; and **RCV** if the system is operating in a unidirectional switching mode.

In order for the command to be successfully completed, the **dirn** must be in agreement with the protection switching operation of the FT-2000 system. If the system is operating with bidirectional protection switching (including Add/Drop Rings Terminal applications), the **dirn** must be

BTH, if not null. If the system is operating with unidirectional protection switching, the *dirn* must be RCV, if not null.

## OUTPUT FORMAT

If FT-2000 fully complies with the protection switching request, the following output message is returned:

```
sid date time
M ctag COMPLD
;
```

If the protection switching request contained within the command does not alter the existing protection switching state or priority, FT-2000 will not deny the command. Instead the system will respond with the completion message (shown above). An example of this is when the protection line is locked out, and a request is made for lockout of protection.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.



## EXAMPLE INPUT/OUTPUT

The following example shows a manual protection switch command requested of an FT-2000 operating BLSR high speed loopback protection switching.

```
opr-protnsw-oc48:LT-FT-2000:Line-1:123456::MAN:BTH;
```

```
IP 123456  
<
```

```
LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **RLS-PROTNSW** command, also.

In addition to the non-message-specific error responses listed in **RTRV-HDR**, the following error responses are also provided, as specified.

If FT-2000 receives an **OPR-PROTNSW** command with a command code modifier other than OC48, the following error response is returned to the OS:

```
sid date time  
M ctag DENY  
IICM  
/* Input, Invalid Command,  
Command code modifier must be OC48 (for line protection switching)  
or STS3 (for DRI path protection switching).  
*/  
;
```

If FT-2000 receives an **OPR-PROTNSW-OC48** command without an *aid* value or with an *aid* value that is invalid for an FT-2000 OC-48 line, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If FT-2000 is operating as an Add/Drop Rings Terminal and thus is provisioned for BLSR high speed loopback protection switching and receives an **OPR-PROTNSW-OC48** command with an *sc* value that is not supported by FT-2000, or with an *sc* value not valid for BLSR protected operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SC */
;
```

For Release 5.0 and later, if FT-2000 is operating as an Add/Drop Rings Terminal and thus is provisioned for BLSR high speed loopback protection switching and receives an **OPR-PROTNSW-OC48** command with an *sc* value that is not supported by FT-2000, or with an *sc* value not valid for BLSR protected operation, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
2-fiber Bidir. Line Switched Ring switching:
SC = LOCKOUT, FRCD, or MAN (no default) */
;
```

If FT-2000 receives an **OPR-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the command is directed to the service line and the protection line is unequipped (line in *AUTO* state), the following error response is returned:

```
sid date time
M ctag DENY
ENPS
/* Equipage, Not equipped with Protection Switching,
inconsistent with provisioned configuration */
;
```

For Releases 3.0 through 4.1, if FT-2000 receives an **OPR-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the command is directed to an unequipped line (line in AUTO state), the following error response is returned to the OS:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
AID value inconsistent with current equipage */
;
```

For Release 5.0 and later, if FT-2000 receives an **OPR-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the command is directed to an unequipped line (line in AUTO state), the following error response is returned to the OS:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid,
AID value inconsistent with current equipage */
;
```

If FT-2000 receives a valid **OPR-PROTNSW-OC48** command, but for which, the command cannot be executed because of a hardware problem, the following error response is returned:

```
sid date time
M ctag DENY
  SPFA
/* Status, Protection unit FAiled,
hardware problem with protection switching mechanism. */
```

If FT-2000 receives an **OPR-PROTNSW-OC48** command with a second manual ring switch request when a first manual ring switch request already exists, the following error response is returned:

```
sid date time
M ctag DENY
  SSRD
/* Status, Switch Request Denied,
Multiple manual ring switches are not allowed
*/
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RLS-PROTNSW-OC48**

## NAME

**OPR-PROTNSW-rr**: Operate Protection Switch on a Line Tributary (DRI)

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**OPR-PROTNSW-modifier**:*[tid]:aid:ctag::sc[:dirn];*

For Releases 5.0 and 6.0:

**OPR-PROTNSW-modifier**:*tid:aid:ctag::sc[:dirn];*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Releases 4.1 through 6.0:

Throughout this TL1 command description the use of the term "low speed interface" implies the following:

- a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

Throughout this TL1 command description the use of the term "low speed interface" implies the following:

- a single quad's constituent slots when referring to OC12 low speed circuit packs.

Throughout this TL1 command description the use of the term "low speed interface" additionally implies the following:

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 tributary within the OC-3 or IS-3 when referring to slots equipped with OC3 or IS3 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, IS3 or OC3 low speed circuit packs.
- a single quad's constituent slots when referring to OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, for example, STS-3 or STS-1.

**OPR-PROTNSW-rr** command messages can be initiated by an OS or users to request FT-2000 to operate a manual Dual Ring Interworking (DRI) path protection switch on a line tributary within the OC-48 line. The purpose of the command is to allow manual switching of a DRI cross-connection from the primary "add" cross-connection to the secondary "through" cross-connection. Refer to the **ENT-CRS-rr** and **ENT-ROLL-rr** command descriptions for details on the restrictions on cross-connections and DRI in the FT-2000 Add/Drop Rings Terminal for bidirectional line switched rings.

⇒ **NOTE:**

A "line tributary" is an STS-3/STS-1 synchronous payload envelope (within an OC-n signal) plus its pointers.

Since DRIs are not allowed on protection lines for LCT Release 1.0, this command will be denied when the aid includes a protection line component.

When FT-2000 receives an **OPR-PROTNSW-rr** command, FT-2000 will operate the protection switching request on the specified line tributary.

Manual DRI path protection switching requests remain active until released (for example, by TL1 command **RLS-PROTNSW-rr** or by the appropriate FT-2000 PC-CIT command) or until overridden by automatic DRI path protection switching or a higher priority external ("**non-auto**") protection switching request.

⇒ **NOTE:**

In FT-2000 OC-48, Release 4.1, DRI path protection switching is non-revertive and there are no external protection switching requests other than manual or RESET (see the **RLS-PROTNSW-rr** TL1 command page). However, FT-2000 release Release 5.0 and 6.0 provides an extension of the DRI path protection switching capability at the STS-3 tributary level.

FT-2000 provides capabilities for unidirectional, non-revertive DRI path protection switching. Thus, an **OPR-PROTNSW-rr** command will affect the selection of the input used for the addressed *outgoing* line tributary signal at the near end (1-way only).

For Release 4.1:

Queuing of DRI path protection switch requests is not provided in FT-2000.

For Releases 7.0 and later:

Nodes not capable of STS1 TSA shall handle STS1 level command requests by treating the requests as if they were STS3 level requests: This command will be applied to the whole STS3 of which the specified STS1 is a part.

For Release 7.0:

This is necessary to be consistent with how STS1 LOP is handled and to avoid future implementations of enhanced DRI having to weight manual requests on

one STS1 versus signal degrade conditions on another STS1.

## INPUT PARAMETERS

*modifier* For Release 4.1, this is a message modifier to the **OPR-PROTNSW** message and may only have the following values: **OC48** or **STS3**.

For Releases 5.0, 6.0, and 7.0, this is a message modifier to the **OPR-PROTNSW** message and may only have the following values: **OC48**, **OC3**, **STS3**, or **STS1**.

**OC48** This requests a high speed line protection switch. Refer to the **OPR-PROTNSW-OC48** TL1 command page for a complete description of the FT-2000 capabilities for high speed protection switching.

**OC12** For Releases 7.1 and later:  
The modifier = OC12 requests a protection switch of a 1+1 (protected) OC-12 quad pair. Refer to the **OPR-PROTNSW-OC12** command page for a complete description of the FT-2000 capabilities for OC-12 low speed optical line protection switching.

**OC3** For Releases 5.0 through 7.0, this requests a protection switch of a 1+1 (protected) OC-3 line pair. Refer to the **OPR-PROTNSW-OC3** TL1 command page for a complete description of the FT-2000 capabilities for OC-3 low speed protection switching.

**STS3** This requests an STS-3 line tributary DRI path protection switch. This command request is fully defined in this TL1 command page.

**STS1** For Release 7.0, this requests an STS-1 line tributary DRI path protection switch.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

For Release 4.1, if no *tid* is given, the command is interpreted to be addressed to the Gateway Network Element (GNE - the network element connected directly to the OS via an X.25 link).

*aid* Access identifier. This is the address for which the **OPR-PROTNSW-rr** command is intended.\* For the command to be accepted, the line tributary specified must be:

---

\* Grouping and/or ranging of *aid* values (or any other TL1 input parameter) is not allowed in FT-2000. While FT-2000 does allow for the use of the *all* construct within the *aid* field of other TL1 commands to provide access to a range of AIDs, the *all* construct is **not** supported in the **OPR-PROTNSW-rr** command.



- a line tributary
- involved as the destination *aid* in a DRI cross-connection.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*sc* Switch command. This required parameter is the switch command that is to be initiated on the line tributary identified in the *aid* parameter.

The terminology in the descriptions for the allowed values of *sc* is used as follows:

**primary** This is the 1-way "add" cross-connection, from a low speed interface to the addressed destination line tributary, established at the primary DRI node.

**secondary** This is the 1-way "through" cross-connection, from the same-numbered line tributary in the other OC-48 line to the addressed destination line tributary, established at the primary DRI node.

**active** The line tributary currently selected to be cross-connected to the destination line tributary and onto the outgoing OC-48 line is said to be active.

**standby** The line tributary not currently selected to be cross-connected to the destination line tributary and onto the outgoing OC-48 line is said to be standby.

In the normal (that is, RESET) state of the DRI path protection switch, the secondary "through" cross-connection is in the standby state and the primary "add" cross-connection is in the active state.

The *sc* parameter must have the following value:

**MAN** This requests a manual protection switch.

The **secondary** "through" line tributary cross-connection is selected if the secondary cross-connection is in the **standby** mode. If the **secondary** cross-connection is in the **active** mode due to a previous manual (**MAN**) DRI path protection switch, the command is accepted and no further DRI path protection switching action is taken.

For reporting purposes and status retrieval (for example **RTRV-CRS-rr**), manual switches are treated and reported as standing conditions (SC).

If the protection switching request contained within the command does not alter the existing DRI path protection switching state or priority, FT-2000 will not deny the command. Instead the system will respond with a completion message. An example of this is when the secondary cross-connection is in the active mode with a switch priority of manual and a manual DRI path protection switch request is received.

*dirn* Direction. This provides the direction of transmission in which the switching command is to be initiated relative to the line tributary identified by the *tid* and *aid*. For the **OPR-PROTNSW-rr** command, this parameter may be null or may have one of the following values:

**TRMT** 1-way switch, transmit direction only.

If the *dirn* value is null, the value will original value to **TRMT** for the **OPR-PROTNSW-rr** command.

## OUTPUT FORMAT

For Release 7.0, all the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

If FT-2000 fully complies with the DRI path protection switching request, the following output message is returned to the OS:

```
sid date time
M ctag COMPLD
;
```

If the protection switching request contained within the command does not alter the existing protection switching state or priority, FT-2000 will not deny the command. Instead the system will respond with the completion message (shown above). An example of this is when the secondary cross-connection is in the active mode with a switch priority of manual and a manual DRI path protection switch request is received.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

For Release 7.0, all the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

The following example shows a manual DRI path protection switch command requested of an FT-2000:

```
opr-protnsw-sts3:LT-FT-2000:sts3-1e-7:123456::MAN;  
  
IP 123456  
<  
  
LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses also apply to the **OPR-PROTNSW-rr** command.

For Release 4.1 only, if FT-2000 receives a **OPR-PROTNSW** command with a command code modifier other than OC48, or STS3, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IICM
/* Input, Invalid Command,
Command code modifier must be OC48 (for line protection switching)
or STS3 (for DRI path protection switching).
*/
;
```

If FT-2000 receives a **OPR-PROTNSW-rr** command without an *aid* value or with an *aid* value that is invalid for an FT-2000 line tributary, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

For Releases 5.0 through 7.0, if FT-2000 receives a **OPR-PROTNSW-rr** command with an *sc* value that is not supported by FT-2000, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid SC */
;
```

For Releases 7.1 and later, if FT-2000 receives a **OPR-PROTNSW-rr** command with an *sc* value that is not supported by FT-2000, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
SC = MAN (no default)
*/
;
```

For Releases 5.0 through 7.0, if FT-2000 receives a **OPR-PROTNSW-rr** command with a *dirn* value that is not supported by FT-2000, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If FT-2000 receives a **OPR-PROTNSW-rr** command with a *dirn* value that is not supported by FT-2000, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
Unidirectional DRI path switching: DIRN = TRMT or null (default =
TRMT)
*/
;
```

If FT-2000 receives a **OPR-PROTNSW-rr** command with an otherwise valid *aid* value but for which the command is directed to a line tributary that is not involved as the destination in a DRI cross-connection, the following error response is returned to the OS:

```
sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied
Target AID not involved in a ring interworking cross-connection.
*/
;
```

If FT-2000 receives a valid **OPR-PROTNSW** command, but for which the command cannot be executed because of a hardware problem, the following error response is returned to the OS:

```
sid date time
M ctag DENY
SPFA
/* Status, Protection unit FAiled,
hardware problem with protection switching mechanism.
*/
;
```

If FT-2000 receives a OPR-PROTNSW command with an otherwise valid *sc* value that would change the protection switching state and/or priority, but for which an equal or higher priority protection switching request already exists, the following error response is returned to the OS:

```

sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied,
Equal or higher-priority switch request exists
*/
;
```

For Releases 4.1 through 6.0, if FT-2000 receives this command with a *modifier* other than STS3, the following error response is returned to the OS:

```

sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied,
Input, Command Not Valid, invalid modifier
*/
;
```



If FT-2000 receives this command, and is otherwise valid, but for which the *aid* parameter value is inconsistent with the *modifier*, (that is, STS3 is associated with STS3 line tributaries and STS1 is associated with STS1 line tributaries), the following error response is returned to the OS:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier,
aid inconsistent with modifier
*/
;
```

## RELATED TL1 COMMANDS/MESSAGES

RLS-PROTNSW-rr

## NAME

**OPR-SYNCNSW:** Operate Synchronization Switch

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

**OPR-SYNCNSW-** *[tid]:[aid]:ctag::sc;*

For Releases 5.0 through 7.0:

**OPR-SYNCNSW-** *tid:[aid]:ctag::sc;*

For Releases 7.1 and later:

**OPR-SYNCNSW-** *[modifier]:tid:[aid]:ctag[:sc];*

## DESCRIPTION

The **OPR-SYNCNSW** command message can be initiated by an OS or OS users to request FT-2000 to operate a manual or forced synchronization reference protection switch or to lockout synchronization reference switching, or to request a change from the provisioned synchronization mode to holdover mode.

For **OPR-SYNCNSW-REF**, the manual, forced and lockout protection switching requests remain active until:

- released (for example, by TL1 command **RLS-SYNCNSW-REF** or FT-2000 PC-CIT command **switch-synchronization-reference**)
- the provisioned synchronization mode is changed from its current value to any other value.

For **OPR-SYNCNSW-MOD**, the forced switch into holdover mode remains active until:

- released (for example, by TL1 command **RLS-SYNCNSW-MOD** or FT-2000 PC-CIT command **switch-synchronization-mode**)
- the provisioned synchronization mode is changed from its current value to any other value.

The **OPR-SYNCNSW** command is used only to operate synchronization **reference** or **mode** protection switches. Synchronization hardware switches are done using **SW-TOPROTN-EQPT** and **SW-TOWKG-EQPT** commands.

For Releases 4.1 through 7.0:

The **OPR-SYNCNSW** command can be used to operate synchronization reference switches for the FT-2000 (End Terminals, or Add/Drop-Rings Terminals) when the FT-2000 is in any of the following synchronization modes:

- Externally-timed (that is, timed to an external DS1 reference);
- Through Timed
- Loop Timed (End Terminal only).

For Releases 7.1 and later:

The **OPR-SYNCNSW** command can be used to operate synchronization reference or mode switches for the network element when the network element is in any of the following synchronization modes:

- Externally-timed (that is, timed to an external DS1 reference)
- Through Timed
- Line Timed.

The order of priority of synchronization mode switches, from highest to lowest is through **RLS-SYNCNSW-MOD**, **OPR-SYNCNSW-MOD**, auto switch (due to synchronization reference failure).

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is a message modifier to the <b>OPR-SYNCNSW</b> message and may be null or have one of the following values:<br><br><b>REF</b> This specifies a synchronization <i>reference</i> protection switch. This is the default.<br><br><b>MOD</b> This specifies a synchronization <i>mode</i> protection switch.<br><br>If no <i>modifier</i> is specified, it defaults to <b>REF</b> . |
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                          |
| <i>aid</i>      | Access identifier. The <i>aid</i> for this command must always be null.                                                                                                                                                                                                                                                                                                                |
| <i>ctag</i>     | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                  |

sc

Switch command. This parameter is the switch command that is to be initiated on the synchronization reference input. This parameter may have one of the following values:

**LOCKOUT**

This requests that a synchronization reference protection switching lockout, preventing selection of the secondary synchronization reference (until released - for example, with **RLS - SYNCNSW**) regardless of any subsequent failures. If the secondary synchronization reference is currently selected, the timing input will be switched to the primary synchronization reference.

**FRCD**

For externally-timed mode, this requests a forced synchronization reference protection switch. The secondary reference is selected, regardless of the health of the secondary reference, unless there is an existing lockout or forced synchronization reference protection switch.

**MAN**

This requests a manual protection switch. The secondary timing reference source is selected provided the secondary link is good and there are no existing synchronization reference protection switching requests.

## OUTPUT FORMAT

If FT-2000 fully complies with the synchronization reference protection switching request or if the request is the same as the one that is active, the following message is returned to the OS:

```
sid date time  
M ctag COMPLD  
;
```

For Releases 7.1 and later, if the network element fully complies with the synchronization reference protection switching request or if the request is the same as the one that is active; or if the network element fully complies with the synchronization mode switching request or if the request does not alter the existing mode, the following output message is returned:

```
sid date time  
M ctag COMPLD  
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **OPR-SYNCNSW** command.

## EXAMPLE INPUT/OUTPUT

```
opr-syncnsw:LT-FT-2000::123456::LOCKOUT;  
  
IP 123456  
  
    LT-FT-2000-3 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 7.1 and later:

```
opr-syncnsw:LT-FT-2000::123456::LOCKOUT;  
  
IP 123456  
  
    LT-FT-2000-3 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

**opr-syncnsw-ref:LT-FT-2000::123456::FRCD;**

IP 123456  
<

LT-FT-2000 97-10-26 16:42:11  
M 123456 COMPLD  
;

**opr-syncnsw-mod:LT-FT-2000::123456;**

IP 123456  
<

LT-FT-2000 97-10-26 16:42:11  
M 123456 COMPLD  
;

## ERROR RESPONSES

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses also apply to the **OPR-SYNCNSW** command.

If FT-2000 receives an **OPR-SYNCNSW** command with a non-null command code modifier (including any extra hyphens [-]), the following error response is returned:

```
sid date time
M ctag DENY
  IICM
  /* Invalid Command, FT-2000 does not support Command = xxxxxxxxxxxxxxxx */
;
```

where "xxxxxxxxxxxxxxxx" is the first 16 characters of the command received (up to, but excluding, the first semicolon [;]).

If FT-2000 receives an **OPR-SYNCNSW** command with a non-null *aid* value, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  INUP
  /* Input Non-null Unimplemented Parameter, no AID value allowed */
;
```



For Releases 5.0, and later:

If an FT-2000 receives an **OPR-SYNCNSW** command with an *sc* value that is not supported by FT-2000, the following error response is returned to the OS:

```
      sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SC */
;
```

If FT-2000 receives an **OPR-SYNCNSW** command with an *sc* value that is not supported by FT-2000, the following error response is returned:

```
      sid date time
M ctag DENY
  IIDT
/* Invalid Input, SC (or SWITCHTO) = LOCKOUT, FRCD, or MAN (no default)
*/
;
```

If FT-2000 receives an **OPR-SYNCNSW** command with an otherwise valid *sc* value that would change the protection switching state and/or priority, but for which an equal or higher priority synchronization reference protection switching request already exists, the following error response is returned to the OS:

```
sid date time

M ctag DENY
  SSRD
  /* Status, Switch Request Denied, equal or higher-priority
    switch request exists */
;
```

If FT-2000 receives an **OPR-SYNCNSW** command with an otherwise valid *sc* value, but for which the secondary synchronization reference is not available, the following error response is returned to the OS:

```
sid date time

M ctag DENY
  ENPS
  /* Equipage, Not equipped with Protection Switching,
    inconsistent with provisioned configuration */
;
```

If FT-2000 receives an **OPR-SYNCNSW** command with an otherwise valid *sc* value that would change the protection switching state and/or priority, but for which, an equal or higher priority synchronization reference protection switching request (e.g., *lockout*) already exists, the following error response is returned:

```

sid date time
M ctag DENY
  SSRD
  /* Status, Switch Request Denied,
  Equal or higher-priority switch request exists
  */
;
```

If FT-2000 receives an **OPR-SYNCNSW** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (,), or termination characters (;), the following error response is returned to the OS:

```

sid date time
M ctag DENY
  IISP
  /* Input, Invalid Syntax or Punctuation */
;
```

If the network element receives an **OPR-SYNCNSW-REF** command with an otherwise valid *sc* value, but for which, the timing mode does not support a synchronization reference protection switch (for example, if the timing mode is free running, the network element is using its internal timing); or if the network element receives an **OPR-SYNCNSW-MOD** command while the provisioned synchronization mode is free running, the following error response is returned:

```
sid date time

M ctag DENY
  SSRD
  /* Status, Switch Request Denied timing mode inconsistent
    with timing reference switch request */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

RLS-SYNCNSW

SW-TOPROTN-EQPT

SW-TOWKG-EQPT

## NAME

**RLS-EXT-CONT:** Release External Control

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**RLS-EXT-CONT:***tid:aid:ctag::;*

## DESCRIPTION

The **RLS-EXT-CONT** command can be initiated by users to release an external miscellaneous discrete control, such as a generator, a fan, a light, or a sprinkler. Miscellaneous discrete controls are operated by the **OPR-EXT-CONT** command.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the Network Element to which the command is addressed.                                                                                         |
| <i>aid</i>  | Access identifier. The <i>aid</i> identifies the external miscellaneous discrete control being released. The <i>aid</i> value can not be null and cannot be <code>cont-all</code> .   |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the Network Element fully complies with the **RLS-EXT-CONT** request, the following normal completion response is returned.

```
      sid date time
M  ctag COMPLD
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **RLS-EXT-CONT** command, also.

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RLS-EXT-CONT** command, also.

If an **RLS-EXT-CONT** command is received with an invalid access identifier, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**OPR-EXT-CONT**

## NAME

**RLS-LPBK-rr**: Release Low-Speed (LS) Terminal and Facility Loopbacks.

This command is available for Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**RLS-LPBK-modifier:tid:aid:ctag[::]**;

For Releases 5.0 and later:

**RLS-LPBK-modifier:tid:aid:ctag[:],,,lpbktype**;

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Release 4.1, this command can be initiated by a user to request the network element to release a manual terminal loopback at the specified LS interface toward the HS OC-n fiber interface. This command will be used during pre-service testing of facilities and during fault diagnostics.

For Releases 7.0 and later, this command can be initiated by a user to request the network element to release a manual terminal loopback at the specified electrical LS interface toward the HS OC-n fiber interface, or to release a manual terminal loopback toward the HS OC-n fiber interface or a manual line loopback toward the cross-connect panel at the specified optical LS interface. This command will be used during pre-service testing of facilities and during fault diagnostics.



### NOTE:

This command is available to all general users.

This command releases a loopback on an OC12 quad in the "from OC-12" direction only.

When the network element receives an **RLS-LPBK-rr** command from the user without specifying *lpbktype*, the network element will release a terminal loopback toward the HS fiber on the specified LS interface.

For Releases 7.1 and later:

This command releases a loopback on an OC12 quad in the "from OC-12" direction only.

When the network element receives a **RLS-LPBK-rr** command from the user, the network element will release a terminal or facility loopback on the specified LS interface.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is a required modifier to the <b>RLS-LPBK</b> message and may only have the following values: <ul style="list-style-type: none"> <li><b>T3</b> This requests release of a loopback on a DS3 LS interface.</li> <li><b>EC1</b> This requests release of a loopback on an EC1 LS interface.</li> <li><b>OC3</b> This requests terminal or line loopback at the addressed OC-3 LS interface.</li> <li><b>OC12</b> For Releases 7.1 and later, this requests facility loopback at the addressed OC-12 LS interface. This command releases a loopback on an OC12 quad in the "from OC-12" direction only.</li> </ul> |
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed. The <i>tid</i> is a required parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>aid</i>      | Access identifier. The <i>aid</i> determines the low speed slot or OC-12 quad for which the loopback release is being requested.<br><br>Refer to Table 3-7 at the end of this section for a list of valid addresses.<br><br><b>ALL</b> is not allowed in the <i>aid</i> value for the <b>RLS-LPBK-rr</b> command.                                                                                                                                                                                                                                                                                                    |
| <i>ctag</i>     | Correlation tag. This is included in the command by the TL1 user and is repeated by the network element in the response to allow the TL1 user to associate the command and response messages.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>lpbktype</i> | For Releases 5.0 and later, this is an optional parameter. But when this parameter is used, the two ":"s and three ","s between the <i>ctag</i> and <i>lpbktype</i> are required. This parameter indicates the type of the loopback being released. Valid values of <i>lpbktype</i> are: <ul style="list-style-type: none"> <li><b>FACILITY</b> Facility loopback (Signal is looped back toward the facility).</li> <li><b>TERMINAL</b> Terminal loopback (Signal is looped back toward the HS fiber of the terminal). This is the original value.</li> </ul>                                                        |



If no *lpbktype* is provided, the network element interprets the *lpbktype* to be **TERMINAL**.

For Releases 7.1 and later:

This parameter is allowed only when the *modifier* is **OC3** or **OC12**. However, for an OC-12 interface, a loopback on an OC12 quad can only be done in the "from OC-12" direction only. Facility loopback is not supported for OC-12 interface.

For an OC-12 interface, if no *lpbktype* is provided, the network element interprets the *lpbktype* to be **FACILITY**.

## OUTPUT FORMAT

Refer to the **RTRV-HDR OUTPUT FORMAT** section. The requirements listed there apply to the **RLS-LPBK-rr** command also.

If the requested loopback release command does not alter the existing condition, the network element shall not DENY the command. Instead the network element shall respond with a COMPLD message.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The requirements listed there also apply to the **RLS-LPBK-rr** command.

### EXAMPLE INPUT/OUTPUT

For Releases 4.1 and later, the following example requests the release of a DS3 loopback:

```
r!s-lpbk-t3:LT-PF-2000:ls-1a-1:123456::;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 5.0 and later, the following FT-2000 OC-48 example requests the release of an OC-3 loopback:

```
r!s-lpbk-oc3:LT-PF-2000:ls-5b:123456::,,facility;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 7.1 and later, the following example requests the release of an IS-3 loopback at slot 8b:

```
r!s-lpbk-oc3:LT-PF-2000:ls-8b:123456::,,facility;
```

```
IP 123456  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

For Releases 7.1 and later, the following example requests the release of an OC-12 loopback at OC-12 quad 5B:

```
r!s-lpbk-oc12:LT-PF-2000:ls-5b:123456::,,facility;
```

```
IP 123456  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The requirements listed there also apply to the **RLS-LPBK-rr** command.

If the network element receives a **RLS-LPBK** command without an *aid* or with an *aid* other than that supported by the network element, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier, AID is missing, wrong or
   inconsistent with modifier */
;
```

If the network element receives a **RLS-LPBK** with an otherwise valid *aid* value but the command could not be completed by the network element, the following error response is returned to the TL1 user:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed */
;
```

For Releases 5.0 and later, if the network element receives a **RLS-LPBK-rr** command, where *rr* is **EC1** or **T3**, with an otherwise valid *aid* value but with the *lpbktype* parameter, then the following error response is returned:

```

sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid */
;
```

For Releases 5.0 and later, if the network element receives a **RLS-LPBK-OC3** command with a valid *aid* value but with a *lpbktype* parameter the following error response is returned:

```

sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid LPBKTYPE */
;
```

For Releases 7.1 and later, if the network element receives a **RLS-LPBK-0C12** command with a valid *aid* value but with an invalid *lpbktype* parameter, or a *lpbktype* parameter value of **TERMINAL**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LPBKTYPE */
;
```

If the network element receives a **RLS-LPBK-rr** command with a valid *aid* value but the command could not be completed by the Network Element because there is the other type of loopback active at that *aid*, the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed, specified loopback does not exist */
;
```

## RELATED COMMANDS/MESSAGES

**OPR-LPBK-rr**

## NAME

**RLS-PROTNSW-OC12:** Release OC-12 Line Protection Switch

Support for this command is available in Release 7.1 and later.

## INPUT FORMAT

**RLS-PROTNSW-OC12:***tid:aid:ctag[::dirn];*

## DESCRIPTION

The **RLS-PROTNSW-OC12** message can be initiated by users to request the network element to release (*clear*) any standing forced, lockout or inhibit protection switching requests on a 1+1 (protected) OC-12 low speed optical line pair.

When the network element receives an **RLS-PROTNSW-OC12** command, the network element will release any standing forced, lockout or inhibit protection switching requests on the specified 1+1 (protected) OC-12 line pair. The network element provides unidirectional 1+1 OC-12 low speed protection switching and 0x1 (unprotected) OC-12 low speed operation. Thus, an **RLS-PROTNSW-OC12** command may affect the selection of the addressed *incoming* 1+1 (protected) OC-12 signal at the near end. In 1+1 unidirectional, non-revertive protection switching, a manual switch is treated as a transient condition (TC) and is not affected by the **RLS-PROTNSW-OC12** command. The network element provides queuing of protection switch requests. There can only be one **external** request active or in the queue at a given time. The **RLS-PROTNSW-OC12** has the effect of clearing the active or pending external request and enabling the highest priority request from the queue (if any).

## INPUT PARAMETERS

*modifier* This is a message modifier to the **RLS-PROTNSW** message and may only have the following value: **OC12**.

**OC12** This requests release of a protection switch of a 1+1 (protected) OC-12 Optical Interface.

*tid* This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the slot address of the OC-12 Optical Interface for which the **RLS-PROTNSW-OC12** command is intended. The *aid* may address *all* applicable OC-12 slot pairs or any single OC-12 slot pair for the given *tid*.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

Provided it is a valid value to address an equipped network element OC-12 Optical Interface pair, the *aid* is not used in determining the completion or denial of the **RLS-PROTNSW-OC12** command.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*dirn* Direction. This provides the direction of transmission in which the release protection switching command is to be initiated relative to the OC12 line identified by the *tid* and *aid*. This parameter may be null or may have the following value:

**RCV** Unidirectional clear, receive direction only

If the *dirn* value is null, the *dirn* value will default to: **RCV**.



## OUTPUT FORMAT

If the network element fully complies with the protection switching request, the following output message is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the **RLS-PROTNSW-OC12** command is valid and does not alter the existing protection state, the network element will not deny the command. Instead the system will respond with the completion message.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following example shows the use of the **RLS-PROTNSW-OC12** message.

```
r'ls-protnsw-oc12:LT-PF-2000:ls-7a:AbC123::rcv;  
  
IP AbC123  
<  
LT-PF-2000 93-10-26 16:42:11  
M AbC123 COMPLD  
;
```

## ERROR RESPONSES

In addition to the non-message-specific error responses listed in the **RTRV-HDR ERROR RESPONSES** description, the following error responses are provided as specified.

If the network element receives an **RLS-PROTNSW-OC12** command without an *aid* value or with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **RLS-PROTNSW-OC12** command with a *dirn* value that is not supported by the network element for unidirectional 1+1 (protected) OC-12 operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If the network element receives an **RLS-PROTNSW-OC12** command with an otherwise valid *aid* value but for which the command is directed at a slot implementing 0x1 (unprotected) protection switching operation, or for which the corresponding protection slot is in the AUTO state, the following error response is returned:

```
sid date time
M ctag DENY
  ENPS
  /* Equipage, Not equipped with Protection Switching,
    inconsistent with provisioned configuration */
;
```

If the network element receives an **RLS-PROTNSW-OC12** command with an otherwise valid *aid* value but for which the command is directed to an unequipped slot (slot in AUTO state), or a slot equipped with anything other than an OC12 circuit pack, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, AID value inconsistent with current equipage */
;
```

If FT-2000 receives a valid **RLS-PROTNSW** command, but for which, the command cannot be executed because of a hardware problem, the following error response is returned:

```
sid date time
M ctag DENY
  SPFA
  /* Status, Protection unit FAiled,
  hardware problem with protection switching mechanism
  */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

**OPR-PROTNSW-OC12**

**OPR-PROTNSW-OC3**

**OPR-PROTNSW-OC48**

**RLS-PROTNSW-OC3**

**RLS-PROTNSW-OC48**

## NAME

**RLS-PROTNSW-OC3:** Release OC-3 Line Protection Switch

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**RLS-PROTNSW-OC3:***tid:aid:ctag[:dirn];*

## DESCRIPTION

The **RLS-PROTNSW-OC3** command message can be initiated by users to request the network element to release (*clear*) any standing forced, lockout or inhibit protection switching requests on a 1+1 (protected) OC-3 low speed optical line pair.

When the network element receives an **RLS-PROTNSW-OC3** command, the network element will release any standing forced, lockout or inhibit protection switching requests on the specified 1+1 (protected) OC-3 line pair. The network element provides unidirectional 1+1 OC-3 low speed protection switching and 0x1 (unprotected) OC-3 low speed operation. Thus, an **RLS-PROTNSW-OC3** command may affect the selection of the addressed *incoming* 1+1 (protected) OC-3 signal at the near end, but will not affect switches executed at the far end affected. It may be necessary to perform an **RLS-PROTNSW-OC3** command at the far end to switch both the transmit and receive direction to the same line. In 1+1 unidirectional, non-revertive protection switching, a manual switch is treated as a transient condition (TC) and is not affected by the **RLS-PROTNSW-OC3** command. The network element provides queuing of protection switch requests. There can only be one **external** request active or in the queue at a given time. The **RLS-PROTNSW-OC3** has the effect of clearing the active or pending external request and enabling the highest priority request from the queue (if any).

For Releases 7.1 and later:

The **RLS-PROTNSW-OC3** command message can be initiated by users to request the network element to release (*clear*) any standing forced, lockout or inhibit protection switching requests on a 1+1 (protected) OC-3/IS-3 low speed optical line pair.

When the network element receives an **RLS-PROTNSW-OC3** command, the network element will release any standing forced, lockout or inhibit protection switching requests on the specified 1+1 (protected) OC-3/IS-3 line pair.

The network element provides unidirectional 1+1 OC-3/IS-3 low speed protection switching and 0x1 (unprotected) OC-3/IS-3 low speed operation. Thus, an **RLS-PROTNSW-OC3** command may affect the selection of the addressed *incoming* 1+1 (protected) OC-3/IS-3 signal at the near end, but will not affect switches executed at the far end affected. It may be necessary to perform an

**RLS-PROTNSW-OC3** command at the far end to switch both the transmit and receive direction to the same line.

In 1+1 unidirectional, non-revertive protection switching, a manual switch is treated as a transient condition (TC) and is not affected by the **RLS-PROTNSW-OC3** command.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **RLS-PROTNSW** message and may only have the following value: **OC3**.

**OC3** For Releases 5.0 and later, a modifier set to **OC3** requests release of a protection switch of a 1+1 (protected) OC-3 Optical Interface. Refer to the **RLS-PROTNSW-OC3** command page for a complete description of the FT-2000 capabilities for OC-3 low speed optical line protection switching.

For Releases 7.1 and later:

The **OC3** modifier is also applicable for a release of a protection switch of a 1+1 (protected) OC-3/IS-3 Optical Interface.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the slot address of the OC-3 Optical Interface for which the **RLS-PROTNSW-OC3** command is intended. The *aid* may address *all* applicable OC-3 slot pairs or any single OC-3 slot pair for the given *tid*.

Refer to Table 3-7 at the end of this section for a list of valid OC-3 slot addresses.

For Release 7.0 and later, this is the slot address of the OC-3/IS-3 Optical Interface for which the **RLS-PROTNSW-OC3** command is intended. The *aid* may address *all* applicable OC-3/IS-3 slot pairs or any single OC-3/IS-3 slot pair for the given *tid*.

Provided it is a valid value to address an equipped network element OC-3 Optical Interface pair, the *aid* is not used in determining the completion or denial of the **RLS-PROTNSW-OC3** command.

For Releases 7.0 and later, provided that the input aid value is valid, the *aid* is not used in determining the completion or denial of the **RLS-PROTNSW-OC3** command.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*dirn* Direction. This provides the direction of transmission in which the release protection switching command is to be initiated relative to the OC3 line identified by the *tid* and *aid*. This parameter may be null or may have the following value:

**RCV** Unidirectional clear, receive direction only

For Releases 7.0 and later, this provides the direction of transmission in which the release protection switching command is to be initiated relative to the IS3 line identified by the *tid* and *aid*. This parameter may be null or may have the following value:

If the *dirn* value is null, the *dirn* value will original value to: **RCV**.

## OUTPUT FORMAT

If the network element fully complies with the protection switching request, the following output message is returned:

```
sid date time
M ctag COMPLD
;
```

If the **RLS-PROTNSW-OC3** command is valid and does not alter the existing protection state, the network element will not deny the command. Instead the system will respond with the completion message.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section of the **RTRV-HDR** command.

## EXAMPLE INPUT/OUTPUT

```
rls-protns-oc3:LT-PF-2000:ls-7a:AbC123::rcv;
```

```
IP AbC123  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M AbC123 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** BERROR RESPONSES section. The error responses listed there also apply to the **RLS-PROTNSW** command.

In addition to the non-message-specific error responses listed in **RTRV-HDR**, the following error responses are also provided, as specified.

If the network element receives a **RLS-PROTNSW-OC3** command without an *aid* value or with an invalid *aid* value, the following error response is returned:

```
sid date time  
M ctag DENY  
IIAC  
/* Input, Invalid Access Identifier */  
;
```



If the network element receives a **RLS-PROTNSW-OC3** command with a *dirn* value that is not supported by the network element, for unidirectional 1+1 (protected) OC-3 operation, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

For Releases 7.1 and later:

If the network element receives an **RLS-PROTNSW-OC3** command with a *dirn* value that is not supported by the network element, for unidirectional 1+1 (protected) OC-3/IS-3 operation, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If the network element receives an **RLS-PROTNSW-OC3** command with an otherwise valid *aid* value but for which the command is directed at a slot implementing 0x1 (unprotected) protection switching operation, or for which the corresponding protection slot is in the AUTO state, the following error response is returned:

```
sid date time
M ctag DENY
ENPS
/* Equipage, Not equipped with Protection Switching,
inconsistent with provisioned configuration */
;
```

If the network element receives an **RLS-PROTNSW-OC3** command with an otherwise valid *aid* value but for which the command is directed to an unequipped slot (slot in AUTO state), or a slot equipped with anything other than an OC3 circuit pack, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid,
AID value inconsistent with current equipage */
;
```

If the network element receives an **RLS-PROTNSW-OC3** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (.), or termination characters (;), the following error response is returned:

```
sid date time
M ctag DENY
  IISP
/* Input, Invalid Syntax or Punctuation */
;
```

If FT-2000 receives a valid **RLS-PROTNSW** command, but for which, the command cannot be executed because of a hardware problem, the following error response is returned:

```
sid date time
M ctag DENY
  SPFA
/* Status, Protection unit FAiled,
hardware problem with protection switching mechanism
*/
;
```

## RELATED TL1 COMMANDS/MESSAGES

### OPR-PROTNSW-OC3

## NAME

**RLS-PROTNSW-OC48:** Release OC-48 Line Protection Switch

This command is available for Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**RLS-PROTNSW-OC48:***[tid]:aid:ctag[::dirn];*

For Releases 5.0 and later:

**RLS-PROTNSW-OC48:***tid:aid:ctag[::dirn];*

## DESCRIPTION

In Add/Drop Rings applications (for Two fiber Bidirectional Line Switched Rings, or "2f BLSRs"), the **RLS-PROTNSW-OC48** command message can be used to release any standing manual, forced or lockout loopback protection switching requests.

This command is invoked with a modifier of OC48. Refer to RLS-PROTNSW-rr for usage of RLS-PROTNSW with other modifiers, including invalid modifiers.

When FT-2000 receives an **RLS-PROTNSW-OC48** command from the OS, FT-2000 will release any standing manual, protection access, forced, lockout or inhibit protection switching requests on the specified OC-48 line. In Add/Drop Rings Terminal applications, FT-2000 provides bidirectional loopback protection switching. Thus, an **RLS-PROTNSW-OC48** command may affect the selection of *both the incoming and transmitted signals at the near and far ends*. The network element provides queuing of protection switch requests. There can only be one request active or in the queue at a given time. The **RLS-PROTNSW-OC48** has the effect of clearing the active or pending external request and enabling the highest priority request from the queue (if any).

## INPUT PARAMETERS

*modifier* This is a message modifier to the **RLS-PROTNSW** message and may only have the following value: OC48.

**OC48** A modifier set to OC48 requests release of a high speed line protection switch. Refer to the **RLS-PROTNSW-OC48** TL1 command page for a complete description of the FT-2000 capabilities for high speed line protection switching.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the OC-48 line facility for which the **RLS-PROTNSW-OC48** command is intended. The *aid* may address all applicable OC-48 lines or any single OC-48 line for the given *tid*.

Refer to Table 3-7 at the end of this section for a list of valid OC-48 line addresses.

In a 1+1, 1x1, or BLSR protected FT-2000 system, provided it is a valid value to address an equipped FT-2000 OC-48 line facility, the *aid* is not used in determining the completion or denial of the **RLS-PROTNSW-OC48** command.

*ctag* Correlation tag. This is included in the command by the user and is repeated by FT-2000 in the response to allow the user to associate the command and response messages.

*dirn* Direction. This provides the direction of transmission in which the release protection switching command is to be initiated relative to the OC48 line's side identified by the *tid* and *aid*. This parameter may be null or may have one of the following values:

UNI Unidirectional clear, receive direction only

BTH Bidirectional clear (both directions)

If the *dirn* value is null, the *dirn* value will default to: BTH if the system is operating with bidirectional protection switching (including Add/Drop Rings Terminal applications); and RCV if the system is operating with unidirectional protection switching.

In order for the command to be successfully completed, the *dirn* must be in agreement with the protection switching operation of the FT-2000 system. If the system is operating with bidirectional protection switching, the *dirn* must be BTH, if not null.

## OUTPUT FORMAT

If FT-2000 fully complies with the protection switching request, the following output message is returned:

```
      sid date time  
M  ctag COMPLD  
;
```

If the **RLS-PROTNSW-OC48** command is valid and does not alter the existing protection state, FT-2000 will not deny the command. Instead the system will respond with the completion message.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section of the **RTRV-HDR** command.

## EXAMPLE INPUT/OUTPUT

```
rls-protnsw-oc48:LT-FT-2000:Line-1:AbC123::BTH;  
  
IP AbC123  
<  
  
    LT-FT-2000 93-10-26 16:42:11  
M  AbC123 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** BERROR RESPONSES section. The error responses listed there also apply to the **RLS-PROTNSW** command.

In addition to the non-message-specific error responses listed in **RTRV-HDR**, the following error responses are also provided, as specified.

If FT-2000 receives a **RLS-PROTNSW** command with a command code modifier other than OC48, the following error response is returned to the OS:

```
sid date time  
M  ctag DENY  
   IICM  
   /* Input, Invalid Command,  
   Command code modifier must be OC48 (for line protection switching)  
   or STS3 (for DRI path protection switching).  
   */  
;
```

If FT-2000 receives a **RLS-PROTNSW-OC48** command without an *aid* value or with an *aid* value that is invalid for an FT-2000 OC-48 line, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
  /* Input, Invalid Access Identifier */
;
```

If FT-2000 is provisioned for bidirectional high speed protection switching (including Add/Drop Rings Terminal applications) and receives a **RLS-PROTNSW-OC48** command with a *dirn* value that is not supported by FT-2000, or with a *dirn* value valid for unidirectional operation but not valid for bidirectional operation, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid DIRN */
;
```



If FT-2000 is provisioned for bidirectional high speed protection switching (including Add/Drop Rings Terminal applications) and receives a **RLS-PROTNSW-OC48** command with a *dirn* value that is not supported by FT-2000, or with a *dirn* value valid for unidirectional operation but not valid for bidirectional operation, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IIDT
/* Invalid Input, Data,
  bidir. switching: DIRN = BTH or null (default = BTH) */
;
```

If FT-2000 is provisioned for unidirectional high speed protection switching and receives a **RLS-PROTNSW-OC48** command with a *dirn* value that is not supported by FT-2000, or with a *dirn* value valid for bidirectional operation but not valid for unidirectional operation, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If FT-2000 receives a **RLS-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the corresponding protection line is in the AUTO state, the following error response is returned to the OS:

```

sid date time
M ctag DENY
ENPS
/* Equipage, Not equipped with Protection Switching,
   inconsistent with provisioned configuration */
;
```

If FT-2000 is provisioned for unidirectional high speed protection switching and receives a **RLS-PROTNSW-OC48** command with a *dirn* value that is not supported by FT-2000, or with a *dirn* value valid for bidirectional operation but not valid for unidirectional operation, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
   unidir. switching: DIRN = RCV or null (default = RCV) */
;
```

If FT-2000 receives a **RLS-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the corresponding protection line is in the AUTO state, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  ENPS
/* Equipage, Not equipped with Protection Switching, inconsistent
with provisioned configuration */
;
```

For Releases 5.0 and later, if FT-2000 receives a **RLS-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the command is directed to an unequipped line (line in AUTO state), the following error response is returned to the OS:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, AID value inconsistent with current equipage */
;
```

If FT-2000 receives a **RLS-PROTNSW-OC48** command with an otherwise valid *aid* value but for which the command is directed to an unequipped line (line in AUTO state), the following error response is returned to the OS:

```
      sid date time
M  ctag DENY
   IIDT
   /* Input, Invalid Data, AID value inconsistent with current
   equipage */
;
```

If FT-2000 receives a valid **RLS-PROTNSW** command, but for which, the command cannot be executed because of a hardware problem, the following error response is returned:

```
      sid date time
M  ctag DENY
   SPFA
   /* Status, Protection unit FAiled,
   hardware problem with protection switching mechanism
   */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**OPR-PROTNSW-OC48**

## NAME

**RLS-PROTNSW-rr:** Release Protection Switch on a Line Tributary (DRI)

This command is available for Releases 4.1 and later.

## INPUT FORMAT

For Releases 5.0 and later:

**RLS-PROTNSW**-*modifier:tid:aid:ctag[::dirn]*;

For Release 4.1:

**RLS-PROTNSW**-*modifier:[tid]:aid:ctag[::dirn]*;

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

For Releases 4.1 to 7.0:

Throughout this TL1 command description the use of the term "low speed interface" implies the following:

- a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

For Releases 7.0 and later:

Throughout this TL1 command description the use of the term "low speed interface" additionally implies the following:

- a single port when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs
- a single quad's constituent slots when referring to OC12 low speed circuit packs.

Throughout this TL1 command description the use of the term "low speed interface" additionally implies the following:

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 tributary within the OC-3 or IS-3 when referring to slots equipped with OC3 or IS3 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, IS3 or OC3 low speed circuit packs.
- a single quad's constituent slots when referring to OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, that is, STS-3 or STS-1.

The **RLS-PROTNSW-rr** command message can be initiated by an OS or users to request FT-2000 to release (*clear*) any standing automatic or manual Dual Ring Interworking (DRI) path protection switching requests on a line tributary.

**⇒ NOTE:**

A "line tributary" is an STS-3/STS-1 synchronous payload envelope (within an OC-n signal) plus its pointers.

Refer to the **ENT-CRS-rr** and **ENT-ROLL-rr** command descriptions for details on the restrictions on cross-connections and DRI in FT-2000.

When FT-2000 receives an **RLS-PROTNSW-rr** command from the OS, FT-2000 will release any standing automatic or manual DRI path protection switching requests on the specified line tributary.

FT-2000 provides capabilities for unidirectional, non-revertive DRI path protection switching.

Thus, a **RLS-PROTNSW-rr** command may affect the selection of the input used for the addressed outgoing line tributary signal at the near end (unidirectional only).

FT-2000 does not provide queuing of DRI path protection switch requests.

For Release 7.0 and later:

Nodes not capable of STS1 TSA shall handle STS1 level command requests by treating the requests as if they were STS3 level requests: This command will be applied to the whole STS3 of which the specified STS1 is a part. This is necessary to be consistent with how STS1 LOP is handled and to avoid future implementations of enhanced DRI having to weight manual requests on one STS1 versus signal degrade conditions on another STS1.

## INPUT PARAMETERS

- |                 |                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is a message modifier to the <b>RLS-PROTNSW</b> message and may only have the following values: OC48, OC3, STS12, STS3, or STS1.                                                                                          |
| <b>OC48</b>     | This requests that high speed line protection switch request(s) be released. Refer to the <b>RLS-PROTNSW-OC48</b> TL1 command page for a complete description of the FT-2000 capabilities for high speed protection switching. |

**OC12** For Releases 7.1 and later:  
A modifier = OC12 requests release of a low speed 1+1 (protected) OC-12 line protection switch. Refer to the **RLS-PROTNSW-OC12** command page for a complete description of the FT-2000 capabilities for OC-12 low speed optical line protection switching.

**OC3** For Releases 5.0 and later:  
A modifier = OC3 requests release of a low speed 1+1 (protected) OC-3 line protection switch. Refer to the **RLS-PROTNSW-OC3** TL1 command page for a complete description of the FT-2000 capabilities for OC-3 low speed protection switching.

**STS3** For Releases 7.0 and later:  
A modifier = STS3 requests an STS-1 line tributary DRI path protection switch for all of the specified STS-3's constituent STS-1 line tributaries. This command request is fully described in these TL1 command pages.

If this command would be denied for any of the constituent STS-1 entities of the STS-3 entity specified by this command, then this entire command shall be denied with the same response and error code as would be for the offending STS-1 entity.

**STS1** For Releases 7.0 and later:  
A modifier = STS1 requests an STS-1 line tributary DRI path protection switch. This command request is fully described in these TL1 command pages.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the line tributary for which the **RLS-PROTNSW-rr** command is intended. The *aid* may address *all* applicable line tributaries or any single line tributary for the given *tid*.

If the addressed line tributary is not involved in a DRI type of cross-connection, the **RLS-PROTNSW-rr** command will successfully complete and no action is taken (or required) as a result.

Refer to Table 3-7 at the end of this section for a list of valid tributary addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*dirn* Direction. This provides the direction of transmission in which the release protection switching command is to be initiated relative to the line tributary identified by the *tid* and *aid*. This parameter may be null or may have one of the following values:

**TRMT** 1-way clear, transmit direction only

If the *dirn* value is null, the *dirn* value will original value to:  
**TRMT**.

## OUTPUT FORMAT

If FT-2000 fully complies with the protection switching request, the following output message is returned to the OS:

```
sid date time
M ctag COMPLD
;
```

If the **RLS-PROTNSW-rr** command is valid and does not alter the existing protection state, FT-2000 will not deny the command. Instead the system will respond with the completion message.



## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

For Release 7.0, all the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", or "-3".

The following example shows a request to release STS-3 line tributary DRI path protection switch request(s).

```
r1s-protnsw-sts3:LT-FT-2000:sts3-1e-1:AbC123::trmt;
```

```
IP AbC123  
<
```

```
LT-FT-2000 93-10-26 16:42:11  
M AbC123 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error response section. The error responses listed there apply to the **RLS-PROTNSW** command, also.

If FT-2000 receives a **RLS-PROTNSW** command with a command code modifier other than **STS1**, or **STS3**, the following error response is returned to the OS:

```
      sid date time
M  ctag DENY
   IICM
   /* Input, Invalid Command,
      Command code modifier must be OC48 (for line protection switching)
      or STS3 (for DRI path protection switching).
   */
;
```

If FT-2000 receives a **RLS-PROTNSW-rr** command without an *aid* value or with an *aid* value that is invalid for an FT-2000 line tributary, the following error response is returned to the OS:

```
      sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid Access Identifier */
;
```

For Releases 5.0 through 7.0, if FT-2000 receives a **RLS-PROTNSW-rr** command with a *dirn* value that is not supported by FT-2000, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If FT-2000 receives a **RLS-PROTNSW-rr** command with a *dirn* value that is not supported by FT-2000, the following error response is returned to the OS:

```

sid date time
M ctag DENY
IIDT
/* Input, Invalid Data,
Unidirectional DRI path switching: DIRN = TRMT or null (default -
TRMT)
*/
;
```

If FT-2000 receives a valid **RLS-PROTNSW** command, but for which the command cannot be executed because of a hardware problem, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  SPFA
/* Status, Protection unit FAiled,
  hardware problem with protection switching mechanism. */
;
```

For Releases 3.0 through 6.0, if FT-2000 receives a **RLS-PROTNSW-rr** command with a *modifier* other than STS3, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  SSRD
/* Status, Release Protection Switch Request Denied,
  Input, Command Not Valid, invalid modifier
*/
;
```

For Release 7.0 and later, if FT-2000 receives this command, and it is otherwise valid, but for which, the *aid* parameter value is inconsistent with the *modifier*, that is, STS3 is associated with STS3 line tributaries and STS1 is associated with STS1 line tributaries, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier aid inconsistent with modifier */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

OPR-PROTNSW-rr

## NAME

**RLS-SYNCNSW:** Release Synchronization Switch

Support for this command is available in Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**RLS-SYNCNSW:** *tid:[aid]:ctag*;

For Releases 5.0 through 7.0:

**RLS-SYNCNSW:** *tid:[aid]:ctag*;

For Releases 7.1 and later:

**RLS-SYNCNSW-** [*modifier*]:*tid:[aid]:ctag*;

## DESCRIPTION

For Releases 4.1 through 7.0:

**RLS-SYNCNSW** command messages can be initiated by an OS or OS users to request FT-2000 to release (clear) any existing manual, forced or lockout synchronization reference switching.

For Releases 7.1 and later:

**RLS-SYNCNSW** command messages can be initiated by a user to request the network element to release (clear) any existing manual, forced or lockout synchronization reference switching, or to reset from operating holdover mode back to provisioned synchronization mode.

The **RLS-SYNCNSW** command is used to release synchronization *reference* or *mode* switches. Synchronization hardware switches are done using **SW-TOPROTN-EQPT** and **SW-TOWKG-EQPT** commands.

The **RLS-SYNCNSW** command can be used to release synchronization reference switches for the FT-2000 (Add/Drop-Ring Terminals) when the FT-2000 is in any of the following synchronization modes:

- Externally (phase-locked) timed
- Through timed
- Line timed
- Free-running.

The order of priority of synchronization mode switches, from highest to lowest is through **RLS-SYNCNSW-MOD**, **OPR-SYNCNSW-MOD**, auto switch (due to synchronization reference failure).

## INPUT PARAMETERS

*modifier* This is a message modifier to the **OPR-SYNCNSW** message and may be null or have one of the following values:

**REF** This specifies a synchronization *reference* protection switch. This is the default.

**MOD** This specifies a synchronization *mode* protection switch.

If no *modifier* is specified, it defaults to **REF**.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. The *aid* for this command must always be null.

*ctag* Correlation tag. This is included in the command by the OS and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages.

## OUTPUT FORMAT

If the network element fully complies with the release synchronization reference switching request; or if the network element fully complies with the synchronization mode switching request, the following output message is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the **RLS-SYNCNSW** command is valid and does not alter the protection state (i.e., no lockout, forced or manual synchronization reference protection switch request already exists), FT-2000 will not deny the command. Instead, the system will respond with the completion message.

For Releases 7.0 and later, if the network element fully complies with the release synchronization reference switching request; or if the network element fully complies with the synchronization mode switching request, the following output message is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the **RLS-SYNCNSW** command is valid and does not alter the protection state (that is, no lockout, forced or manual synchronization reference protection switch request already exists), or if the network element is already operating in the provisioned synchronization mode, the network element will not deny the command. Instead, the system will respond with the normal completion message.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. The output parameters listed there apply to the **RLS-SYNCNSW** command, also.



**EXAMPLE INPUT/OUTPUT**

```
r!s-syncnsw:LT-FT-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-FT-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
;
```

```
r!s-syncnsw-ref:LT-FT-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-FT-2000 97-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
;
```

```
rls-syncnsw-mod:LT-FT-2000::123456;

IP 123456
<

    LT-FT-2000 97-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section, the error responses listed there apply to the **RLS-SYNCNSW** command, also.

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses also apply.

If FT-2000 receives a **RLS-SYNCNSW** command with a non-null command code *modifier* (including any extra hyphens [-]), the following error response is returned to the OS:

```

    sid date time
M ctag DENY
  IICM
  /* Invalid Command, FT-2000 does not support Command = xxxxxxxxxxxxxxxxx
  */
;
```

where "xxxxxxxxxxxxxxxx" is the first 16 characters of the command received (up to, but excluding, the first semicolon [;]).

If FT-2000 receives an **OPR-SYNCNSW** command with a non-null *aid* value, the following error response is returned to the OS:

```

      sid date time
M ctag DENY
  INUP
/* Input Non-null Unimplemented Parameter, no AID value allowed */
;
```

If FT-2000 receives a **RLS-SYNCNSW** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (,), or termination characters (;), the following error response is returned to the OS:

```

      sid date time
M ctag DENY
  IISP
/* Input, Invalid Syntax or Punctuation */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**OPR-SYNCNSW**

**SW-TOPROTN-EQPT**

**SW-TOWKG-EQPT**

## NAME

**RTRV-ALM:** Retrieve Alarm

This command is available for Releases 4.1 and later.

## INPUT FORMAT

For Releases through 4.1:

**RTRV-ALM***[-modifier]:[tid]:[aid]:ctag[:[:ntfcncde];*

For Releases 5.0 and later:

**RTRV-ALM***[-modifier]:tid:[aid]:ctag[:[:ntfcncde],  
[condtype],[srveff],[locn],[dirn],[tmper]];*

## DESCRIPTION

**RTRV-ALM** command messages can be initiated by an OS or OS users to retrieve all active alarms from a network element terminal. This command retrieves all active alarms pertaining to the addressed network element terminal and upstream repeater bays, reported one line per condition, similar to the autonomous messages used to report alarm (REPT ALM) conditions when they occur.

Any alarm condition reported by an autonomous REPT ALM or REPT ALM ENV message which is active when a **RTRV-ALM** command is received, is included in the **RTRV-ALM** response.

## INPUT PARAMETERS

*modifier* This is a message modifier to the RTRV-ALM message and may have one of the following values:

- ALL** This requests all conditions. This is the original value.
- COM** Common. This requests all conditions that are not specifically equipment- or facility-related conditions but apply to the network element as a whole.
- EQPT** This requests equipment-related conditions.
- OC48** This requests facility-related conditions at the optical carrier signal level 48.
- OC12** For Releases 7.1 and later, this requests facility-related conditions at the optical carrier signal level 12.
- OC3** For Releases 5.0 and later, this requests facility-related conditions at the optical carrier signal level 3.

For Releases 7.1 and later, the **OC3** *modifier* is also applicable for the IS3 signal.

**STS3** For Releases 5.0 and later, This requests facility-related conditions at the synchronous transport signal level 3.

**STS1** For Releases 5.0 and later, this requests facility-related conditions at the synchronous transport signal level 1.

**EC1** This requests facility-related conditions at the electrical carrier signal level 1.

**T3** This requests facility-related conditions at the DS3 level.

**T1** This requests facility-related conditions at the DS1 level.

If no message modifier is provided, the network element interprets the modifier to be **ALL**.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the equipment component, facility, or repeater bay site ID for which the current conditions are requested.

The *aid* value entered should be a valid *aid* for a given *modifier*.

If the *modifier* is **ALL** (null) or **COM**, then the *aid* must be **all** or null. If null, the *aid* defaults to **all**.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ctag* Correlation tag. This is included in the command by the OS and is repeated by the network element in the response to allow the OS to associate the command and response messages. Valid values for *ctag* include strings of up to 6 characters comprised of identifiers (alphanumerics begin with a letter) or decimal numerals (a string of decimal digits with an optional non-trailing ".").

*ntfcncde* Notification code. This is the alarm level for which the current alarms are requested, and it may have one of the following values:

**CR** Critical alarm

**MJ** Major alarm

**MN** Minor alarm.

If the *ntfcncde* is valid, the network element's response to the OS is limited to the specified notification code. If no notification code is provided or if the notification code is not valid, the network element's response includes all alarm

conditions. Additional input parameters (*condtype*, *srveff*, *locn*, *dirn*, and *tmper*) may be included in the command request. However, the network element responds to the OS without limiting the response based in these input parameters.

## OUTPUT FORMAT

If there are no alarm conditions to report, the following message is returned to the OS:

```
sid date time
M ctag COMPLD
;
```

If there are alarm conditions to report, the following output report is returned to the OS:

```
sid date time
M ctag COMPLD
  "[aid],aidtype:ntfcncde,condtype,srveff,ocrdat,ocrtm,,
  \"conddescr\",,:[,tblislt]"
  :
  :
  :
  :
  :
  :
  :
  "[aid],aidtype:ntfcncde,condtype,srveff,ocrdat,ocrtm,,
  :\"conddescr\",,:[,tblislt]"
;
```

Applicable output lines are ordered as follows:

1. By alarm severity level CR, followed by MJ, followed by MN.
2. For conditions with the same alarm severity, by the value of occurrence date (*ocrdat*), and occurrence time (*ocrtm*), with the most recent listed first.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*aid* Access identifier. This is the address of the equipment component, facility, or repeater bay site ID for which an alarm condition is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*aidtype* Access identifier type. This has one of the following values:

|      |                                                                                                                                                                       |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM  | Common. This reports an alarm that is not an equipment or facility condition but applies to the network element as a whole.                                           |
| OC48 | For Release 4.0 and later, this reports a facility-related alarm at the optical carrier signal level 48.                                                              |
| OC12 | For Releases 7.1 and later, this reports a facility-related alarm at the optical carrier signal level 12.                                                             |
| OC3  | For Release 5.0 and later, this reports a facility-related alarm at the optical carrier signal level 3. The <i>OC3 aidtype</i> is also applicable for the IS3 signal. |
| STS3 | For Release 5.0 and later, this reports a facility-related alarm at the synchronous transport signal level 3.                                                         |
| STS1 | For Release 4.0 and later, this reports a facility-related alarm at synchronous transport signal level 1.                                                             |
| EC1  | For Release 4.0 and later, this reports a facility-related alarm at the electrical carrier signal level 1.                                                            |
| T3   | For Release 4.0 and later, this reports a facility-related alarm at the DS3 level.                                                                                    |
| T1   | For Release 4.0 and later, this reports a facility-related alarm at the DS1 level.                                                                                    |

*ntfcncde* Notification code. This is the alarm level and has one of the following values:

|    |                |
|----|----------------|
| CR | Critical alarm |
| MJ | Major alarm    |
| MN | Minor alarm    |

|                  |                                                                                                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>condtype</i>  | Condition type (or alarm type). The values for this parameter are listed in Table 3-11 at the end of this section.                                                                                                                                                                                                                  |
| <i>srveff</i>    | Service effect (or condition effect). This indicates the effect of the reported alarm on service or the effect of an alarm on the condition of the network element. This parameter has one of the following values:<br><br>SA     Service-affecting alarm condition.<br><br>NSA    Non-service-affecting alarm or status condition. |
| <i>ocrdat</i>    | Occurrence date. This indicates the date of the alarm being reported and has the format MM-DD (month-day).                                                                                                                                                                                                                          |
| <i>ocrtm</i>     | Occurrence time. This indicates the time of the alarm being reported and has the format HH-MM-SS (hours-minutes-seconds).                                                                                                                                                                                                           |
| <i>conddescr</i> | Condition description (or Alarm message). This is the text description of the reported condition.<br><br>If further explanation, including likely causes, of a reported condition is required, refer to Table 3-8 at the end of this section.                                                                                       |
| <i>tblislt</i>   | Trouble isolated. If a reported condition is isolated to the reported <i>aid</i> , the <i>tblislt</i> parameter value is ISLTD to indicate that the <i>aid</i> identifies the circuit pack that should be replaced by craft to correct the reported condition. Otherwise, this parameter is not reported.                           |

## EXAMPLE INPUT/OUTPUT

```
rtrv-alm-all:LT-FT-2000:all:123456;
```

```
IP 123456
```

```
LT-FT-2000 96-08-15 16:42:11
```

```
"ls-3b-2,EC1:CR,LOF,SA,08-14,18-26-14,,,:incoming (from STSX1) EC-1 LOF",,:"
```

```
"ls-1a-1,T3:CR,LOS,SA,08-13,12-17-41,,,:incoming (from DSX) DS3 LOS",,:"
```

```
"ls-1a-3,T3:CR,T-BERL,SA,08-11,03-50-32,,,:incoming (from DSX) DS3 SD",,:"
```

```
;
```



```
rtrv-alm-all:LT-FT-2000:all:123456;

IP 123456
<

    LT-FT-2000 96-08-15 16:42:11
    "ls-7a,0C12:CR,LOS,SA,08-14,12-29-13,,:\\"incoming 0C-12 LOS\","::"
    "ls-3b-2,EC1:CR,LOF,SA,08-13,18-26-14,,:\\"incoming (from STSX1) EC-1 LOF\","::"
    "ls-1a-3,T3:CR,T-BERL,SA,08-13,03-50-32,,:\\"incoming (from DSX) DS3 SD\","::"
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to **RTRV-ALM** also. For Releases 5.0 and later, if a **RTRV-ALM** command is received with an invalid aid value, the following error response is returned:

```
    sid date time
M  ctag DENY
    IIAC
    /* Input, Invalid Access Identifier, AID is missing, wrong or inconsistent
    with modifier */
;
```

## RELATED TL1 MESSAGES

RTRV-ALM

RTRV-ALM-ENV

RTRV-COND

SET-ATTRrr

## NAME

**RTRV-ALM-ENV:** Retrieve Alarm Environment

This command is available for Releases 4.1 and later.

## INPUT FORMAT

**RTRV-ALM-ENV:***tid:[aid]:ctag:[ntfcncde][,];*

## DESCRIPTION

**RTRV-ALM-ENV** commands can be initiated to retrieve active environmental alarm conditions from the network element. This command retrieves active environmental alarm conditions pertaining to the addressed network element in a line-by-line format, similar to the autonomous messages used to report environmental alarm conditions when they occur.

Any alarm condition reported by an autonomous REPT ALM ENV message, which is active when a **RTRV-ALM-ENV** command is received, is included in the **RTRV-ALM-ENV** response.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the environmental point(s), for example, **env-1** or **env-all**, for which the current alarm conditions are requested. The *aid* value may also be **all** or null (each of which is effectively equivalent to **env-all**).

If the *aid* value is invalid, the network element responds without limiting the response based on the input *aid*, if any.

Refer to Table 3-7 at the end of this section for a list of valid *environmental input* addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*ntfcncde* Notification code. This is the alarm level for which the current environmental alarms are requested, and it may have one of the following values:

**CR** Critical alarm

**MJ** Major alarm

**MN** Minor alarm.

If the *ntfcncde* is valid, the network element's response is limited to the specified notification code. If no notification code is provided or if the notification code is not valid, the network element's response includes all alarm conditions.

## OUTPUT FORMAT

If there are no environmental alarms to report, the following response is returned:

```

sid date time
M ctag COMPLD
;
```

If there are environmental alarms to report, the following output report is returned:

```

sid date time
M ctag COMPLD
"aid:ntfcncde,almtype,ocrdat,ocrtm,\"almmsg\""
. . . . .
. . . . .
. . . . .
"aid:ntfcncde,almtype,ocrdat,ocrtm,\"almmsg\""
;
```

Applicable output lines are ordered as follows:

1. By alarm severity level, greatest to least.
2. By date and time, with the most recent listed first.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. In addition, the following parameters apply.

*aid* Access identifier. This is the address of the environmental alarm point being reported.

Refer to Table 3-7 at the end of this section for a list of valid *environmental input* addresses.

*ntfcncde* Notification code. This is the alarm level and has one of the following values:

CR Critical alarm

MJ Major alarm

MN Minor alarm.

*almtype* Alarm type.

*ocrdat* Occurrence date. This indicates the date of the condition being reported and has the format MM-DD (month-day).

*ocrtm* Occurrence time. This indicates the time of the condition being reported and has the format HH-MM-SS (hours-minutes-seconds).

*almmsg* Alarm message. This is the text description of the reported condition. (The original value is `environment n.`)

Refer to Table 3-8 at the end of this section for list of alarms and conditions.

## EXAMPLE INPUT/OUTPUT

```
RTRV-ALM-ENV:LT-PF-2000:all:123456::MN;  
  
IP 123456  
<  
  
LT-PF-2000 96-06-26 16:42:11  
M 123456 COMPLD  
"env-1:MN,MISC,08-18,16-30-00,\"repeater bay environment input\""  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **RTRV-ALM-ENV** command, also.

If the Network Element receives a **RTRV-ALM** command with an invalid command modifier, the following error response is returned:

```
sid date time  
M ctag DENY  
ICNV  
/* Input, Command Not Valid, invalid modifier */  
;
```

## RELATED TL1 MESSAGES

REPT ALM ENV  
**RTRV-ALM**  
SET-ATTR-ENV

## NAME

**RTRV-ALM-NTWK:** Retrieve-Alarm-Network

Support for this command is available in Release 7.1 and subsequent 7.x releases. This command is not supported in FT-2000 Release 8.0 and later.

## INPUT FORMAT

**RTRV-ALM-NTWK:***tid::ctag;*

## DESCRIPTION

**RTRV-ALM-NTWK** command messages can be initiated by an user to retrieve a report of all network elements in the maintenance subnetwork with active alarm/or status conditions.

The information reported by the command may be misleading if the information is incomplete due to any of the following reasons:

- The OC-48 DCC channel in both the East and West direction is declared failed.
- Any OC-3 DCC channel in the local network element is declared failed.
- Any OC-12 DCC channel in the local network element is declared failed.
- If "Remote Activity Reporting" is disabled.
- If one or more nodes are unreachable due to multiple failures.

This is because the report does not distinguish between missing entries and no entries due to no active alarms. To determine if the report is complete, use this command in conjunction with **RTRV-MAP-NTWK**, **RTRV-FECOM** and **RTRV-ALM**.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If there are no alarm conditions to report, the following message is returned:

```
sid date time
M  ctag COMPLD
;
```

If there are alarm conditions to report, the following output report is returned:

```
sid date time
M  ctag COMPLD
   ":ntfcncde,ocrdat,ocrtm,tid,prodtype,lc1_rng"
   :      :      :      :      :      :
   :      :      :      :      :      :
   ":ntfcncde,ocrdat,ocrtm,tid,prodtype,lc1_rng"
;
```

Applicable output lines are ordered as follows:

1. By highest alarm severity level CR, followed by MJ, followed by MN, followed by ABN, followed by NE\_ACTY.
2. For conditions with the same alarm severity, by the value of occurrence date (*ocrdat*), and occurrence time (*ocrtm*), with the most recent listed first.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*ntfcncde* Notification code. This is the alarm level active at the network element for which the report is being generated. It can have one of the following values:

|         |                   |
|---------|-------------------|
| CR      | Critical alarm    |
| MJ      | Major alarm       |
| MN      | Minor alarm       |
| ABN     | Abnormal          |
| NE_ACTY | Near End Activity |

*ocrdat* Occurrence date. This indicates the date of the alarm being reported and has the format MM-DD (month-day).

*ocrtm* Occurrence time. This indicates the time of the alarm being reported and has the format HH-MM-SS (hours-minutes-seconds).

*tid* Target identifier. This gives the target identifier of the network element for which the report is being generated.

*prodtype* Product Type. This gives the category of network element for which the report is being generated. It takes one of the following values.

DDM-OC3 This indicates that the reported TID is a DDM-2000 OC-3.

DDM-OC12 This indicates that the reported TID is a DDM-2000 OC-12.

FT-2000 This indicates that the reported TID is an FT-2000.

SLC-2000 This indicates that the reported TID is a SLC-2000.

FbrRch This indicates that the reported TID is a Fiber Reach.

? This indicates that the reported TID is unknown or not one of the product types listed above.



*lcl\_rng* Local ring. This indicates whether or not the network element for which report is being generated represents a node in the local ring. It can have one of the following values.

yes This indicates that the reported TID is a node of the local ring.

no This indicates that the reported TID is not a node of the local ring.

## EXAMPLE INPUT/OUTPUT

```
rtrv-alm-ntwk:LT-PF-2000::123456;  
IP 123456  
>  
  
LT-PF-2000 96-06-07.16:42:11  
M 123456 COMPLD  
"CR, 06-07, 16-10-14, abcdefgh1, DDM-OC3, no"  
"CR, 06-07, 16-26-14, abcdefgh, FT-2000, yes"  
"MJ, 06-07, 11-26-14, abcdefgh3, FT-2000, yes"  
"MJ, 06-07, 13-26-14, abcdefgh2, DDM-OC12, no"  
"MN, 06-07, 16-26-13, abcdefgh4, FT-2000, no"  
"ABN, 06-07, 16-29-14, abcdefgh5, SLC-2000, no"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to **RTRV-ALM**.

If the network element receives an **RTRV-ALM-NTWK** command while alarm reporting is temporarily disabled due to execution of a **test-auto turnup-local** command, the following error response is returned:

```
sid date time
M ctag DENY
SARB
/* Status, All Resources Busy,
The system is temporarily busy, please try later
*/
;
```

## RELATED TL1 MESSAGES

**RTRV-MAP-NETWORK**

**RTRV-FECOM**

**RTRV-ALM**

**RTRV-ALM-ENV**

## NAME

**RTRV-AO:** Retrieve Autonomous Output

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**RTRV-AO:***tid:[aid]:ctag[:::spec\_block];*

## DESCRIPTION

**RTRV-AO** commands can be initiated to request the network element to send copies of autonomous TL1 messages.

The content of the response to the **RTRV-AO** command depends on the OS-type assigned to the access channel, for example, the X.25 virtual circuit (VC), over which the command is received. The output is limited to the autonomous TL1 messages that are assigned to the same OS-type.

The network element saves autonomous TL1 messages in a separate file for each OS-type, thus the response to a **RTRV-AO** command is retrieved from the file for the *same OS-type only* that the **RTRV-AO** command came in on.

The copies of autonomous TL1 messages available for retrieval include those actually reported to the user as well as those that may not have reached the user due to external (for example, X.25 failures) or internal (for example, autonomous TL1 message output buffer overflow, no current login for the OS-type, or inhibited autonomous TL1 message reporting) conditions.

The network element saves a copy of each autonomous TL1 message to which an *atag* value is assigned per OS-type.

Whenever the *atag* sequence is reset for an OS-type, for example, due to system initialization or processor reset, the **RTRV-AO** log file for that OS-type is cleared.

The network element saves copies of the 50 most recent autonomous TL1 messages for the *memory administration* OS-type.

The network element saves copies of the 50 most recent autonomous TL1 messages for the *other* OS-type.

The network element saves copies of the 40 most recent autonomous TL1 messages for the *maintenance* OS-type.

## INPUT PARAMETERS

- tid* Target identifier. This is the name of the network element to which the command is addressed.
- aid* Access identifier. Because the **RTRV-AO** log file is not filtered by *aid*, the *aid* value must be **all** or null (default value = **all**).
- ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.
- spec\_block* Specific block. Parameters included within the specific block are positionally independent and are specified using a name-defined construct of The specific block may have one, both, or none of the following parameters specified within it in a comma-separated list. Furthermore, each parameter listed below can appear, at most, once within the specific block for a single **RTRV-AO** command. The use of the word "null" in the descriptions below implies that the parameter does not appear or appears with no value (for example, **ATAGSEQ=,MSGTYPE=**) in the command. The parameters are listed in alphabetic order.
- ATAGSEQ** Automatic tag sequence. This is the 3-digit *atag* value of the autonomous TL1 messages requested. For example, "**ATAGSEQ=010**" specifies single *atag* value "010".
- Two *atag* values may be specified by using an "&" (ampersand), for example, "**ATAGSEQ=010&20**" specifies *atag* values "010" and "020".
- A range of *atag* values may be specified by using "&&" (double ampersands), for example, "**ATAGSEQ=10&&20**" specifies *atag* values "010, 011, 012, ..., 020".
- The network element response to "**ATAGSEQ=001&&001**" is the same as for "**ATAGSEQ=001**" (or "**ATAGSEQ=001&001**"), that is, to retrieve just *one* copy of the autonomous TL1 message with *atag* "001".
- A wraparound range of *atag* values may also be specified by using "&&" (double ampersands), for example, "**ATAGSEQ=998&&2**" specifies *atag* values "998, 999, 000, 001, and 002".

The network element's support of wraparound ranges indicates that the order of input of *atag* values in ranges is significant.

Combinations of single ampersands (&) and double ampersands (&&) are not allowed in the same **ATAGSEQ** parameter specification.

If multiple or a range of *atag* values is specified by **ATAGSEQ**, but *some* of the *atag* values are not available in the network element's **RTRV-AO** log file, the network element responds with the *atag* values that *are* available within the specified **ATAGSEQ**. If no **ATAGSEQ** is specified (null), the response is not limited based on *atag* value.

**MSGTYPE** Message type. This is the type of autonomous messages requested. This parameter may be null or have one of the following values:

|              |                                                   |
|--------------|---------------------------------------------------|
| <b>ALM</b>   | Report Alarm (including Report Alarm Environment) |
| <b>COND</b>  | Report Condition                                  |
| <b>EVENT</b> | Report Event                                      |
| <b>DBCHG</b> | Report Database Change                            |
| <b>SW</b>    | Report Switch                                     |

For example, "**MSGTYPE=DBCHG**" requests all REPT DBCHG autonomous messages.

If no **MSGTYPE** is specified (null), the response is not limited by the type of autonomous messages.

**OUTPUT FORMAT**

If there are no autonomous messages to report, the following response is returned:

```
sid date time
M ctag COMPLD
;
```

If the input **ATAGSEQ** *atag* or **MSGTYPE** values do not match any *atag* values or message types, respectively, in the network element's **RTRV-AO** log file, or if the **MSGTYPE** value does not match the TL1 autonomous message types provisioned for the OS-types of the current login session, the network element provides a normal completion response.

If there are autonomous messages to report, the following output report is returned:

```
sid date time
M ctag COMPLD
/*
complete autonomous messages except without the termination
indicator (";")
*/
;
```

If there is more than one autonomous message to report, the autonomous messages are output in ascending (chronological) order by their *atag* values. The *order* of output is independent of the *order* of input of the **ATAGSEQ** *atag* values.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
RTRV-AO:LT-PF-2000::123456:::ATAGSEQ=10&011;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 94-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
/*
```

```
LT-PF-2000 96-08-18 10:30:02
```

```
* 010 REPT ALM EQPT
```

```
"tg-1:MN,SYNCCLK,NSA,10-25,10-30-00:\"TG3 failure\":,ISLTD"
```

```
LT-PF-2000 94-08-18 10:30:03
```

```
A 011 REPT SW
```

```
"tg-1,tg-2"
```

```
*/
```

```
;
```

**ERROR RESPONSES**

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **RTRV-AO** command, also.

If the network element receives an **RTRV-AO** command with a non-null command code modifier [including any extra hyphens (-)], the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If the network element receives a **RTRV-AO** command with an extra hyphen (-), the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, network element does not support
   command = xxxxxxxxxxxxxxxxxx */
;
```

where xxxxxxxxxxxxxxxxxx is the first 16 characters, or up to the end-of-message semicolon (;) if less than 16 characters, of the command received.



If the network element receives an **RTRV-AO** command with a non-null command code modifier, the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If the network element receives an **RTRV-AO** command with an invalid *aid* value (that is, anything other than **all** or null), the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an **RTRV-AO** command with the same parameter specified more than once, the following error response is returned:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation, parameter(s) multiply defined */
;
```

If the network element receives an **RTRV-AO** command with an invalid **ATAGSEQ** value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid ATAGSEQ */
;
```

If the network element receives an **RTRV-AO** command with an invalid **MSGTYPE** value, (that is, an autonomous TL1 message type that the network element does not support), the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid MSGTYPE */
;
```

#### RELATED TL1 MESSAGES

REPT *ALM*

REPT *ALM ENV*

REPT *COND*

REPT *EVENT*

REPT *DBCHG*

REPT *SW*

**ENT-CID-SECU**

**RTRV-CID-SECU**

## NAME

**RTRV - ASGNMT - DCC:** Retrieve-Assignment-DCC

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV - ASGNMT - DCC:***tid::ctag*;

## DESCRIPTION

The **RTRV - ASGNMT - DCC** command can be initiated by users to retrieve information on the assignment of DCC Channels to low speed slots or Quads or slot or Quad pairs.

This command is available for all users.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If there is provisioning information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "aid: :DCC_CHAN=dcc_chan,ORTN=ortn,"
  "aid: :DCC_CHAN=dcc_chan,ORTN=ortn,"
  .
  .
  "aid: :DCC_CHAN=dcc_chan,ORTN=ortn"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

- aid* Access Identifier. This is the low speed address for which information on DCC channel assignment is being reported.
- dcc\_chan* DCC Channel. *DCC\_CHAN* is a name defined parameter to report the address of the DCC channel assigned to the addressed low speed slot.
- ortn* Orientation. *ORTN* is a name defined parameter to report the orientation of the addressed channel. It can take the following values:
- User This assigns the specified *DCC\_CHAN* the user-side role in the LAPD protocol.
  - Network This assigns the specified *DCC\_CHAN* the network-side role in the LAPD protocol. This is the original value.

If not specified, *ORTN* will retain its currently provisioned value.

## EXAMPLE INPUT/OUTPUT

The following example shows an **RTRV-ASGNMT-DCC** command for an FT-2000.

```
rtrv-asgnmt-dcc:LT-PF-2000::123456;

IP 123456
<

LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
"ls-1a::DCC_CHAN=dcc3-1,ORTN=User,"
"ls-1b::DCC_CHAN=dcc3-1,ORTN=User,"
"ls-2b::DCC_CHAN=dcc3-2,ORTN=Network,"
"ls-4a::DCC_CHAN=dcc3-5,ORTN=Network,"
"ls-5b::DCC_CHAN=dcc12-4,ORTN=User,"
"ls-7b::DCC_CHAN=dcc12-4,ORTN=User"
;
```

## **ERROR RESPONSE**

Refer to the **RTRV - HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV - ASGNMT - DCC** command, also.

## **RELATED TL1 COMMANDS/MESSAGES**

**ENT - ASGNMT - DCC**

**DLT - ASGNMT - DCC**

## NAME

**RTRV-ATTR-ALM:** Retrieve Attribute Alarm

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**RTRV-ATTR-ALM:***tid::ctag;*

## DESCRIPTION

For Release 7.0, the **RTRV-ATTR-ALM** command can be initiated by users to retrieve the values that have been set for incoming signal alarm delay (*almdel*), and the alarm clear delay (*clrdel*) interval. For Releases 7.1 and later, the **RTRV-ATTR-ALM** command can be initiated by users to retrieve the values that have been set for incoming signal alarm delay (*almdel*) interval, the alarm clear delay (*clrdel*) interval, and tributary level reporting (*tribrept*) parameters.

This command is available to all users.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

For Release 7.0 only, if the element fully complies with the **RTRV-ATTR-ALM** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
  "almdel=AlarmDelay", "clrdel=ClearDelay"
.
;
```

For Release 7.1 and later, if the network element fully complies with the **RTRV-ATTR-ALM** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
  "almdel=AlarmDelay,clrdel=ClearDelay,tribrept=TributaryReporting"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

- AlmDel* Alarm Delay. This is the value of the *almdel* (incoming signal alarm delay) parameter in seconds. It represents the time that the network element will wait, after it finds an incoming signal condition, before reporting it. The *almdel* value is an integer from 0 to 120.
- ClrDel* Clear Delay. This is the value of the *clrdel* (alarm clear delay) parameter in seconds. It represents the time that the network element will wait, after a condition clears, before reporting the cleared condition. The *clrdel* value is an integer from 0 to 120.
- TribRept* Tributary Reporting. This is the value of the *tribrept* parameter. This is the alarm notification code associated with the tributary failed conditions. This parameter may take one of the following values:
- |           |                |
|-----------|----------------|
| <b>CR</b> | Critical alarm |
| <b>MJ</b> | Major alarm    |
| <b>MN</b> | Minor alarm    |
| <b>NA</b> | Not alarmed    |
| <b>NR</b> | Not reported   |
| <b>NO</b> | Not indicated. |



### EXAMPLE INPUT/OUTPUT

For Release 7.0, the following example shows an **RTRV-ATTR-ALM** command for a PF-2000 system where the AlarmDelay parameter has been provisioned to 11 seconds; the ClearDelay parameter has been provisioned to 9 seconds.

```
RTRV-ATTR-ALM:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"almdel=11", "clrdel=9"
```

```
;
```

For Releases 7.1 and later, the following example shows an **RTRV-ATTR-ALM** command for a PF-2000 system where the *AlarmDelay* value has been provisioned to 11 seconds; the *ClearDelay* value has been provisioned to 9 seconds; and the *TributaryReporting* value has been provisioned to be CR.

```
RTRV-ATTR-ALM:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 97-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"almdel=11,clrdel=9,tribrept=CR"
```

```
;
```

## **ERROR RESPONSES**

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-ATTR-ALM** command, also.

## **RELATED TL1 COMMANDS/MESSAGES**

**SET-ATTR-ALM**

## NAME

**RTRV-ATTR-CONT:** Retrieve Attribute Control

Support for this message is available in Releases 7.0 and later.

## INPUT FORMAT

**RTRV-ATTR-CONT:***tid:aid:ctag*[:[:[:]]];

## DESCRIPTION

The **RTRV-ATTR-CONT** command can be initiated by general users to retrieve the provisioned description(s) associated with an external control device or devices. These descriptions are used for information purposes when a user seeks to operate or release external miscellaneous discrete controls. For example, The user may want to verify that *aid=cont-1* is associated with a fan (and not a sprinkler) before operating it.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                              |
| <i>aid</i>  | Access identifier. The <i>aid</i> identifies the external miscellaneous discrete control for which attributes are being retrieved.<br><br>Refer to Table 3-7 at the end of this section for list of valid addresses. The <i>aid</i> value can not be null. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                      |

## OUTPUT FORMAT

If the network element fully complies with the **RTRV-ATTR-CONT** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
  "aid:\"conttype\"
  ...
  "aid:\"conttype\"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Parameters that specifically apply to this command response are defined below.

|                 |                                                                                                                                                                                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>      | Target Identifier. This is the system name.                                                                                                                                                                                                                                           |
| <i>aid</i>      | The aid identifies the external control for which the provisioned names are being retrieved. When <i>aid</i> is equal to <code>cont-all</code> , the output is sorted by <i>aid</i> , with <code>cont-1</code> and its description printed first and <code>cont-2</code> second, etc. |
| <i>conttype</i> | The control type is the user provisioned description for the control identified by the <i>aid</i> . The description is enclosed with a pair of escaped quotes ( <code>\</code> ).                                                                                                     |

### EXAMPLE INPUT/OUTPUT

The following example shows an **RTRV-ATTR-CONT** command to retrieve the provisioned descriptions for all miscellaneous discrete controls for a PF-2000 system:

```
RTRV-ATTR-CONT:LT-PF-2000:CONT-ALL:123456::;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"cont-1:\"startPump\""
```

```
"cont-2:\"startGenerator\""
```

```
"cont-3:\"startLights\""
```

```
"cont-4:\"control4\""
```

```
;
```

The following example shows an **RTRV-ATTR-CONT** command to retrieve the description of the first miscellaneous discrete control for a PF-2000 system:

```
RTRV-ATTR-CONT:LT-PF-2000:CONT-1:123456::;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"cont-1:\"startpump\""
```

```
;
```

The following example shows an **RTRV-ATTR-CONT** command to retrieve the second miscellaneous discrete control's provisioned name for a PF-2000 system:

```
RTRV-ATTR-CONT:LT-PF-2000:CONT-2:123456::;
```

```
IP 123456  
<
```

```
LT-PF-2000 94-10-26 16:42:11  
M 123456 COMPLD  
"cont-2:\"startsprinkler\""  
;
```

The following example shows an **RTRV-ATTR-CONT** command to retrieve the third miscellaneous discrete control for a PF-2000 system:

```
RTRV-ATTR-CONT:LT-PF-2000:CONT-2:123456::;
```

```
IP 123456  
<
```

```
LT-PF-2000 94-10-26 16:42:11  
M 123456 COMPLD  
"cont-3:\"startlights\""  
;
```

## **ERROR RESPONSE**

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **RTRV-ATTR-CONT** command.

If a **RTRV-ATTR-CONT** command is received with an invalid access identifier (i.e. something other than **cont-1** through **cont-4** or **cont-all**), the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IIAC
/* Input, Invalid Access Identifier, AID missing or
inconsistent with modifier value */
;
```

## **RELATED TL1 COMMANDS/MESSAGES**

**OPR-EXT-CONT**

**RLS-EXT-CONT**

**RTRV-ALM**

**SET-ATTR-CONT**

## NAME

**RTRV-ATTR-ENV:** Retrieve Attribute Environment

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**RTRV-ATTR-ENV:***tid:aid:ctag*[::,];

## DESCRIPTION

**RTRV-ATTR-ENV** commands can be initiated to retrieve the alarm level and description parameters for each selected miscellaneous discrete environmental input point.

## INPUT PARAMETERS

- |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>aid</i>  | Access identifier. This is the address of the environmental points for which attributes are requested. The value <b>env-all</b> is allowed and requests the alarm level and description parameters for all 16 environmental points in the system. In this case, the output shall be sorted by increasing environment point number.<br><br>Refer to Table 3-7 at the end of this section for list of valid addresses.<br><br>A null value is not permitted with this parameter. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                                                                                                          |



## OUTPUT FORMAT

If the network element fully complies with the retrieve attribute environment request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
  "aid:ntfcncde,\"almmsg\"
    .      .      .
    .      .      .
    .      .      .
  "aid:ntfcncde,\"almmsg\"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. The remainder of the output parameters are described below.

*aid* Access identifier. This is the address of the environmental point for which the attributes are reported.

*ntfcncde* Notification code. This is the alarm level associated with the addressed environmental point, and has one of the following values:

CR Critical alarm

MJ Major alarm

MN Minor alarm

NA Not alarmed

NR Not reported.

*almmsg* Alarm message. This is the condition description associated with the addressed environmental point. The description is an alphanumeric string, upper-case and lower-case characters (spaces are allowed), up to 26 characters. The description is enclosed within a pair of escaped quotes (\").

## EXAMPLE INPUT/OUTPUT

The following example shows a **RTRV-ATTR-ENV** command to retrieve the tenth miscellaneous discrete environment parameter for a FT-2000 system:

```
RTRV-ATTR-ENV:LT-FT-2000:env-10:123456;  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
    "env-10:MJ,\"environment 10\""  
;
```

The following example shows a **RTRV-ATTR-ENV** command to retrieve all of the miscellaneous discrete environment parameters for a FT-2000 system:

```
RTRV-ATTR-ENV:LT-FT-2000:env-all:123456;  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
    "env-1:NA,\"open door\""  
    "env-2:MN,\"high water\""  
    "env-3:MN,\"high temperature\""  
    "env-4:NA,\"generator started\""  
    "env-5:CR,\"battery low\""  
    "env-6:MJ,\"environment 6\""  
    "env-7:NR,\"environment 7\""  
    "env-8:MJ,\"environment 8\""  
    "env-9:MJ,\"environment 9\""  
    "env-10:MJ,\"environment 10\""  
    "env-11:MJ,\"environment 11\""  
    "env-12:MJ,\"environment 12\""  
    "env-13:MJ,\"environment 13\""  
    "env-14:MJ,\"environment 14\""  
    "env-15:MJ,\"environment 15\""  
    "env-16:MJ,\"environment 16\""  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **RTRV-ATTR-ENV** command, also.

If the network element receives an **RTRV-ATTR-ENV** command with an invalid *aid* value (i.e. not one of **env-1** through **env-16** or **env-all**), the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier, AID is missing, wrong or
inconsistent with modifier */
;
```

## RELATED TL1 MESSAGES

REPT ALM ENV

REPT COND

REPT EVT

**RTRV-ALM-ENV**

**RTRV-COND**

**SET-ATTR-ENV**

## NAME

**RTRV-ATTR-rr**: Retrieve Attribute

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**RTRV-ATTR-rr**:*tid*[:*aid*]:*ctag*[:*,,,,,*];

## DESCRIPTION

**RTRV-ATTR-rr** command instructs a network element to retrieve the notification code associated with incoming signal failure events.

The incoming signal failure events are described for the **SET-ATTR-rr** command.

This attribute also governs whether the event notification is alarmed (reported via REPORT ALARM) or not alarmed (reported via REPORT EVENT).

## INPUT PARAMETERS

*modifier* This is the message modifier for the **RTRV-ATTR-rr** message and may have one of the following values:

**ALL** This requests attributes for all of the following facility types.

**EC1** This requests attributes for the electrical carrier signal level 1.

**T3** This requests attributes for the DS3 level.

**OC3** This retrieves the attributes for the optical OC3 signal.

For Releases 7.1 and later, the **OC3** *modifier* is also applicable for the IS3 signal.

**OC12** For Releases 7.1 and later, this retrieves the attributes for the optical OC12 signal.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the facility for which the attributes are requested. The *aid* value may be **all** or null (default = **all**), also.

If the *modifier* is **ALL** or null, the *aid* value must be **all** or "null". Otherwise the *aid* value must match the values corresponding to the *modifier*.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ctag* Correlation tag. This is included in the command by the OS and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages.

## OUTPUT FORMAT

If there are no attributes to report, the following message is returned:

```
sid date time  
M ctag COMPLD  
;
```

If there are attributes to report, the following output is returned:

```
sid date time
M ctag COMPLD
"aid,aidtype:ntfncde,, locn,dirn"
.      .      .      .      .
.      .      .      .      .
"aid,aidtype:ntfncde,, locn,dirn"
;
```

Applicable output lines are ordered as follows:

1. By EC1 data.
2. By T3 data.
3. By OC3 or IS3 (Release 7.1 and later) data.
4. By OC12 (Release 7.1 and later) data.

Within each type, the data is sorted by *aid*.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. The remainder of the output parameters are described below.

*aid* Access identifier. This is the address of the facility for which the attributes are reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*aidtype* Access identifier type. This has one of the following values:

EC1 This reports attributes for the electrical carrier signal level 1.

OC3 This reports attributes for the OC3 level.

For Releases 7.1 and later:

The OC3 aidtype is also applicable for the IS3 signal.

T3 This reports attributes for the DS3 level.

OC12 For Releases 7.1 and later:  
This reports attributes for the OC12 level.

*ntfcncde* Notification code. For Release 5.0, this is the alarm level associated with the addressed facility and has one of the following values:

CR Critical alarm  
MJ Major alarm  
MN Minor alarm  
NA Not alarmed  
NR Not reported.  
NO Not indicated.

Notification code. For Releases 6.0 and later, this is the alarm level associated with the addressed facility. This parameter has one of the following values:

CR Critical alarm  
MJ Major alarm  
MN Minor alarm  
NA Not alarmed.  
NR Not reported. (For Releases 6.0 and later)  
NO Not indicated. For Releases 6.0 and later, only valid for the **OC3** modifier.

*locn* Location. This parameter always has the value NEND.

*dirn* Direction. This parameter always has the value RCV.

## EXAMPLE INPUT/OUTPUT

The following is an FT-2000 example of retrieving DS3 port attributes from slot 1a:

```
RTRV-ATTR-T3:LT-FT-2000:ls-1a-all:123456;  
IP 123456  
<  
  LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
  "ls-1a-1,T3:CR,,NEND,RCV"  
  "ls-1a-2,T3:CR,,NEND,RCV"  
  "ls-1a-3,T3:CR,,NEND,RCV"  
;
```

The following is an FT-2000 example of retrieving EC1 port 2 attributes from slot 2a:

```
RTRV-ATTR-EC1:LT-FT-2000:ls-2a-2:123456;  
IP 123456  
<  
  LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
  "ls-2a-2,EC1:CR,,NEND,RCV"  
;
```



For Releases 6.0 and later, the following is an example of retrieving OC3 slot attributes from slot 8a:

```
RTRV-ATTR-OC3:LT-FT-2000:ls-8a:123456;  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
ls-8a,OC3:NO,,NEND,RCV"
```

For Releases 7.1 and later, the following is an example of retrieving IS3 slot attributes from slot 8b:

```
RTRV-ATTR-OC3:LT-FT-2000:ls-8b:123456;  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
    "ls-8b,OC3:MN,,NEND,RCV"  
;
```

For Releases 7.1 and later, the following is an example of retrieving OC12 attributes from quad 7A:

```
RTRV-ATTR-OC12:LT-FT-2000:1s-7b:123456;  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD  
    "1s-7b,OC12:NR,,NEND,RCV"  
;
```

## **ERROR RESPONSES**

Refer also to the non-message-specific error responses listed in the **RTRV-HDR** error responses.

If an FT-2000 receives an **RTRV-ATTR-rr** command with an invalid command modifier, the following error response is returned:

```
    sid date time  
M ctag DENY  
  ICNV  
  /* Input, Command Not Valid, invalid modifier */  
;
```

If an FT-2000 receives an **RTRV-ATTR-rr** command with an invalid *aid* value, the following error response is returned:

```
      sid date time  
M  ctag DENY  
   IIAC  
   /* Input, Invalid Access Identifier */  
;
```

#### **RELATED TL1 MESSAGES**

**SET-ATTR-rr**

**ENT-rr**

**RTRV-rr**

## NAME

**RTRV-CID-SECU:** Retrieve Channel Identifier Security

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV-CID-SECU:***tid:[aid]:ctag;*

## DESCRIPTION

The **RTRV-CID-SECU** command can be initiated by users to retrieve the current CIT or TL1 port provisioning parameters such as, port status, timeout, port type or OS type information. Also, this command lists the users currently logged on to the network element via each port.

## INPUT PARAMETERS

|             |                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                            |
| <i>aid</i>  | Access identifier. This parameter specifies the port address for which the user wants to retrieve information.<br><br>The <i>aid</i> must be a valid communications port address or <b>all</b> .<br><br>If null, the <i>aid</i> defaults to <b>all</b> . |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                    |

## OUTPUT FORMAT

If the network element fully complies with the **RTRV-CID-SECU** request, the following normal completion response is returned.

```

      sid date time
M    ctag COMPLD
      "aid::spec_block"
      "aid::spec_block"
      .      .      .
      .      .      .
      .      .      .
      "aid::spec_block"
;

```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

*aid* The *aid* is the network element communications port address.

*spec\_block* Specific Parameter Block. This parameter field identifies the communications port security parameters for the X.25, DTE, DCE, and DCC ports of the network element. Parameters within the *spec\_block* are specified using a name defined construct of: **PARAMETER=value** in a comma separated list.

For the **RTRV-CID-SECU** command, the *spec\_block* may contain some or all of the following parameters depending on the specified input *aid*:

*tmout* Time Out. This parameter identifies the time out interval before an inactive session is automatically terminated for the DCE, DTE, and DCC ports.

This parameter will only be reported when the *aid* value is *dte* or *dce* or *dcc* when *chan* is *vc-0*. The format for this parameter is "TMOUT=*tmout*".

When specified in the *spec\_block*, it has an integer value in the range of 0-999 minutes. A 0 value indicates that the time out mechanism has been disabled.

*portstat* Port Status. This parameter reports whether communications access for the data communications port identified by the input *aid* is enabled or disabled.

This parameter will only be reported when the *aid* value is *dte* or *dce* or *dcc* when *chan* is *vc-0*. The format for this parameter is "PORTSTAT=*portstat*".

When specified in the *spec\_block*, it may take the value *enabled* or *disabled*.

When the port status of the DCC port is disabled, users on remote network elements are prevented from doing a CIT remote login to the local network element. Disabling the DCC port does not affect TL1 commands, only CIT access to the local network element via the DCC port is affected. CIT remote login from the local network element to other network elements is not prevented when the DCC port is disabled.

*porttype* Port Type. This parameter reports the protocol used by the network element for the DTE or DCE port.

This parameter will only be reported when the *aid* value is *dte* or *dce* or *dcc* when *chan* is *vc-0*. The format for this parameter is "PORTTYPE=*porttype*".

When specified in the *spec\_block*, it will have one of the following values.

*cit* This reports that the DTE or DCE port is provisioned to accept CIT commands.

*tl1* This reports that the DTE or DCE port is provisioned to accept TL1 commands.

When the DCE or DTE *porttype* is *tl1*, the FT-2000 CIT program will no longer work on the specified port. The user will have to re-provision the *porttype* for the affected port to be *cit* via one of the other CIT accessible ports or by the

**ENT-CID-SECU** TL1 command, before the CIT program can be used again.

*baudrate* Baud Rate. This parameter reports the baud rate of the DTE port or DCE port if the *porttype* is **tl1**.

This parameter will only be reported when the *aid* value is **dte** or **dce**. The format for this parameter is "BAUDRATE=*baudrate*".

When specified in the *spec\_block*, it will have one of the following values: 1200, 2400, 4800, 9600, or **auto**.

The **auto** value will be reported only when the *porttype* is **cit**.

*chan* Channel. This parameter reports the channel type of the X.25 port. This parameter lists the permanent virtual channels and the calling address table entries for the switched virtual channels of the X.25 port. It also lists the virtual channels for the DCC port.

This parameter will only be reported when the *aid* value is **x25** or **dcc**. The format for this parameter is "CHAN=*chan*".

When specified in the *spec\_block*, it will have one of the following values.

vc-0 DCC Virtual Channel #0. This is reserved for CIT remote logins.

vc-1 DCC Virtual Channel #1.

vc-2 DCC Virtual Channel #2.

vc-3 DCC Virtual Channel #3.

vc-4 DCC Virtual Channel #4.

vc-5 DCC Virtual Channel #5.

vc-6 DCC Virtual Channel #6.

vc-7 DCC Virtual Channel #7.

vc-8 DCC Virtual Channel #8.

pvc-1 Permanent Virtual Channel #1.

pvc-2 Permanent Virtual Channel #2.

- tbl-1 Switched Virtual Channel #1 calling address table entry.
- tbl-2 Switched Virtual Channel #2 calling address table entry.
- tbl-3 Switched Virtual Channel #3 calling address table entry.
- tbl-4 Switched Virtual Channel #4 calling address table entry.
- tbl-5 Switched Virtual Channel #5 calling address table entry.
- tbl-6 Switched Virtual Channel #6 calling address table entry.

*ostype* OS Type. This parameter reports the OS type for the virtual circuit of the X.25 and DCC ports. The value of the *ostype* parameter determines which, if any TL1 autonomous reports will be provided to the associated channel as identified by the *chan* parameter. All OS types allow command/response TL1 messages.

This parameter will only be reported when the *aid* value is *x25* or *dcc*. The format for this parameter is "OSTYPE=*ostype*".

When specified in the *spec\_block*, it will have one of the following values.

For a *chan* value of *pvc-x* or *vc-x*, *ostype* can take one of the following values.

- mt Maintenance. This provides the identified *chan* with the REPT ALM, REPT ALM ENV, REPT COND, and REPT EVT autonomous TL1 messages.
- ma Memory Administration. This provides the identified *chan* with the REPT DBCHG autonomous TL1 message.
- test Test. This provides the identified *chan* with no autonomous TL1 messages. This parameter is available starting with FT-2000 ADR Release 8.0.
- cmdr Command Response only. This provides the identified *chan* with no autonomous TL1 messages.



*othr* Other. This provides the identified *chan* with all autonomous TL1 messages.

For a *chan* value of *tbl-x*, *ostype* can take one of the following values.

*mt* Maintenance. This provides the identified *chan* with the REPT ALM, REPT ALM ENV, REPT COND, and REPT EVT autonomous TL1 messages.

*ma* Memory Administration. This provides the identified *chan* with the REPT DBCHG autonomous TL1 message.

*test* Test. This provides the identified *chan* with no autonomous TL1 messages. This parameter is available starting with FT-2000 ADR Release 8.0.

*cmdr* Command Response only. This provides the identified *chan* with no autonomous TL1 messages.

*othr* Other. This provides the identified *chan* with all autonomous TL1 messages.

*none* None. This provides the identified *chan* with no autonomous TL1 messages.

*calladdr* Calling Address. This parameter reports the calling address of the OS or user corresponding to the Switched Virtual Circuit (*tbl-x*) of the X.25 port, if the *ostype* is other than *none*.

This parameter will only be reported when the *aid* value is *x25* and the *chan* value is *tbl-x*. The format for this parameter is "CALLADDR=*calladdr*".

When specified in the *spec\_block*, it's value may be a numeric string of up to a maximum of 15 digits.

*gnetid* Gateway Network Element TID. This parameter reports the *tid* value of the gateway network element (GNE) for the DCC's virtual channels.

This parameter will only be reported when the *aid* value is *dcc*. The format for this parameter is "GNETID=*gnetid*".

*uid*

User Identifier. This parameter reports the user ID of the user currently logged into the system via the communication port identified by the *aid*.

If no user is currently logged in at the time of the report, this parameter is not reported.

## EXAMPLE INPUT/OUTPUT

The following example shows a **RTRV-CID-SECU** command requesting a report of the provisioned security parameters for all of the network element's communications ports and all the users currently logged into the network element.

```
RTRV-CID-SECU:LT-PF-2000:all:123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 98-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"dce::TMOUT=25,PORTSTAT=enabled,PORTTYPE=cit,BAUDRATE=auto,UID=user1"
```

```
"dte::TMOUT=10,PORTSTAT=enabled,PORTTYPE=tl1,BAUDRATE=9600,UID=user2"
```

```
"dcc::CHAN=vc-0,TMOUT=15,PORTSTAT=enabled,PORTTYPE=cit,UID=user3"
```

```
"dcc::CHAN=vc-1,OSTYPE=ma,GNETID=another.gid1,UID=luc01"
```

```
"dcc::CHAN=vc-2,OSTYPE=cmdr,GNETID=another.gid2,UID=luc02"
```

```
"dcc::CHAN=vc-3,OSTYPE=ma,GNETID=another.gid3,UID=luc03"
```

```
"dcc::CHAN=vc-4"
```

```
"dcc::CHAN=vc-5"
```

```
"dcc::CHAN=vc-6"
```

```
"dcc::CHAN=vc-7"
```

```
"dcc::CHAN=vc-8"
```

```
"x25::CHAN=pvc-1,OSTYPE=mt,UID=NMA01"
```

```
"x25::CHAN=pvc-2"
```

```
"x25::CHAN=tbl-1,OSTYPE=cmdr,CALLADDR=19089188888,UID=luc04"
```

```
"x25::CHAN=tbl-2"
```

```
"x25::CHAN=tbl-3"
```

```
"x25::CHAN=tbl-4"
```

```
"x25::CHAN=tbl-5"
```

```
"x25::CHAN=tbl-6"
```

```
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-CID-SECU** command, also.

If the network element receives a **RTRV-CID-SECU** command with an invalid *aid*, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**ENT-CID-SECU**

## NAME

**RTRV-CKT-rr**: Retrieve Circuit Path.

This command is available in FT-2000 Releases 7.1 and later.

## INPUT FORMAT

**RTRV-CKT-*modifier*:*tid*:*aid*:*ctag***;

## DESCRIPTION

This command can be initiated by users to retrieve a circuit path report showing all of the cross-connections that make up the circuit.

When the network element receives an **RTRV-CKT-rr** command, the network element will retrieve all applicable circuit information according to the parameter settings in the command.

## INPUT PARAMETERS

This is the message modifier and may only have the following value:

- |             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>STS1</i> | This specifies that the cross-connection information for an STS-1 circuit which drops to the STS-1 port specified by the aid, be retrieved.                                           |
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>aid</i>  | Access identifier. This is the address of the STS-1 port for which the cross-connection information is to be retrieved.                                                               |
|             | The <i>aid</i> must identify a single STS-1 port.                                                                                                                                     |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

**OUTPUT FORMAT**

If the network element fully complies with the circuit retrieval request, the following output message is returned:

```
sid date time
M ctag COMPLD
  "STATUS=status"
  "src_aid,dest_aid: :RINGNODE=NODE-TID,AUDIT=audit[:sst]"
  "src_aid,dest_aid: :RINGNODE=NODE-TID,AUDIT=audit[:sst]"
    .      .      .      .      .      .      .
    .      .      .      .      .      .      .
  "src_aid,dest_aid: :RINGNODE=NODE-TID,AUDIT=audit[:sst]"
;
```

The report starts at the specified drop connection on the local node and continues until either one or the other of the following occur:

1. A source is found (for example, a simple add cross-connection or a DRI cross-connection in the add state)
2. The circuit path is broken (that is, a node with no cross-connection in the appropriate direction). In this case, the source AID entry is marked with a "?" at this node.

A DRI cross-connection in the through mode, is traversed and the search for the source continues at the next node.

If at the local node, the specified drop cross-connection is part of a drop and continue configuration or a broadcast configuration, only the specified "drop" cross-connection is shown. The other related cross-connections are not displayed.

Both cross-connections of a DRI cross-connection are displayed.

For 1+1 protected low speed slots or quads, either the service or protection slot or quad may be selected as input. The report will show only the designated slot or quad regardless of the state of that slot or quad (that is, Active or Standby). The service and protection slots or quads are never reported together.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>status</i>   | Circuit Status Condition. This parameter reports the status condition of the circuit being retrieved. Only one status condition is reported in order of precedence as shown below:<br><br>Path Integrity Failure<br>This indicates that the circuit path is open.<br><br>Squelch Map Inconsistent<br>This indicates that the circuit audit algorithm has declared an <i>STS1 Squelch Map Inconsistent</i> condition for this circuit.<br><br>Circuit Provisioning Error<br>This indicates that the circuit audit algorithm has declared a <i>Circuit Provisioning Error</i> condition for this circuit.<br><br>audit disabled<br>This indicates that one or more of the cross-connections which make up the circuit has its AUDIT parameter set to "no".<br><br>good<br>This indicates that no errors were detected. |
| <i>src_aid</i>  | Source access identifier. This is the source address of the line tributary or low speed interface that is cross connected to the <i>dest_aid</i> . For a given cross-connection in the output report, the AID of the line tributary or low speed interface specified in the <b>RTRV-CKT-rr</b> command can be listed as either the <i>src_aid</i> or the <i>dest_aid</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>dest_aid</i> | Destination access identifier. This is the destination address of the line tributary or low speed interface that is cross connected to the <i>src_aid</i> . For a given cross-connection in the output report, the AID of the line tributary or low speed interface specified in the <b>RTRV-CKT-rr</b> command can be listed as either the <i>dest_aid</i> or the <i>src_aid</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                                                                                         |      |                                                                                                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------|
| <i>NODE-TID</i> | <p>Ring Node Target Identifier. This parameter specifies the target identifier (TID) of the node at which the specified <i>src_aid</i> and <i>dest_aid</i> exist. It is reported in the format "RINGNODE=NODE-TID". The <i>NODE-TID</i> value provided is a valid TID for a node on the ring subnetwork.</p> <p>If no known <i>NODE-TID</i> for a given cross-connection is available or if it is an invalid format (for example, if the cross-connection map has somehow become corrupted), then the following value is provided in the response: "RINGNODE=TID-UNKNOWN?".</p> <p>Although not obvious from the output format, this parameter is a name defined parameter since it is part of a <i>spec_block</i>, which is by Bellcore definition, a name-value pair parameter block.</p> |     |                                                                                                         |      |                                                                                                        |
| <i>audit</i>    | <p>Audit indicator. This parameter specifies whether circuit audit function is enabled for the circuit of which the specified cross-connection is a part. It is reported in the format "AUDIT=<i>audit</i>", where <i>audit</i> may have one of the following values.</p> <table> <tr> <td>NO</td><td>This specifies that circuit audit is disabled for the circuit of which this cross-connection is a part.</td></tr> <tr> <td>YES</td><td>This specifies that circuit audit is enabled for the circuit of which this cross-connection is a part.</td></tr> </table>                                                                                                                                                                                                                      | NO  | This specifies that circuit audit is disabled for the circuit of which this cross-connection is a part. | YES  | This specifies that circuit audit is enabled for the circuit of which this cross-connection is a part. |
| NO              | This specifies that circuit audit is disabled for the circuit of which this cross-connection is a part.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                                                                                         |      |                                                                                                        |
| YES             | This specifies that circuit audit is enabled for the circuit of which this cross-connection is a part.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                                                                                         |      |                                                                                                        |
| <i>sst</i>      | <p>Secondary state. This parameter value is position-defined. It reports the status of DRI ("1WAYDRI"), 1+1 protected OC-3 interface and 1+1 protected OC-12 interface cross-connections. Otherwise this parameter is not reported. When reported, the <i>sst</i> value can be one of the following:</p> <table> <tr> <td>ACT</td><td>for active DRI, OC-3 protected, or OC-12 protected cross-connections.</td></tr> <tr> <td>STBY</td><td>for standby DRI, OC-3 protected, or OC-12 protected cross-connections.</td></tr> </table>                                                                                                                                                                                                                                                       | ACT | for active DRI, OC-3 protected, or OC-12 protected cross-connections.                                   | STBY | for standby DRI, OC-3 protected, or OC-12 protected cross-connections.                                 |
| ACT             | for active DRI, OC-3 protected, or OC-12 protected cross-connections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                                                                                         |      |                                                                                                        |
| STBY            | for standby DRI, OC-3 protected, or OC-12 protected cross-connections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                                                                                         |      |                                                                                                        |

**EXAMPLE INPUT/OUTPUT**

The following example retrieves a circuit which drops at node LT-PF-2000-2 to low speed STS-1 port ls-7a-2:

```
rtrv-ckt-sts1:LT-PF-2000-2:ls-7a-2:123456;  
  
IP 123456  
<  
  
    LT-PF-2000-2 97-01-26 16:42:11  
M 123456 COMPLD  
  "STATUS=GOOD"  
  "ls-7a-2, sts1-1e-2-3::RINGNODE=LT-PF-2000-2, AUDIT=YES"  
  "sts1-1w-2-3, sts1-1e-2-3::RINGNODE=LT-PF-2000-3, AUDIT=YES"  
  "sts1-1w-2-3, sts1-1e-2-3::RINGNODE=LT-PF-2000-4, AUDIT=YES"  
  "sts1-1w-2-3, ls-4a-3::RINGNODE=LT-PF-2000-5, AUDIT=YES"  
;
```

**ERROR RESPONSES**

Refer to the BRTRV-HDR **ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-CKT-rr** command also.

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses are listed in the order and priority that FT-2000 checks for each condition.

If the network element receives this command with an invalid *aid* value, with an *aid* value that is invalid for the modifier provided, or without an *aid* value, the following error response is returned:

```
    sid date time  
M ctag DENY  
  IIAC  
  /* Input, Invalid Access Identifier */  
;
```



If the network element receives an otherwise valid **RTRV-CKT-rr** command, but a cross-connection does not exist for the specified *aid*, the following error response is returned.

```
sid date time
M ctag DENY
SNVS
/* Status, Not in Valid State,
The specified aid is not cross-connected in the drop direction.
*/
;
```

If the network element receives an otherwise valid **RTRV-CKT-rr** command, but the ring topology is not available at the local node (for example, the ring is incomplete/open), or all or part of the cross-connection table is missing, or circuit audit is suspended, the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed,
The cross-connection data is unavailable.
*/
;
```

## RELATED TL1 MESSAGES

**RTRV-CRS-rr**

## NAME

**RTRV-COND**: Retrieve Condition

This command is available for Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**RTRV-COND**[-*modifier*]:[*tid*]:[*aid*]:*ctag*::[*condtype*],[*locn*],[*dirn*][,*tmper*];

For Releases 5.0 later:

**RTRV-COND**[-*modifier*]:*tid*:[*aid*]:*ctag*::[*condtype*],[*locn*],[*dirn*][,*tmper*];

## DESCRIPTION

**RTRV-COND** command messages can be initiated by an OS or OS users to retrieve the current state of the network element circuit pack slots and facilities. This command retrieves all active alarms and status ("non-alarmed" and "non-reported") conditions pertaining to the addressed network element, reported one line per condition, similar to the autonomous messages used to report alarm and non-alarmed conditions when they occur.

Any alarm condition reported by an autonomous REPT ALM or REPT ALM ENV message which is active; and any status condition reported by an autonomous REPT EVT message with *condeff*=SC (standing condition), which is active when a **RTRV-COND** message is received, is included in the **RTRV-COND** response message. Conditions provisioned with an alarm level of NR (not reported) are also included in the report even though they are not included in any REPT EVT autonomous messages.

## INPUT PARAMETERS

*modifier* This is a message modifier to the **RTRV-COND** message and may have one of the following values:

- ALL** This requests all status conditions. This is the original value.
- COM** Common. This requests all status conditions that are not specifically equipment- or facility-related conditions but apply to the network element as a whole.
- EQPT** This requests equipment-related status conditions.
- OC48** This requests facility-related status conditions at the optical carrier signal level 48.
- OC12** For Releases 7.1 and later, this requests facility-related status conditions at the optical carrier signal level 12.

**OC3** For Releases 5.0 and later, this requests facility-related status conditions at the optical carrier signal level 3. For Releases 7.1 and later, the **OC3** *modifier* is also applicable for the IS3 signal.

**STS3** For Releases 5.0 and later, this requests facility-related status conditions at the synchronous transport signal level 3.

**STS1** This requests facility-related status conditions at the synchronous transport signal level 1.

**EC1** This requests facility-related status conditions at the electrical carrier signal level 1 (also known as "STS-1E").

**T3** This requests facility-related status conditions at the DS3 level.

**T1** This requests facility-related status conditions at the DS1 level.

For Release 4.1, if no message modifier is provided, or if an incorrect message modifier is provided, the network element interprets the modifier to be **ALL**.

For Releases 5.0 and later, if no message modifier is provided, the network element interprets the modifier to be **ALL**.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the equipment component or facility for which the current status conditions are requested.

The **aid** entered should be a valid aid for a given modifier.

If the *modifier* is **ALL** (null) or **COM**, then the *aid* must be **all** or null. If null, the *aid* defaults to **all**.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

Additional input parameters [*condtype* (or *typereq* per TR-NWT-000833, Issue 4), *locn*, *dirn*, and *tper*] may be included in the command request. However, the network element responds to the OS without limiting the response based on these input parameters.

## OUTPUT FORMAT

If there are no status conditions to report, the following message is returned:

```
sid date time
M ctag COMPLD
;
```

If there are status conditions to report, the following output report is returned:

```
sid date time
M ctag COMPLD
"[aid],aidtype:ntfcncde,condtype,srveff,ocrdat,ocrtm,locn,dirn,tmper,\"conddescr\""
. . . . .
. . . . .
"[aid],aidtype:ntfcncde,condtype,srveff,ocrdat,ocrtm,locn,dirn,tmper,\"conddescr\""
;
```

Applicable output lines are ordered as follows:

1. By alarm severity level CR, followed by MJ, followed by MN, followed by NA, followed by NR.
2. For conditions with the same alarm severity, by the value of occurrence date (*ocrdat*), and occurrence time (*ocrtm*), with the most recent listed first.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*aid* Access identifier. This is the address of the equipment component or facility for which a status condition is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*aidtype* Access identifier type. This has one of the following values:

- COM Common. This reports a condition that is not an equipment or facility condition but applies to the network element as a whole.
- EQPT This reports an equipment-related condition.
- OC48 This reports a facility-related condition at the optical carrier signal level 48.
- OC12 For Releases 7.1 and later, this reports a facility-related condition at the optical carrier signal level 12.
- OC3 For Releases 5.0 and later, this reports a facility-related condition at the optical carrier signal level 3. For Releases 7.1 and later, the OC3 *aidtype* is also applicable for the IS3 signal.
- STS3 For Releases 5.0 and later, this reports a facility-related condition at the synchronous transport signal level 3.
- STS1 This reports a facility-related condition at synchronous transport signal level 1.
- EC1 This reports a facility-related status condition at the electrical synchronous transport signal level 1 (also known as "STS-1E").
- T3 This reports a facility-related condition at the DS3 level.
- T1 This reports a facility-related condition at the DS1 level.

*ntfcncde* Notification code. This is the alarm level and has one of the following values:

- CR Critical
- MJ Major
- MN Minor

NA Not alarmed

NR Not reported.

|                  |                                                                                                                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>condtype</i>  | Condition type [or condition type reported ( <i>typerep</i> ) per TR-NWT-000833, Issue 4]. The values for this parameter are listed in Table 3-11 at the end of this section.                                                                                                          |
| <i>srveff</i>    | Service effect (or Condition effect). This indicates the effect of the reported condition on service. This parameter has one of the following values:<br><br>SA Service-affecting alarm condition.<br>NSA Non-service-affecting alarm or status condition.                             |
| <i>ocrdat</i>    | Occurrence date. This indicates the date of the event being reported and has the format MM-DD (month-day).                                                                                                                                                                             |
| <i>ocrtm</i>     | Occurrence time. This indicates the time of the event being reported and has the format HH-MM-SS (hours-minutes-seconds).                                                                                                                                                              |
| <i>locn</i>      | Location. The location field will always be null for the network element <b>RTRV-COND</b> responses.                                                                                                                                                                                   |
| <i>dirn</i>      | Direction. The direction field will always be null for the network element <b>RTRV-COND</b> responses.                                                                                                                                                                                 |
| <i>tmper</i>     | Time period. The time period field will always be null for the network element <b>RTRV-COND</b> responses.                                                                                                                                                                             |
| <i>conddescr</i> | Condition description (or Alarm message). This is the text description [enclosed within a pair of escaped quotes (\")] of the reported condition. If further explanation, including likely causes, of a reported condition is required, refer to Table 3-8 at the end of this section. |

**EXAMPLE INPUT/OUTPUT**

```
rtrv-cond-all:LT-FT-2000:all:123456;
```

```
IP 123456
```

```
<
```

```
LT-FT-2000 93-08-15 16:42:11
```

```
"ls-3b-2,EC1:CR,LOF,SA,08-14,18-26-14,,,,:\\"incoming (from STSX1) EC-1  
LOF
```

```
"ls-1a-1,T3:CR,LOS,SA,08-13,12-17-41,,,,:\\"incoming (from DSX) DS3 LOS
```

```
"ls-1a-3,T3:CR,T-BERL,SA,08-11,03-50-32,,,,:\\"incoming (from DSX) DS3 SD  
;
```

For Releases 7.0 and later:

```
rtrv-cond-all:LT-FT-2000:all:123456;
```

```
IP 123456
```

```
<
```

```
LT-FT-2000 93-08-15 16:42:11
```

```
"ls-7a,OC12:CR,LOS,SA,08-14,12-29-13,,,,:\\"incoming OC-12 LOS\\  
"ls-3b-2,EC1:CR,LOF,SA,08-13,18-26-14,,,,:\\"incoming (from STSX1) EC-1  
LOF\\
```

```
"ls-1a-3,T3:CR,T-BERL,SA,08-13,03-50-32,,,,:\\"incoming (from DSX) DS3  
SD\\
```

```
;
```

## ERROR RESPONSES

Refer to the non-message-specific error responses listed in the **RTRV-HDR** error responses.

If **RTRV-COND** messages are sent and a valid *ctag* is recognized, FT-2000 responds with **all** active status conditions.

If the network element receives an **RTRV-COND** command with a non-null invalid command modifier, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If an **RTRV-COND** command is received with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier, AID is missing,
   wrong or inconsistent with modifier */
;
```



**RELATED TL1 MESSAGES**

REPT ALM

REPT EVT

**RTRV ALM**

## NAME

**RTRV - CRS - rr:** Retrieve Cross-Connection rr

This command is available starting in FT-2000 Release 4.1.

## INPUT FORMAT

For Release 5.0 and later:

**RTRV - CRS - modifier:** *tid*: [*aid*]: *ctag*;

For Release 4.1 only:

**RTRV - CRS - modifier:** [*tid*]: [*aid*]: *ctag*;

## DESCRIPTION

For Releases 4.1 through 6.0:

Throughout this TL1 command description the use of the term "low speed interface" implies

- a single slot when referring to slots equipped with DS3, or STS1E low speed circuit packs.

For Releases 5.0 through 6.0:

The use of the term "low speed interface" also implies

- a single slot when referring to slots equipped with OC3 low speed circuit packs.

For Releases 7.0 and later:

The use of the term "low speed interface" implies

- a single port when referring to slots equipped with DS3, or STS1E low speed circuit packs, or
- a single STS-1 or STS-3 tributary within the OC-3 when referring to slots equipped with OC3 low speed circuit packs, or
- a single slot when referring to slots equipped with DS3, STS1E, or OC3 low speed circuit packs.

For Releases 7.1 and later:

The use of the term "low speed interface" also implies

- a single STS-1 or STS-3 tributary within IS-3 when referring to slots equipped with IS3 low speed circuit packs, or
- a single STS-1 or STS-3 tributary within the OC-12 when referring to slots equipped with OC12 low speed circuit packs, or
- a single slot when referring to slots equipped with IS3 low speed circuit packs.
- a single quad when referring to slots equipped with OC12 low speed circuit packs.

Any ambiguity of these terms can be resolved in the context of their usage given that cross-connections can only be established between tributaries, slots, and ports which carry the same signal type, i.e., STS-3 or STS-1.

**RTRV-CRS-rr** command messages can be initiated by an user to request FT-2000 to retrieve line tributary cross-connections in the FT-2000 OC-48 Add/Drop-Rings Terminal.

Cross-connections in FT-2000 can be 1-way, 2-way or Dual Ring Interworking (DRI) cross-connections.

Refer to the **ENT-CRS-rr** command description for details on the restrictions on cross-connections and DRI in the FT-2000 Add/Drop-Rings Terminal for bidirectional line switched rings.

When FT-2000 receives a **RTRV-CRS-rr** command, FT-2000 will retrieve all applicable line tributary cross-connection(s) according to the parameter settings in the command.

Provided that the input command is syntactically correct and uses input parameter values that are consistent with those supported by FT-2000, the **RTRV-CRS-rr** command is never DENY-ed.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is the message modifier and may only have one of the following values:                                                                                                                                                                                                                                                                                                                                             |
| <b>STS3</b>     | For Releases 4.1 through 6.0:<br>This specifies that STS-3 cross-connection information be retrieved.<br><br>For Releases 7.0 through 7.1:<br>For a non-STS1 capable ring node, this specifies that STS-3 cross-connection information be retrieved. For an STS1 capable ring node, this specifies that an STS-3 line tributary's three constituent STS-1 line tributaries' cross-connections information be retrieved. |
| <b>STS1</b>     | For Release 7.0 and later:<br>This specifies that an STS-1 line tributary's cross-connection information be retrieved. For Releases 7.0 through 7.1:<br>This <i>modifier</i> cannot be used on a non-STS1 capable ring node.                                                                                                                                                                                            |
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                           |

For Release 4.1 only:

If no *tid* is given, the command is interpreted to be addressed to the Gateway Network Element (GNE - the network element connected directly to the OS via an X.25 link).

*aid*

Access identifier. This is the address of the line tributary or low speed interface for which the **RTRV-CRS-rr** command is intended.

For Releases 4.1 through 6.0:

The *aid* may be null, a valid FT-2000 access identifier value identifying one or more STS-3 line tributaries or low speed interface slots, or **all**.

For Releases 4.1 through 6.0:

If **all** is specified, all STS-3 cross connections in the system will be retrieved as per the *modifier* value (This is the default value). For Release 7.0 through 7.1:

When the *modifier* is **STS3**, the *aid* may be null, a valid FT-2000 access identifier value identifying one or more low speed interface slots, or **all**.

For Release 7.0 and later:

When the *modifier* is **STS1**, the *aid* may be null, a valid FT-2000 access identifier value identifying one or more STS-1 line tributaries or low speed interface slots, or **all**.

For Release 7.0 and later:

If **all** is specified, all STS-1 cross-connections in the system will be retrieved. (This is the default value).

When the *aid* is null, the default value is used.

FT-2000 retrieves cross-connection information for all cross-connections in which the *aid(s)* provided is (are) involved; whether as a source, a destination, or both. Grouping of *aid* values (or any other TL1 input parameter) is not allowed in FT-2000. However, the FT-2000 OC-48 system does allow for the use of the **all** construct within the *aid* field of TL1 commands to provide access to a range of AIDs.

*ctag*

Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

**OUTPUT FORMAT**

In accordance with the T1X1.5 Draft Standard on Bidirectional Line Switched Rings, in order for ring terminals to correctly switch traffic and/or "squelch" potentially misconnected traffic in the event of multiple failures on the ring, the nodes at which a particular signal enters and exits the bidirectional line switched ring must be identified in the cross-connection matrix for the ring nodes (refer to the **ENT - CRS - rr** command pages). Therefore, the supporting cross-connection retrieval responses for two-fiber bidirectional line switched rings include identification of the signal entry and exit points as provisioned on the ring for all nodes which are involved (have cross-connections established) in carrying the traffic through the ring. These two parameters are called LOCA and LOCZ and are defined below.

Leading carriage returns (<cr>), line feeds (<lf>), and spaces ( ) are explicitly shown.

If the network element fully complies with the cross-connection retrieval request, the following output message is returned:

For Release 8.1 and later:

```
sid date time
M ctag COMPLD
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,DRI-P=dri-p][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit,REDLINE=redline[:pst[,sst]]"
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,DRI-P=dri-p][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit,REDLINE=redline[:pst[,sst]]"
      .      .      .      .      .      .      .
      .      .      .      .      .      .      .
      .      .      .      .      .      .      .
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,DRI-P=dri-p][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit,REDLINE=redline[:pst[,sst]]"
;
```

For Release 7.0 through 8.0:

```

sid date time
M ctag COMPLD
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit[:pst[,sst]]"
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit[:pst[,sst]]"
      .      .      .      .      .      .      .      .
      .      .      .      .      .      .      .      .
      .      .      .      .      .      .      .      .
  "src_aid,dest_aid:cct:[LOCA=loca,][LOCZ=locz][,EXTRA=extra]
[,OC3PROT-ST=oc3st],AUDIT=audit[:pst[,sst]]"
;

```

For Releases 6.0 through 7.0:

```

sid date time
M ctag COMPLD
  "src_aid,dest_aid:cct:[LOCA=SOURCE-TID,][LOCZ=DEST-TID][,EXTRA=yes]
[,OC3PROT-ST=oc3st][:pst[,sst]]"
  "src_aid,dest_aid:cct:[LOCA=SOURCE-TID,][LOCZ=DEST-TID][,EXTRA=yes]
[,OC3PROT-ST=oc3st][:pst[,sst]]"
      .      .      .      .      .      .      .      .
      .      .      .      .      .      .      .      .
      .      .      .      .      .      .      .      .
  "src_aid,dest_aid:cct:[LOCA=SOURCE-TID,][LOCZ=DEST-TID][,EXTRA=yes]
[,OC3PROT-ST=oc3st][:pst[,sst]]"
;

```

For Releases 4.1 through 5.0:

```

sid date time
M ctag COMPLD
  "src_aid,dest_aid:cct:[LOCA=SOURCE-TID,LOCA-NID=source-nid, ]
[LOCZ=DEST-TID,LOCZ-NID=dest-nid]
[,EXTRA=yes][,OC3PROT-ST=oc3st][:pst[,sst]]"
  ...
  "src_aid,dest_aid:cct:[LOCA=SOURCE-TID,LOCA-NID=source-nid, ]
[LOCZ=DEST-TID,LOCZ-NID=dest-nid]
[,EXTRA=yes][,OC3PROT-ST=oc3st][:pst[,sst]]"
;

```

If multiple lines are reported the output is sorted as follows:

By line tributary number, in ascending order where, for a given line tributary number:

1. all cross-connections associated with the west-facing tributary are listed first, with:
  - a. cross-connections with the tributary as the *dest\_aid* listed first;
    - through cross-connections are listed first, followed by add cross-connections.
  - b. followed by cross-connections with the tributary as the *src\_aid*.
    - through cross-connections are listed first, followed by drop cross-connections.
2. followed by all cross-connections associated with the east-facing tributary not previously included above, with:
  - a. cross-connections with the tributary as the *dest\_aid* listed first;
    - through cross-connections are listed first, followed by add cross-connections.
  - b. followed by cross-connections with the tributary as the *src\_aid*.
    - through cross-connections are listed first, followed by drop cross-connections.

Tributaries and/or low speed interfaces for which there is no cross-connection are not listed. Only true, simple 2-way cross-connections are reported in the **RTRV-CRS-rr** response as 2WAY cross-connections. That is, for a cross-connection to be reported as 2-way:

- the only cross-connections allowed with the addresses involved are limited to two symmetrical 1-way cross-connections between one line tributary and low speed interface or between a line and the corresponding line from the other side; **and**
- the source address (*aid*) of each of the two 1-way cross-connections involved must be the destination address of the other; **and**
- the LOCA terminating node of each of the two 1-way cross-connections involved must be the LOCZ of the other.

All other cross-connections are listed as 1-way or DRI types. If a cross-connection is listed in an output line as a 2-way cross-connection, the symmetrical cross-connection line (with source and destination *aids* reversed) is not included in the output.

For Release 8.1 and later:

When an 1WAYDRI cross-connection is from a "0x1" slot, the 1WAYDRI cross-connection is reported as two related cross-connections: an add cross-connection and a through cross-connection. A 1WAYDRI cross-connection for a "1+1" protected slot pair is reported as three related cross-connections: two add cross-connections and a through cross-connection.

For Release 8.1 and later:

When a 2WAYDRI cross-connection is from a "0x1" slot, the 2WAYDRI cross-connection is reported as four related cross-connections: an add cross-connection and a through cross-connection making up a 1WAYDRI cross-connection; and a drop and a through cross-connection to the opposite line. A 2WAYDRI cross-connection for a "1+1" protected slot pair is reported as six related cross-connections: two add cross-connections, two drop cross-connections and two through cross-connections.

For Release 8.1 and later:

When a 2WAYDRIPRI cross-connection is from a "0x1" slot, the 2WAYDRIPRI cross-connection is reported as four related cross-connections: an add cross-connection and a TSI through cross-connection making up a 1WAYDRI cross-connection; a drop and a TSI through cross-connection to the opposite line. Note that the through portion of the 1WAYDRI cross-connection involves a Time Slot Interchange (TSI) from the service tributary to the corresponding protection tributary.

A 2WAYDRIPRI cross-connection for a "1+1" protected slot pair is reported as six related cross-connections: two add cross-connections, two drop cross-connections and two TSI through cross-connections.



For Release 8.1 and later:

When a 2WAYDRISEC cross-connection is from a "0x1" slot, the 2WAYDRISEC cross-connection is reported as two related cross-connections: an add cross-connection to a protection tributary and a drop cross-connection from a protection tributary. The source for the drop cross-connection is reported as the DRI-P source TID. The LOCA value for this drop cross-connection is the LOCZ value for the corresponding add cross-connection. A 2WAYDRISEC cross-connection for a "1+1" protected slot pair is reported as four related cross-connections: two add cross-connections, and two drop cross-connections.

For Release 8.1 and later:

For the definitions of 2WAYDRI, 2WAYDRIPRI, and 2WAYDRISEC cross-connections, see the **ENT-CRS-rr** command page.

If a syntactically valid LOCA or LOCZ cannot be determined for a cross-connection associated with a requested *aid*, FT-2000 responds with a TID value of "TID-UNKNOWN?" for the undetermined parameter value.

For Releases 8.1 and later:

If a syntactically valid DRI-P cannot be determined for a cross-connection associated with a requested *aid*, FT-2000 responds with a TID value of "TID-UNKNOWN?" for the undetermined DRI-P parameter value.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*src\_aid*

Source access identifier. This is the source address of the line tributary or low speed interface that is cross connected to the *dest\_aid*. For a given cross-connection in the output report, the *aid* of the line tributary or low speed interface specified in the **RTRV-CRS-rr** command can be listed as either the *src\_aid* or the *dest\_aid*.

*dest\_aid*

Destination access identifier. This is the destination address of the line tributary or low speed interface that is cross connected to the *src\_aid*. For a given cross-connection in the output report, the *aid* of the line tributary or low speed interface specified in the **RTRV-CRS-rr** command can be listed as either the *dest\_aid* or the *src\_aid*.

*cct*

Cross-connection type. This parameter specifies the type of cross-connection and may have one of the following values:

- |         |                                                                                                                                                                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1WAY    | This specifies a 1-way cross-connection between the source and destination.                                                                                                                                                                                                                            |
| 2WAY    | This specifies a 2-way cross-connection between the source and destination.                                                                                                                                                                                                                            |
| 1WAYDRI | This specifies a 1-way cross-connection between the source and destination and that the cross-connection is used as the primary input at a ring interconnect node for DRI. All cross-connections of this type always have a line tributary as the destination and a low speed interface as the source. |

*loca* Ring location A. This parameter specifies the ring "source" terminal identifier (TID). It is only included in the **RTRV-CRS-rr** command response if a cross-connection is between tributaries, or between a tributary and a low speed interface whose destination differs from the local Network Element, and is active for the *aid* provided in the command. For cross-connections between local source low speed interfaces and tributaries, *loca* is not output. In this case, the *sid* is *loca*. If it is specified, it is in the format: "LOCA=SOURCE-TID". The value provided is a valid TID value for a node on the ring subnetwork. **Important:** In order to properly protect against service outages and/or misconnected traffic in the event of ring failures, the LOCA parameter must be set with the correct TID value of the ring source node.

If the signal is added as a DRI cross-connection, then the secondary node at which the signal is added must be specified as the source for the tributary at all nodes that the tributary carrying the signals is cross-connected, to ensure proper DRI and ring protection switching operation.

For Release 6.0 and later:

If the Network Element detects a discrepancy in its internal ring map, this is indicated by the including an asterisk ("\*") as the first character of the *loca* value reported.

If the source TID *loca* and the source node ID *loca-nid*, (defined below) are an invalid pair, this is indicated by the including an asterisk ("\*") as the first character of the *loca* value reported.

If there is no known source TID *loca* for a given cross-connection is available or if it is an invalid format (e.g., if the cross-connection map has somehow become corrupted), then the following *loca* value is provided in the response: "TID-UNKNOWN?"

*loca-nid* For Releases 4.1 through 5.0:  
Ring location A Node ID. This parameter specifies the ring "source" node identifier and is always included in the **RTRV-CRS-rr** response if a cross-connection between tributaries or between a tributary and a low speed interface, whose destination is not the local Network Element, is active for the *aid* provided in the command. For cross-connections between local source low speed interfaces and tributaries, *loca-nid* is not output. If it is specified, it is in the format: "LOCA-NID=source-nid". The value provided is a valid NID value for a node on the ring (a value between 0 and 15, inclusive). *Locanid* is not a value provisioned via any cross-connection commands. Its inclusion in the **RTRV-CRS-rr** response is intended to help find errors in the cross-connection map.

*locz* Ring location Z. This parameter specifies the ring "destination" terminal identifier (TID). It is always included in the **RTRV-CRS-rr** command response if a cross-connection is between tributaries, or between a tributary and a low speed interface whose source is different than the local Network Element, and is active for the *aid* provided in the command. For cross-connections between local destination low speed interfaces and tributaries, *locz* is not output. In this case, the *sid* is *locz*. It is specified in the format: "LOCZ=DEST-TID". The value provided is a valid TID value for a node on the ring subnetwork. **Important:** In order to properly protect against service outages and/or misconnected traffic in the event of ring failures, the LOCZ parameter must be set with the correct TID value of the ring destination node.

If the signal is bridged at one or more nodes, whether for simple broadcast or for DRI operations, then the final node at which signals on that line tributary are terminated must be specified as the destination for the tributary at all nodes to which the tributary carrying the signals is cross-connected. This ensures proper DRI and ring protection switching operation.

For Release 6.0 and later:

If the Network Element detects a discrepancy in its internal ring map, this is indicated by the including an asterisk ("\*") as the first character of the *locz* value reported.

For Releases 4.1 through 5.0:

If the destination TID *locz* and the destination node ID *locz-nid*, (defined below) are an invalid pair, this is indicated by the including an asterisk ("\*") as the first character of the *locz* value reported.

If there is no known destination TID *locz* for a given cross-connection is available or if it is an invalid format (e.g., if the cross-connection map has somehow become corrupted), then the following *locz* value is provided in the response: "TID-UNKNOWN?"

*locz-nid* For Releases 4.1 through 5.0:  
Ring location Z Node ID. This parameter specifies the ring "destination" node identifier and is always included in the **RTRV-CRS-rr** response if a cross-connection between tributaries or between a tributary and a low speed interface whose source is not the local Network Element, is active for the aid provided in the command. For cross-connections between local source low speed interfaces and tributaries, *locz-nid* is not output. It is specified in the format: "LOCZ-NID=dest-nid". The value provided is a valid NID value for a node on the ring (a value between 0 and 15, inclusive). *locz-nid* is not a value provisioned via any cross-connection commands. Its inclusion in the **RTRV-CRS-rr** response is intended to help find errors in the cross-connection map.

For Release 6.0 and later:

*dri-p* For Release 8.1 and later:  
Primary DRI Ring location. This parameter specifies the Primary DRI "source" terminal identifier (TID) only for 2WAYDRISEC drop-side crossconnections in place of LOCA. For cross-connections between local source low speed interfaces and tributaries, *dri-p* is not output. In this case, the *locz* of this add cross-connection is *loca* of the drop cross-connection. If it is specified, it is in the format: "DRI-P=*dri-p*". The value provided is a valid TID value for a node on the ring subnetwork.

For Release 8.1 and later:

If the Network Element detects a discrepancy in its internal ring map, this is indicated by the including an asterisk ("\*") as the first character of the *dri-p* value reported.

*extra* Extra traffic indicator. This parameter is reported in the format: "EXTRA=yes" if the *aid* requested in the command message is involved in an "extra traffic"\* cross-connection. Otherwise this parameter is not reported.

---

\* FT-2000 supports cross-connections of extra traffic (i.e., use of protection time slots in a two-fiber ring). In the two-fiber ring application, extra traffic is preemptible in the event of ring loopback protection switching. In the FT-2000 OC-48 Add/Drop-Rings Terminal for 2-Fiber Rings, the protection time slots available for extra traffic are the 9th through the 16th STS-3 line tributaries on both the east and west-facing OC-48 lines.

*oc3st*

For Release 5.0 through 6.0:

OC-3 (circuit pack protection) state. This parameter value is name-define and is reported **only** when an OC-3 circuit pack is equipped in a low speed interface used as the source address **and** is being operated in a 1+1 protection mode. It is used to report the state of the OC-3 low speed interface protection. When reported, the *oc3st* can be one of the following:

- ACT This value is used when the addressed OC-3 equipped low speed interface is 1+1 protected and is currently active.
- STBY This value is used when the addressed OC-3 equipped low speed interface is 1+1 protected and is currently in standby.

For Release 7.0 and later:

OC-3 (circuit pack protection) state. This parameter value is name-defined and is reported **only** when an OC-3 or OC-12 circuit pack is equipped in a low speed interface used as the source address **and** is being operated in a 1+1 protection mode. It is used to report the state of the OC-3 or OC-12 low speed interface protection. When reported, the *oc3st* can be one of the following:

- ACT This value is used when the addressed OC-3 or OC-12 equipped low speed interface is 1+1 protected and is currently active.
- STBY This value is used when the addressed OC-3 or OC-12 equipped low speed interface is 1+1 protected and is currently in standby.

*audit*

For Release 7.0 and later:

Audit indicator. This parameter specifies whether circuit audit is to be performed for the circuit of which this cross-connection is a part. This parameter may have one of the following values:

- no This reports that circuit audit is disabled for the circuit of which this cross-connection is a part.
- yes This reports that circuit audit is enabled for the circuit of which this cross-connection is a part.

*redline*

For Release 8.1 and later:

Red Line Services designation. This parameter value is name-defined and is reported when a cross-connection is designated as a Red Line Service. The *redline* value is always reported and can be one of the following:

- YES This value indicates that the cross-connection is designated as a Red Line Service.

|            |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |
|------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|            | NO   | This value indicates that the cross-connection is <i>not</i> designated as a Red Line Service.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <br> |
| <i>pst</i> |      | Primary state. This parameter value is position-defined. It is used to report the status of DRI ("1WAYDRI") cross-connections. Otherwise this parameter is not reported. When reported, the <i>pst</i> value can be one of the following:                                                                                                                                                                                                                                                                                                        |      |
|            | ACT  | This value is used to report the DRI cross-connection that is currently active.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |
|            | STBY | This value is used to report the DRI cross-connection that is currently in standby.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |
| <i>sst</i> |      | Secondary state. This position-defined parameter is used to report secondary state information for primary DRI ("1WAYDRI") add cross-connections. If the primary DRI add cross-connection is in a primary state ( <i>pst</i> ) other than ACT, the <i>sst</i> value is used to report the current active switch priority. Otherwise, this parameter is not reported. This parameter is not reported for the secondary DRI through cross-connection or any cross-connections other than the primary DRI add cross-connection, as described above. |      |
|            |      | The <i>sst</i> can be reported with the following values:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |
|            | AUTO | This value is used to report that the DRI switch to the secondary line tributary is active with a priority of AUTO. The FT-2000 DRI switch has performed an automatic protection switch to the secondary through line tributary.                                                                                                                                                                                                                                                                                                                 |      |
|            | MAN  | This value is used to report that the DRI switch to the secondary line tributary is active with a priority of MANUAL. The FT-2000 DRI switch has performed a manual protection switch to the secondary through line tributary.                                                                                                                                                                                                                                                                                                                   |      |

## EXAMPLE OUTPUT

Leading carriage returns (<cr>), line feeds (<lf>), and spaces ( ) are explicitly shown.

For Release 8.1 and later

In this example, the east-to-west direction of a 1-way DRI cross-connection associated with the west-facing STS-1 line tributary, sts1-1w-4-1, for a "1+1" protected slot pair is retrieved.

```
rtrv-crs-sts1:LT-PF-2000-3:sts1-1w-4-1:654321;
```

```
IP 654321
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 98-11-26 16:54:33
```

```
M 654321 COMPLD
```

```
"sts1-1e-4-1, sts1-1w-4-1, 1WAYDRI, LOCA=LT-PF-2000-4, LOCZ=LT-PF-2000-10, AUDIT=NO,  
REDLINE=NO:STBY"
```

```
"ls-1a-1, sts1-1w-4-1, 1WAYDRI, LOCZ=LT-PF-2000-10, OC3PROT-ST=STBY, AUDIT=NO,  
REDLINE=NO:STBY, AUTO"
```

```
"ls-1b-1, sts1-1w-4-1, 1WAYDRI, LOCZ=LT-PF-2000-10, OC3PROT-ST=ACT, AUDIT=NO,  
REDLINE=NO:ACT"
```

```
;
```

For Release 8.1 and later

In this example, both directions of a 2-way DRI cross-connection associated with the west-facing STS-1 line tributary, sts1-1w-8-2, for a "1+1" protected slot pair is retrieved.

```
rtrv-crs-sts1:LT-PF-2000-3:sts1-1w-8-2:654321;
```

```
IP 654321
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 98-11-26 16:54:33
```

```
M 654321 COMPLD
```

```
"sts1-1e-8-2, sts1-1w-8-2, 1WAYDRI, LOCA=LT-PF-2000-4, LOCZ=LT-PF-2000-10, AUDIT=NO,  
REDLINE=NO:STBY"
```

```
"ls-1a-2, sts1-1w-8-2, 1WAYDRI, LOCZ=LT-PF-2000-10, OC3PROT-ST=STBY, AUDIT=NO,  
REDLINE=NO:STBY, AUTO"
```

```
"ls-1b-2, sts1-1w-8-2, 1WAYDRI, LOCZ=LT-PF-2000-10, OC3PROT-ST=ACT, AUDIT=NO,  
REDLINE=NO:ACT"
```

```
"sts1-1w-8-2, sts1-1e-8-2, 1WAY, LOCA=LT-PF-2000-10, LOCZ=LT-PF-2000-4, AUDIT=NO,  
REDLINE=NO"
```

```
"sts1-1w-8-2, ls-1a-2, 1WAY, LOCA=LT-PF-2000-10, AUDIT=NO, REDLINE=NO"
```

```
"sts1-1w-8-2, ls-1b-2, 1WAY, LOCA=LT-PF-2000-10, AUDIT=NO, REDLINE=NO"
```

```
;
```



For Release 8.1 and later

The following example retrieves both directions of a 2-way DRI primary cross-connection associated with the west-facing STS-1 line tributary, sts1-1w-3-3, for a "1+1" protected slot pair as follows:

```
rtrv-crs-sts1:LT-PF-2000-3:sts1-1w-3-3:654321;  
  
IP 654321  
<  
  
<lf>  
    LT-PF-2000-3 98-11-26 16:54:33  
M 654321 COMPLD  
    "sts1-1e-11-3, sts1-1w-3-3, 1WAYDRI, LOCA=LT-PF-2000-7, LOCZ=LT-PF-2000-13, AUDIT=YES,  
    REDLINE=YES:STBY"  
    "ls-7a-2, sts1-1w-3-3, 1WAYDRI, LOCZ=LT-PF-2000-13, OC3PROT-ST=STBY, AUDIT=YES,  
    REDLINE=YES:STBY, AUTO"  
    "ls-7b-2, sts1-1w-3-3, 1WAYDRI, LOCZ=LT-PF-2000-13, OC3PROT-ST=ACT, AUDIT=YES,  
    REDLINE=YES:ACT"  
    "sts1-1w-3-3, sts1-1e-11-3, 1WAY, LOCA=LT-PF-2000-13, LOCZ=LT-PF-2000-7, AUDIT=YES,  
    REDLINE=YES"  
    "sts1-1w-3-3, ls-7a-2, 1WAY, LOCA=LT-PF-2000-13, AUDIT=YES, REDLINE=YES"  
    "sts1-1w-3-3, ls-7b-2, 1WAY, LOCA=LT-PF-2000-13, AUDIT=YES, REDLINE=YES"  
;
```

For Release 8.1 and later

The following example retrieves both directions of a 2-way DRI secondary cross-connection associated with the "1+1" protected slot pair for slots ls-12a-2 and ls-12b-2, as follows:

```
rtrv-crs-sts1:LT-PF-2000-3:ls-12a-2:654321;  
  
IP 654321  
<  
  
<lf>  
    LT-PF-2000-3 98-11-26 16:54:33  
M 654321 COMPLD  
    "ls-12a-2, sts1-1w-15-3, 1WAY, LOCZ=LT-PF-2000-13, OC3PROT-ST=STBY, AUDIT=YES, REDLINE=NO"  
    "ls-12b-2, sts1-1w-15-3, 1WAY, LOCZ=LT-PF-2000-13, OC3PROT-ST=ACT, AUDIT=YES, REDLINE=NO"  
    "sts1-1w-15-3, ls-12a-2, 1WAY, DRI-P=LT-PF-2000-5, AUDIT=YES, REDLINE=NO"  
    "sts1-1w-15-3, ls-12b-2, 1WAY, DRI-P=LT-PF-2000-5, AUDIT=YES, REDLINE=NO"  
;
```

For Release 7.0 and later:

All the "sts3" examples would be valid "sts1" level examples upon substituting "sts1" for "sts3" and appending all access identifiers with "-1", "-2", "-3" or "-all".

Also, a **RTRV-CRS-STSS3** command for a single STS-3 tributary or low speed slot will result in a report with three (STS-1 level) lines of output.

For Release 7.0 and later:

The following example retrieves a 2-way (add/drop) cross-connection associated with the STS-3 line tributary sts3-1e-2 (and low speed interface ls-7a) using

**RTRV-CRS-STSS3:**

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1e-2:123456;

IP 123456
<

<lf>
    LT-PF-2000-3 93-11-26 16:42:11
M 123456 COMPLD
    "ls-7a-1, sts1-1e-2-1, 2WAY, LOCA=LT-PF-2000-1, AUDIT=NO"
    "ls-7a-2, sts1-1e-3-2, 2WAY, LOCA=LT-PF-2000-1, AUDIT=NO"
    "ls-7a-3, sts1-1e-7-3, 2WAY, LOCA=LT-PF-2000-1, AUDIT=YES"
;
```

For Release 6.0 only:

The following example retrieves a 2-way (add/drop) cross-connection associated with the STS-3 line tributary sts3-1e-2 (and low speed interface ls-7a):

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1e-2:123456;

IP 123456
<

<lf>
    LT-PF-2000-3 93-11-26 16:42:11
M 123456 COMPLD
    "ls-7a, sts3-1e-2, 2WAY, LOCA=LT-PF-2000-1"
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 2-way (add/drop) cross-connection associated with the STS-3 line tributary sts3-1e-2 (and low speed interface ls-7a):

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1e-2:123456;  
  
IP 123456  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:42:11  
M 123456 COMPLD  
    "ls-7a,sts3-1e-2,2WAY,LOCA=LT-PF-2000-1,LOCA-NID=0"  
;
```

For Release 6.0 only:

The following example retrieves a 1-way (drop) cross-connection associated with the STS-3 line tributary sts3-1w-8 (and low speed interface ls-2b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-8:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
    "sts3-1w-8,ls-2b:1WAY:LOCA=LT-PF-2000-4,"  
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 1-way (drop) cross-connection associated with the STS-3 line tributary sts3-1w-8 (and low speed interface ls-2b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-8:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
    "sts3-1w-8, ls-2b:1WAY:LOCA=LT-PF-2000-4, LOCA-NID=3"  
;
```

For Release 6.0 only:

The following example retrieves a 1-way (add) cross-connection associated with the STS-3 line tributary sts3-1w-1 (and low speed interface ls-1a) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-1:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
    "ls-1a, sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7"  
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 1-way (add) cross-connection associated with the STS-3 line tributary sts3-1w-1 (and low speed interface ls-1a) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-1:789abc;
```

```
IP 789abc
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD
```

```
"ls-1a,sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7,LOCZ-NID=6"
```

```
;
```

For Release 6.0 only:

The following example retrieves a 2-way (add/drop) cross-connection associated with the STS-3 line tributary sts3-1w-12 (and low speed interface ls-1a) for extra traffic (i.e. using a protection time slot) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-12:789abc;
```

```
IP 789abc
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD
```

```
"ls-1a,sts3-1w-12:2WAY:LOCZ=LT-PF-2000-16,EXTRA=yes"
```

```
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 2-way (add/drop) cross-connection associated with the STS-3 line tributary sts3-1w-12 (and low speed interface ls-1a) for extra traffic (i.e. using a protection time slot) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-12:789abc;
```

```
IP 789abc
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD
```

```
"ls-1a,sts3-1w-12:2WAY:LOCZ=LT-PF-2000-16,LOCZ-NID=15,EXTRA=yes"
```

```
;
```

For Release 6.0 only:

The following example retrieves a 2-way (through) cross-connection associated with the west-facing STS-3 line tributary sts3-1w-2 (and the east-facing STS-3 tributary sts3-1e-2) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-2:789abc;
```

```
IP 789abc
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD
```

```
"sts3-1e-2,sts3-1w-2:2WAY:LOCA=LT-PF-2000-2,LOCZ=LT-PF-2000-12"
```

```
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 2-way (through) cross-connection associated with the west-facing STS-3 line tributary sts3-1w-2 (and the east-facing STS-3 tributary sts3-1e-2) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-2:789abc;
```

```
IP 789abc
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M 789abc COMPLD
```

```
"sts3-1e-2,sts3-1w-2:2WAY:LOCA=LT-PF-2000-2, LOCA-NID=1, LOCZ=LT-PF-2000-12, LOCZ-NID=11"
```

```
;
```

For Release 6.0 only:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the low speed interface "ls-6a" (and east-facing STS-3 tributary sts3-1e-6 in STANDBY state) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI001;
```

```
IP DRI001
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M DRI001 COMPLD
```

```
"sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2, LOCZ=LT-PF-2000-12:STBY"
```

```
"ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12:ACT"
```

```
"sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12, LOCZ=LT-PF-2000-2"
```

```
"sts3-1w-6, ls-6a:1WAY:LOCA=LT-PF-2000-12"
```

```
;
```

For Releases 4.1 through 5.0:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the low speed interface "ls-6a" (and east-facing STS-3 tributary sts3-1e-6 in STANDBY state) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI001;  
  
IP DRI001  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M  DRI001 COMPLD  
    "sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCA-NID=1,LOCZ=LT-PF-2000-12,  
LOCZ-NID=1:STBY"  
    "ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,LOCZ-NID=11:ACT"  
    "sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11,LOCZ=LT-PF-2000-2,LOCZ-NID=1"  
    "sts3-1w-6,ls-6a:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"  
;
```

For Release 6.0 only:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the low speed interface "ls-6a" in the STANDBY state, as a result of an automatic DRI protection switch (and east-facing STS-3 tributary sts3-1e-6 in ACTIVE state), as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI002;  
  
IP DRI002  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M  DRI002 COMPLD  
    "sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCZ=LT-PF-2000-12:ACT"  
    "ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12:STBY,AUTO"  
    "sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCZ=LT-PF-2000-2,"  
    "sts3-1w-6,ls-6a:1WAY:LOCA=LT-PF-2000-12,"  
;
```



For Releases 4.1 through 5.0:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the low speed interface "ls-6a" in the STANDBY state, as a result of an automatic DRI protection switch (and east-facing STS-3 tributary sts3-1e-6 in ACTIVE state), as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI002;  
  
IP DRI002  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M   DRI002 COMPLD  
    "sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCA-NID=1,LOCZ=LT-PF-2000-12,  
LOCZ-NID=11:ACT"  
    "ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,LOCZ-NID=11:STBY,AUTO"  
    "sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11,LOCZ=LT-PF-2000-2,LOCZ-NID=1"  
    "sts3-1w-6,ls-6a:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"  
;
```

For Release 6.0 only:

The following example retrieves a 1-way (drop) cross-connection associated with the STS-3 line tributary sts3-1w-8 (and 1+1 protected OC-3 low speed interface pair ls-2a, ls-2b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-8:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M   789abc COMPLD  
    "sts3-1w-8,ls-2a:1WAY:LOCA=LT-PF-2000-4,"  
    "sts3-1w-8,ls-2b:1WAY:LOCA=LT-PF-2000-4,"  
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 1-way (drop) cross-connection associated with the STS-3 line tributary sts3-1w-8 (and 1+1 protected OC-3 low speed interface pair ls-2a, ls-2b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-8:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
    "sts3-1w-8, ls-2a:1WAY:LOCA=LT-PF-2000-4, LOCA-NID=3"  
    "sts3-1w-8, ls-2b:1WAY:LOCA=LT-PF-2000-4, LOCA-NID=3"  
;
```

For Release 6.0 only:

The following example retrieves a 1-way (add) cross-connection associated with the STS-3 line tributary sts3-1w-1 (and 1+1 protected OC-3 low speed interface pair ls-1a, ls-1b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-1:789abc;  
  
IP 789abc  
<  
  
<lf>  
    LT-PF-2000-3 93-11-26 16:53:22  
M 789abc COMPLD  
    "ls-1a, sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7, OC3PROT-ST=ACT"  
    "ls-1a, sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7, OC3PROT-ST=STBY"  
;
```

For Releases 4.1 through 5.0:

The following example retrieves a 1-way (add) cross-connection associated with the STS-3 line tributary sts3-1w-1 (and 1+1 protected OC-3 low speed interface pair ls-1a, ls-1b) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-1:789abc;
```

IP 789abc

<

<lf>

LT-PF-2000-3 93-11-26 16:53:22

M 789abc COMPLD

"ls-1a,sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7,LOCZ-NID=6,OC3PROT-ST=ACT"

"ls-1b,sts3-1w-1:1WAY:LOCZ=LT-PF-2000-7,LOCZ-NID=6,OC3PROT-ST=STBY"

;

For Release 6.0 only:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the 1+1 protected OC-3 low speed interface pair ls-6a, ls-6b (and east-facing STS-3 tributary sts3-1e-6 in STANDBY state) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI001;
```

IP DRI001

<

<lf>

LT-PF-2000-3 93-11-26 16:53:22

M DRI001 COMPLD

"sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCZ=LT-PF-2000-12,STBY"

"ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,OC3PROT-ST=ACT:ACT"

"ls-6b,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,OC3PROT-ST=STBY:STBY,AUTO"

"sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCZ=LT-PF-2000-2"

"sts3-1w-6,ls-6a:1WAY:LOCA=LT-PF-2000-12,"

"sts3-1w-6,ls-6b:1WAY:LOCA=LT-PF-2000-12,"

;

For Releases 4.1 through 5.0:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the 1+1 protected OC-3 low speed interface pair ls-6a, ls-6b (and east-facing STS-3 tributary sts3-1e-6 in STANDBY state) as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI001;
```

```
IP DRI001
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M DRI001 COMPLD
```

```
"sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCA-NID=1,LOCZ=LT-PF-2000-12,  
LOCZ-NID=1:STBY"
```

```
"ls-6a,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,LOCZ-NID=11,OC3PROT-ST=ACT:ACT"
```

```
"ls-6b,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,LOCZ-NID=11,OC3PROT-ST=STBY:STBY,AUTO"
```

```
"sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11,LOCZ=LT-PF-2000-2,LOCZ-NID=1"
```

```
"sts3-1w-6,ls-6a:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"
```

```
"sts3-1w-6,ls-6b:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"
```

```
;
```

For Release 6.0 only:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the 1+1 protected OC-3 low speed interface pair "ls-6a, ls-6b" in the STANDBY state, as a result of an automatic DRI protection switch (and east-facing STS-3 tributary sts3-1e-6 in ACTIVE state), as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI002;
```

```
IP DRI002
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M DRI002 COMPLD
```

```
"sts3-1e-6, sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2, LOCZ=LT-PF-2000-12:ACT"
```

```
"ls-6a, sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12, OC3PROT-ST=STBY:STBY, AUTO"
```

```
"ls-6b, sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12, OC3PROT-ST=ACT:STBY, AUTO"
```

```
"sts3-1w-6, sts3-1e-6:1WAY:LOCA=LT-PF-2000-12, LOCZ=LT-PF-2000-2"
```

```
"sts3-1w-6, ls-6a:1WAY:LOCA=LT-PF-2000-12"
```

```
"sts3-1w-6, ls-6b:1WAY:LOCA=LT-PF-2000-12"
```

```
;
```

For Releases 4.1 through 5.0:

The following example retrieves both directions of a DRI cross-connection associated with the west-facing STS-3 line tributary sts3-1w-6 and the 1+1 protected OC-3 low speed interface pair "ls-6a, ls-6b" in the STANDBY state, as a result of an automatic DRI protection switch (and east-facing STS-3 tributary sts3-1e-6 in ACTIVE state), as follows:

```
rtrv-crs-sts3:LT-PF-2000-3:sts3-1w-6:DRI002;
```

```
IP DRI002
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:53:22
```

```
M DRI002 COMPLD
```

```
"sts3-1e-6, sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2, LOCA-NID=1, LOCZ=LT-PF-2000-12,  
LOCZ-NID=11:ACT"
```

```
"ls-6a, sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12, LOCZ-NID=11, OC3PROT-ST=STBY:STBY, AUTO"
```

```
"ls-6b, sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12, LOCZ-NID=11, OC3PROT-ST=ACT:STBY, AUTO"
```

```
"sts3-1w-6, sts3-1e-6:1WAY:LOCA=LT-PF-2000-12, LOCA-NID=11, LOCZ=LT-PF-2000-2, LOCZ-NID=1"
```

```
"sts3-1w-6, ls-6a:1WAY:LOCA=LT-PF-2000-12, LOCA-NID=11"
```

```
"sts3-1w-6, ls-6b:1WAY:LOCA=LT-PF-2000-12, LOCA-NID=11"
```

```
;
```

For Release 6.0 only:

The following example retrieves all STS cross-connections in an FT-2000 OC-48 system as follows:

```
rtrv-crs-sts3:LT-PF-2000-3::654321;
```

```
IP 654321
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:54:33
```

```
M 654321 COMPLD
```

```
"ls-6a,sts3-1w-1,1WAY,LOCZ=LT-PF-2000-1,OC3PROT-ST=ACT"
```

```
"ls-6b,sts3-1w-1,1WAY,LOCZ=LT-PF-2000-1,OC3PROT-ST=STBY"
```

```
"sts3-1w-1,ls-6a,1WAY,LOCA=LT-PF-2000-1"
```

```
"sts3-1w-1,ls-6b,1WAY,LOCA=LT-PF-2000-1"
```

```
"ls-7a,sts3-1e-1,2WAY,LOCA=LT-PF-2000-1"
```

```
"sts3-1e-2,sts3-1w-2:2WAY:*LOCA=LT-PF-2000-13,LOCZ=LT-PF-2000-2"
```

```
"sts3-1e-3,sts3-1w-3:2WAY:LOCA=LT-PF-2000-1,LOCZ=TID-UNKNOWN?"
```

```
"sts3-1e-4,sts3-1w-4:1WAYDRI:LOCA=LT-PF-2000-15,LOCZ=LT-PF-2000-5:STBY"
```

```
"ls-5a,sts3-1w-4:1WAYDRI:LOCZ=LT-PF-2000-5:ACT"
```

```
"sts3-1w-4,sts3-1e-4:1WAY:LOCA=LT-PF-2000-5,LOCZ=LT-PF-2000-15"
```

```
"sts3-1w-4,ls-5a:1WAY:LOCA=LT-PF-2000-5"
```

```
"ls-3b,sts3-1w-5:2WAY:LOCZ=LT-PF-2000-9"
```

```
"ls-1b,sts3-1e-5:2WAY:LOCZ=LT-PF-2000-1"
```

```
"sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCZ=LT-PF-2000-12:ACT"
```

```
"ls-5b,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12:STBY,AUTO"
```

```
"sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCZ=LT-PF-2000-2"
```

```
"sts3-1w-6,ls-5b:1WAY:LOCA=LT-PF-2000-12"
```

```
"sts3-1e-7,sts3-1w-7:1WAY:LOCA=LT-PF-2000-12,LOCZ=LT-PF-2000-2"
```

```
"ls-4a,sts3-1e-7:1WAY:LOCZ=LT-PF-2000-12"
```

```
"sts3-1e-7,ls-4a:1WAY:LOCA=LT-PF-2000-12"
```

```
"sts3-1e-8,sts3-1w-8:1WAYDRI:LOCA=LT-PF-2000-1,LOCZ=LT-PF-2000-14:ACT"
```

```
"ls-3a,sts3-1w-8:1WAYDRI:LOCZ=LT-PF-2000-14:STBY,MAN"
```

```
"sts3-1w-8,sts3-1e-8:1WAY:LOCA=LT-PF-2000-14,*LOCZ=LT-PF-2000-7"
```

```
"sts3-1w-8,ls-2b:1WAY:LOCA=LT-PF-2000-14"
```

```
"ls-2a,sts3-1w-9:2WAY:LOCZ=LT-PF-2000-5,EXTRA=yes"
```

```
"sts3-1e-10,sts3-1w-10:2WAY:LOCA=LT-PF-2000-2,LOCZ=LT-PF-2000-5,EXTRA=yes"
```

```
"sts3-1e-11,sts3-1w-11:2WAY:LOCA=TID-UNKNOWN?,LOCZ=LT-PF-2000-8,EXTRA=yes"
```

```
"ls-1a,sts3-1w-12:1WAY:LOCZ=LT-PF-2000-16,EXTRA=yes"
```

```
;
```

The following example retrieves all STS cross-connections in an FT-2000 OC-48 system as follows:

```
rtrv-crs-sts3:LT-PF-2000-3::654321;
```

```
IP 654321
```

```
<
```

```
<lf>
```

```
LT-PF-2000-3 93-11-26 16:54:33
```

```
M 654321 COMPLD
```

```
"ls-6a,sts3-1w-1,1WAY,LOCZ=LT-PF-2000-1,LOCZ-NID=0,OC3PROT-ST=ACT"
```

```
"ls-6b,sts3-1w-1,1WAY,LOCZ=LT-PF-2000-1,LOCZ-NID=0,OC3PROT-ST=STBY"
```

```
"sts3-1w-1,ls-6a,1WAY,LOCA=LT-PF-2000-1,LOCA-NID=0"
```

```
"sts3-1w-1,ls-6b,1WAY,LOCA=LT-PF-2000-1,LOCA-NID=0"
```

```
"ls-7a,sts3-1e-1,2WAY,LOCA=LT-PF-2000-1,LOCA-NID=0"
```

```
"sts3-1e-2,sts3-1w-2:2WAY:*LOCA=LT-PF-2000-13,LOCA-NID=8,LOCZ=LT-PF-2000-2,LOCZ-NID=1"
```

```
"sts3-1e-3,sts3-1w-3:2WAY:LOCA=LT-PF-2000-1,LOCA-NID=0,LOCZ=TID-UNKNOWN?,LOCZ-NID=6"
```

```
"sts3-1e-4,sts3-1w-4:1WAYDRI:LOCA=LT-PF-2000-15,LOCA-NID=14,LOCZ=LT-PF-2000-5,
```

```
LOCZ-NID=4:STBY"
```

```
"ls-5a,sts3-1w-4:1WAYDRI:LOCZ=LT-PF-2000-5,LOCZ-NID=4:ACT"
```

```
"sts3-1w-4,sts3-1e-4:1WAY:LOCA=LT-PF-2000-5,LOCA-NID=4,LOCZ=LT-PF-2000-15,LOCZ-NID=14"
```

```
"sts3-1w-4,ls-5a:1WAY:LOCA=LT-PF-2000-5,LOCA-NID=4"
```

```
"ls-3b,sts3-1w-5:2WAY:LOCZ=LT-PF-2000-9,LOCZ-NID=2"
```

```
"ls-1b,sts3-1e-5:2WAY:LOCZ=LT-PF-2000-1,LOCZ-NID=0"
```

```
"sts3-1e-6,sts3-1w-6:1WAYDRI:LOCA=LT-PF-2000-2,LOCA-NID=0,LOCZ=LT-PF-2000-12,
```

```
LOCZ-NID=11:ACT"
```

```
"ls-5b,sts3-1w-6:1WAYDRI:LOCZ=LT-PF-2000-12,LOCZ-NID=11:STBY,AUTO"
```

```
"sts3-1w-6,sts3-1e-6:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11,LOCZ=LT-PF-2000-2,LOCZ-NID=1"
```

```
"sts3-1w-6,ls-5b:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"
```

```
"sts3-1e-7,sts3-1w-7:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11,LOCZ=LT-PF-2000-2,LOCZ-NID=1"
```

```
"ls-4a,sts3-1e-7:1WAY:LOCZ=LT-PF-2000-12,LOCZ-NID=11"
```

```
"sts3-1e-7,ls-4a:1WAY:LOCA=LT-PF-2000-12,LOCA-NID=11"
```

```
"sts3-1e-8,sts3-1w-8:1WAYDRI:LOCA=LT-PF-2000-1,LOCA-NID=0,LOCZ=LT-PF-2000-14,
```

```
LOCZ-NID=13:ACT"
```

```
"ls-3a,sts3-1w-8:1WAYDRI:LOCZ=LT-PF-2000-14,LOCZ-NID=13:STBY,MAN"
```

```
"sts3-1w-8,sts3-1e-8:1WAY:LOCA=LT-PF-2000-14,LOCA-NID=13,*LOCZ=LT-PF-2000-7,
```

```
LOCZ-NID=0"
```

```
"sts3-1w-8,ls-2b:1WAY:LOCA=LT-PF-2000-14,LOCA-NID=13"
```

```
"ls-2a,sts3-1w-9:2WAY:LOCZ=LT-PF-2000-5,LOCZ-NID=4,EXTRA=yes"
```

```
"sts3-1e-10,sts3-1w-10:2WAY:LOCA=LT-PF-2000-2,LOCA-NID=1,LOCZ=LT-PF-2000-5,LOCZ-NID=4,  
EXTRA=yes"
```

```
"sts3-1e-11,sts3-1w-11:2WAY:LOCA=TID-UNKNOWN?,LOCA-NID=6,LOCZ=LT-PF-2000-8,LOCZ-NID=7,  
EXTRA=yes"
```

```
"ls-1a,sts3-1w-12:1WAY:LOCZ=LT-PF-2000-16,LOCZ-NID=15,EXTRA=yes"
```

```
;
```



## ERROR RESPONSES

Leading carriage returns (<cr>), line feeds (<lf>), and spaces ( ) are explicitly shown in the first error output. Leading carriage returns (<cr>) and line feeds (<lf>) are explicitly shown in the error outputs thereafter.

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses are listed in the order and priority that FT-2000 checks for each condition.

If the network element receives a **RTRV-CRS-rr** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (not supported by FT-2000, delimited by ","), or termination characters (;), the following error response is returned:

```
sid date time
M ctag DENY
  IISP
  /* Input, Invalid Syntax or Punctuation */
;
```

For Release 4.1 only:

If the network element receives a **RTRV-CRS-rr** command with a command code modifier other than STS3, the following error response is returned:

```
sid date time
M ctag DENY
  IICM
  /* Input, Invalid Command, modifier must be STS3 */
;
```

If the network element receives a **RTRV-CRS-rr** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

For Release 7.0 and later:

If the network element receives an otherwise valid instance of this command, but for which the *modifier*, and *aid* parameters values do not all identify entities which carry the same signal, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid,
aid inconsistent with modifier
*/
;
```

For Releases 5.0 through 6.0:

If the network element receives this command with a *modifier* other than **STS3**, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

#### RELATED TL1 MESSAGES

**DLT-CRS-rr**

**ENT-ROLL-rr**

**ENT-CRS-rr**

## NAME

**RTRV-DAT:** Retrieve Date and Time

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV-DAT:***tid::ctag*;

## DESCRIPTION

The **RTRV-DAT** command can be initiated by all users to retrieve the network element's time zone and daylight savings time provisioning information.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

When reporting the provisioning information report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "TZ=tz, STRTDST=strtdst, STOPDST=stopdst, DSTZ=dstz"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

|                |                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------|
| <i>tz</i>      | Standard Time Zone. This reports the time zone designation outside of daylight savings time (i.e EST).                    |
| <i>strtdst</i> | Start Daylight Savings Time. This is the date on which the one hour increment in the system time is to occur.             |
| <i>stopdst</i> | Stop Daylight Savings Time. This is the date on which one hour decrement in system time is to occur.                      |
| <i>dstz</i>    | Daylight Savings Time Zone. This reports the time zone specification for during Daylight Savings Time (for example, EDT). |

## EXAMPLE OUTPUT

The following example shows a **rtrv-dat** command for a network element.

```
rtrv-dat:LT-PF-2000::CTAG;  
IP 123456  
<  
  
LT-PF-2000 98-10-26 16:42:11  
M CTAG COMPLD  
"TZ=EST,STRTDST=04-05,STOPDST=10-25,DSTZ=EDT"  
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-DAT** command, also.

## RELATED TL1 MESSAGES

**ED-DAT**

## NAME

**RTRV-EQPT:** Retrieve Equipment

This command is available for Releases 5.0 and later.

## INPUT FORMAT

**RTRV-EQPT:***tid:aid:ctag;*

## DESCRIPTION

The **RTRV-EQPT** command is initiated to request FT-2000 to retrieve the circuit pack and version number information for one or more slots.

When the network element receives a **RTRV-EQPT** command from the user, the network element will display the circuit pack and version number information for the requested slot(s).

## INPUT PARAMETERS

- tid* Target identifier. This is the name of the network element to which the command is addressed.
- aid* Access identifier. *aid* determines slot address whose equipage is to be reported. If **all** is specified, all slots are reported.
- ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

## OUTPUT FORMAT

In response to a valid **RTRV-EQPT** command, the following output report is returned.

```

sid date time
M ctag COMPLD
  "aid::spec_block"
    :      :      :
    :      :      :
  "aid::spec_block"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The requirements listed there also apply to the **RTRV-EQPT** command. In addition, the following requirements pertaining to the output parameters also apply to **RTRV-EQPT**.

*aid* Access identifier. This is the address of the slot and shelf for which equipage is being reported.

*spec\_block* Specific block. This parameter field is used for returning the current equipage information for the slot. Parameters within the specific block are positionally independent and are specified using a name defined construction of *PARAMETER=value* in a comma separated list.

FT-2000 will return the parameter within the *spec\_block* in the following order: **TYPE**, **APP**, **SSN**, **CLEI**, **ECI**, **SLN**, and **VRSN**. The parameters are:

**TYPE** This is the mnemonic name that identifies the general type function provided by the circuit pack. For example, DS3 low speed interfaces are all named DS3.

**APP** This is the apparatus code and it uniquely identifies the specific function provided by the circuit pack. Circuit packs with different **APP** are not interchangeable, even if they have the same name.

**SSN** This is the series number and it is used to indicate interchangeability among the circuit packs with the same circuit pack type and apparatus code, but different manufacturing versions. In general, a circuit

pack can be replaced by another pack that has the same apparatus code and the same or later series number.

Note that the series number normally includes a colon (:). Since the colon is used as a TL1 field separator, a dash (-) is used instead.

|             |                                                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CLEI</b> | The <i>Common Language</i> * is the 10-character code identifying each circuit pack.                                                                                                                         |
| <b>ECI</b>  | The Equipment Catalog Item is a 6-character code identifying each circuit pack. This code corresponds to the bar-code label on the faceplate of the circuit pack and is uniquely equivalent to <b>CLEI</b> . |
| <b>SLN</b>  | This is the serial number and it is a 12-character code uniquely identifying each circuit pack and indicating the date and place of manufacture.                                                             |
| <b>VRSN</b> | The program version is the version of the software currently stored in the circuit pack.                                                                                                                     |

The network element will include in its response equipage information on only equipped slots. The network element will successfully complete the **RTRV-EQPT** command and return a *COMPLD*, even if the *aid* in the command points to slot(s) that is/are not equipped.

If the circuit pack in an equipped slot is removed, declared failed, or replaced with a pack of different type, the **TYPE** of the provisioned (removed/failed) circuit pack is retained and reported in the normal fashion, except in some specific cases where it is reported as specified in other requirements in this document. The **CLEI** value is lost and reported as a dash ("-") indicating that data is unavailable. The **CLEI** is reported other than a dash in some specific cases where error conditions are reported by the NE as specified in other requirements in this document.

When the *aid* of the slot in the input command is SYSCTL or SYSMEM, the network element will return the equipage information for both SYSCTL and SYSMEM *aids*.

The program version information is reported whenever the report includes information on a circuit pack on which a downloadable program is stored.

If the circuit pack in an equipped slot is replaced with a pack of different but known type, the **TYPE** field is set to "-" and the **CLEI** field for that slot will be set to *installed\_CP\_mismatch\_(info)*, where the *info* field contains any

---

\* COMMON LANGUAGE is a registered trademark and CLEI, CLLI, and CLFI are trademarks of Bell Communication Research, Inc.



information available on the installed CP in the order of CP type, apparatus code, series number, and serial number respectively, separated by commas.

If any one of these three pieces of information is unavailable, a dash is reported in its place.

See below for order and syntax of the information for the *info* field:  
*ccccccc, aaaaaaaaa, sssss, nnnnnnnnnnnn*, where:

|             |                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------|
| ccccccc:    | is the Circuit pack type of the installed circuit pack if available; otherwise, reported as a dash. |
| aaaaaaaa:   | is the Apparatus Code of the installed circuit pack if available; otherwise, reported as a dash.    |
| sssss:      | is the Series Number of the installed circuit pack if available; otherwise, reported as a dash.     |
| nnnnnnnnnn: | is the Serial Number of the installed circuit pack if available, otherwise reported as a dash.      |

If the circuit pack in an equipped slot is replaced with a pack of different and unknown type, the **TYPE** field is set to the expected CP type and the **CLEI** field for that slot or quad is set to *installed\_CP\_unknown\_(info)*, where *info* field contains any information available on the installed CP in the order of CP type, apparatus code, series number and serial number respectively separated by commas. If any one of these three pieces of information is unavailable a dash is reported in its place.

The order and syntax of the information for the *info* field is given as:  
*ccccccc, aaaaaaaaa, sssss, nnnnnnnnnnnn*, where:

|             |                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------|
| ccccccc:    | is the Circuit pack type of the installed circuit pack if available; otherwise, reported as a dash. |
| aaaaaaaa:   | is the Apparatus Code of the installed circuit pack if available; otherwise, reported as a dash.    |
| sssss:      | is the Series Number of the installed circuit pack if available; otherwise, reported as a dash.     |
| nnnnnnnnnn: | is the Serial Number of the installed circuit pack if available, otherwise reported as a dash.      |

If the CP in an equipped slot is removed, the **CLEI** is set to *CP\_removed\_complete\_information\_not\_available*.

If the CP in an equipped slot is failed, the **CLEI** is set to *installed\_CP\_failed\_complete\_information\_not\_available*.

If the CP in the slot specified by the *aid* in the user input command is declared failed and if the software is able to identify a single alternative CP to be replaced, then the **CLEI** will be set to *CP\_failed\_alternative\_CP\_(info)*, where the *info* field contains any information available on the alternative CP in the order of slot address, CP type, and apparatus code respectively, separated by commas. If any one of these three pieces of information is unavailable, a dash is reported in its place.

### EXAMPLE INPUT/OUTPUT

The following FT-2000 OC-48 example requests the equipage information in the *SYSCTL* slot:

```
rtrv-eqpt:LT-PF-2000:sysctl:123456;
```

```
IP 123456
```

```
<
```

```
"sysctl: :TYPE=SYSCTL, APP=LAA23, SSN=12345, CLEI=1234567890,  
ECI=123456, SLN=123456789012, VRSN=FT-2000_RELEASE_x.y.z-ADR"
```

```
"sysmem: :TYPE=SYSMEM, APP=LAA25, SSN=12345, CLEI=1234567890,  
ECI=123456, SLN=123456789012, VRSN=FT-2000_RELEASE_x.y.z-ADR"
```

```
;
```

The following FT-2000 OC-48 example requests the equipage information with aid=**all** for a FT-2000 ADR Terminal with a low speed shelf fully populated with DS3, STS1E, and OC3 circuit packs.

```
rtrv-eqpt:LT-PF-2000:all:123456;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
"sysctl::TYPE=SYSCTL,APP=LAA23,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012,  
VRSN=FT-2000_RELEASE_x.y.z-ADR"  
"sysmem::TYPE=SYSMEM,APP=LAA25,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012,  
VRSN=FT-2000_RELEASE_x.y.z-ADR"  
"lnctl-1w::TYPE=LNCTL,APP=LAA28,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ohctl-1w::TYPE=OHCTL,APP=LAA21,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ohctl-1e::TYPE=OHCTL,APP=LAA21,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"tg-1::TYPE=TG3,APP=LAA18,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"tg-2::TYPE=TG3,APP=LAA18,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"trmtr-1w::TYPE=TRMTR,APP=739B2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"trmtr-1e::TYPE=TRMTR,APP=739B2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"rcvr-1w::TYPE=RCVR,APP=839B2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"rcvr-1e::TYPE=RCVR,APP=839B2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-1a::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-1b::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-2a::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=CP_failed_alternative_CP_trmtr-1e,TYPE=TRMTR,APP=739B1"  
"ls-2b::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-3a::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-3b::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=CP_failed_alternative_CP_information_not_available"  
"ls-4a::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-4b::TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-5a::TYPE=STS1E,APP=LAA4,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-5b::TYPE=STS1E,APP=LAA4,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-6a::TYPE=OC3,APP=LAA10,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-6b::TYPE=OC3,APP=LAA10,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-7a::TYPE=OC3,APP=LAA10,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-7b::TYPE=-,CLEI=installed_CP_mismatch_DS3,APP=LAA2,SSN=12345,SLN=123456789012"  
"ls-8a::TYPE=STS1E,APP=LAA4,SSN=12345,CLEI=installed_CP_unknown_OC3,APP=LAA10,SSN=12345,  
SLN=123456789012"  
"ls-8b::TYPE=-,CLEI=installed_CP_unknown_OC3,APP=LAA10,SSN=12345,SLN=123456789012"  
"ls-p1,TYPE=DS3,APP=LAA2,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ls-p2,TYPE=STS1E,APP=LAA4,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"lssw-in,TYPE=LSSW,APP=LAA12,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"lssw-out,TYPE=LSSW,APP=LAA12,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
;
```

For Release 6.0, the TOHCTL slot is included in the aid=**all** report,  
immediately after the OHCTL slots as shown below.

```
rtrv-eqpt:LT-PF-2000:all:123456;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD
```

```
      .  
      .  
      .  
"ohctl-1w::TYPE=OHCTL,APP=LAA21,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"ohctl-1e::TYPE=OHCTL,APP=LAA21,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"tohctl::TYPE=TOHCTL,APP=LAA26,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"tg-1::TYPE=TG3,APP=LAA18,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"  
"tg-2::TYPE=TG3,APP=LAA18,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"
```

```
;
```

For Releases 7.1 and later, the following is included in the *aid=all* report output when OC-12 circuit packs are installed in quads 5A and 7A, and when IS-3 circuit packs are installed in slots 3A and 3B.

```
rtrv-eqpt:LT-PF-2000:all:123456;
IP 123456
<
  LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD

      .
      .
      .
"ls-3a::TYPE=IS3,APP=LAA5,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"
"ls-3b::TYPE=IS3,APP=LAA5,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"
      .
      .
      .
"ls-5a::TYPE=OC12,APP=LAA6,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"
"ls-5b::TYPE=EXT"
"ls-6a::TYPE=EXT"
"ls-6b::TYPE=EXT"
"ls-7a::TYPE=OC12,APP=LAA6,SSN=12345,CLEI=1234567890,ECI=123456,SLN=123456789012"
"ls-7b::TYPE=EXT"
"ls-8a::TYPE=EXT"
"ls-8b::TYPE=EXT"
      .
      .
      .
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

If FT-2000 receives an **RTRV-EQPT** command without an *aid* or with an invalid *aid*, the following error response is returned:

```
      sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid Access Identifier */
;
```

## RELATED TL1 MESSAGES/COMMANDS

None

## NAME

**RTRV - FECOM:** Retrieve Far End Communications

Support for this message is available in Release 7.1. This message is no longer available starting with FT-2000 ADR Release 8.0.

## INPUT FORMAT

**RTRV - FECOM:***tid::ctag;*

## DESCRIPTION

The **RTRV - FECOM** command can be initiated by general users to retrieve the provisioned state of the network element section data communication channel (DCC) as set by the **ENT - FECOM** command.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the network element fully complies with the **RTRV - FECOM** request, the following far end communication output report is given; details on parameter values are given below:

```
sid date time
M ctag COMPLD
"::rar,roa"
;
```

## **OUTPUT PARAMETERS**

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below:

- rar* This parameter indicates whether the remote activity reporting is enabled or disabled.
- roa* This parameter shows whether the remote office alarms are enabled or disabled.

## **EXAMPLE INPUT/OUTPUT**

The following example shows a **RTRV-FECOM** command output.

```
RTRV-FECOM:LT-PF-2000::123456;  
  
IP 123456  
<  
    LT-PF-2000 9-10-26 16:42:11  
M 123456 COMPLD  
    "::RAR=enabled,ROA=enabled"  
;
```

## **ERROR RESPONSE**

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-FECOM** command, also.

## **RELATED TL1 MESSAGES**

**ENT-FECOM**



## NAME

**RTRV-HDR:** Retrieve Header

This command is available for Releases 3.0 and later.

## INPUT FORMAT

**RTRV-HDR:***[tid]::ctag*; (Release 4.1 and earlier)

**RTRV-HDR:***tid::ctag*; (Release 5.0 and later)

## DESCRIPTION

This command requests that an FT-2000 return a normal completion response. The OS or OS user may use this as a "keep-alive" signal.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed. Prior to Release 5.0, when the *tid* entry is optional, if no *tid* is given, the command is interpreted to be addressed to the GNE.

The *tid* is a case insensitive character string of up to 20 characters. The allowed ASCII characters are letters "A" through "Z" and "a" through "z", numbers "0" through "9", and special characters: "#" (pound), "%" (percent), "+" (plus), "-" (hyphen), and "." (period).

*ctag* Correlation tag. This is included in the command by the OS and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages.

Valid values for *ctag* include strings of up to 6 characters comprised of identifiers (alphanumerics begin with a letter) or decimal numerals (a string of decimal digits with an optional nontrailing ".").

### ⇒ NOTE:

All position-defined parameters (for example, *tid* and *ctag*) may be specified by a name=value format, or, as a value only. Therefore, **RTRV-HDR:LT-PF-2000::123**; and **RTRV-HDR:TID=LT-PF-2000::CTAG=123**; and **RTRV-HDR:TID=LT-PF-2000::123**; and **RTRV-HDR:LT-PF-2000::CTAG=123**; are equivalent.

## OUTPUT FORMAT

After receiving this command, the following normal completion response message is returned to the OS:

```
    sid date time  
M ctag COMPLD  
;
```

## OUTPUT PARAMETERS

|             |                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>sid</i>  | Source identifier (or target identifier, <i>tid</i> ). This is the system name.                                                                                       |
| <i>date</i> | Date output message is generated. This has the format YY-MM-DD (year-month-day).                                                                                      |
| <i>time</i> | Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).                                                                               |
| M           | This indicates the output message is generated in response to a manual command.                                                                                       |
| <i>ctag</i> | Correlation tag. This is included in the command by the OS and is repeated by FT-2000 in the response to allow the OS to associate the command and response messages. |
| COMPLD      | This indicates that the command has been completed.                                                                                                                   |

**EXAMPLE INPUT/OUTPUT**

```
RTRV-HDR:LT-PF-2000::123456;  
      LT-PF-2000 94-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

The following error conditions are not unique to the **RTRV-HDR** command but may apply to any TL1 command received by the network element. When the TL1 security feature is enabled, the GNE only responds for another addressed network element if the user is logged into the GNE; however, a user does not have to be logged into the GNE to get an error response from a remote network element.

If a Gateway Network Element (GNE) receives a command, but

1. it's buffer is full,
2. it's undergoing initialization,
3. TL1 command processing is terminated *before any* of that command response is put in the TL1 command/response *output* buffer,
4. or when OSI is supported on the DCC and the GNE can not establish an OSI association with the addressed remote Network Element,

instead of returning an in-progress (IP) acknowledgement, the following repeat later acknowledgement is returned:

RL *ctag*  
<

For FT-2000 Releases 5.0 and later, if a GNE receives a command but cannot parse the command for at least 3 colons (:), and no more than the maximum number of colons allowed for any supported TL1 command, before the TL1 end-of-message semicolon (;), instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the addressed network element:

```
      sid date time
M  ctag DENY
   IISP
   /* Input, Invalid Syntax or Punctuation */
;
```

For FT-2000 Releases 5.0 and later, if a GNE receives a command for which a *tid* value (non-null) is *required* but no *tid* value is included, instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the GNE:

```
      sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid, TID must be specified */
;
```

For FT-2000 Releases 5.0 and later, if a GNE receives a command with a syntactically incorrect *tid* value, instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the GNE:

```
sid date time
M ctag DENY
  IITA
/* Invalid TID, unallowed characters or too long */
;
```

For FT-2000 Releases 5.0 and later, if a GNE receives a command (other than **RTRV-HDR**) with valid *tid* value but the addressed remote network element is temporarily unable to communicate with the GNE due to exhaustion of allocated resources at either the GNE or remote network element, instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  SARB
/* Status, All Resources Busy */
;
```

For FT-2000 Releases 5.0 and later, if the network element receives a command but cannot recognize a valid *ctag* value, instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M 0 DENY
  IICT
  /* Input, Invalid Correlation Tag (CTAG) */
;
```

For FT-2000 Releases 5.0 and later, if a GNE receives a command with an unknown *tid* value (a *tid* value that does not exist in the GNE's subnetwork), instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the GNE:

```
sid date time
M ctag DENY
  IITA
  /* Unknown TID */
;
```

For FT-2000 Releases 5.0 through 7.2, if a GNE receives a command with a valid *tid* value but the addressed remote network element is temporarily unable to communicate with the GNE, instead of returning an in-progress (IP) acknowledgement, the following error response is returned, using the *sid* value of the addressed remote network element:

```
sid date time
M ctag DENY
  IITA
  /* Communication Failure */
;
```

For FT-2000 Release 5.0, if the network element receives a TL1 command other than those supported, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid, Network Element does not support
    Command = xxxxxxxxxxxxxxxxx */
;
```

where xxxxxxxxxxxxxxxxx is the first 16 characters, or up to the end-of-message semicolon (;) if less than 16 characters, of the command received.



For FT-2000 Releases 6.0 and later, if a network element receives a TL1 command other than those supported, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  ICNV
  /* Input, Command Not Valid, Network Element does not support
    Command = xxxxxxxxxxxxxxxxx */
;
```

where xxxxxxxxxxxxxxxxx is the first 16 characters of the command received [up to, but excluding, the first colon ( : ), semicolon ( ; ), or null (end of message indicator)].

For FT-2000 Releases 5.0 and later, when the TL1 security feature is enabled, if the network element receives a command requiring a privilege higher than that of the user issuing the command, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  PICC
  /* Privilege, Illegal Command Code */
;
```

For FT-2000 Releases 5.0 and later, if the network element receives any TL1 command (except **RTRV-PM**) for which it is unable to complete the request due to internal system processing problems, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  SROF
/* Status, Requested Operation Failed */
;
```

For FT-2000 Releases 5.0 and later, receive a command with an otherwise valid command code modifier, but one not listed as an allowable input parameter *modifier* for that command, the following error response is returned, using the *sid* value of the addressed network element:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

For FT-2000 Releases 5.0 and later, if the network element receives a command with any extra (beyond the command-specific input format specification) null or non-null command parameter blocks (:), parameters (,), or termination characters (;), or if a command with a name-defined parameter block includes an invalid parameter *name* label, the following error response is returned:

```
      sid date time
M  ctag DENY
   IISP
   /* Input, Invalid Syntax or Punctuation */
;
```

The network element does accept and ignore some extra non-null entries in some **RTRV** commands only.

For Releases 7.0 and later, if the NE receives a command with more than 488 characters, the following error response is returned:

```
      sid date time
M  ctag DENY
   IISP
   /* Input, Invalid Syntax or Punctuation, command too long */
;
```

For Releases 8.0 and later, typically the TL1-GNE will be the first to determine a TL1 command is too long, thus will be responding for an RNE. In other cases, the TL1-GNE may support longer TL1 message lengths than the RNE, thus the RNE will determine a TL1 command is too long sometimes, too.

**RELATED TL1 MESSAGES**

**None**

## NAME

**RTRV - LOG:** Retrieve-Log

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV - LOG:***tid::ctag*;

## DESCRIPTION

The **RTRV - LOG** command can be initiated by users to generate a history log for the network element. This report contains up to 500 of the most recent events. Events include the start and end of alarm and status conditions, and all craft/OS input activities that affect or would affect the state of the network element, successfully completed or denied.

The history log displays the events in last in-first out order, and each event is time stamped.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If there is event data to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "aid:evtdatetime:almlvl,evt_desc"
  "aid:evtdatetime:almlvl,evt_desc"
  .      .
  .      .
  "aid:evtdatetime:almlvl,evt_desc"
;
```

If there is no event data to report, the following output message is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

*aid* Address Identifier. The *aid* is the event source identifier. For user initiated commands the value is user login identifier and for all other conditions the value is the source address of the event.

For protection switch events (automatic, manual, forced, lockout) of 1+1 protected entities, the address of the entity **not** carrying service after the switch has been done is shown. For inhibit switch event of 1+1 protected entities, the address of the entity **carrying** service after the switch has been done is shown.

For protection switch events of 1XN entities (automatic, manual, forced, lockout and reset), the address of the affected "service" or "from" line/slot is shown.

For protection switch events of synchronization references (auto, manual, forced, lockout, reset), the address of the affected reference or "from" reference is shown.

*evtdat* Event Date. This is the date on which the event occurred. It is reported in MM-DD format, where MM is the month of the year ranging from 01 to 12; and DD is the day of the month ranging from 01 to 31.

Normally the events are displayed in order of date/time-stamp with the most recent event being displayed first and the oldest being displayed last. If the system clock is reset, however the date and time stamps may be displayed in monotonically decreasing order.

*evttim* Event Time. This is the time at which the event occurred. It is reported in HH-MM-SS format, where HH is the hour in a 24 hour format ranging from 00 to 23; MM is the minute ranging from 00 to 59; and SS is the second ranging from 00 to 59.

*almlevl* This is the alarm level of the system immediately after the event. It takes one of the following values.

|         |                    |
|---------|--------------------|
| CR      | Critical Alarm     |
| MJ      | Major Alarm        |
| MN      | Minor Alarm        |
| ABN     | Abnormal Condition |
| NE_ACTY | Near End Activity  |

FE\_ACTY     Far End Activity

STATUS      Status

If there is no alarm level to report, nothing is reported for this field.

The alarm level reported is not necessarily related to the event or condition described in the report entry. The alarm level reported is the highest alarm level active in the system when the condition is reported.

*evt\_desc* Event Description. This is a brief description of the event.

## EXAMPLE INPUT/OUTPUT

The following example shows a **RTRV-LOG** command for a network element.

```
rtrv-log:LT-PF-2000::123456;
IP 123456
<

LT-PF-2000 98-10-26 16:42:11
M 123456 COMPLD
"line-1w:10-26,06-20-20:,"line auto switch-cleared""
"line-1w:10-26,06-10-20:CR,"incoming OC-48 LOF-cleared""
"line-1w:10-26,05-40-41:CR,"line auto switch""
"line-1w:10-26,05-40-40:CR,"Incoming OC-48 LOF""
"LUC01:05-08,05-40-20:,"set-OC3:ls-1a""
;
```



## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-LOG** command, also. If the network element receives a **RTRV-LOG** command when a **TEST-AUTO TURNUP-SYSTEM** command is being executed, the the following error response is returned:

```
sid date time
M ctag DENY
SARB
/* Status, All Resources Busy */
;
```

## RELATED TL1 COMMANDS/MESSAGES

None

## NAME

**RTRV-MAP:** Retrieve Map

This command is available for Release 5.0 only.

## INPUT FORMAT

**RTRV-MAP:***tid::ctag*[::];

## DESCRIPTION

The **RTRV-MAP** command is initiated to request FT-2000 to retrieve the topological map of the SONET subnetwork, including a list of the systems in the subnetwork, their connectivity to the local system, and the communication status to each system.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the command request completes successfully, the following normal completion response is returned:

```

    sid date time
M  ctag COMPLD
    "::::spec_block"
      .   .   .
      .   .   .
    "::::spec_block"
;
```

## OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, *ctag*, and *COMPLD* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. In addition the following parameters are used in the **RTRV-MAP** command:

*spec\_block* Specific block. Parameters within the specific block are positionally independent and are specified using a name defined construction of *PARAMETER=value* in a comma separated list. FT-2000 will return the parameters within the *spec\_block* in the following order: **NID**, **TID**, **DSNE**, **DCCSTATUS**, and **CONTINUITY**. The parameters are:

- |            |                                                                                                                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NID</b> | Node identifier. This is the self-healing ring address of the network element. <b>NID</b> is an integer with range of 0 through 15. It is provisioned by the PC-CIT command <b>set-network element</b> or the TL1 command <b>ENT-SYS</b> .                                                   |
| <b>TID</b> | Target identifier. This is the target identifier address of the network element. <b>TID</b> is a character string consisting of alphas, numerics, and hyphens of up to 20 characters. It is provisioned by the PC-CIT command <b>set-network element</b> or the TL1 command <b>ENT-SYS</b> . |

- DSNE** Directory services network element. This field has the values of Yes or No and indicates whether or not the system identified in the **TID** is serving as the Directory Service Network Element. This field can be for the systems in the subnetwork that are not serving as **DSNE**.
- DCCSTATUS** DCC status. This field has the values of Good or Failed and indicates the status of the Data Communications Channel from the local system. This field can be omitted from the output report if the **DCCSTATUS** is Good for the identified systems.
- CONTINUITY** This field has the values of good or isolated and indicates whether or not transmission to the listed system has failed (isolated) from the local system. This field will not be included in the output if the ring is incomplete (for example, a "ring incomplete/open" condition is reported by **RTRV-ALARM**).

The topmost entry in the output report represents the local system; that is, the node at which the command is entered. The subsequent entries in the report represents the remaining systems arranged in a west-to-east sequence. That means, for example, that the second entry represents the system immediately "east" of the system at which the **RTRV-MAP** command is executed.

Data which is unavailable for the report will be represented by a question ("?) mark (for example, DCCSTATUS=?).

All specific requirements pertaining to the functioning of the **RTRV-MAP-RING** PC-CIT command are applicable to this **RTRV-MAP** also.

## EXAMPLE INPUT/OUTPUT

```
rtrv-map:LT-FT-2000::123456;  
  
IP 123456  
<  
    LT-FT-2000 93-10-26 16:42:11  
M 123456  COMPLD  
  
    "NID=0,TID=SAMPLE-TID-GOES-HERE,DSNE=yes,CONTINUITY=good"  
    "NID=1,TID=ANOTHER-TID-HERE,DCCSTATUS=failed,CONTINUITY=good"  
    "NID=2,TID=TID-3-GOES-HERE,CONTINUITY=good"  
    "NID=3,TID=TID-4-GOES-HERE,CONTINUITY=good"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

If FT-2000 receives an **RTRV-MAP** command with an otherwise valid set of input parameter values but the command could not be completed by the network element, the following error response is returned to the user:

```
    sid date time  
M  ctag DENY  
  SROF  
    /* Status, Request Operation Failed,*/  
;
```

## RELATED TL1 COMMANDS/MESSAGES

None

## NAME

**RTRV-MAP-NEIGHBOR:** Retrieve Map of Nearest DCC Neighbors.

Support for this command is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV-MAP-NEIGHBOR:***tid::ctag;*

## DESCRIPTION

This command will retrieve a list of all Network Elements that are immediate DCC to the local Network Element.

The Network Element will return a report containing the Target IDentifiers (or TIDs) of every NE that is directly connected (via the DCC) to that NE, including the connectivity between each one of those NE's and the local NE, as well as other information.

For Releases 8.0 and later, if this command is issued to an NE provisioned as a Level 2 IS, the report will list all neighboring NEs in its own area, as well as the neighboring Level 2 ISs in other areas. If this command is issued to an NE that is not provisioned as a Level 2 IS, the report will only list the neighboring NEs that are in its own area. If there is a DCC failure between the local NE and its neighboring NE, the neighbor NE entry will not appear in the report.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

In response to a valid **RTRV-MAP-NEIGHBOR** command, the following output report is returned to the user.

```

sid date time
M ctag COMPLD
  "spec_block"
.
.
  "spec_block"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The parameters listed there also apply to the **RTRV-MAP-NEIGHBOR** command. Additional parameters that apply specifically to this command response are defined below.

*spec\_block* Specific block. Parameters within the specific block are positionally independent and are specified using a name defined construct of: **PARAMETER=va lue** in a comma separated list. The parameters are listed and explained below. For Releases 7.1 through 7.2, it should be noted, however, that the network element will return the parameters within the *spec\_block* in the following order: **TID, LINKSTATUS, PRODTYPE, THRU**. For Releases 8.0 and later, the parameters within the *spec\_block* will be in the following order for the local NE: **TID, NSAP, LEVEL, PRODTYPE**. The parameters will be in the following order for a remote NE: **TID, NSAP, THRU, LEVEL**.

**TID** This is the Target Identifier of the Network Element. The TID in the first entry of the report will be the local NE. If the NE is unable to determine a TID for a reachable NSAP, the parameter/value will be "TID=?".

**LINKSTATUS** For Releases 7.1 through 7.2, this field can take on the values of **good** or **FAIL**, and indicates the status of the Data Communications Channel from the local system to the neighboring NE identified by the TID. When the DCC link has failed, the **prodtype, TID, and THRU** value for

that neighbor node shall be shown using the last known good information.

This field is always included for the FT-2000. If a node included in a subnetwork is already registered by the DSNE when LOS or DCC failure occurs between it and any other NE that the DSNE knows about, this event shall cause each NE at either end of the failed DCC to show the other NE at the other end of the failed DCC in its RTRV-MAP-NEIGHBOR report using the last known good information and a "LINKSTATUS=FAIL" parameter/value. If the link status cannot be determined, the neighboring node is shown and the "LINKSTATUS=?" parameter/value is shown in the report.

**PRODTYPE** For Releases 7.1 through 7.2, this field identifies the product type of each NE.

Lucent Technologies PF-2000 NE product types are DDM-OC3, DDM-OC12, FT-2000, SLC-2000, and FbrRch. Any other value will be reported as a "?".

For Releases 8.0 and later, this field identifies the product type of the local Network Element. This field only appears in the first entry of the report.

**THRU** This field indicates the *aid* of the optical line through which the local NE is connected to the neighboring NE.

This field is omitted for the local NE.

If the *aid* of the connecting optical circuit pack cannot be determined, the neighboring node is shown and the "THRU=?" parameter/value is shown in the report.

The first entry in the output report represents the local system; that is, the NE to which the command is addressed.

The other NEs in the report are ordered by the value of the THRU field as follows: high-speed optical AIDs, then low-speed optical AIDs.



### EXAMPLE INPUT/OUTPUT

For Releases 7.1 and 7.2, the following FT-2000 OC-48 example requests the neighbors of a node in a 2-fiber ring that has three OC-3 interfaces with terminated DCCs.

```
rttrv-map-neighbor:LT-PF-2000::123456;
IP 123456
<
    LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
"\"TID=LOCAL-TID-GOES-HERE, LINKSTATUS=good, PRODTYPE=FT-2000"
"\"TID=RING-TID-2-GOES-HERE, LINKSTATUS=good, PRODTYPE=FT-2000, THRU=line-1w"
"\"TID=RING-TID-3-GOES-HERE, LINKSTATUS=good, PRODTYPE=FT-2000, THRU=line-1e"
"\"TID=OC-3-NEIGHBOR-1, LINKSTATUS=good, PRODTYPE=DDM-OC3, THRU=ls-1a"
"\"TID=OC-3-NEIGHBOR-2, LINKSTATUS=FAIL, PRODTYPE=FT-2000, THRU=ls-3b"
"\"TID=OC-3-NEIGHBOR-3, LINKSTATUS=good, PRODTYPE=DDM-OC12, THRU=ls-6a"
;
```

For Releases 8.0 and later, the following FT-2000 OC-48 example requests the neighbors of a node in a 2-fiber ring that has three OC-3 interfaces with terminated DCCs.

```
rtrv-map-neighbor:LT-PF-2000::123456;
IP 123456
<
    LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
    "TID=LOCAL-TID-GOES-HERE, NSAP=39840F80000000000000000000000000e3a06e00, LEVEL=2,
PRODTYPE=FT-2000"
    "TID=RING-TID-2-GOES-HERE, NSAP=39840F80000000000000000000000000e3a037200,
THRU=line-1w, LEVEL=1"
    "TID=RING-TID-3-GOES-HERE, NSAP=39840F80000000000000000000000000e3a0d6f00,
THRU=line-1e, LEVEL=1"
    "TID=OC-3-NEIGHBOR-1, NSAP=39840F80000000000000000000000000e3a027300,
THRU=ls-1a, LEVEL=1"
    "TID=OC-3-NEIGHBOR-2, NSAP=39840F8000000000000000000108006a1ad07f00,
THRU=ls-3b, LEVEL=1"
    "TID=OC-3-NEIGHBOR-3, NSAP=39840F8000000000000000000200000e3a073200,
THRU=ls-6a, LEVEL=2"
;
```

## **ERROR RESPONSES**

Refer to the **RTRV-HDR ERROR RESPONSES** section. The requirements listed there also apply to the **RTRV-MAP-NEIGHBOR** command.

If the network element receives a **RTRV-MAP-NEIGHBOR** with an otherwise valid set of input parameter values but the command could not be completed by the network element, the following error response is returned:

```
sid date time
M  ctag DENY
   SROF
/* Status, Requested Operation Failed */
;
```

## **RELATED COMMANDS**

**ENT-SYS**

**ENT-ULSDCC-L3**

**RTRV-SYS**

**RTRV-MAP-RING**

**RTRV-MAP-NETWORK**

**RTRV-ULSDCC-L3**

**SET-SID**

## NAME

**RTRV-MAP-NETWORK:** Retrieve Map Network.

This command is available for Releases 6.0 and later.

## INPUT FORMAT

For Releases 6.0 through 7.2:

**RTRV-MAP-NETWORK:***tid::ctag*[*:*[*:*]];

For Releases 8.0 and later:

**RTRV-MAP-NETWORK:***tid::ctag*[*:*[*:*level2]];

## DESCRIPTION



### CAUTION:

*For Releases 6.0 through 7.2, if there is a duplicate **dsne** condition at the time that this command is executed at the addressed NE, the returned report could be incorrect. Hence, the user is advised to ensure that such error conditions do not exist while attempting this command.*

This command will retrieve a list of all Network Elements in a subnetwork. When the Network Element receives a **RTRV-MAP-NETWORK** command from the user, the Network Element will return a report containing names (Target IDentifiers, or TIDs) of other NEs in the subnetwork, as well as other information about the NEs.

For Releases 8.0 and later, if this command is issued to an NE provisioned as a Level 2 IS, the report will list all neighboring NEs in its own area, as well as the neighboring Level 2 ISs in other areas. If this command is issued to an NE that is not provisioned as a Level 2 IS, the report will only list the neighboring NEs that are in its own area. If there is a DCC failure between the local NE and its neighboring NE, the neighbor NE entry will not appear in the report.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

|               |                                                                                                                                                  |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>level2</i> | Level 2. For Releases 8.0 and later, the valid values are:                                                                                       |
| <b>N</b>      | (default) The report will list the reachable NEs (including Level 2 ISs) in the local area only.                                                 |
| <b>Y</b>      | This value is only accepted if the local NE is provisioned as a Level 2 IS. The report will list the reachable Level 2 IS NEs, across all areas. |

## OUTPUT FORMAT

In response to a valid **RTRV-MAP-NETWORK** command, the following output report is returned.

```

sid date time
M ctag COMPLD
"spec_block"
. . .
. . .
"spec_block"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The parameters listed there also apply to the **RTRV-MAP-NETWORK** command. Additional parameters that apply specifically to this command response are defined below.

*spec\_block* Specific block. Parameters within the specific block are positionally independent and are specified using a name defined construct of: *PARAMETER=value* in a comma separated list. The parameters are listed and explained below.

For Releases 8.0 and later, the Network Element will return the parameters within the *spec\_block* in the following order for the local NE: TID, NSAP, LEVEL, PRODTYPE. The parameters will be in the following order for the remote NE: TID, NSAP, LEVEL.

**TID** This is the Target Identifier of the Network Element. If the NE is unable to determine a TID for a reachable NSAP, the parameter/value will be "TID=?".

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------|----------|----------------------------------------------------------|---------|----------------------------------------------------|----------|----------------------------------------------------|--------|-----------------------------------------------------|
| DCCSTATUS | For Releases 6.0 through 7.2, this field can take on the values of <code>good</code> or <code>failed</code> and indicates the status of the Data Communications Channel from the local system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| PRODTYPE  | Product Type. For Releases 6.0 through 7.2, this field identifies the product type of each network element in the subnetwork. Values for PRODTYPE can be one of the following: <table> <tr> <td>DDM-OC3</td><td>This identifies the network element as a DDM-2000 OC-3.</td></tr> <tr> <td>DDM-OC12</td><td>This identifies the network element as a DDM-2000 OC-12.</td></tr> <tr> <td>FT-2000</td><td>This identifies the network element as an FT-2000.</td></tr> <tr> <td>SLC-2000</td><td>This identifies the network element as a SLC-2000.</td></tr> <tr> <td>FbrRch</td><td>This identifies the network element as Fiber Reach.</td></tr> </table> <p>PF-2000 network elements only output the values specified above. A "?" (question mark) will be output for other product type values or if the data is unavailable for a particular network element. For Releases 8.0 and later, this field only identifies the product type of the local Network Element. This field only appears in the first entry of the report.</p> | DDM-OC3 | This identifies the network element as a DDM-2000 OC-3. | DDM-OC12 | This identifies the network element as a DDM-2000 OC-12. | FT-2000 | This identifies the network element as an FT-2000. | SLC-2000 | This identifies the network element as a SLC-2000. | FbrRch | This identifies the network element as Fiber Reach. |
| DDM-OC3   | This identifies the network element as a DDM-2000 OC-3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| DDM-OC12  | This identifies the network element as a DDM-2000 OC-12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| FT-2000   | This identifies the network element as an FT-2000.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| SLC-2000  | This identifies the network element as a SLC-2000.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| FbrRch    | This identifies the network element as Fiber Reach.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| NETYPE    | For Releases 6.0 through 7.2, this field can take on the values of <code>DSNE</code> , or <code>-</code> (dash) and indicates whether or not the system identified in the <b>TID</b> is serving as the Directory Service Network Element or not.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |
| ALARMGRP  | For Releases 6.0 through 7.2, this field can take on integer values from <code>0</code> or <code>255</code> and indicates the alarm group, or SONET maintenance sub-branch (SMSB), to which the listed NE belongs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                                                         |          |                                                          |         |                                                    |          |                                                    |        |                                                     |

|       |                                                                                                                                                                                                                                              |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | The alarm group identifies a set of NEs that exchange remote alarm information via one or more alarm gateway network elements. The value 0 is specially designated to mean the NE doesn't share alarm information with any other remote NEs. |
| NSAP  | NSAP address of the NE. For Releases 8.0 and later, the 20 bytes of the NSAP are displayed using 40 hexadecimal digits. Refer to the <b>ENT-ULSDCC</b> command for the format of the NSAP.                                                   |
| LEVEL | For Releases 8.0 and later, this field is a "2" if the NE is provisioned as the default Level 2 IS, otherwise this field is "1".                                                                                                             |

The first entry in the output report represents the local system; that is, the NE to which the command is addressed.

For Releases 8.0 and later, the other entries (after the local NE) in the report are sorted by TID values in alphabetical (ASCII) order.

For Releases 6.0 through 7.2, if the local ring is complete ("ring incomplete/open" is **not** reported), the next entries in the report represent the remaining nodes in the local ring, in west-to-east order.

For Releases 6.0 through 7.2, the other entries in the report represent all other Network Elements accessible via DCC channels. The entries are sorted first by Product Type with FT-2000 first, followed by DDM-OC3, DDM-OC12, SLC-2000 and FbrRch, with unrecognized network elements (represented by a question mark) last. They are further sorted within each Product Type by TID values in alphabetical (ASCII) order.

For Releases 6.0 through 7.2, if the local ring network is incomplete (the "ring incomplete" condition is reported by **RTRV-ALARM**, the local network element will appear first in the report and all remaining network elements will be sorted as described in the preceding paragraph.

Data which is unavailable for the report is represented by a question ("?.") mark (for example TID=?).

### EXAMPLE INPUT/OUTPUT

For Releases 6.0 through 7.2, the following FT-2000 OC-48 example requests the map of the subnetwork of which the local system is a part. The output shows a complete ring and subnetwork:

```
rtrv-map-network:LT-PF-2000::123456;
```

IP 123456  
<

LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD

```
"TID=LT-PF-2000,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=-,ALARMGRP=222"
"TID=RING-TID-2-GOES-HERE,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=-,ALARMGRP=222"
"TID=RING-TID-3-GOES-HERE,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=DSNE,ALARMGRP=222"
"TID=RING-TID-4-GOES-HERE,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=-,ALARMGRP=222"
"TID=NONRING-TID-HERE-0,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=-,ALARMGRP=222"
"TID=NONRING-TID-HERE-1,DCCSTATUS=good,PRODTYPE=FT-2000,NETYPE=-,ALARMGRP=222"
"TID=NONRING-TID-HERE-2,DCCSTATUS=good,PRODTYPE=DDM-OC3,NETYPE=-,ALARMGRP=222"
"TID=NONRING-TID-HERE-3,DCCSTATUS=failed,PRODTYPE=DDM-OC3,NETYPE=-,ALARMGRP=222"
"TID=NONRING-TID-HERE-4,DCCSTATUS=good,PRODTYPE=DDM-OC12,NETYPE=-,ALARMGRP=222"
```

**i.**

For Releases 8.0 and later, the following FT-2000 OC-48 example requests the map of the area that the local system is a part of.

```
rtrv-map-network:LT-PF-2000::123456;
```

IP 123456  
<

LT-PF-2000 96-10-26 16:42:11  
M 123456 COMPLD

```
"TID=LT-PF-2000, NSAP=39840F800000000000000000000000008006a1ad06e00, LEVEL=2, PRODTYPE=FT-2000"
```

```
"TID=NONRING-TID-HERE-0, NSAP=39840F800000000000000000000000000000e3a037200, LEVEL=1"
```

```
"TID=NONRING-TID-HERE-1, NSAP=39840F8000000000000000000000000000008006a1ad06f00, LEVEL=1"
```

```
"TID=RING-TID-2-GOES-HERE, NSAP=39840F800000000000000000000000000000e3a027300, LEVEL=1"
```

```
"TID=RING-TID-3-GOES-HERE, NSAP=39840F8000000000000000000000000000008006a1ad07f00, LEVEL=1"
```

```
"TID=RING-TID-4-GOES-HERE, NSAP=39840F800000000000000000000000000000000000e3a073200, LEVEL=2"
```

;

For Releases 8.0 and later, the following FT-2000 OC-48 example shows the use of the `level2 = "y"` input parameter.

```
rtrv-map-network:LT-PF-2000::123456;
IP 123456
<
    LT-PF-2000 93-10-26 16:42:11
M   123456 COMPLD
      "TID=LOCAL-TID-GOES-HERE, NSAP=39840F8000000000000000000000e06a1ad06e00, LEVEL=2,
PRODTYPE=FT-2000"
      "TID=RING-TID-2-GOES-HERE, NSAP=39840F800000000000000000000000e3a037200,
THRU=line-1w, LEVEL=2"
      "TID=RING-TID-3-GOES-HERE, NSAP=39840F800000000000000000000000e06a1ad06f00,
THRU=line-1e, LEVEL=2"
      "TID=OC-3-NEIGHBOR-1, NSAP=39840F800000000000000000000000e3a027300,
THRU=ls-1a, LEVEL=2"
      "TID=OC-3-NEIGHBOR-2, NSAP=39840F800000000000000000000000e06a1ad07f00,
THRU=ls-3b, LEVEL=2"
      "TID=OC-3-NEIGHBOR-3, NSAP=39840F800000000000000000000000e3a073200,
THRU=ls-6a, LEVEL=2"
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The requirements listed there also apply to the **RTRV-MAP-NETWORK** command.

If the network element receives an **RTRV-MAP-NETWORK** with an otherwise valid set of input parameter values but the command could not be completed by the network element, the following error response is returned:

```

    sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed */
:

```



For Releases 8.0 and later, if this command is issued to a Network Element that is not provisioned as a Level 2 IS, and the value of *LEVEL2* is set to "Y", the command will be denied with the following error message:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LEVEL2 */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

ENT-SYS

ENT-ULSDCC-L3

RTRV-SYS

RTRV-MAP-NEIGHBOR

RTRV-MAP-RING

RTRV-ULSDCC-L3

SET-SID

## NAME

**RTRV-MAP-RING:** Retrieve Map Ring

This command is available for Release 6.0 and later.

## INPUT FORMAT

**RTRV-MAP-RING:***tid::ctag;*

## DESCRIPTION

This command generates a report listing all network elements in the local OC-48 ring, based on the local FT-2000 Ring Directory Information Database (DIB).

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

In response to a valid **RTRV-MAP-RING** command, the following output report is returned to the user:

```
sid date time
M ctag COMPLD
  "spec_block"
    .
    .
    .
  "spec_block"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The requirements listed there also apply to the **RTRV-MAP-RING** command. In addition, the following requirements pertaining to the output parameters also apply to **RTRV-MAP-RING**.

*spec\_block* Specific block. This parameter field is used for returning the OC-48 ring map information. Parameters within the specific block are positionally independent and are specified using a name defined construct of: **PARAMETER=value** in a comma separated list. The parameters are listed and explained below.

**⇒ NOTE:**

The network element will return the parameters within the *spec\_block* in the following order:

For Releases 6.0 through 7.2, **TID, DSNE, DCCSTATUS, CONTINUITY**.

For Releases 8.0 and later, **TID, CONTINUITY, NSAP**.

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TID        | This is the Target identifier of each network element in the OC-48 ring.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DSNE       | For Releases 6.0 through 7.2, this field can take on the values of <b>yes</b> or <b>no</b> and indicates whether or not the system identified in the <b>TID</b> is serving as the directory service network element.                                                                                                                                                                                                                                                                                                                      |
| DCCSTATUS  | For Releases 6.0 through 7.2, this field can take on the values of <b>good</b> or <b>failed</b> and indicates the status of the data communications channel from the local system.                                                                                                                                                                                                                                                                                                                                                        |
| CONTINUITY | This field can take on the values of <b>good</b> , <b>ISOLATED</b> or dash ("-") and indicates whether or not the listed system is <b>ISOLATED</b> from the local system. Ring continuity for the local network element is always reported as <b>good</b> . This field will be dash ("-") if the ring is incomplete (that is, the "ring incomplete/open" condition is reported by <b>RTRV-ALARM</b> ). The local network element will be reported first. The remaining nodes in the local OC-48 ring are listed in an East-to-West order. |
| NSAP       | The NSAP address is a 20-byte (40 hexadecimal character) address required by OSI to provide unique identification within the subnetwork. The NSAP consists of a number of fields, some of which are pre-defined and some which are user-settable. Refer to the <b>ENT-ULSDCC-L3</b> TL1 command page for a complete description of the NSAP.                                                                                                                                                                                              |

Data which is unavailable for the report will be represented by a question ("?.") mark (for example, DCCSTATUS=?).

### **EXAMPLE OUTPUT**

For Releases 6.0 through 7.2, the following FT-2000 OC-48 example requests a map of a complete four node ring.

```
rtrv-map-ring:LT-FT-2000::123456;
```

```
IP 123456  
<
```

```
LT-FT-2000 93-10-26 16:42:11  
M 123456 COMPLD
```

```
"TID=LT-FT-2000, DSNE=yes, DCCSTATUS=good, CONTINUITY=good"  
"TID=RING-TID-2-GOES-HERE, DSNE=no, DCCSTATUS=good, CONTINUITY=good"  
"TID=RING-TID-3-GOES-HERE, DSNE=no, DCCSTATUS=good, CONTINUITY=good"  
"TID=RING-TID-4-GOES-HERE, DSNE=no, DCCSTATUS=good, CONTINUITY=good"  
;
```





**RELATED TL1 COMMANDS/MESSAGES**

ENT-ULSDCC-L3

|

RTRV-MAP-NETWORK

RTRV-MAP-NEIGHBOR

|

|

RTRV-ULSDCC-L3

|

## NAME

**RTRV-NE-SECU:** Retrieve-Network Element-Security

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV-NE-SECU:***tid::ctag*;

## DESCRIPTION

The **RTRV-NE-SECU** command can be initiated by users to retrieve network element global security information. The user can determine whether non-privileged user logins are allowed, whether the password aging interval is set and its value, and whether the login aging interval is set and its value.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If there is provisioned security information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
":, :spec_block"
;
```



## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

*spec\_block* Specific Parameter Block. This parameter field is used to report the network element global security attributes. Parameters within the *spec\_block* are specified using a name defined construct of: *PARAMETER=value* in a comma separated list.

For the **RTRV-NE-SECU** command, all of the following parameters are reported.

*ALW\_UID* Allow non-privileged user access. This parameter reports whether or not non-privileged user access to the network element is allowed. It can take one of the the following values.

YES This indicates that non-privileged users may access the network element.

NO This indicates that non-privileged users may **not** access the network element.

*PAGE*

*UOut* UID Aging Interval. This parameter reports the period in days during which a user has to login at least once to retain the login. At the end of this interval, the UID is disabled if during this interval it was never used to set up a session. It can take a value between 7 and 999, or 0. A 0 value disables the login aging mechanism.

## **EXAMPLE OUTPUT**

```
rtrv-ne-secu:LT-PF-2000::123456;  
IP 123456  
<  
    LT-PF-2000 97-03-22 16:12:12  
M 123456 COMPLD  
    ":, :ALW_UID=YES, PAGE=60, UOUT=90"  
;
```

## **ERROR RESPONSE**

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-NE-SECU** command, also.

## **RELATED TL1 COMMANDS/MESSAGES**

**ENT-NE-SECU**

## NAME

**RTRV-PM:** Retrieve-Performance Monitoring

This command is available for Releases 1.1 and later.

## INPUT FORMAT

For Releases 3.0 through 4.1:

**RTRV-PM**-*modifier:tid:aid:ctag:[montype],[monlev],*  
*[locn],[dirn],[tmper],[mondatt],[montm];*

For Releases 5.0 and later:

**RTRV-PM**-*modifier:tid:aid:ctag:[montype],[monlev],*  
*[locn],[dirn],[tmper],[mondatt],[montm];*

## DESCRIPTION

This command is initiated by an OS or OS user to request the network element to send the current and/or historical performance-monitoring (PM) data associated with one or more facilities.

For Releases 4.0 and later, performance monitoring data can be retrieved for all high speed and low speed transmission facilities supported by FT-2000 (OC-48, EC1, and DS3) as well as STS-1 path performance monitoring data.

## INPUT PARAMETERS

*modifier* For Releases 5.0 and later, this is the command code modifier and **must** have one of the following values:

**ALL** This requests all performance-monitoring information.



### CAUTION:

*For Releases 4.0 and later, use of **ALL** as the command code modifier may have a detrimental effect on the OS/NE network bandwidth. Lucent Technologies does not recommend the use of the **RTRV-PM-ALL** command. Upon receiving an **RTRV-PM-ALL** command, the network element could be required to transmit over 1 Megabyte of data from its performance-monitoring bins to report for one network element terminal. Furthermore, Bellcore strongly suggests to NMA users via SR-ST5-001665, Issue 2, that this command construct **not** be used due to the potential strain it may place on the OS/NE network bandwidth.*

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OC48</b>    | This requests performance-monitoring information at the optical carrier signal level 48 for an FT-2000 terminal.                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>OC12</b>    | For Releases 7.1 and later:<br>This requests performance-monitoring information at the optical carrier signal level 12.                                                                                                                                                                                                                                                                                                                                                                           |
| <b>OC3</b>     | This requests performance-monitoring information at the optical carrier signal level 3 for an FT-2000 terminal.<br><br>For Releases 7.1 and later:<br>The <b>OC3</b> modifier is also applicable for IS-3 circuit packs.                                                                                                                                                                                                                                                                          |
| <b>STS1</b>    | This requests performance-monitoring information at the synchronous transport signal level 1 for an FT-2000 terminal.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>EC1</b>     | This requests performance-monitoring information at the electrical carrier signal level 1 for an FT-2000 terminal.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>T3</b>      | This requests performance-monitoring information at the DS3 level for an FT-2000 terminal.                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>tid</i>     | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>aid</i>     | Access identifier. This is the address of the facility for which the performance-monitoring data is requested.<br><br>Refer to Table 3-7 at the end of this section for list of valid addresses.<br><br>For Releases 4.0 and later, the <i>aid</i> value must be <b>ALL</b> or specify a valid facility address for which the <b>RTRV-PM modifier</b> value applies. If the <b>RTRV-PM</b> modifier value is <b>ALL</b> , the <i>aid</i> value must be <b>ALL</b> .                               |
| <i>ctag</i>    | Correlation tag. This is included in the command by the OS and is repeated by the network element in the response to allow the OS to associate the command and response messages.                                                                                                                                                                                                                                                                                                                 |
| <i>montype</i> | Monitored type. For Releases 3.0 through 6.0, this is the PM parameter type for which PM data is requested.<br><br>Refer to Table 3-9 at the end of this section for a list of valid values.<br><br>If <i>montype</i> is null, the network element will respond with all performance monitoring data applicable to the <i>modifier</i> and <i>aid</i> . If the modifier is <b>OC3</b> but the equipped circuit pack is an IS3, the LBCL, LPR, and LPT <i>montype</i> will <b>NOT</b> be reported. |

*mon lev* Discriminating monitored parameter level. For Releases 3.0 and later, *mon lev* provides the level and direction which are used to discriminate which PM data is being requested. This parameter may be null or have one of the following values:

**1-UP** A **1-UP** *mon lev* value means that the network element reports only positive, nonzero data.

**0-UP** A **0-UP** *mon lev* value means that the network element reports data on all requested PM parameters without regard for their value.



**NOTE 1:**

All network element PM data can have only non-negative values. A null value for *mon lev* defaults to **1-UP**.



**NOTE 2:**

The *LBCL* (Laser Bias Current) PM parameter is reported regardless of what the input *mon lev* parameter value is. The *mon lev* parameter does not apply to *LBCL* because *LBCL* is represented as a fractional number ("real-valued") and is non-zero in the nominal case.

*locn* Location being monitored for performance. For Releases 4.0 and later, this parameter may be null or have one of the following values:

**NEND** Near end performance monitoring data is requested. A *locn=NEND* value is applicable to all the network element near end performance monitoring parameters.

**FEND** Far end performance monitoring data is requested. This value is applicable to FT-2000 far end performance monitoring parameters (applicable for *modifier=STS1* only).

If the *locn* value is null, *locn* will be assigned the value **NEND**.

*dirn* Direction of monitoring. For Releases 4.0 and later, this parameter may be null or have one of the following values:

**NA** Not applicable (default value)

**RCV** Receive side only

**AZ** A-Z direction only.

If the *dirn* value is null, the default value is used.

**⇒ NOTE:**

In the implementation, the use of the **NA**, **RCV**, and the **AZ** values for *dirn* are functionally the same. Bellcore TR-833, Issue 3 used the term **AZ** to specify the "A-to-Z" direction, and other (**ZA**) to specify the "Z-to-A" direction of collection of performance monitoring. In an attempt to clarify their usage, TR-833, Issue 4 uses the terms **RCV** and **TRMT** to accomplish the same thing. To maintain full compatibility with surveillance OSs designed to be compliant to TR-833, our product supports (and equates) both **AZ** and **RCV**.

In general, all monitored parameters for the network element apply strictly to the **RCV** direction of transmission, including far end performance monitoring data (see *locn=FEND*, above). Two possible exceptions are the **OPT** (optical power transmitted) and **STS-1** far end path performance monitoring parameters. **OPT** is compliant with Bellcore TR-833, Issues 3 and 4, and suffices without the need to use the *dirn=TRMT* construct.

*tper* Time period. For Releases 3.0 and later, this requests PM data information for a specified time interval. This parameter may be null or have one of the following values:

**15-MIN** This requests PM data in 15-minute intervals (default).

**1-DAY** This requests daily PM data.

If the *tper* value is blank, the network element responds to the OS using the default value.

*mondatt* Monitored date. For Releases 5.0 and later, this requests the beginning date of the interval for which the PM data is to be reported. This has the format MM-DD (month-day). For a *tmper* value of 15-MIN, the maximum allowable range of valid dates supported by *mondatt* include the current and previous one day. For a *tmper* value of 1-DAY, the maximum allowable range of valid dates supported by *mondatt* include the current and previous six days. This parameter may be null or have one of the following values:

**MM-DD** Month-day

**ALL** Current and previous day(s), as described above.

For Releases 5.0 and later, the default value for *mondatt* is the current date. If the *mondatt* value is blank or specifies a date other than the current date or the previous day(s)'s date, as described above, the network element responds to the OS using the default *mondatt* value.

*montm* Monitored time. For Releases 3.0 and later, this specifies the beginning time of day of the requested performance-monitoring period specified in *tmper*. This has the format HOD-MOH (hour of day-minute of hour), where the HOD range is from 0 to 23 and the MOH range is from 0 to 59. This parameter may be null or have one of the following values:

**HOD-MOH** Hour of day-minute of hour

**ALL** All applicable beginning times for the given *mondatt* value.

For Releases 3.0 and later, the default value value for *montm* is the current HOD-0. If the *montm* value provided does not correspond exactly to the network element PM reporting boundary, the value is *rounded up* to the next applicable boundary (for example, **01-03** for a 15-minute PM data is rounded up to **01-15**). If the *tmper* value is **1-DAY** then the *montm* parameter is not used.

Table 3-4 specifies the performance-monitoring data output based on the input values of *mondatt*, *tmper*, and *montm* parameters. The term "other" is used to refer to any input value that is not covered by another entry for the subject parameter. The term "any" is used to refer to any input value, including "other" and null (no value), for the subject parameter.

**Table 3-4. RTRV-PM Output Data Relating to MONDAT, TMPER, and MONTM Input Parameters**

| TMPER            | MONDAT                             | MONTM                                                                            | Output PM Data                                                                                                                                                           |
|------------------|------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 - MIN or null | ALL                                | any                                                                              | 15 min. data from the present time to the previous 8.25 hours                                                                                                            |
| 15 - MIN or null | current day or null                | ALL                                                                              | 15 min. data from the present time to the previous midnight or 8.25 earlier than the present, whichever is more recent.                                                  |
| 15 - MIN or null | previous day                       | ALL                                                                              | 15 min. data from the previous midnight to 8 hours earlier than the present time. If the current time is later than 8:15 A.M., return an error response (invalid MONTM). |
| 15 - MIN or null | previous day, current day, or null | value of MONDAT and MONTM within 8.25 hours of current time                      | single 15 min. interval of data beginning at MONDAT and MONTM                                                                                                            |
| 15 - MIN or null | current day, previous day, or null | value of MONDAT and MONTM more than 8.25 hours before the current time, or other | return error response (invalid MONTM)                                                                                                                                    |



**Table 3-4. RTRV-PM Output Data Relating to MONDAT, TMPER, and MONTM Input Parameters (Contd)**

| TMPER          | MONDAT                           | MONTM                                                                            | Output PM Data                                                |
|----------------|----------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------|
| 15-MIN or null | other                            | value of MONDAT and MONTM within 8.25 hours of the current time                  | single 15 min. interval of data beginning at MONDAT and MONTM |
| 15-MIN or null | other                            | value of MONDAT and MONTM more than 8.25 hours before the current time, or other | return error response (invalid MONTM)                         |
| 1-DAY          | ALL                              | any                                                                              | current and previous 1-day data                               |
| 1-DAY          | current day or null              | any                                                                              | current 1-day data                                            |
| 1-DAY          | any one of the previous six days | any                                                                              | appropriate previous 1-day data                               |
| 1-DAY          | other                            | any                                                                              | current 1-day data                                            |
| other          | any                              | any                                                                              | return error response (invalid TMPER)                         |

**OUTPUT FORMAT**

After receiving a valid **RTRV-PM** command, the following output message is returned:

```
      sid date time
M  ctag COMPLD
   "aid,aidtype:montype,monval,[stat],[locn],[dirn],tmper,[mondatt],[montm]"
      :           :           :           :           :
      :           :           :           :           :
   "aid,aidtype:montype,monval,[stat],[locn],[dirn],tmper,[mondatt],[montm]"
;
```

Applicable output lines are ordered as follows:

1. By *aid* in order corresponding to the shelf architecture.
2. By requested time intervals, starting with the current time interval.
3. By applicable PM parameters per *aid*.

If there is no data to return for the given valid **RTRV-PM** command, the following message is returned:

```
      sid date time
M  ctag COMPLD
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*aid* Access identifier. This is the address of the facility for which the PM data is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*aidtype* Access identifier type. This has one of the following values:

**OC48** This reports performance-monitoring information at the optical carrier signal level 48.

**OC12** For Releases 7.1 and later:  
This reports performance-monitoring information at the optical carrier signal level 12.

**OC3** This reports performance-monitoring information at the optical carrier signal level 3.

**STS1** This reports performance-monitoring information at synchronous transport signal level 1.

**EC1** This reports performance-monitoring information at the electrical carrier signal level 1.

**T3** This reports performance-monitoring information at the DS3 level.

*montype* Monitored parameter type. For Releases 3.0 and later, this has one of the values specified in Table 3-9 located at the end of this section.

*monval* Monitored value. For Releases 3.0 and later, this contains the measured value of the parameter specified in *montype*.

*stat* Status indicator. For Release 7.0, *stat* indicates the validity of the PM data or if threshold has been exceeded by the PM data. This parameter may be null or have one of the following values:

**NA** Data is not available. This includes counts not available because of trouble conditions that cause performance-monitoring to be suspended. *vldty* is set to **NA** for *montype*=LBCL, LPR, and LPT when data has not yet been collected.

**PRTL** Data is partial, accumulated over some portion of the requested time period. This includes counts that overflow their registers.

TCA      Threshold Crossing Alert. If the status is null, the data is valid and below the threshold level for that parameter.

For **stat**, *OVFL* has a higher priority than *TCA* and *TCA* has a higher priority than *PRTL*.

*locn*      Location. For Releases 4.0 and later, the location field may be null (NEND), or have one of the following values:

NEND      For near end performance data.

FEND      For far end STS-1 path performance data.

*dirn*      Direction. The direction field is always null.

*tmper*      Time period. This parameter has the value 15-MIN or 1-DAY.

*mondat*      Monitored date. This is the beginning date of the interval for which PM data is reported. This parameter has the format MM-DD (month-day).

*montm*      Monitored time. This is the beginning time of the interval for which the PM data is reported. This parameter has the format HOD-MOH (hour of day-minute of hour).

**EXAMPLE OUTPUT**

In the following example, the command returns B2 EC-1 line coding violations (CV-L) performance monitoring data for the east and west OC-48 lines at 15 minute intervals on October 26, starting at 17:00.

```
rtrv-pm-oc48:LT-FT-2000:line-all:314152::CVL,, ,15-MIN,10-26;
```

```
IP 314152
```

```
>
```

```
LT-FT-2000 91-10-26 17:12:31
```

```
M 314152 COMPLD
```

```
"line-1e,OC48:CVL,7,, ,15-MIN,10-26,17-00"
```

```
"line-1w,OC48:CVL,1357,, ,15-MIN,10-26,17-00"
```

```
;
```

In the following example, the command requests far-end path unavailable seconds performance monitoring data for the three STS-1s in STS-3 tributary 6 on the east OC-48 line for the current and previous six days. Of the three, only one STS-1 tributary has any non-zero count of far end unavailable seconds, and not all days have non-zero counts.

```
rtrv-pm-sts1:LT-FT-2000:sts1-1e-6-all:123XYZ:UASP,1-up,FEND,,1-Day,all;
```

```
IP 123XYZ
```

```
>
```

```
LT-FT-2000 91-10-26 17:12:31
```

```
M 123XYZ COMPLD
```

```
"sts1-1e-6-2,STS1:UASP,3,PRTL,FEND,,1-DAY,10-26,00-00"
```

```
"sts1-1e-6-2,STS1:UASP,427,,FEND,,1-DAY,10-25,00-00"
```

```
"sts1-1e-6-2,STS1:UASP,12,,FEND,,1-DAY,10-22,00-00"
```

```
"sts1-1e-6-2,STS1:UASP,17,,FEND,,1-DAY,10-20,00-00"
```

```
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-PM** command, also.

For Releases 4.0 and later, if the network element receives an **RTRV-PM** command without an *aid* value or with an *aid* value that is invalid for the *modifier* provided, the following error response is returned:

```
      sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid Access Identifier */
;
```

If the network element receives an **RTRV-PM** command with a *montype* value that is not supported by network element, the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid MONTYPE */
;
```

For Releases 7.1 and later:

If the network element receives an **RTRV-PM** command with a *montype* value of LBCL, LPR, or LPT when the slot addressed by the *aid* is equipped with an IS3 circuit pack, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, MONTYPE invalid for IS3 */
;
```

If the network element receives an **RTRV-PM** command with a *tmper* value other than **15-MIN**, **1-DAY** or null, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid TMPER */
/*
;
```

For Releases 3.0 and later, if the network element receives an **RTRV-PM** command with a *mon lev* value of anything other than null, **0-UP** or **1-UP**, the following error response is returned:

```
      sid date time
M    ctag DENY
      IDNV
      /* Input, Data Not Valid, invalid MONLEV */
      ;
```

For Releases 5.0 and later, if an FT-2000 terminal receives an **RTRV-PM** command with a *locn* value of anything other than null, **NEND**, or **FEND**, the following error response is returned:

```
      sid date time
M    ctag DENY
      IDNV
      /* Input, Data Not Valid, invalid LOCN */
      ;
```



For Releases 5.0 and later, if the network element receives an **RTRV-PM** command with a *dirn* value of anything other than null, **AZ**, **NA**, or **RCV**, the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid DIRN */
;
```

For Releases 5.0 and later, if the network element receives an **RTRV-PM** command with an invalid *montm* value, the following error response is returned:

```
      sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid MONTM */
;
```

For Releases 5.0 and later, if the network element receives an **RTRV-PM** command with an invalid *mondatt* format, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid MONDAT */
;
```

## RELATED TL1 MESSAGES

SET-TH

RTRV-TH

## NAME

**RTRV-PM-STIME:** Retrieve-Performance Monitoring-Start Time

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV-PM-STIME:***tid::ctag*;

## DESCRIPTION

The **RTRV-PM-STIME** command can be initiated by all users to retrieve the start time for measuring the day bins.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

When reporting the provisioning information, the following output message is returned:

```
sid date time
M ctag COMPLD
  ":start_hour"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

|                   |                                                                                                                                                                                                                                                                 |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>start_hour</i> | Day Bin Start Hour, This position defined parameter reports the start hour for day bin measurements. It is reported in HH-00 format, where HH is the provisioned start time hour and has valid values from 00 to 23, and the minutes are always reported as 00. |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## EXAMPLE INPUT/OUTPUT

```
rtrv-pm-stime:LT-PF-2000::123456;  
  
IP 123456  
<  
  
LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
":23-00"  
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **RTRV-PM-STIME** command, also.

## RELATED TL1 MESSAGES

**SET-PM-STIME**

**RTRV-PM**

## NAME

**RTRV-PROT-rr**: Retrieve Protection Access Attribute

Support for this command is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV-PROT-rr**:*tid*[:*aid*]:*ctag*;

## DESCRIPTION

**RTRV-PROT-rr** command instructs an NE to retrieve the current values of the protection access attributes for its high speed protection tributaries.

## INPUT PARAMETERS

*modifier* This is the command code modifier and must have one of the following values:

**STS1** This requests the protection access attribute for STS-1 level protection tributaries.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the high speed protection tributary(s) for which the protection access attribute(s) are desired. The value **all** is valid as a component of the *aid* for this command and requests retrieval of the protection access attribute of all applicable protection tributaries in the local NE. If no *aid* is given, the aid value will default to **all**. This address specifies a set of STS-1 tributaries.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages.

## OUTPUT FORMAT

If there are protection access attributes to report, the following output report is returned:

```
sid date time
M ctag COMPLD
  "aid, aidtype: protacc"
    .
    .
    .
  "aid, aidtype: protacc"
;
```

Applicable output lines are ordered first by high speed protection line(s) with **west** before **east**, then by tributary.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response shall be as specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. The remainder of the output parameters are described below.

- aid* Access identifier. This is the address of the tributary whose protection access attribute is being reported.
- aidtype* Access identifier type. This has the following value:  
STS1
- protacc* Protection Access. This is the value of the protection access attribute associated with the addressed tributary and has one of the following values:
- preemptible* The tributary is available for use during high speed protection switching.
  - temporary* The tributary is unavailable for use during high speed protection switching, and a condition is reported to reflect this fact.
  - permanent* The tributary is unavailable for use during high speed protection switching, and no condition is reported to reflect this fact.

### EXAMPLE INPUT/OUTPUT

The following is an FT-2000 example of retrieving the protection access attribute values of all the STS-1 tributaries of STS-3 #11 of the west high speed line:

```
RTRV-PROT-STs1:LT-FT-2000:sts1-1w-11-all:123456;  
IP 123456  
<  
    LT-FT-2000 97-10-26 16:42:11  
M 123456 COMPLD  
    "sts1-1w-11-1, STS1:permanent"  
    "sts1-1w-11-2, STS1:preemptible"  
    "sts1-1w-11-3, STS1:temporary"  
;
```

The following is an FT-2000 example of retrieving the protection access attribute values of all the tributaries of the east high speed line. Note that no output is produced for service tributaries.

```
RTRV-PROT-STS1:LT-FT-2000:sts1-1e-all:123456;  
IP 123456  
<  
  LT-FT-2000 97-10-26 16:42:11  
M 123456 COMPLD  
  "sts1-1e-9-1,STS1:preemptible"  
  "sts1-1e-9-2,STS1:preemptible"  
  "sts1-1e-9-3,STS1:preemptible"  
  "sts1-1e-10-1,STS1:preemptible"  
  "sts1-1e-10-2,STS1:preemptible"  
  "sts1-1e-10-3,STS1:permanent"  
  "sts1-1e-11-1,STS1:preemptible"  
  "sts1-1e-11-2,STS1:preemptible"  
  "sts1-1e-11-3,STS1:preemptible"  
  "sts1-1e-12-1,STS1:permanent"  
  "sts1-1e-12-2,STS1:permanent"  
  "sts1-1e-12-3,STS1:preemptible"  
  "sts1-1e-13-1,STS1:preemptible"  
  "sts1-1e-13-2,STS1:preemptible"  
  "sts1-1e-13-3,STS1:preemptible"  
  "sts1-1e-14-1,STS1:preemptible"  
  "sts1-1e-14-2,STS1:preemptible"  
  "sts1-1e-14-3,STS1:preemptible"  
  "sts1-1e-15-1,STS1:permanent"  
  "sts1-1e-15-2,STS1:permanent"  
  "sts1-1e-15-3,STS1:permanent"  
  "sts1-1e-16-1,STS1:preemptible"  
  "sts1-1e-16-2,STS1:temporary"  
  "sts1-1e-16-3,STS1:preemptible"  
;
```



## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-PROT-rr** command, also.

If the network element receives a **RTRV-PROT-rr** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

The input *aid* is invalid if it does not refer to high speed tributaries or if its expansion does not include at least one protection tributary.

## RELATED TL1 MESSAGES

**ENT-PROT-rr**

**RTRV-rr**

**RTRV-STATE**

## NAME

**RTRV-PROTN-LINE:** Retrieve Protection Line.

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV-PROTN-LINE:** *tid::ctag*;

## DESCRIPTION

This command can be initiated by users to retrieve the network element's line protection switching characteristics.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the network element fully complies with the command request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
":WTR=wtr"
;
```

## OUTPUT PARAMETERS

Refer to the the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The parameters listed there apply to this command, also.

Additional parameters that specifically apply to this command are defined below.

*wtr* Wait To Restore. This indicates the amount of time that will transpire between when the defect that caused the line protection switch is cleared and when the line protection switch is released. It is reported as *WTR=xx* where *xx* is a value in the range 0-12 minutes. A value of 0 implies that the wait to restore feature is disabled.

## EXAMPLE INPUT/OUTPUT

The following example retrieves the line protection switching characteristics.

```
RTRV-PROTN-LINE:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 98-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
":WTR=5"
```

```
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to this command, also.

## RELATED TL1 COMMANDS/MESSAGES

**ENT-PROTN-LINE**

## NAME

**RTRV-PROTN-LS:** Retrieve Protection Low Speed.

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**RTRV-PROTN-LS:** *tid::ctag*;

## DESCRIPTION

This command can be initiated by users to retrieve the network element's low speed protection switching characteristics.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If there are any low speed protection switching characteristics to report, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
":WTR=wtr"
;
```

## OUTPUT PARAMETERS

Refer to the the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The parameters listed there apply to this command, also.

Additional parameters that specifically apply to this command are defined below.

*wtr* Wait To Restore. This indicates the amount of time that will transpire between when the defect that caused the low speed protection switch is cleared and when the low speed protection switch is released. It is reported as WTR=xx where xx is a value in the range 0-12 minutes. A value of 0 implies that the wait to restore feature is disabled.

## EXAMPLE INPUT/OUTPUT

The following example retrieves the low speed protection switching characteristics.

```
RTRV-PROTN-LS:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 98-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
":WTR=5"
```

```
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to this command, also.

## RELATED TL1 COMMANDS/MESSAGES

**ENT-PROTN-LS**

## NAME

**RTRV-PTHTRC-rr**: Retrieve Path Trace.

Support for this command is available in FT-2000 OC-48 Release 6.0 and later.

## INPUT FORMAT

**RTRV-PTHTRC-rr**:*tid*[:*aid*]:*ctag*[:*msgtype*];

## DESCRIPTION

**RTRV-PTHTRC-rr** commands can be initiated to retrieve the provisioned transmit and receive path traces, the status of the path trace, and the actual receive path trace, if available. This command retrieves path trace information pertaining to the addressed path terminating entity in a line-by-line format.

## INPUT PARAMETERS

|                |                                                                                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>rr</i>      | This is the message modifier to the <b>RTRV-PTHTRC-rr</b> message and may only have the following value:<br><br><b>STS1</b> This requests the STS-1 path trace information from the addressed path terminating entity.                                                |
| <i>tid</i>     | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                         |
| <i>aid</i>     | This is the low speed <i>port</i> address of the SONET path terminating signal for which the path trace is requested.<br><br>If null, the <i>aid</i> defaults to all.<br><br>Refer to Table 3-7 at the end of this section for a list of valid <i>port</i> addresses. |
| <i>ctag</i>    | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                 |
| <i>msgtype</i> | Message type. This is the type of message to be retrieved.<br><br><i>msgtype</i> must be <b>ALL</b> (default) or null.                                                                                                                                                |

## OUTPUT FORMAT

If there is path trace information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  aid=low speed port,status=x, label=x,
  INCTRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ ",
  EXPTRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ ",
  TRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ ",
      .      .      .      .      .      .      .      .      .
      .      .      .      .      .      .      .      .      .
aid=low speed port,status=x, label=x,
INCTRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ ",
EXPTRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ ",
TRC="\xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\ "
;
```

The output message line length is limited to 80 characters irrespective of the length of the trace to be reported.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for normal completion response. The output parameters listed there apply to the **RTRV-PTHTRC-rr** command, also.

Additional parameters that specifically apply to this command response are defined below.

|        |                                                                                                                                                                                            |                                                                                                 |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| aid    | Access Identifier. This is the address of the signal for which the path trace is reported.<br><br>Refer to Table 3-7 at the end of this section for a list of valid <i>port</i> addresses. |                                                                                                 |
| status | Path Trace Status. This is a status report of the incoming trace. For <b>RTRV-PTHTRC-rr</b> messages <i>status</i> can take one of the following values.                                   |                                                                                                 |
|        | GOOD                                                                                                                                                                                       | Good. This indicates that the INCTRC and the EXPTRC match.                                      |
|        | MISMATCH                                                                                                                                                                                   | Mismatch. This indicates that the INCTRC and the EXPTRC do not match.                           |
|        | UNAVAILABLE                                                                                                                                                                                | Unavailable. This indicates that there is no INCTRC because there has been a path interruption. |
|        | NOT_APPLICABLE                                                                                                                                                                             | Not Applicable. This indicates that the <i>aid</i> chosen does not have a trace capability.     |
| label  | STS payload signal label. This is the description string from the Path Signal Label byte (C2). The following STS payload strings are provided.                                             |                                                                                                 |
|        | a. unequipped                                                                                                                                                                              |                                                                                                 |
|        | b. equipped-non specific payload                                                                                                                                                           |                                                                                                 |
|        | c. floating VT mode                                                                                                                                                                        |                                                                                                 |
|        | d. locked VT mode                                                                                                                                                                          |                                                                                                 |
|        | e. async mapping for DS3                                                                                                                                                                   |                                                                                                 |
|        | f. byte observable SYNTRAN                                                                                                                                                                 |                                                                                                 |
|        | g. DS4NA async mapping                                                                                                                                                                     |                                                                                                 |
|        | h. mapping for ATM                                                                                                                                                                         |                                                                                                 |



- i. async mapping FDDI
- j. mapping for DQDB
- k. unknown payload type.

If the INCTRC is UNAVAILABLE, a question mark (" ") is reported for the label.

If the INCTRC is NOT\_APPLICABLE, a dash ("-") is reported for the label.

**INCTRC** Incoming Path trace message. This indicates the incoming Path Trace (J1) content. The INCTRC is a string of the first 62 ASCII characters received in the path trace bytes (J1) of the SONET signal. The terminating carriage return (<cr>) and line feed (<lf>) are displayed as "??".

The 63rd and the 64th character positions of every trace message are fixed as <cr> and <lf>, respectively.

If the INCTRC is UNAVAILABLE, a question mark (" ") is reported for the INCTRC.

If the INCTRC is NOT\_APPLICABLE, a dash ("-") is reported for the INCTRC.

If there are invalid characters or there is no CR/LF in a non-null INCTRC, the status will be set to MISMATCH.

**EXPTRC** Expected incoming Path trace message. This indicates the expected Path Trace (J1) content. The EXPTRC is a string of the first 62 ASCII characters received in the path trace bytes (J1) of the SONET signal. The terminating carriage return (<cr>) and line feed (<lf>) are displayed as "??".

If no EXPTRC has been provisioned, the EXPTRC is all nulls and will be displayed as EXPTRC=\\ \".

If there are invalid characters or there is no CR/LF in a provisioned EXPTRC, the status will be set to MISMATCH.

**TRC** Outgoing Path trace message. This identifies the path trace message to be transmitted. The trace byte (J1) continuously transmits a 64 byte fixed length, ASCII string, one byte at a time. The TRC is a string of the first 62 ASCII characters to be transmitted in the path trace bytes (J1) of the SONET signal. The terminating carriage return (<cr>) and line feed (<lf>) are displayed as "??".

If no TRC has been provisioned, the TRC is all nulls and will be displayed as TRC=\\ \".

If there are invalid characters or there is no CR/LF in a provisioned TRC, the status will be set to MISMATCH.

HEXTRC Hexadecimal outgoing path trace. The ASCII characters allowed for the path trace are letters "A" through "Z" and "a" through "z", numbers "0" through "9", and special characters: "#" (pound), "\$" (dollar), "%" (percent), "&" (ampersand), "\*" (asterisk), "(" (open parenthesis), ")" (close parenthesis), "+" (plus), "|" (pipe), "-" (hyphen), "[" (open square bracket), "]" (close square bracket), "{" (open bracket), "}" (close bracket), "'" (apostrophe), "`" (grave accent), "." (period), "/" (slash), "<" (less than), and ">" (greater than).

All non-printable characters in the trace messages will be mapped to question mark ("?",) in the output. Nulls and spaces will be displayed as space ("~").

## EXAMPLE INPUT/OUTPUT

The example below shows the response to by the user concerning all three DS3 ports associated with slot "ls-1a". The first DS3 port has a status of GOOD, the second DS3 port has a status of MISMATCH, and the third DS3 port has a status of GOOD.

```
RTRV-PTHTRC-STS1:LT-PF-2000:ls-1a-all:123456;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
"ls-1a-1,status=GOOD,label=async mapping for DS3,  
INCTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]}&+|. ' ??\",  
EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]}&+|. ' ??\",  
TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",  
ls-1a-2,status=MISMATCH,label=async mapping for DS3,  
INCTRC=\"?????pectedmnopqrstuvwxyz????????????????????????????\",  
EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]}&+|. ' ??\",  
TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",  
ls-1a-3,status=GOOD,label=async mapping for DS3,  
INCTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]}&+|. ' ??\",  
EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]}&+|. ' ??\",  
TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\""  
;
```

The example below shows the response to by the user concerning all three low speed ports associated with slot "ls-2a". All three low speed ports have a status of NOT\_APPLICABLE indicating that the interface circuit pack in slot "ls-2a" is not a path terminating circuit pack.

```
RTRV-PTHTRC-STS1:LT-PF-2000:ls-2a-all:123456;
```

```
IP 123456
<
```

```
LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
  "ls-2a-1,status=NOT_APPLICABLE,label=-,
  INCTRC= -
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]})&+|.-' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",
  ls-2a-2,status=NOT_APPLICABLE,label=-,
  INCTRC= -
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]})&+|.-' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",
  ls-2a-3,status=NOT_APPLICABLE,label=-,
  INCTRC= -
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<({[>]})&+|.-' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\"
;
```

The example below shows the response to by the user concerning all three low speed ports associated with slot "ls-3b". All three low speed ports have a status of UNAVAILABLE indicating that the that each path has been interrupted.

```
RTRV-PTHTRC-STS1:LT-PF-2000:ls-3b-all:123456;
```

```
IP 123456
<
```

```
LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
  "ls-3b-1,status=UNAVAILABLE,label=?,
  INCTRC= ?
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<{[>]}&+|. - ' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",
  ls-3b-2,status=UNAVAILABLE,label=?,
  INCTRC= ?
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<{[>]}&+|. - ' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\",
  ls-3b-3,status=UNAVAILABLE,label=?,
  INCTRC= ?
  EXPTRC=\"AID1Expectedmnopqrstuvwxyzabcdefghijkl#*%<{[>]}&+|. - ' ??\",
  TRC=\"ProvisionedOutgoingTraceyzabcdefghijklmnopqrstuvwxyz ??\"
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error response section. The error responses listed there apply to the **RTRV-PTHTRC-rr** command, also.

If an **RTRV-PTHTRC-rr** command is received with a *modifier* value other than **STS1**, the following error response is returned:

```
sid date time
M ctag DENY
ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If an **RTRV-PTHTRC-rr** command is received with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If an **RTRV-PTHTRC-rr** command is received with a *msgtype* value other than **ALL** or null, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid MSGTYPE */
;
```

#### RELATED TL1 COMMANDS/MESSAGES

**ENT-rr**

**ENT-STS1**

**ENT-CRS-rr**

## NAME

**RTRV - rr**: Retrieve Attributes and State Information for transmission objects.

Support for this command is available in Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1 (only):

```
RTRV -modifier:[tid]:aid:ctag[:[type]  
[:[common_block][:[spec_block][:state_block]]]]];
```

For Releases 5.0 and later:

```
RTRV -modifier:tid:aid:ctag[:[type]  
[:[common_block][:[spec_block][:state_block]]]]];
```

## DESCRIPTION

**RTRV - rr** command messages can be initiated by a user to retrieve the current provisioned state of the network element's low speed ports and slots as well as the current state and equipage of the low speed slots. This command retrieves all low speed port or slot parameter settings that are provisionable via the **ENT - rr** command pertaining to the addressed network element, reported one line per low speed port or slot.

In addition to the low speed port and slot information available in earlier releases, **RTRV - rr** command messages can be initiated by a user to retrieve the current provisioned state, operational state and equipage of the high speed lines. This command retrieves all high speed line parameter settings that are provisionable via the **ENT - rr** command.

For Releases 7.1 and later, **RTRV - rr** command messages can be initiated by a user to retrieve the current provisioned state, operational state and equipage of the OC-12 low speed interface. This command retrieves all OC-12 interface parameter settings that are provisionable via the **ENT - rr** command.

## INPUT PARAMETERS

- modifier* This is a message modifier to the **RTRV-rr** message and may have one of the following values:
- ALL** low speed slot and port provisioning parameters.  
  
For Releases 7.1 and later, this requests all high speed line, low speed slot, port, quad, and tributary protection access parameters.
  - LS** This requests low speed slot provisioning parameters.
  - EC1** This requests port provisioning parameters at the electrical carrier signal level 1 (also known as "STS1E").
  - T3** This requests port provisioning parameters at the DS3 level.
  - OC48** For Releases 7.1 and later:  
This requests high speed line provisioning parameters at the optical carrier signal level 48.
  - OC12** For Releases 7.1 and later:  
This requests port provisioning parameters at the optical carrier signal level 12.
  - OC3** This requests port provisioning parameters at the optical carrier signal level 3.  
  
For Releases 7.1 and later:  
The **OC3** modifier is also applicable for IS-3 slots and ports.
  - T1** For Releases 7.1 and later:  
This requests protection switching state parameters for the DS1 input timing ports.

If no message *modifier* is provided, the network element interprets the *modifier* to be **ALL**.

For all of the remaining parameters, it is implied that the *modifier* must match the port, slot or quad addresses by *aid* and that all parameters requested by the command must be applicable to the *modifier* type.



|             |                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                                     |
| <i>aid</i>  | Access identifier. This is the address of the entity for which the current provisioned and state values are requested. The <i>aid</i> must match the <i>modifier</i> for the command to be accepted.<br><br>If the <i>modifier</i> is <b>ALL</b> or null, the <i>aid</i> must be <b>ALL</b> .<br><br>Refer to Table 3-7 at the end of this section for a list of valid addresses. |
| <i>ctag</i> | Correlation tag. This is included in the command by the OS and is repeated by the NE in the response to allow the OS to associate the command and response messages.                                                                                                                                                                                                              |
| <i>type</i> | Type. The <i>type</i> parameter must be null.                                                                                                                                                                                                                                                                                                                                     |

Some additional input parameters and parameter blocks, specifically the [*spec\_block* and *state\_block*], may be included. However, the NE will respond to the OS without limiting the response based on these input parameters.

The rules regarding these additional input parameters are as follows:

- The *common\_block* must be null
- The *spec\_block* parameters must be among those supported by the NE in the **ENT-rr** TL1 command and follow the formatting rules provided in the **ENT-rr** command description
- The *state\_block* parameters must follow the appropriate formatting requirements for primary state and secondary state, as specified in the **ENT-rr** TL1 command description.

Since the system currently does not filter/screen the output based on the common block, specific block, and state block parameters, the command is accepted by the system irrespective of valid or invalid values for these parameters.

## OUTPUT FORMAT

Because the network element supports pre-provisioning of parameters, lines are included for all applicable *aid* values in response to the **RTRV-rr** command, whether or not the present equipage is capable of supporting the type of facility specified by the *modifier* value.

Leading carriage returns (<cr>), line feeds (<lf>), and spaces ( ) are explicitly shown. Line wrapping is not supported in the **OUTPUT FORMAT**. Output lines are broken here **only** for the convenience of the reader.

For Release 4.1 (only):

In response to a valid **RTRV-rr** command, the following output report is returned, sorted as follows:

1. slot data LS is listed first, followed by port data;
2. for ports, by signal level, EC1, followed by T3 (if EC-1 and DS3 data is requested - e.g. **RTRV-ALL**); and
3. by *aid* value.

```
sid date time
M ctag COMPLD
"slot_aid:::[level,]prty[,swprty]:pst,sst"
"slot_aid:::[level,]prty[,swprty]:pst,sst"
.      .      .      .      .      .
.      .      .      .      .      .
"slot_aid:::[level,]prty[,swprty]:pst,sst"
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
.      .      .      .      .      .
.      .      .      .      .      .
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
;
```

For Releases 5.0 through 7.0:

In response to a valid **RTRV-rr** command, the following output report is produced, sorted as follows:

1. LS slot data is listed first, followed by:
2. supplemental OC3 slot data, (if OC-3 data is requested - for example, **RTRV-ALL**) followed by port data:
3. for ports, by signal level, EC1, followed by T3 (if EC-1 and DS3 data is requested - for example, **RTRV-ALL**); and
4. by *aid* value.

```
sid date time
M ctag COMPLD
"slot_aid:::[level,prty,swprty]:pst,sst"
"slot_aid:::[level,prty,swprty]:pst,sst"
. . . . .
. . . . .
"slot_aid:::[level,prty,swprty]:pst,sst"
"slot_aid:::ntfcncde,sdthr,[au4map,optlinecde,wavlenth,proc3frmlgx,proc3tolgx,
opoc3frmlgx, opoc3tolgx,pyldfrmlgx,pyldtolgx]"
"slot_aid:::ntfcncde,sdthr,[au4map,optlinecde,wavlenth,proc3frmlgx,proc3tolgx,
opoc3frmlgx, opoc3tolgx,pyldfrmlgx,pyldtolgx]"
. . . . .
. . . . .
"slot_aid:::ntfcncde,sdthr,[au4map,optlinecde,wavlenth,proc3frmlgx,proc3tolgx,
opoc3frmlgx, opoc3tolgx,pyldfrmlgx,pyldtolgx]"
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
. . . . .
. . . . .
"port_aid:::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
;
```

For Releases 7.1 and later:

In response to a valid **RTRV-rr** command, the following output report is produced, sorted as follows:

1. DS1 external input timing reference port data
2. OC48 high speed line provisionable data and state data
3. LS quad data
4. LS slot data
5. Port data, by signal level, OC12, OC3, (IS-3), EC1 and T3 (if OC-12, OC-3(IS-3), EC-1 and DS3 data is requested - for example, **RTRV-ALL**).

Within each group the entries are sorted by *aid* value.

```

sid date time
M ctag COMPLD
  "port_aid::[actswprty,queswprty]:pst,sst"
  "port_aid::[actswprty,queswprty]:pst,sst"
  "line_aid::sdthr[,opt linecde,wavlnth,syncmsg]:pst,sst"
  "line_aid::sdthr[,opt linecde,wavlnth,syncmsg]:pst,sst"
  "quad_aid::[level,ntfcncde,sdthr,]prty[,swprty]:pst,sst"
  "quad_aid::[level,ntfcncde,sdthr,]prty[,swprty]:pst,sst"
  "quad_aid::[level,ntfcncde,sdthr,]prty[,swprty]:pst,sst"
  "quad_aid::[level,ntfcncde,sdthr,]prty[,swprty]:pst,sst"
  "slot_aid::[level,ntfcncde,sdthr,prty,swprty]:pst,sst"
  "slot_aid::[level,ntfcncde,sdthr,prty,swprty]:pst,sst"
  .
  .
  .
  .
  "slot_aid::[level,ntfcncde,sdthr,prty,swprty]:pst,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc12frmlgx,proc12tolgx,
opoc12frmlgx,opoc12tolgx,pyldfrmlgx,pyldtolgx,oc12tdir,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc12frmlgx,proc12tolgx,
opoc12frmlgx,opoc12tolgx,pyldfrmlgx,pyldtolgx,oc12tdir,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc12frmlgx,proc12tolgx,
opoc12frmlgx,opoc12tolgx,pyldfrmlgx,pyldtolgx,oc12tdir,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc12frmlgx,proc12tolgx,
opoc12frmlgx,opoc12tolgx,pyldfrmlgx,pyldtolgx,oc12tdir,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc3frmlgx,proc3tolgx,
opoc3frmlgx,opoc3tolgx,pyldfrmlgx,pyldtolgx,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc3frmlgx,proc3tolgx,
opoc3frmlgx,opoc3tolgx,pyldfrmlgx,pyldtolgx,syncmsg]:,sst"
  .
  .
  .
  .
  "port_aid::ntfcncde,sdthr,[au4map,opt linecde,wavlnth,proc3frmlgx,proc3tolgx,
opoc3frmlgx,opoc3tolgx,pyldfrmlgx,pyldtolgx,syncmsg]:,sst"
  "port_aid::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
  "port_aid::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
  .
  .
  .
  .
  "port_aid::ntfcncde,sdthr,[fmt,linecde,omode,pbit]:pst,sst"
;

```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **RTRVrr** command, also. Additional parameters that specifically apply to this command response are defined below.

*line\_aid* Line access identifier. For Releases 7.1 and later, this is the line address of the equipment component for which output is being reported. This *aid* uniquely identifies a high speed interface slot.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*slot\_aid* Slot access identifier. This is the slot address of the equipment component for which output is being reported. Since low speed slots and ports are provisioned separately in the network element, this *aid* uniquely identifies a low speed interface slot.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*port\_aid* Port access identifier. This is the port address of the facility for which output is being reported. Since low speed slots and ports are provisioned separately in the network element, this AID uniquely identifies a low speed port.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*quad\_aid* Quad access identifier. For Releases 7.1 and later, this is the address of the OC-12 Interface Command slot for which the output is being reported.

Refer to Table 3-7 at the end of this section for a list of valid addresses.

*level* Signal level.

For Releases 4.1 through 5.0:

This parameter is the signal level type being supported by the slot specified in the addressed slot (if equipped). If non-null, the *level* parameter is reported in **LEVEL=xx** format where *xx* has one of the following values:

**EC1** This specifies that the applicable slot is supporting EC-1 level ports.

**T3** This specifies that the applicable slot is supporting DS3 level ports.

No *level* value is reported for unequipped slots.

For Releases 6.0 through 7.0:

This parameter is the signal level type being supported by the slot specified in the addressed slot (if equipped). If non-null, the *level* parameter is reported in *LEVEL=xx* format where *xx* has one of the following values:

- OC3      This specifies that the applicable slot is supporting OC-3 level slots.
- EC1      This specifies that the applicable slot is supporting EC-1 level ports.
- T3        This specifies that the applicable slot is supporting DS3 level ports.

No *level* value is reported for unequipped slots.

For Releases 7.1 and later:

This parameter is the signal level type being supported by the slot/quad specified in the addressed slot/quad (if equipped). If non-null, the *level* parameter is reported in *LEVEL=xx* format where *xx* has one of the following values:

- OC3      This specifies that the applicable slot is supporting OC-3 level ports.
- OC12     This specifies that the applicable slot is supporting OC-12 level ports.
- EC1      This specifies that the applicable slot is supporting EC-1 level ports.
- T3        This specifies that the applicable slot is supporting DS3 level ports.

No *level* value is reported for unequipped slots.

*au4map*

For Releases 7.1 and later:

AU4 Mapping. The *au4map* parameter is only reported in the specific block for OC3 or IS3 slots and OC12 quads. It specifies the type of traffic being carried. The *au4map* parameter is reported in *AU4MAP=xx* format where *xx* has one of the following values:

- SONET    This specifies that the S-bit in the output direction of the OC3 slot(s) is set to "0", indicating that the OC3 slot(s) is provisioned to carry STS-3 or STS-3c traffic.

This also specifies that the S-bit in the output direction of the IS3 slot(s) is set to "0", indicating that the IS3 slot(s) is provisioned to carry STS-3 or STS-3c traffic.

This also specifies that the S-bit in the output direction of the OC12 quad(s) is set to "0", indicating that the OC12 quad(s) is provisioned to carry OC-12 or OC-12c traffic.

SONET is the default state for optical low speed slots and quads.

SDH This specifies that the S-bit in the output direction of the OC3 slot(s) is set to "1", indicating that the OC3 slot(s) is provisioned to carry AU-4 traffic.

This also specifies that the S-bit in the output direction of the IS3 slot(s) is set to "1", indicating that the IS3 slot(s) is provisioned to carry AU-4 traffic.

This specifies that the S-bit in the output direction of the OC12 quad(s) is set to "1", indicating that the OC12 quad(s) is provisioned to carry AU-4 traffic.

If provisioned, the *au4map* value is reported for unequipped slots and quads.

*optlinecde* For Releases 7.1 and later:  
Optical Line coding. The line coding parameter is only reported in the specific block for OC-48 lines, OC-3 (IS-3) slots, or OC-12 quads. It specifies the type of optical line coding used on the Optical Interface. The *optlinecde* parameter is reported in OPTLINECDE=xx format where xx is:

NRZ Non-return to Zero.

No *optlinecde* value is reported for unequipped quads, slots or lines.

*wavlenth* For Releases 7.1 and later:  
Optical Wavelength. The optical wavelength parameter is only reported in the specific block for OC-48 lines, OC-12 quads, OC-3 and IS-3 slots. It specifies the optical wavelength used on the OC48, OC12, OC3 or IS3 optical interfaces. The *wavlenth* parameter for OC-48 lines, OC-12 quads, OC-3 and IS-3 slots is reported in WAVLNTH=xxxx format where xxxx may be one of the following.

1310 1310 nm.

1550 1550 nm. (OC-48 lines only)

No *wavlenth* value is reported for unequipped slots, quads, or high speed lines.



*syncmsg*

For Releases 7.1 and later:

Synchronization Messaging. This parameter determines whether synchronization messaging is provided on the optical interfaces. The *syncmsg* parameter is reported in SYNCMSG=xxxx format where xxxx is:

**ENABLED** This indicates that synchronization messages are provided on the optical interface identified by the *line\_aid* or *port\_aid* in the report. See the **RTRV-SYNCN** command for the detailed description of the output synchronization message.

**DISABLED** This indicates that synchronization messages are not provided on the optical interface identified by the *line\_aid* or *port\_aid* in the report. See the **RTRV-SYNCN** command for the detailed description of the output synchronization message.

This parameter is only valid for **OC48**, **OC12**, and **OC3** *modifier* values.

*ntfcncde*

Notification code. This parameter is the alarm level provisioned for failures of facilities serviced by the addressed port or slot. The *ntfcncde* parameter is reported in NTFCNCDE=xx format where xx has one of the following values:

- |    |                                                                                           |
|----|-------------------------------------------------------------------------------------------|
| CR | Critical                                                                                  |
| MJ | Major                                                                                     |
| MN | Minor                                                                                     |
| NA | Not alarmed                                                                               |
| NR | Not reported (no autonomous report will be generated - see <b>ENT-rr</b> )                |
| NO | For Releases 6.0 and later, ignored (no autonomous or on-demand report will be generated) |

*opoc12frmlgx* For Releases 7.1 and later:

From OC12 Operating Protection Mode. The *opoc12frmlgx* parameter is only reported in the specific block for OC12 quads. It specifies whether the OC12 signal coming from the crossconnect is operating as unprotected or 1+1 protected. The *opoc12frmlgx* parameter is reported in OPOC12FRMLGX=xx format where xx has one of the following values:

- |     |                                                                                                                           |
|-----|---------------------------------------------------------------------------------------------------------------------------|
| 0x1 | This specifies that the protection mode of the OC12 signal coming from the OC12 crossconnect is operating as unprotected. |
|-----|---------------------------------------------------------------------------------------------------------------------------|

- 1+1 This specifies that the protection mode of the OC12 signal coming from the OC12 crossconnect is operating as 1+1 protected.

No *opoc12frmlgx* value is reported for unequipped quads.

*opoc12tolgx* For Releases 7.1 and later:

From OC48 Operating Protection Mode. The *opoc12tolgx* parameter is only reported in the specific block for OC12 quads. It specifies whether the OC12 signal going to the crossconnect is operating as unprotected or 1+1 protected.

The *opoc12tolgx* parameter is reported in OPOC12TOLGX=xx format where xx has one of the following values:

- 0x1 This specifies that the protection mode of the OC12 signal going to the OC12 crossconnect is operating as unprotected.
- 1+1 This specifies that the protection mode of the OC12 signal going to the OC12 crossconnect is operating as 1+1 protected.

No *opoc12tolgx* value is reported for unequipped quads.

*proc12frmlgx* For Releases 7.1 and later:

From OC12 Provisioned Protection Mode. The *proc12frmlgx* parameter is only reported in the specific block for OC12 quads. It specifies whether the OC12 signal coming from the crossconnect is provisioned as unprotected or 1+1 protected. The *proc12frmlgx* parameter is reported in PROC12FRMLGX=xx format where xx has one of the following values:

- 0x1 This specifies that the provisioned protection mode of the OC12 signal coming from the OC12 crossconnect is provisioned as unprotected.
- 1+1 This specifies that the provisioned protection mode of the OC12 signal coming from the OC12 crossconnect is provisioned as 1+1 protected.

If provisioned, the *proc12frmlgx* value is reported for unequipped quads.

*proc12tolgx* For Releases 7.1 and later:

From OC12 Provisioned Protection Mode. The *proc12tolgx* parameter is only reported in the specific block for OC12 quads. It specifies whether the OC12 signal going to the crossconnect is provisioned as unprotected or 1+1 protected. The *proc12tolgx* parameter is reported in PROC12TOLGX=xx

format where *xx* has one of the following values:

- 0x1 This specifies that the protection mode of the OC12 signal going to the OC12 crossconnect is provisioned as unprotected.
- 1+1 This specifies that the protection mode of the OC12 signal going to the OC12 crossconnect is provisioned as 1+1 protected.

If provisioned, the *proc12tolgx* value is reported for unequipped quads.

*oc12tdir*

For Releases 7.1 and later:

OC12 Timing Direction. The *oc12tdir* parameter indicates whether the OC12 quad gets timing from 1W or 1E direction. The *oc12tdir* parameter is reported in OC12TDIR=*xx* format where *xx* has one of the following values:

- 1W This specifies that the OC12 quad gets timing reference from 1W direction.
- 1E This specifies that the OC12 quad gets timing reference from 1E direction.

*opoc3frmlgx*

From OC3 Operating Protection Mode. The *opoc3frmlgx* parameter is only reported in the specific block for OC3 slots. It specifies whether the OC3 signal coming from the crossconnect is operating as unprotected or 1+1 protected. The *opoc3frmlgx* parameter is reported in OP0C3FRMLGX=*xx* format where *xx* has one of the following values:

- 0x1 This specifies that the protection mode of the OC3 signal coming from the OC3 crossconnect is operating as unprotected.
- 1+1 This specifies that the protection mode of the OC3 signal coming from the OC3 crossconnect is operating as 1+1 protected.

No *opoc3frmlgx* value is reported for unequipped slots.

The *opoc3frmlgx* value is also reported for IS-3 slots.

*opoc3tolgx*

From OC48 Operating Protection Mode. The *opoc3tolgx* parameter is only reported in the specific block for OC3 slots. It specifies whether the OC3 signal going to the crossconnect is operating as unprotected or 1+1 protected.

The *opoc3tolgx* parameter is reported in OP0C3TOLGX=*xx* format where *xx* has one of the following values:

- 0x1 This specifies that the protection mode of the OC3 signal going to the OC3 crossconnect is operating as unprotected.
- 1+1 This specifies that the protection mode of the OC3 signal going to the OC3 crossconnect is operating as 1+1 protected.

No *opoc3tolgx* value is reported for unequipped slots.

The *opoc3tolgx* value is also reported for IS-3 slots.

*proc3frmlgx* From OC3 Provisioned Protection Mode. The *proc3frmlgx* parameter is only reported in the specific block for OC3 slots. It specifies whether the OC3 signal coming from the crossconnect is provisioned as unprotected or 1+1 protected. The *proc3frmlgx* parameter is reported in PROC3FRMLGX=xx format where xx has one of the following values:

- 0x1 This specifies that the provisioned protection mode of the OC3 signal coming from the OC3 crossconnect is provisioned as unprotected.
- 1+1 This specifies that the provisioned protection mode of the OC3 signal coming from the OC3 crossconnect is provisioned as 1+1 protected.

If provisioned, the *proc3frmlgx* value is reported for unequipped slots.

The *proc3frmlgx* value is also reported for IS-3 slots.

*proc3tolgx* From OC3 Provisioned Protection Mode. The *proc3tolgx* parameter is only reported in the specific block for OC3 slots. It specifies whether the OC3 signal going to the crossconnect is provisioned as unprotected or 1+1 protected. The *proc3tolgx* parameter is reported in PROC3TOLGX=xx format where xx has one of the following values:

- 0x1 This specifies that the protection mode of the OC3 signal going to the OC3 crossconnect is provisioned as unprotected.
- 1+1 This specifies that the protection mode of the OC3 signal going to the OC3 crossconnect is provisioned as 1+1 protected.

If provisioned, the *proc3tolgx* value is reported for unequipped slots.

The *proc3tolgx* value is also reported for IS-3 slots.

*pyldfrmlgx*

For Releases 7.1 and later:

From OC3, IS3, or OC12 Payload Type. The *pyldfrmlgx* parameter is only reported in the specific block for OC3/IS3 slots or OC12 quads. It specifies the OC3, IS3 or OC12 signal type coming from the crossconnect. The *pyldfrmlgx* parameter is reported in PYLDFRMLGX=xx format where xx has one of the following values:

- 3 This specifies that the signal payload type being transported by the OC-3 or IS-3 Optical Interface is normal.
- 3C This specifies that the signal payload type being transported by the OC-3 or IS-3 Optical Interface is concatenated.
- 12 This specifies that the signal payload type being transported by the OC-12 Optical Interface is normal.
- 12C This specifies that the signal payload type being transported by the OC-12 Optical Interface is concatenated.

If provisioned, the *pyldfrmlgx* value is reported for unequipped slots and quads.

*pyldtolgx*

For Releases 7.1 and later:

From OC48 Payload Type. The *pyldtolgx* parameter is only reported in the specific block for OC3/IS3 slots or OC12 quads. It specifies the OC3, IS3 or OC12 signal type coming from the high speed line. The *pyldtolgx* parameter is reported in PYLDTOLGX=xx format where xx has one of the following values:

- 3 This specifies that the signal payload type being transported by the OC-3 or IS-3 Optical Interface is normal.
- 3C This specifies that the signal payload type being transported by the OC-3 or IS-3 Optical Interface is concatenated.
- 12 This specifies that the signal payload type being transported by the OC-12 Optical Interface is normal.
- 12C This specifies that the signal payload type being transported by the OC-12 Optical Interface is concatenated.

If provisioned, the *pyldtolgx* value is reported for unequipped slots and quads.

*sdthr*

Signal degrade threshold. This parameter is the signal degrade Bit Error Rate (BER) threshold for the facility serviced by the addressed port. The *sdthr* parameter is reported in SDTHR=xx format where xx has one of the following values:

- 9 This signifies that the signal degrade threshold is set at a BER of  $10^{-9}$ . This value is applicable to optical interfaces only.
- 8 This signifies that the signal degrade threshold is set at a BER of  $10^{-8}$ . This value is applicable to optical interfaces only.
- 7 This signifies that the signal degrade threshold is set at a BER of  $10^{-7}$ . This value is applicable to optical interfaces only.
- 6 This signifies that the signal degrade threshold is set at a BER of  $10^{-6}$ . This value is applicable to electrical and optical interfaces.
- 5 This signifies that the signal degrade threshold is set at a BER of  $10^{-5}$ . This value is applicable to optical interfaces only.
- 3 This signifies that the signal degrade threshold is set at a BER of  $10^{-3}$ . This value is applicable to electrical interfaces only.

For Releases 7.1 and later:

Optical interfaces implies OC12, OC3 (IS-3), and OC48.  
Electrical interfaces implies EC1 and T3.

*fmt*

DS3 Format. The format parameter is only reported in the specific block for DS3 ports. It specifies the type of DS3 signal formatting used. The *fmt* parameter is always reported as FMT=ASYNCR.

*linecde*

DS3 Line coding. The line coding parameter is only reported in the specific block for DS3 ports. It specifies the type of DS3 line coding used and with *pmmode*, *omode*, and *pbit*, specifies the VMR mode for the addressed DS3 port (see **ENT-rr** description of VMR mode encoding). The *linecde* parameter is reported in LINECDE=xx format where xx has one of the following values:

- B3ZS This specifies that the DS3 interface is operating with framed Bipolar with 3 Zero Substitution (B3ZS) line coding.

CCHAN This specifies that the DS3 interface is operating in an unframed DS3 format (clear channel).

*omode* DS3 Output Mode. The output mode parameter is only reported in the specific block for DS3 ports. It specifies the type of output mode used for a DS3 port operating in clear channel format and with *pmmode*, *linecde*, and *pbit*, specifies the VMR mode for the addressed DS3 port (see **ENT-rr** description of VMR mode encoding). The *omode* parameter is reported in OMODE=xx format where xx has one of the following values:

NORM This will be the value set when the *linecde* value is B3ZS and will be set when the low speed port is operating in pure clear channel mode. If the *linecde* value is CCHAN and *omode* value is NORM, AIS will not be inserted on the low speed port output.

AIS This means that DS3 AIS will be inserted on the DS3 output port operating in clear channel format if a loss of signal is detected.

*pbit* DS3 P-bit monitoring. The P-bit monitoring parameter is only reported in the specific block for DS3 ports. It specifies the type of DS3 p-bit monitoring used. The NE monitors parity violations in the **demultiplex** direction (high speed line to low speed port).

The *pbit* parameter is reported in PBIT=xx format where xx has one of the following values:

ON The VMR mode for the addressed port is in the VMR state, monitoring and correcting P-bit parity errors in the DS3 signal before outputting the DS3 signal on the addressed low speed port. For the *pbit* parameter to be set to ON, the *linecde* and *omode* parameters must be set to B3ZS and NORM, respectively.

OFF The P-bit mode for the addressed port is off. If the *linecde* parameter is set in the B3ZS state, the addressed port is operating in the VM state, monitoring, but not correcting P-bit parity violations in the the DS3 signal before outputting the DS3 signal on the addressed low speed port. If the *linecde* parameter is set in the CCHAN state, the addressed port is operating in CC mode, neither monitoring nor correcting P-bit parity violations in the the DS3 signal before outputting the DS3 signal on the addressed low speed port.

Table 3-5 illustrates the possible combinations of *LINECDE*, *OMODE* and *PBIT* used to report the four DS-3 VMR modes of the FT-2000.

**Table 3-5. FT-2000 DS3 Port VMR Reporting (using RTRV-T3)**

| VMR Mode   | LINECDE | OMODE | PBIT |
|------------|---------|-------|------|
| VMR        | B3ZS    | NORM  | ON   |
| VM         | B3ZS    | NORM  | OFF  |
| CC w/ AIS  | CCHAN   | AIS   | OFF  |
| CC w/o AIS | CCHAN   | NORM  | OFF  |

*PMMODE*

Performance Monitoring Mode. This parameter is only reported in the specific block for DS3 ports. It specifies whether P-Bits or F&M bits are being used to calculate DS3 parity errors. Together with *OMMODE*, *PBIT*, and *LINECDE*, it specifies the VMR mode for the addressed DS3 port (see **ENT-rr** for a description of VMR encoding). The *PMMODE* parameter is reported in *PMMODE=xx* format where *xx* has one of the following values:

- P P-bits are used to calculate DS3 parity errors for the VMR mode.
- FM F&M bits are used to calculate DS3 parity errors for the VMR mode.

For Releases 7.1 and later, the value *pbrit* parameter is used in combination with the values of *pmmode*, *linecde*, and *omode* parameters to determine the FT-2000 VMR mode. In combination with *omode*, *pmmode*, and *linecde*, *pbrit* specifies the VMR mode for the FT-2000.



Table 3-6 illustrates the valid combinations of *LINECDE*, *OMODE*, *PBIT*, *PMMODE* values used to set the four VMR modes of the FT-2000.

**Table 3-6. Combination Values to Set Four VMR Modes**

| VMR Mode   | LINECDE | OMODE | PBIT | PMMODE |
|------------|---------|-------|------|--------|
| VMR (p)    | B3ZS    | NORM  | ON   | P      |
| VMR (fm)   | B3ZS    | NORM  | ON   | FM     |
| VM (p)     | B3ZS    | NORM  | OFF  | P      |
| VM (fm)    | B3ZS    | NORM  | OFF  | FM     |
| CC w/AIS   | CCHAN   | AIS   | OFF  | N/A    |
| CC w/o AIS | CCHAN   | NORM  | OFF  | N/A    |

*prty*

Protection switching priority. The protection switching priority parameter is only reported in the specific block for both EC1 and DS3 slots. The network element maintains two hardware protection switching priority levels for its low speed circuit packs, Low and HIGH. The *prty* parameter is reported in PRTY=xx format where xx has one of the following values:

- 1 The low speed circuit pack containing this port is provisioned with a protection switching priority of Low.
- 2 The low speed circuit pack containing this port is provisioned with a protection switching priority of HIGH.

*swprty*

Switch Priority. This field is reported for low speed slots in the case of a protection switch being in effect. It specifies the current active or queued (if an earlier external request had been superseded by a higher priority protection switching request) protection switching request for the slot identified by the *slot\_aid*. If non-null, the *swprty* parameter is reported in SWPRTY=xx format where xx has one of the following values (for clarity, the values applicable to a given modifier/entity are grouped together and listed in the order of priority of request):

**For\_LS(ELEC): Applies to electrical low speed slots: -**

|              |                                                                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOCKOUT      | Lockout. This specifies that a lockout of electrical low speed protection switching request is active.                                                                                   |
| FRCD         | Forced. This specifies that a forced electrical low speed protection switching request is active or queued.                                                                              |
| APS(CP-FAIL) | Automatic protection switch(Circuit Pack fail). This specifies that an automatic electrical low speed protection switching (circuit pack fail) request is active.                        |
| MAN          | Manual. This specifies that a manual electrical low speed protection switching request is active or queued.                                                                              |
| APS(WTR)     | Automatic protection switch(Wait to restore). This specifies that an automatic electrical low speed protection switching request is active because the wait to restore timer is running. |
| RDNA         | Requested data not available. If the requested <i>swprty</i> data for the addressed entity is corrupted, this value is reported.                                                         |

NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

**For\_LS(OPT): Applies to optical low speed slots:-**

|              |                                                                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INH          | Inhibit. This specifies that a inhibit optical low speed protection switching request is active at the near end.                                                                        |
| LOCKOUT-NE   | Lockout Near End. This specifies that a lockout of optical low speed protection switching request is active at the near end.                                                            |
| LOCKOUT-FE   | Lockout Far End. This specifies that a lockout of optical low speed protection switching request is active at the far end.                                                              |
| FRCD-NE      | Forced Near End. This specifies that a forced optical low speed protection switching request is active or queued at the near end.                                                       |
| FRCD-FE      | Forced Far End. This specifies that a forced optical low speed protection switching request is active or queued at the far end.                                                         |
| APS(SF) - NE | Automatic protection switch (Signal Failure) Near End. This specifies that an automatic optical low speed protection switching request due to signal failure is active at the near end. |
| APS(SF) - FE | Automatic protection switch (Signal Failure) Far End. This specifies that an automatic optical low speed protection switching request due to signal failure is active at the far end.   |
| APS(SD) - NE | Automatic protection switch (Signal Degrade) Near End. This specifies that an automatic optical low speed protection switching request due to signal degrade is active at the near end. |
| APS(SD) - FE | Automatic protection switch (Signal Degrade) Far End. This specifies that an automatic optical low speed protection                                                                     |

switching request due to signal degrade is active at the far end.

APS(BYTE-FAIL) Automatic protection switch (Byte Fail). This specifies that the status of far end is unknown due to byte failure.

RDNA Requested data not available. If the requested *swprty* data for the addressed entity is corrupted, this value is reported. NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

*actswprty* For Releases 7.1 and later:  
Active Switch Priority. This field is reported for high speed lines in the case of a protection switch being in effect. It specifies the current active protection switching request for the DS1 input timing reference ports identified by the *port\_aid* and for the high speed lines identified by the *line\_aid*. If non-null, the *actswprty* parameter is reported in ACTSWPRTY=xx format where xx has one of the following values (for clarity, the values applicable to a given modifier/entity are grouped together and listed in the order of priority of request):

FRCD Forced. This specifies that a forced protection switching request is active.

MAN Manual. This specifies that a manual protection switching request is active.

APS(REF-FAIL) Automatic protection switch (Reference Fail). This specifies that an automatic protection switching request is active.

RDNA Requested data not available. If the requested *actswprty* data for the addressed entity is corrupted, this value is reported. NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

LOCKOUT Lockout. This specifies that a lockout of protection switching request is active.

APS(REF-FAIL)

Automatic protection switch (Reference Fail).  
This specifies that an automatic protection switching request is active.

RDNA

Requested data not available. If the requested *actswprty* data for the addressed entity is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

*queswprty*

For Releases 7.1 and later:

Queued Switch Priority. This field is reported for the DS1 input timing reference ports in the case of a protection switch being in effect. It specifies the current queued protection switching request. If non-null, the *queswprty* parameter is reported in QUESWPRTY=xx format where xx has one of the following values (for clarity, the values applicable to a given modifier/entity are grouped together and listed in the order of priority of request):

MAN

Manual. This specifies that a manual protection switching request is queued.

APS(REF-FAIL)

Automatic protection switch (Reference Fail).  
This specifies that an automatic protection switching request is queued.

RDNA

Requested data not available. If the requested *queswprty* data for the addressed entity is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

LOCKOUT

Lockout. This specifies that a lockout of protection switching request is queued.

RDNA

Requested data not available. If the requested *queswprty* data for the addressed entity is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is

not. For example, the associated LNCTL circuit pack might be failed.

*pst* Primary state. This parameter reports the current primary state of the addressed slot or port. The *pst* will have one of the primary states supported by the network element.

For Releases 4.1 through 7.0:

The (LS) slot primary state will have one of the following values:

IS In service. This specifies that the low speed slot addressed by *slot\_aid* is equipped and in the in-service state.

OOS-MA-UAS

Out of service, memory administration, unassigned. This specifies that the low speed slot addressed by *slot\_aid* is in the "AUTO" state and will transition to the in-service state upon insertion of a valid low speed interface circuit pack.

RDNA

Requested data not available. If the requested *pst* data for the addressed low speed slot is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

The primary state for ports will have one of the following values:

IS In service. This specifies that the low speed port addressed by *port\_aid* is in the in service state in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

OOS-MA-AS Out of service, memory administration, assigned. This specifies that the low speed port addressed by *port\_aid* is in the "AUTO" state and will transition to in-service upon detection of a valid incoming (from the low speed side) low speed signal in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

OOS Out of service. This specifies that the low speed port addressed by *port\_aid* is in the "NMON" state in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

RDNA Requested data not available. If the requested *pst* data for the addressed low speed port is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

For Releases 7.1 and later:

Primary state. This parameter reports the current primary state of the addressed slot or port. The *pst* will have one of the primary states supported by the network element.

The DS1 input timing reference port primary state will have one of the following values:

IS In service. This specifies that the DS1 input timing reference port addressed by the *port\_aid* is in the in-service state.

OOS-MA-AS Out of service, memory administration, assigned. This specifies that the DS1 input timing reference port addressed by the *port\_aid* is in the "AUTO" state and will transition to in-service upon detection of a valid incoming signal.

OOS Out of service. This specifies that the DS1 input timing reference port addressed by the *port\_aid* is in the "NMON" state.

RDNA Requested data not available. If the requested *pst* data for the addressed DS1 input timing reference port is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

The (LS) slot primary state will have one of the following values:

IS In service. This specifies that the low speed slot addressed by *slot\_aid* is equipped and in the in-service state.

OOS-MA-UAS

Out of service, memory administration, unassigned. This specifies that the low speed slot addressed by *slot\_aid* is in the "AUTO" state and will transition to the in-service state upon insertion of a valid low speed interface circuit pack.

RDNA

Requested data not available. If the requested *pst* data for the addressed low speed slot is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

The primary state for electrical low speed ports will have one of the following values:

IS

In service. This specifies that the low speed port addressed by *port\_aid* is in the in service state in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

OOS-MA-AS

Out of service, memory administration, assigned. This specifies that the low speed port addressed by *port\_aid* is in the "AUTO" state and will transition to in-service upon detection of a valid incoming (from the low speed side) low speed signal in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

OOS

Out of service. This specifies that the low speed port addressed by *port\_aid* is in the "NM0N" state in the *demux* (from the OC-48 fiber toward the cross-connect) direction.

RDNA

Requested data not available. If the requested *pst* data for the addressed low speed port is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

*sst*

Secondary state. This parameter reports the current secondary state of the addressed slot or port. The *sst* will have one of the secondary states supported by the network element.



For Releases 4.1 through 7.0:

The (LS) slot secondary state will have one of the following values:

|      |                                                                                                                                                                                                                                                                                                                                                            |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACT  | Active. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the active state. This is used when the slot is equipped and the logical transmit and receive lines on that slot are carrying service, or the logical receive line of an optical interface on that slot is carrying service.                                             |
| STBY | Standby. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the standby state. This is used when the slot is equipped but the logical transmit and receive lines on that slot are not carrying service, or the logical receive line of an optical interface on that slot is not carrying service.                                   |
| UEQ  | Unequipped. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the unequipped state. This is used when the slot is unequipped.                                                                                                                                                                                                      |
| RDNA | Requested data not available. If the requested <i>sst</i> data for the addressed low speed slot is corrupted, this value is reported.<br>NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed. |

The electrical low speed port secondary state will have one of the following values:

|           |                                                                                                                                                                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IS        | In service. This specifies that the low speed port addressed by <i>port_aid</i> is in the in service state in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction.                                                                                                                                                  |
| OOS-MA-AS | Out of service, memory administration, assigned. This specifies that the low speed port addressed by <i>port_aid</i> is in the "AUTO" state and will transition to in-service upon detection of a valid incoming (from the low speed side) low speed signal in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction. |

|      |                                                                                                                                                                                                                                                                                                                                                            |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OOS  | Out of service. This specifies that the low speed port addressed by <i>port_aid</i> is in the "NM0N" state in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction.                                                                                                                                                                    |
| RDNA | Requested data not available. If the requested <i>sst</i> data for the addressed low speed port is corrupted, this value is reported.<br>NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed. |

For Releases 7.1 and later:

Secondary state. This parameter reports the current secondary state of the addressed slot or port. The *sst* will have one of the secondary states supported by the network element.

The DS1 input timing reference port secondary state will have one of the of the following values.

|      |                                                                                                                                                                                                                                                                                                                                                                             |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACT  | Active. This specifies that the DS1 input timing reference port is in the active state.                                                                                                                                                                                                                                                                                     |
| STBY | Standby. This specifies that the DS1 input timing reference port is in the standby state.                                                                                                                                                                                                                                                                                   |
| UEQ  | Unequipped. This specifies that the DS1 input timing reference port is in the unequipped state. This is used when the slot is unequipped.                                                                                                                                                                                                                                   |
| RDNA | Requested data not available. If the requested <i>sst</i> data for the addressed DS1 input timing reference port is corrupted, this value is reported.<br>NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed. |

The (LS) slot secondary state will have one of the following values:

|     |                                                                                                                                                                                                                                                                                                                |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACT | Active. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the active state. This is used when the slot is equipped and the logical transmit and receive lines on that slot are carrying service, or the logical receive line of an optical interface on that slot is carrying service. |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|      |                                                                                                                                                                                                                                                                                                                                                            |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STBY | Standby. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the standby state. This is used when the slot is equipped but the logical transmit and receive lines on that slot are not carrying service, or the logical receive line of an optical interface on that slot is not carrying service.                                   |
| UEQ  | Unequipped. This specifies that the low speed slot addressed by <i>slot_aid</i> is in the unequipped state. This is used when the slot is unequipped.                                                                                                                                                                                                      |
| RDNA | Requested data not available. If the requested <i>sst</i> data for the addressed low speed slot is corrupted, this value is reported.<br>NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed. |

The low speed port secondary state will have one of the following values:

|           |                                                                                                                                                                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IS        | In service. This specifies that the low speed port addressed by <i>port_aid</i> is in the in service state in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction.                                                                                                                                                  |
| OOS-MA-AS | Out of service, memory administration, assigned. This specifies that the low speed port addressed by <i>port_aid</i> is in the "AUTO" state and will transition to in-service upon detection of a valid incoming (from the low speed side) low speed signal in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction. |
| OOS       | Out of service. This specifies that the low speed port addressed by <i>port_aid</i> is in the "NM0N" state in the <i>mux</i> (from the cross-connect toward the OC-48 fiber) direction.                                                                                                                                                  |

RDNA Requested data not available. If the requested *sst* data for the addressed low speed port is corrupted, this value is reported.  
NOTE: "Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

## EXAMPLE INPUT/OUTPUT

In the following examples, Leading carriage returns (<cr>), line feeds (<lf>), and spaces ( ) are explicitly shown. Line wrapping is not supported in the **OUTPUT FORMAT**. Output lines are broken here **only** for the convenience of the reader.

The following example shows the response to a query concerning all three DS3 ports associated with slot "ls-1a".

- The first DS3 port is in-service, has a critical notification code level in case of failure, is operating in VMR mode with a signal degrade threshold of  $10^{-6}$ .
- The second DS3 port is in-service, has a major notification code level in case of failure, is operating in VM mode with a signal degrade threshold of  $10^{-3}$ .
- The third DS3 port is in-service but is not monitoring the mux (from the cross-connect) direction of the DS3 signal, has a minor notification code level in case of failure, is operating in clear channel mode (with AIS insertion if a signal failure is detected) with a signal degrade threshold of  $10^{-3}$ .

The switch priority is provisioned per slot using **ENT-LS** and can be requested from the network element using **RTRV-ALL** or **RTRV-LS**.

```
rtrv-t3:LT-PF-2000:ls-1a-all:123456;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
"ls-1a-1::NTFCNCDE=CR,SDTHR=-6,FMT=ASYNC,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:IS,IS"  
"ls-1a-2::NTFCNCDE=MJ,SDTHR=-3,FMT=ASYNC,LINECDE=B3ZS,OMODE=NORM,PBIT=OFF:IS,IS"  
"ls-1a-3::NTFCNCDE=MN,SDTHR=-3,FMT=ASYNC,LINECDE=CCHAN,OMODE=AIS,PBIT=OFF:IS,OOS"  
;
```

The next example shows the response to a query concerning all EC-1 service ports contained in the low speed shelf ("ls-all"), of which there are six. Of the six service ports (supported by two service slots, ls-2a and ls-2b), two are In Service ("IS"), one is in the FT-2000 "NMON" primary state and the remaining three are in the FT-2000 "AUTO" primary state.

```
rtrv-ec1:LT-PF-2000:ls-all:789012;
```

```
IP 789012
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 789012 COMPLD
```

```
"ls-1a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-1a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-1a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-1b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-1b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-1b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-2a-1::NTFCNCDE=CR, SDTHR=-3:IS,IS"  
"ls-2a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-2a-3::NTFCNCDE=CR, SDTHR=-3:IS,IS"  
"ls-2b-1::NTFCNCDE=CR, SDTHR=-6:00S-MA-AS,00S-MA-AS"  
"ls-2b-2::NTFCNCDE=CR, SDTHR=-6:00S-MA-AS,00S-MA-AS"  
"ls-2b-3::NTFCNCDE=CR, SDTHR=-6:00S,00S"  
"ls-3a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-3a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-3a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-3b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-3b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-3b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-4b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-5b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-6b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-7b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"  
"ls-8b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
```

```
;
```

For Releases 5.0 through 7.0:

The example below shows the response to a query concerning all OC-3 service ports contained in the FT-2000 low speed service shelf ("ls-all"), of which there are seven equipped with OC3 Optical interfaces.

```
rtrv-oc3:LT-PF-2000:ls-all:789012;
```

```
IP 789012
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 789012 COMPLD
```

```
"ls-1a::NTFCNCDE=CR, SDTHR=-6, AU4MAP=SDH, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=0x1, PROC3TOLGX=0x1, OPOC3FRMLGX=0x1, OPOC3TOLGX=0x1, PYLDFRMLGX=-3c,  
PYLDTOLGX=-3c"
```

```
"ls-1b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-2a::NTFCNCDE=CR, SDTHR=-8, AU4MAP=SONET, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=1+1, PROC3TOLGX=1+1, OPOC3FRMLGX=1+1, OPOC3TOLGX=1+1, PYLDFRMLGX=-3c,  
PYLDTOLGX=-3"
```

```
"ls-2b::NTFCNCDE=CR, SDTHR=-8, AU4MAP=SONET, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=1+1, PROC3TOLGX=1+1, OPOC3FRMLGX=1+1, OPOC3TOLGX=1+1, PYLDFRMLGX=-3c,  
PYLDTOLGX=-3c"
```

```
"ls-3a::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-3b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-4a::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-4b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-5a::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SDH, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=1+1, PROC3TOLGX=1+1, OPOC3FRMLGX=1+1, OPOC3TOLGX=0x1, PYLDFRMLGX=-3,  
PYLDTOLGX=-3"
```

```
"ls-5b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SDH, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=1+1, PROC3TOLGX=1+1, OPOC3FRMLGX=1+1, OPOC3TOLGX=1+1, PYLDFRMLGX=-3,  
PYLDTOLGX=-3"
```

```
"ls-6a::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-6b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=0x1, PROC3TOLGX=0x1"
```

```
"ls-7a::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=1+1, PROC3TOLGX=1+1"
```

```
"ls-7b::NTFCNCDE=CR, SDTHR=-5, AU4MAP=SONET, PROC3FRMLGX=1+1, PROC3TOLGX=1+1"
```

```
"ls-8a::NTFCNCDE=CR, SDTHR=-9, AU4MAP=SONET, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=0x1, PROC3TOLGX=0x1, OPOC3FRMLGX=0x1, OPOC3TOLGX=0x1, PYLDFRMLGX=-3,  
PYLDTOLGX=-3"
```

```
"ls-8b::NTFCNCDE=CR, SDTHR=-7, AU4MAP=SONET, OPTLINECDE=NRZ, WAVLNTH=1310,  
PROC3FRMLGX=0x1, PROC3TOLGX=0x1, OPOC3FRMLGX=0x1, OPOC3TOLGX=0x1, PYLDFRMLGX=-3,  
PYLDTOLGX=-3"
```

```
;
```

For Release 4.1:

The following example shows the response to a query of the OS concerning all low speed service slots and ports contained in the FT-2000 low speed service shelf ("ls-all"), of which there are 18 slots (16 service and 2 protection) and 9 equipped service ports (3 DS3 and 6 EC-1).

- Of the 16 service slots, only one has a switching priority of "HIGH", the remaining slots are provisioned with a switching priority of "low".
- Of the nine equipped service ports (supported by three service slots):
  - Three are In Service ("IS") in both the mux (from the cross-connect toward the OC-48 fiber) and the demux (from the OC-48 fiber toward the cross-connect) directions.
  - One is in the FT-2000 "NMON" state in both the mux and demux directions (ls-2b-3).
  - One is in the IS state in the mux direction and the NMON state in the demux direction (ls-1a-3).
  - One is in the NMON state in the mux direction and the IS state in the demux direction (ls-1a-1).
  - The remaining three are in the FT-2000 "AUTO" state.

In the example, there is an automatic low speed protection switching (APS) request active on one low speed slot (the STS1E circuit pack in slot ls-2a). There is also a manual low speed protection switching (MAN) request (superseded by the APS request) on another low speed slot (the STS1E circuit pack in slot ls-2b) that has been queued by FT-2000.



rtrv-all:LT-FT-2000:ls-all:789012;

IP 789012

<

LT-FT-2000 93-10-26 16:42:11

M 789012 COMPLD

```
"ls-1a:::LEVEL=T3,PRTY=1:IS,ACT
"ls-1b:::PRTY=1:00S-MA-UAS,UEQ
"ls-2a:::LEVEL=EC1,PRTY=2,SWPRTY=APS:IS,STBY
"ls-2b:::LEVEL=EC1,PRTY=1,SWPRTY=MAN:IS,ACT
"ls-3a:::PRTY=1:00S-MA-UAS,UEQ
"ls-3b:::PRTY=1:00S-MA-UAS,UEQ
"ls-4a:::PRTY=1:00S-MA-UAS,UEQ
"ls-4b:::PRTY=1:00S-MA-UAS,UEQ
"ls-5a:::PRTY=1:00S-MA-UAS,UEQ
"ls-5b:::PRTY=1:00S-MA-UAS,UEQ
"ls-6a:::PRTY=1:00S-MA-UAS,UEQ
"ls-6b:::PRTY=1:00S-MA-UAS,UEQ
"ls-7a:::PRTY=1:00S-MA-UAS,UEQ
"ls-7b:::PRTY=1:00S-MA-UAS,UEQ
"ls-8a:::PRTY=1:00S-MA-UAS,UEQ
"ls-8b:::PRTY=1:00S-MA-UAS,UEQ
"ls-p1:::LEVEL=T3,PRTY=2:IS,STBY
"ls-p2:::LEVEL=EC1,PRTY=2:IS,ACT
"ls-1a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-2a-1:::NTFCNCDE=CR,SDTHR=-3:IS,IS"
"ls-2a-2:::NTFCNCDE=CR,SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2a-3:::NTFCNCDE=CR,SDTHR=-3:IS,IS"
"ls-2b-1:::NTFCNCDE=CR,SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2b-2:::NTFCNCDE=CR,SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2b-3:::NTFCNCDE=CR,SDTHR=-6:00S,00S"
"ls-3a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
```

Continued

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```
"ls-5a-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-1::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-2::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-3::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-1::NTFCNCDE=CR,SDTHR=-6,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S,IS"
"ls-1a-2::NTFCNCDE=MJ,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=OFF:IS,IS"
"ls-1a-3::NTFCNCDE=MN,SDTHR=-3,FMT=ASYNCLINECDE=CCHAN,OMODE=AIS,
PBIT=OFF:IS,00S"
"ls-1b-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-1b-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-1b-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2a-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2a-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2a-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2b-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2b-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
"ls-2b-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:00S-MA-AS,00S-MA-AS"
```

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```
"ls-3a-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-3a-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-3a-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-3b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-3b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-3b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4a-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4a-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4a-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-4b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5a-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5a-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5a-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-5b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6a-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6a-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6a-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-6b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
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"ls-7a-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-7a-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-7a-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-7b-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-7b-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-7b-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8a-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8a-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8a-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8b-1::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8b-2::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
"ls-8b-3::NTFCNCDE=CR,SDTHR=-3,FMT=ASYNCLINECDE=B3ZS,OMODE=NORM,
PBIT=ON:OOS-MA-AS,OOS-MA-AS"
;
```

For Releases 5.0 through 7.0:

The following example shows the response to a query concerning all low speed service slots and ports contained in the FT-2000 low speed service shelf, of which there are 18 slots (16 service and two protection) and eleven equipped service ports (three DS3, six EC-1, and two OC-3). Of the 16 service slots, only two have a switching priority of "HIGH", the remaining slots are provisioned with a switching priority of "low". Of the eleven equipped service ports (supported by five service slots, three slots for nine electrical ports and two slots for two OC3 ports.) seven are In Service ("IS"), one is in the FT-2000 "NM0N" primary state and the remaining three are in the FT-2000 "AUTO" primary state.

In the example, there is an automatic low speed protection switching (APS) request active on two low speed slots (the STS1E circuit pack in slot 1s-2a and the OC3 circuit pack in slot 1s-5a). There is also a manual low speed protection switching (MAN) request (superseded by the APS request) on another low speed slot (the STS1E circuit pack in slot 1s-2b) that has been queued by FT-2000.

```
Ortrv-all:LT-PF-2000:all:789012;
```

```
IP 789012
```

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<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 789012 COMPLD
```

```
"1s-1a:::LEVEL=T3,PRTY=1:IS,ACT
```

```
"1s-1b:::PRTY=1:OOS-MA-UAS,UEQ
```

```
"1s-2a:::LEVEL=EC1,PRTY=2,SWPRTY=APS:IS,STBY
```

```
"1s-2b:::LEVEL=EC1,PRTY=1,SWPRTY=MAN:IS,ACT
```

```
"1s-3a:::PRTY=1:OOS-MA-UAS,UEQ
```

```
"1s-3b:::PRTY=1:OOS-MA-UAS,UEQ
```

```
"1s-4a:::PRTY=1:OOS-MA-UAS,UEQ
```

```
"1s-4b:::PRTY=1:OOS-MA-UAS,UEQ
```

```
"1s-5a:::LEVEL=OC3,SWPRTY=APS:IS,STBY
```

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```
"ls-5b::LEVEL=OC3:IS,ACT
"ls-6a::PRTY=1:OOS-MA-UAS,UEQ
"ls-6b::PRTY=1:OOS-MA-UAS,UEQ
"ls-7a::PRTY=1:OOS-MA-UAS,UEQ
"ls-7b::PRTY=1:OOS-MA-UAS,UEQ
"ls-8a::PRTY=1:OOS-MA-UAS,UEQ
"ls-8b::PRTY=1:OOS-MA-UAS,UEQ
"ls-p1::LEVEL=T3,PRTY=2:IS,STBY
"ls-p2::LEVEL=EC1,PRTY=2:IS,ACT
"ls-1a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-1b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-2a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-2b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-3a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-3b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-4a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-4b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-5a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,
PROC3FRMLGX=1+1,PROC3TOLGX=1+1,OPOC3FRMLGX=1+1,OPOC3TOLGX=0x1,PYLDFRMLGX=-3,
PYLDTOLGX=-3"
"ls-5b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,
PROC3FRMLGX=1+1,PROC3TOLGX=1+1,OPOC3FRMLGX=1+1,OPOC3TOLGX=1+1,PYLDFRMLGX=-3,
PYLDTOLGX=-3"
"ls-6a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-6b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-7a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-7b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1"
"ls-8a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-8b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1"
"ls-1a-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-1a-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-1a-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-1b-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-1b-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-1b-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-2a-1::NTFCNCDE=CR,SDTHR=-3:IS,IS"
"ls-2a-2::NTFCNCDE=CR,SDTHR=-6:OOS-MA-AS,OOS-MA-AS"
"ls-2a-3::NTFCNCDE=CR,SDTHR=-3:IS,IS"
"ls-2b-1::NTFCNCDE=CR,SDTHR=-6:OOS-MA-AS,OOS-MA-AS"
"ls-2b-2::NTFCNCDE=CR,SDTHR=-6:OOS-MA-AS,OOS-MA-AS"
"ls-2b-3::NTFCNCDE=CR,SDTHR=-6:OOS,OOS"
"ls-3a-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-3a-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-3a-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-3b-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-3b-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
"ls-3b-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"
```

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```
"ls-4a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-1:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-2:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-3:::NTFCNCDE=CR,SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-1:::NTFCNCDE=CR,SDTHR=-6,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:00S,IS"
"ls-1a-2:::NTFCNCDE=MJ,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=OFF:IS,IS"
"ls-1a-3:::NTFCNCDE=MN,SDTHR=-3,FMT=ASYN,LINECDE=CCHAN,OMODE=AIS,PBIT=OFF:IS,00S"
"ls-1b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-1b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-1b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2a-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2a-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2a-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2b-1:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2b-2:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
"ls-2b-3:::NTFCNCDE=CR,SDTHR=-3,FMT=ASYN,LINECDE=B3ZS,OMODE=NORM,PBIT=ON:
00S-MA-AS,00S-MA-AS"
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"ls-3a-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-3a-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-3a-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-3b-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-3b-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-3b-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4a-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4a-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4a-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4b-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4b-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-4b-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5a-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5a-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5a-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5b-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5b-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-5b-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6a-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6a-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6a-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6b-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6b-2:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-6b-3:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-7a-1:::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"

*Continued*



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```
"ls-7a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-7a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-7b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-7b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-7b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
"ls-8b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON :  
OOS-MA-AS, OOS-MA-AS"  
;
```

For Releases 7.1 and later:

The example below shows the response to a query concerning all OC48 high speed lines ("line-all") data.

```
rtrv-oc48:LT-PF-2000:line-all:789012;

IP 789012
<

    LT-PF-2000 97-10-26 16:42:11
M 789012 COMPLD
    "line-1e::SDTHR=-6,OPTLINECDE=NRZ,WAVLNTH=1310,SYNMSG=ENABLED:IS,ACT"
    "line-1w::SDTHR=-6,OPTLINECDE=NRZ,WAVLNTH=1550,SYNMSG=ENABLED:IS,ACT"
;
```

For Releases 7.1 and later:

The following example shows the response to a query concerning the protection switching state of the DS1 input timing reference ports of the network element. The primary DS1 input timing reference has a forced switch active, has an automatic protection switch request queued, and is in a standby state. The secondary DS1 input timing reference is in service and active.

```
rtrv-t1:LT-PF-2000:all:789012;

IP 789012
<

    LT-PF-2000 97-03-26 16:42:11
M 789012 COMPLD
    "DS1-in-pri::FRCD,APS (REF-FAIL):IS,STBY"
    "DS1-in-sec:::IS,ACT"
;
```

For Releases 7.1 and later:

The following example shows the response to a query concerning all ("all"), DS1 input timing reference ports, high speed lines, and low speed service slots and ports of the network element.

```
rtrv-all:LT-PF-2000:all:789012;
```

```
IP 789012
```

```
<
```

```
LT-PF-2000 97-03-26 16:42:11
```

```
M 789012 COMPLD
```

```
"DS1-in-pri::::IS,ACT"
```

```
"DS1-in-sec::::IS,STBY"
```

```
"line-1e::SDTHR=-6,OPTLINECDE=NRZ,SYNMSG=ENABLED"
```

```
"line-1w::SDTHR=-6,OPTLINECDE=NRZ,SYNMSG=ENABLED"
```

```
"ls-1a::LEVEL=T3,PRTY=1:IS,ACT"
```

```
"ls-1b::PRTY=1:OOS-MA-UAS,UEQ"
```

```
"ls-2a::LEVEL=EC1,PRTY=2,SWPRTY=APS:IS,STBY"
```

```
"ls-2b::LEVEL=EC1,PRTY=1,SWPRTY=MAN:IS,ACT"
```

```
"ls-3a::PRTY=1:OOS-MA-UAS,UEQ"
```

```
"ls-3b::PRTY=1:OOS-MA-UAS,UEQ"
```

```
"ls-4a::LEVEL=OC3,SWPRTY=APS:IS,STBY"
```

```
"ls-4b::LEVEL=OC3:IS,ACT"
```

```
"ls-5a::LEVEL=OC12.EXT:IS,ACT"
```

```
"ls-5b::LEVEL=OC12:IS,ACT"
```

```
"ls-6a::LEVEL=OC12.EXT:IS,ACT"
```

```
"ls-6b::LEVEL=OC12.EXT:IS,ACT"
```

```
"ls-7a::LEVEL=OC12.EXT:IS,STBY"
```

```
"ls-7b::LEVEL=OC12:IS,STBY"
```

```
"ls-8a::LEVEL=OC12.EXT:IS,STBY"
```

```
"ls-8b::LEVEL=OC12.EXT:IS,STBY"
```

```
"ls-p1::LEVEL=T3,PRTY=2:IS,STBY"
```

```
"ls-p2::LEVEL=EC1,PRTY=2:IS,ACT"
```

```
Continued
```

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"ls-1b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC12FRMLGX=0x1,PROC12TOLGX=0x1,  
PYLDFRMLGX=-12,PYLDTOLGX=-12:,OOS-MA-AS"

"ls-3b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC12FRMLGX=0x1,PROC12TOLGX=0x1,  
PYLDFRMLGX=-12,PYLDTOLGX=-12:,OOS-MA-AS"

"ls-5b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,  
PROC12FRMLGX=1+1,PROC12TOLGX=1+1,OPOC12FRMLGX=1+1,OPOC12TOLGX=0x1,PYLDFRMLGX=-12,  
PYLDTOLGX=-12,OC12TDIR=1W,SYNCSMSG=ENABLED:,IS"

"ls-7b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,  
PROC12FRMLGX=1+1,PROC12TOLGX=1+1,OPOC12FRMLGX=1+1,OPOC12TOLGX=1+1,PYLDFRMLGX=-12,  
PYLDTOLGX=-12,OC12TDIR=1W,SYNCSMSG=ENABLED:,IS"

"ls-1a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-1b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-2a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-2b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-3a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-3b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-4a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,  
PROC3FRMLGX=1+1,PROC3TOLGX=1+1,OPOC3FRMLGX=1+1,OPOC3TOLGX=0x1,PYLDFRMLGX=-3,  
PYLDTOLGX=-3,SYNCSMSG=DISABLED:,IS"

"ls-4b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SDH,OPTLINECDE=NRZ,WAVLNTH=1310,  
PROC3FRMLGX=1+1,PROC3TOLGX=1+1,OPOC3FRMLGX=1+1,OPOC3TOLGX=1+1,PYLDFRMLGX=-3,  
PYLDTOLGX=-3,SYNCSMSG=DISABLED:,IS"

"ls-5a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-5b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-6a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-6b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-7a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-7b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=1+1,PROC3TOLGX=1+1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-8a::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-8b::NTFCNCDE=CR,SDTHR=-5,AU4MAP=SONET,PROC3FRMLGX=0x1,PROC3TOLGX=0x1,  
PYLDFRMLGX=-3,PYLDTOLGX=-3:,OOS-MA-AS"

"ls-1a-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-1a-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-1a-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-1b-1::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-1b-2::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-1b-3::NTFCNCDE=CR,SDTHR=-3:OOS-MA-AS,OOS-MA-AS"

"ls-2a-1::NTFCNCDE=CR,SDTHR=-3:IS,IS"

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```
"ls-2a-2::NTFCNCDE=CR, SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2a-3::NTFCNCDE=CR, SDTHR=-3:IS,IS"
"ls-2b-1::NTFCNCDE=CR, SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2b-2::NTFCNCDE=CR, SDTHR=-6:00S-MA-AS,00S-MA-AS"
"ls-2b-3::NTFCNCDE=CR, SDTHR=-6:00S,00S"
"ls-3a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-3b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-4b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-5b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-6b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-7b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8a-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-1::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-2::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-8b-3::NTFCNCDE=CR, SDTHR=-3:00S-MA-AS,00S-MA-AS"
"ls-1a-1::NTFCNCDE=CR, SDTHR=-6,FMT=ASYNCR,LINECDE=B3ZS,OMODE=NORM,PBIT=ON,
PMODE=P:00S,IS"
"ls-1a-2::NTFCNCDE=MJ, SDTHR=-3,FMT=ASYNCR,LINECDE=B3ZS,OMODE=NORM,PBIT=OFF,
PMODE=P:IS,IS"
"ls-1a-3::NTFCNCDE=MN, SDTHR=-3,FMT=ASYNCR,LINECDE=CCHAN,OMODE=AIS,PBIT=OFF,
PMODE=P:IS,00S"
"ls-1b-1::NTFCNCDE=CR, SDTHR=-3,FMT=ASYNCR,LINECDE=B3ZS,OMODE=NORM,PBIT=ON,
PMODE=P:00S-MA-AS,00S-MA-AS"
"ls-1b-2::NTFCNCDE=CR, SDTHR=-3,FMT=ASYNCR,LINECDE=B3ZS,OMODE=NORM,PBIT=ON,
PMODE=P:00S-MA-AS,00S-MA-AS"
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```

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```
"ls-1b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-2b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-3b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-4b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-5a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-5a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
"ls-5a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:00S-MA-AS, 00S-MA-AS"
```

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```
"ls-5b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-5b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-5b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-6b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-7b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8a-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8a-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8a-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8b-1::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8b-2::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
"ls-8b-3::NTFCNCDE=CR, SDTHR=-3, FMT=ASYNCR, LINECDE=B3ZS, OMODE=NORM, PBIT=ON,
PMODE=P:OOS-MA-AS, OOS-MA-AS"
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-rr** command, also.

If a FT-2000 network element receives a **RTRV-rr** command with any extra (beyond the input format specification above) null or non-null command parameter blocks (:), parameters (,), or termination characters (;), the following error response is returned to the OS:

```
sid date time
M ctag DENY
IISP
/* Input, Invalid Syntax or Punctuation */
;
```

If FT-2000 receives a **RTRV-rr** command without an *aid* value or with an *aid* value that is invalid for the *modifier* provided, the following error response is returned to the OS:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier, AID missing or inconsistent
   with modifier value */
;
```



If FT-2000 receives a **RTRV-rr** command with a *type* value that is other than null, the following error response is returned to the OS:

```
sid date time
M ctag DENY
  INUP
/* Input, Non-null Unimplemented Parameter, TYPE must be null */
;
```

## RELATED TL1 COMMANDS/MESSAGES

RTRV-PROTN-*rr*  
ENT-PROTN-*rr*  
ENT-*rr*  
OPR-PROTNSW-*OC3*  
OPR-PROTNSW-*OC12*  
OPR-PROTNSW-*OC48*  
OPR-PROTNSW-*SWFBR*  
OPR-PROTNSW-*rr*  
SET-ATTR-*rr*  
REPT SW  
RLS-PROTNSW-*OC3*  
RLS-PROTNSW-*OC12*  
RLS-PROTNSW-*OC48*  
RLS-PROTNSW-*SWFBR*  
RLS-PROTNSW-*rr*  
RTRV-PROTN-*rr*

## NAME

**RTRV-STATE:** Retrieve State

Support for this message is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV-STATE:***tid:[aid]:ctag;*

## DESCRIPTION

The **RTRV-STATE** command can be initiated by users to retrieve slot, STS-1 tributary protection switching state, and timing circuit pack switch priority information for the network element.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the slot, or STS-1 tributary for which this command is intended. The *aid* value may also be **all** or null.

If null the *aid* value defaults to **all**.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

## OUTPUT FORMAT

If there is state information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "aid[, cptype]:sw_state, actswprty, queswprty"
      .           .           .
      .           .           .
  "aid[, cptype]:sw_state, actswprty, queswprty"
;
```

The output report is sorted as follows:

1. Timing generator slot data
2. High speed slot (OC48) data
3. STS1 tributary data.

Within each group, the entries are sorted by *aid* values.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------|
| <i>aid</i>      | Access identifier. This is the address of the slot, STS-1 tributary, or line for which state information is given.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |
| <i>cptype</i>   | Circuit Pack Type. This is the mnemonic name of the circuit pack. For example, TG3 is the mnemonic name of the timing generator circuit pack. A null value implies that the slot is not equipped or the parameter does not apply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |
| <i>sw_state</i> | Switch State. This is the switch state of the addressed switchable entity. This parameter will have one of the following values: <table><tr><td>ACT</td><td>Active. This specifies that the addressed entity is in the active state. For an STS-1 tributary, this specifies that this is a service tributary or that this is a protection tributary with an active protection access request.</td></tr><tr><td>STBY</td><td>Standby. This specifies that the addressed entity is in the standby state. For an STS-1 tributary, this specifies that this is a protection tributary without an active protection access request.</td></tr><tr><td>RDNA</td><td>Requested data not available. If the requested <i>sw_state</i> data for the addressed entity is corrupted, this value is reported.</td></tr></table> | ACT | Active. This specifies that the addressed entity is in the active state. For an STS-1 tributary, this specifies that this is a service tributary or that this is a protection tributary with an active protection access request. | STBY | Standby. This specifies that the addressed entity is in the standby state. For an STS-1 tributary, this specifies that this is a protection tributary without an active protection access request. | RDNA | Requested data not available. If the requested <i>sw_state</i> data for the addressed entity is corrupted, this value is reported. |
| ACT             | Active. This specifies that the addressed entity is in the active state. For an STS-1 tributary, this specifies that this is a service tributary or that this is a protection tributary with an active protection access request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |
| STBY            | Standby. This specifies that the addressed entity is in the standby state. For an STS-1 tributary, this specifies that this is a protection tributary without an active protection access request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |
| RDNA            | Requested data not available. If the requested <i>sw_state</i> data for the addressed entity is corrupted, this value is reported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                    |      |                                                                                                                                    |

### ⇒ NOTE:

"Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

|                  |                                                                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>actswprty</i> | Active Switch Priority. This field is reported for addressed switchable entities in the case of a protection switch being in effect. It specifies the current active protection switching |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

request. If non-null, the *actswprty* parameter has one of the following values (for clarity, the values applicable to a given entity are grouped together and listed in the order of priority of request):

**For\_TG:**

|              |                                                                                                                                       |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------|
| MAN          | Manual. This specifies that a manual protection switching request is active.                                                          |
| APS(CP-FAIL) | Automatic protection switch (Circuit Pack Fail). This specifies that an automatic protection switching request is active.             |
| TG-WARMUP    | Timing Generator-Warming Up. This specifies that the TG circuit pack is in the standby state because the warming up timer is running. |
| RDNA         | Requested data not available. If the requested <i>actswprty</i> data for the addressed entity is corrupted, this value is reported.†  |

**For TRMTR OR RCVR:**

|               |                                                                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOCKOUT-NE    | Lockout Near End. This specifies that a lockout of protection switching request is active because of a command executed at this network element.       |
| LOCKOUT-FE    | Lockout Far End. This specifies that a lockout of protection switching request is active because of a command executed at the other end of the span.   |
| LOCKOUT-OTHER | Lockout Other. This specifies that a lockout of protection switching request is active because of a command executed on some other span in the ring.   |
| FRCD-NE       | Forced Switch Near End. This specifies that a forced protection switching request is active because of a command executed at this network element.     |
| FRCD-FE       | Forced Switch Far End. This specifies that a forced protection switching request is active because of a command executed at the other end of the span. |
| FRCD-OTHER    | Forced Switch Other. This specifies that a forced protection switching request is active because of a command executed on some other span in the ring. |

|                 |                                                                                                                                                                                                   |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APS(SF)         | Automatic protection switch (Signal Failure). This specifies that an automatic protection switching request is active because of a signal fail condition.                                         |
| APS(SF) - OTHER | Automatic protection switch (Signal Failure) Other. This specifies that an automatic protection switching request is active because of a signal fail condition on some other span in the ring.    |
| APS(SD)         | Automatic protection switch (Signal Degrade). This specifies that an automatic protection switching request is active because of a signal degrade condition.                                      |
| APS(SD) - OTHER | Automatic protection switch (Signal Degrade) Other. This specifies that an automatic protection switching request is active because of a signal degrade condition on some other span in the ring. |
| MAN-NE          | Manual Switch Near End. This specifies that a manual protection switching request is active because of a command executed at this network element.                                                |
| MAN-FE          | Manual Switch Far End. This specifies that a manual protection switching request is active because of a command executed at the other end of the span.                                            |
| MAN-OTHER       | Manual Switch Other. This specifies that a manual protection switching request is active because of a command executed on some other span in the ring.                                            |
| RDNA            | Requested data not available. If the requested <i>actswprty</i> data for the addressed entity is corrupted, this value is reported.                                                               |



**NOTE:**

"Corrupted" means that the provisioned state of the system is such that the data should be available but, for some other reason, it is not. For example, the associated LNCTL circuit pack might be failed.

**For\_PROTN\_TRIB:**

TEMPORARY-NE    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request at the local node.

TEMPORARY-FE    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request at the other end of the span containing the tributary.

TEMPORARY-OTHER  
                    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request made for some other tributary not adjacent to the local node in the same high speed time slot.

PERMANENT-NE    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request at the local node.

PERMANENT-FE    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request at the other end of the span containing the tributary.

PERMANENT-OTHER  
                    There is an active temporary (that is, reportable) protection access request on this tributary due to a user request made for some other tributary not adjacent to the local node in the same high speed time slot.

**For\_SRVC\_TRIB:**

UNPROTECTED      There is an active temporary or permanent protection access request on the protection tributary associated with this service tributary. This tributary will not be protected during high speed switches.

## EXAMPLE INPUT/OUTPUT

The following examples show the **RTRV-STATE** command. The system is equipped as follows:

- TG3 CPs in slots TG-1, TG-2.
- TRMTR and RCVR CPs in all four high speed slots.

```
rtrv-state:LT-PF-2000:all:123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 97-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"tg-1, TG3:ACT, ,MAN"
```

```
"tg-2, TG3:ACT,APS(CP-FAIL),"
```

```
"trmtr-1e, TRMTR:STBY,APS(SD),"
```

```
"trmtr-1w, TRMTR:ACT,APS(SD)-OTHER,"
```

```
"rcvr-1e, RCVR:STBY,APS(SD),"
```

```
"rcvr-1w, RCVR:ACT,APS(SD)-OTHER,"
```

```
"sts1-1w-1-1:ACT,UNPROTECTED,"
```

```
"sts1-1w-1-2:ACT,UNPROTECTED,"
```

```
"sts1-1w-1-3:ACT,UNPROTECTED,"
```

```
"sts1-1w-2-1:ACT,UNPROTECTED,"
```

```
"sts1-1w-2-2:ACT,,"
```

```
"sts1-1w-2-3:ACT,,"
```

```
"sts1-1w-3-1:ACT,,"
```

```
"sts1-1w-3-2:ACT,,"
```

```
"sts1-1w-3-3:ACT,,"
```

```
"sts1-1w-4-1:ACT,,"
```

```
"sts1-1w-4-2:ACT,,"
```

```
"sts1-1w-4-3:ACT,,"
```

```
"sts1-1w-5-1:ACT,,"
```

```
"sts1-1w-5-2:ACT,,"
```

```
"sts1-1w-5-3:ACT,,"
```

```
"sts1-1w-6-1:ACT,,"
```

```
"sts1-1w-6-2:ACT,,"
```

```
"sts1-1w-6-3:ACT,,"
```

```
"sts1-1w-7-1:ACT,,"
```

```
(Continued)
```

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```
"sts1-1w-7-2:ACT,, "  
"sts1-1w-7-3:ACT,, "  
"sts1-1w-8-1:ACT,, "  
"sts1-1w-8-2:ACT,, "  
"sts1-1w-8-3:ACT,, "  
"sts1-1w-9-1:ACT, TEMPORARY-OTHER, "  
"sts1-1w-9-2:ACT, PERMANENT-OTHER, "  
"sts1-1w-9-3:ACT, PERMANENT-OTHER, "  
"sts1-1w-10-1:ACT, TEMPORARY-FE, "  
"sts1-1w-10-2:STBY,, "  
"sts1-1w-10-3:STBY,, "  
"sts1-1w-11-1:STBY,, "  
"sts1-1w-11-2:STBY,, "  
"sts1-1w-11-3:STBY,, "  
"sts1-1w-12-1:STBY,, "  
"sts1-1w-12-2:STBY,, "  
"sts1-1w-12-3:STBY,, "  
"sts1-1w-13-1:STBY,, "  
"sts1-1w-13-2:STBY,, "  
"sts1-1w-13-3:STBY,, "  
"sts1-1w-14-1:STBY,, "  
"sts1-1w-14-2:STBY,, "  
"sts1-1w-14-3:STBY,, "  
"sts1-1w-15-1:STBY,, "  
"sts1-1w-15-2:STBY,, "  
"sts1-1w-15-3:STBY,, "  
"sts1-1w-16-1:STBY,, "  
"sts1-1w-16-2:STBY,, "  
"sts1-1w-16-3:STBY,, "  
"sts1-1e-1-1:ACT, UNPROTECTED, "  
"sts1-1e-1-2:ACT, UNPROTECTED, "  
"sts1-1e-1-3:ACT, UNPROTECTED, "  
"sts1-1e-2-1:ACT, UNPROTECTED, "  
"sts1-1e-2-2:ACT,, "  
"sts1-1e-2-3:ACT,, "  
"sts1-1e-3-1:ACT,, "  
"sts1-1e-3-2:ACT,, "  
"sts1-1e-3-3:ACT,, "  
"sts1-1e-4-1:ACT,, "  
"sts1-1e-4-2:ACT,, "  
"sts1-1e-4-3:ACT,, "  
"sts1-1e-5-1:ACT,, "  
"sts1-1e-5-2:ACT,, "  
"sts1-1e-5-3:ACT,, "  
"sts1-1e-6-1:ACT,, "  
"sts1-1e-6-2:ACT,, "  
"sts1-1e-6-3:ACT,, "  
"sts1-1e-7-1:ACT,, "
```

(Continued)



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```
"sts1-1e-7-2:ACT,, "  
"sts1-1e-7-3:ACT,, "  
"sts1-1e-8-1:ACT,, "  
"sts1-1e-8-2:ACT,, "  
"sts1-1e-8-3:ACT,, "  
"sts1-1e-9-1:ACT, TEMPORARY-OTHER, "  
"sts1-1e-9-2:ACT, PERMANENT-OTHER, "  
"sts1-1e-9-3:ACT, PERMANENT-OTHER, "  
"sts1-1e-10-1:ACT, TEMPORARY-FE, "  
"sts1-1e-10-2:STBY,, "  
"sts1-1e-10-3:STBY,, "  
"sts1-1e-11-1:STBY,, "  
"sts1-1e-11-2:STBY,, "  
"sts1-1e-11-3:STBY,, "  
"sts1-1e-12-1:STBY,, "  
"sts1-1e-12-2:STBY,, "  
"sts1-1e-12-3:STBY,, "  
"sts1-1e-13-1:STBY,, "  
"sts1-1e-13-2:STBY,, "  
"sts1-1e-13-3:STBY,, "  
"sts1-1e-14-1:STBY,, "  
"sts1-1e-14-2:STBY,, "  
"sts1-1e-14-3:STBY,, "  
"sts1-1e-15-1:STBY,, "  
"sts1-1e-15-2:STBY,, "  
"sts1-1e-15-3:STBY,, "  
"sts1-1e-16-1:STBY,, "  
"sts1-1e-16-2:STBY,, "  
"sts1-1e-16-3:STBY,, "
```

;

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there also apply to the **RTRV-STATE** command.

If an **RTRV-STATE** command is received with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

## RELATED TL1 COMMANDS/MESSAGES

ENT-PROT-orr  
ENT-orr  
OPR-PROTNSW-OC48  
REPT SW  
RLS-PROTNSW-OC48  
RLS-PROTNSW-orr  
RTRV-ATTR-orr  
RTRV-PROT-orr  
RTRV-SYNCN  
SET-ATTR-orr

## NAME

**RTRV - SYNCN:** Retrieve Synchronization

Support for this command is available in Release 7.1 and later.

## INPUT FORMAT

**RTRV - SYNCN:***tid::ctag*;

## DESCRIPTION

This command displays the provisioning and operational information on the synchronization attributes as set by the **ENT - SYNCN** command.

Output reports will vary according to the provisioned timing mode.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

**OUTPUT FORMAT**

If the network element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
  "PROVISIONED_MODE=syncnmod,"
  "OPERATING_TIMING_MODE_E=oper_E, OPERATING_TIMING_MODE_W=oper_W,"
  "TG1_CLOCK_RANGE_STATUS=tg1_clk_sts, TG2_CLOCK_RANGE_STATUS=tg2_clk_sts,"
  "PRIMARY_DS1_INPUT/OUTPUT_FORMAT=pds1_iof, SECONDARY_DS1_INPUT/OUTPUT_FORMAT=sds1_iof,"
  "PRIMARY_DS1_INPUT_LINE_CODE=pds1_ilc, SECONDARY_DS1_INPUT_LINE_CODE=sds1_ilc,"
  "DS1_OUT_1_EQUALIZATION=ds11_equ, DS1_OUT_2_EQUALIZATION=ds12_equ,"
  "DS1_OUT_1_STATUS=ds11_stat, DS1_OUT_2_STATUS=ds12_stat,"
  "line_aid, INPUT_MSG=input_msg, OUTPUT_MSG=output_msg,"
  "line_aid, INPUT_MSG=input_msg, OUTPUT_MSG=output_msg[,]"
["slot, OUTPUT_MSG=output_msg,"]
.
.
.
.
.
["slot, OUTPUT_MSG=output_msg"]
;
```

For Release 7.2 and later:

If the Network Element fully complies with the request, the following normal completion response is returned:

```

sid date time
M ctag COMPLD
  "PROVISIONED_MODE=synchnmod, [SYNCHRONIZATION_SOURCE=src,]"
  "OPERATING_TIMING_MODE_E=oper_E, OPERATING_TIMING_MODE_W=oper_W, "
  "TG1_CLOCK_RANGE_STATUS=tg1_clk_sts, TG2_CLOCK_RANGE_STATUS=tg2_clk_sts, "
  "PRIMARY_DS1_INPUT/OUTPUT_FORMAT=pds1_iof,
SECONDARY_DS1_INPUT/OUTPUT_FORMAT=sds1_iof, "
  "PRIMARY_DS1_INPUT_LINE_CODE=pds1_ilc, SECONDARY_DS1_INPUT_LINE_CODE=sds1_ilc, "
  "DS1_OUT_1_EQUALIZATION=ds11_equ, DS1_OUT_2_EQUALIZATION=ds12_equ, "
  "DS1_OUT_1_STATUS=ds11_stat, DS1_OUT_2_STATUS=ds12_stat, "
  "line_aid, INPUT_MSG=input_msg, OUTPUT_MSG=output_msg, "
  "line_aid, INPUT_MSG=input_msg, OUTPUT_MSG=output_msg[,]"
  ["slot, OUTPUT_MSG=output_msg, "]
  .
  .
  .
  .
  .
  .
  ["slot, OUTPUT_MSG=output_msg"]
;

```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also. Additional parameters that specifically apply to this command are defined below.

|                     |                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>line_aid</i>     | Line access identifier. This is the line address of the equipment component for which output is being reported. This <i>aid</i> uniquely identifies a high speed interface slot.                   |
| <i>slot_aid</i>     | Slot access identifier. This is the slot address of the facility for which output is being reported.                                                                                               |
| <i>input_msg</i>    | Input Synchronization Message. This indicates the input synchronization message received on the high speed line identified by the <i>line_aid</i> .                                                |
| ?                   | Indicates that the message is not readable (for example, due to a line failure).                                                                                                                   |
| DON'T_USE           | The high speed line is not suitable for synchronization timing (DUS, Quality Level 7).                                                                                                             |
| UNDEFINED           | The high speed line is receiving a message on the S1 byte that is not defined by the standards (Quality Level 7). Upon receiving this message, the system treats it the same as DON'T_USE message. |
| TRACEABLE_SONET_CLK | The high speed line is receiving timing from a system in holdover or free running (SIC, Quality Level 5).                                                                                          |
| TRACEABLE_STRATUM_3 | The high speed line is receiving timing from a Stratum 3 clock source (ST3, Quality Level 4).                                                                                                      |
| TRACEABLE_STRATUM_2 | The high speed line is receiving timing from a Stratum 2 clock source (ST2, Quality Level 3).                                                                                                      |
| SYNC_TRACE_UNKNOWN  | This high speed line is receiving timing from a good quality clock source (STU, Quality Level 2).                                                                                                  |
| PRS_TRACEABLE       | The high speed line is receiving timing from a Stratum 1 clock source (PRS, Quality Level 1).                                                                                                      |

*output\_msg*

Output Synchronization Message. This indicates the synchronization message transmitted on the high speed line identified by the *line\_aid* or on the optical low speed interface identified by the *slot\_aid*.

? Indicates that the message is not readable (for example, due to a line or optical low speed interface failure).

DON'T\_USE The high speed line or optical low speed interface is not suitable for synchronization timing (DUS, Quality Level 7).

TRACEABLE\_SONET\_CLK  
The high speed line or optical low speed interface is receiving timing from a system in holdover or free running (SIC, Quality Level 5).

TRACEABLE\_STRATUM\_3  
The high speed line or optical low speed interface is receiving timing from a Stratum 3 clock source (ST3, Quality Level 4).

TRACEABLE\_STRATUM\_2  
The high speed line or optical low speed interface is receiving timing from a Stratum 2 clock source (ST2, Quality Level 3).

SYNC\_TRACE\_UNKNOWN  
This high speed line or optical low speed interface is receiving timing from a good quality clock source (STU, Quality Level 2).

PRS\_TRACEABLE  
The high speed line or optical low speed interface is receiving timing from a Stratum 1 clock source (PRS, Quality Level 1).

In addition to the above *output\_msgs*, the following values may also be reported for the optical low speed interface identified by the *slot\_aid*.

DISABLED Indicates that the field is not applicable (for example, if synchronization messaging is disabled).

*syncnmod* Synchronization Mode. This indicates the provisioned synchronization mode. It may have one of the following values.

FRNG Free Running. In this mode, the network element derives timing from the internal stratum 3 oscillator. This

internal timing is used to time all synchronous outgoing signals.

THRU Through timed. In this mode, the network element derives timing from both high speed lines independently. Timing received from one direction is used to time the transmitted high speed signal in the same direction and the low speed interfaces that are dropped from the incoming high speed signal. For example, in the east to west direction, timing is derived from the high speed signal coming from the east on RCVR 1E and used to time the high speed signal going to the west TRMTR 1W and any low speed signals dropping from RCVR 1E. The converse occurs for the west to east direction.

EXT Externally timed. In this mode, the network element derives timing from either the primary or secondary DS1 timing reference input. Timing received from the primary or secondary DS1 timing reference is used to time all synchronous outgoing signals.

For Release 7.2 and later:  
It may have one of the above or the following value.

LINE Line timed. In this mode, the network element derives timing from one incoming high speed line. Timing received from the specified high speed line is used to time all synchronous outgoing signals.

*src*

For Release 7.2 and later:  
Synchronization source. This parameter indicates the line from which the system timing and/or the DS1 synchronization output timing will be derived when the provisioned synchronization mode, syncnmod, is line timed, LINE. It may have one of the following values:



- |      |                                                                                                                                                                                                                                                                                                                                             |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1E   | This indicates that the East line is the synchronization source.                                                                                                                                                                                                                                                                            |
| 1W   | This indicates that the West line is the synchronization source.                                                                                                                                                                                                                                                                            |
| auto | Autoreconfiguration allows the system to choose the best timing source to use when it is provisioned for Line Timing. Automatic Protection Switching takes place to the standby timing source when the active source fails. The switch is nonrevertive, and there will not be an automatic switch back when the failed source becomes good. |

When this parameter is chosen, the system automatically reconfigures between line timing sources 1E and 1W.

*oper\_E* Operating Mode East is the operational synchronization mode on outgoing line-1e. It can have one of the following values.

- |       |                              |
|-------|------------------------------|
| FRNG  | Free Running                 |
| THRU  | Through Timed                |
| EXT_P | Externally Timed - Primary   |
| EXT_S | Externally Timed - Secondary |
| HLDVR | Holdover                     |

For Release 7.2 and later:  
It may have one of the above or one of the following values.

- |        |                 |
|--------|-----------------|
| LINE_E | Line Timed East |
| LINE_W | Line Timed West |

*oper\_W* Operating Mode West is the operational synchronization mode on outgoing line-1w. It can have one of the following values.

- |       |                            |
|-------|----------------------------|
| FRNG  | Free Running               |
| THRU  | Through Timed              |
| EXT_P | Externally Timed - Primary |

EXT\_S        Externally Timed - Secondary  
HLD0VR      Holdover

For Release 7.2 and later:  
It may have one of the above or one of the  
following values.

LINE\_E      Line Timed East  
LINE\_W      Line Timed West

*tg1\_clk\_sts*

TG-1 Clock Range Status. This indicates the  
current percentage of the maximum allowable  
adjustment range of the TG3 pack in the TG-1  
slot. This parameter is an integer within  
ranging from -110 to 110.

*tg2\_clk\_sts*

TG-2 Clock Range Status. This indicates the  
current percentage of the maximum allowable  
adjustment range of the TG3 pack in the TG-2  
slot. This parameter is an integer within  
ranging from -110 to 110.

*pds1\_iof*

Primary DS1 Input and Output format. This  
indicates the DS1 signal format for the  
primary DS1 timing reference. It may have  
one of the following values.

SF    This indicates that the DS1 signal  
format is set to Super Frame.

ESF   This indicates that the DS1 signal  
format is set to Extended Super Frame.

*sds1\_iof*

Secondary DS1 Input and Output format.  
This indicates the DS1 signal format for the  
secondary DS1 timing reference. It may have  
one of the following values.

SF    This indicates that the DS1 signal  
format is set to Super Frame.

ESF   This indicates that the DS1 signal  
format is set to Extended Super Frame.

*pds1\_iloc*

Primary DS1 Input Line Code. This indicates  
the DS1 line code for the primary DS1 timing  
reference input. It may have one of the  
following values.

AMI This indicates that the DS1 line code is set to Alternate Mark Inversion.

B8ZS This indicates that the DS1 line code is set to Bipolar 8 Zero Substitution.

*sds1\_illc* Secondary DS1 Input Line Code. This indicates the DS1 line code for the secondary DS1 timing reference input. It may have one of the following values.

AMI This indicates that the DS1 line code is set to Alternate Mark Inversion.

B8ZS This indicates that the DS1 line code is set to Bipolar 8 Zero Substitution.

*ds11\_equ* DS1 OUT 1 Equalization. This indicates the equalizer setting for the DS1 timing reference from the TG3 circuit pack in slot TG-1. Its value corresponds to the maximum percentage of the rated cable length that is supported by the setting. It may have one of the following values.

20 This indicates that the maximum cable length for 600 Type cable is 130 feet or for 1249 Type cable is 90 feet.

40 This indicates that the maximum cable length for 600 Type cable is 260 feet or for 1249 Type cable is 180 feet.

60 This indicates that the maximum cable length for 600 Type cable is 390 feet or for 1249 Type cable is 270 feet.

80 This indicates that the maximum cable length for 600 Type cable is 520 feet or for 1249 Type cable is 360 feet.

100 This indicates that the maximum cable length for 600 Type cable is 660 feet or for 1249 Type cable is 450 feet.

*ds12\_equ* DS1 OUT 2 Equalization. This indicates the equalizer setting for the DS1 timing reference from the TG3 circuit pack in slot TG-2. Its value corresponds to the maximum percentage of the rated cable length that is supported by the setting. It may have one of the following values.

- 20 This indicates that the maximum cable length for 600 Type cable is 130 feet or for 1249 Type cable is 90 feet.
- 40 This indicates that the maximum cable length for 600 Type cable is 260 feet or for 1249 Type cable is 180 feet.
- 60 This indicates that the maximum cable length for 600 Type cable is 390 feet or for 1249 Type cable is 270 feet.
- 80 This indicates that the maximum cable length for 600 Type cable is 520 feet or for 1249 Type cable is 360 feet.
- 100 This indicates that the maximum cable length for 600 Type cable is 660 feet or for 1249 Type cable is 450 feet.

*ds11\_stat* DS1 OUT 1 Status. This indicates the status of the DS1 timing reference from the TG3 circuit pack in slot TG-1. It may have one of the following values.

- ON This indicates that DS1-OUT-1 is transmitting a valid DS1 signal.
- OFF This indicates that DS1-OUT-1 is inactive due to a the TG-1 circuit pack being failed or unequipped.
- AIS This indicates that DS1-OUT-1 is transmitting a DS1 AIS signal.

*ds12\_stat* DS1 OUT 2 Status. This indicates the status of the DS1 timing reference from the TG3 circuit pack in slot TG-2. It may have one of the following values.

- ON This indicates that DS1-OUT-2 is transmitting a valid DS1 signal.
- OFF This indicates that DS1-OUT-2 is inactive due to a the TG-2 circuit pack being failed or unequipped.
- AIS This indicates that DS1-OUT-2 is transmitting a DS1 AIS signal.

**EXAMPLE INPUT/OUTPUT**

This example shows the report generated from a network element provisioned for external timing, with OC3 interfaces in slots 1A, 1B, 2A, and 2B, and with OC12 interfaces in Quads 3 and 4.

```
rtrv-syncn:LT-PF-2000::123456;  
IP 123456  
<  
  
LT-PF-2000 97-10-26 16:38:47  
M 123456 COMPLD  
  "PROVISIONED_MODE=EXT, "  
  "OPERATING_TIMING_MODE_E=EXT_P, OPERATING_TIMING_MODE_W=EXT_P, "  
  "TG1_CLOCK_RANGE_STATUS=10, TG2_CLOCK_RANGE_STATUS=-5, "  
  "PRIMARY_DS1_INPUT/OUTPUT_FORMAT=ESF, SECONDARY_DS1_INPUT/OUTPUT_FORMAT=ESF, "  
  "PRIMARY_DS1_INPUT_LINE_CODE=B8ZS, SECONDARY_DS1_INPUT_LINE_CODE=B8ZS, "  
  "DS1_OUT_1_EQUALIZATION=100, DS1_OUT_2_EQUALIZATION=100, "  
  "DS1_OUT_1_STATUS=ON, DS1_OUT_2_STATUS=OFF, "  
  "line-1e, INPUT_MSG=SYNC_TRACE_UNKNOWN, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
  "line-1w, INPUT_MSG=SYNC_TRACE_UNKNOWN, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
  "ls-1a, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
  "ls-1b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
  "ls-2a, OUTPUT_MSG=DISABLED, "  
  "ls-2b, OUTPUT_MSG=DISABLED, "  
  "ls-5b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
  "ls-7b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN"  
;
```

For Release 7.2 and later:

This example shows the report generated from a network element provisioned for line timing, with OC3 interfaces in slots 1A, 1B, 2A, and 2B, and with OC12 interfaces in Quads 3 and 4.

```
rtrv-syncn:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 97-10-26 16:38:47
```

```
M 123456 COMPLD
```

```
"PROVISIONED_MODE=LINE, SYNCHRONIZATION_SOURCE=1E, "  
"OPERATING_TIMING_MODE_E=LINE_E, OPERATING_TIMING_MODE_W=LINE_E, "  
"TG1_CLOCK_RANGE_STATUS=10, TG2_CLOCK_RANGE_STATUS=-5, "  
"PRIMARY_DS1_INPUT/OUTPUT_FORMAT=ESF, SECONDARY_DS1_INPUT/OUTPUT_FORMAT=ESF, "  
"PRIMARY_DS1_INPUT_LINE_CODE=B8ZS, SECONDARY_DS1_INPUT_LINE_CODE=B8ZS, "  
"DS1_OUT_1_EQUALIZATION=100, DS1_OUT_2_EQUALIZATION=100, "  
"DS1_OUT_1_STATUS=AIS, DS1_OUT_2_STATUS=ON, "  
"line-1e, INPUT_MSG=SYNC_TRACE_UNKNOWN, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
"line-1w, INPUT_MSG=SYNC_TRACE_UNKNOWN, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
"ls-1a, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
"ls-1b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
"ls-2a, OUTPUT_MSG=DISABLED, "  
"ls-2b, OUTPUT_MSG=DISABLED, "  
"ls-5b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN, "  
"ls-7b, OUTPUT_MSG=SYNC_TRACE_UNKNOWN"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

The network element returns the following error response when both TG slots are in the auto state.

```
sid date time
M ctag DENY
  ENEQ
/* Equipage, Not EQuipped, Both timing slots are unequipped */
;
```

#### RELATED TL1 MESSAGES

ENT-SYNCN

OPR-SYNCNSW

RLS-SYNCNSW

## NAME

**RTRV-SYS:** Retrieve network element name and other system level parameters.

This command is available for FT-2000 OC-48 Releases 4.1 and later.

## INPUT FORMAT

For Release 4.1:

**RTRV-SYS:***[tid]::ctag;*

For Release 5.0 and later:

**RTRV-SYS:***tid::ctag;*

## DESCRIPTION

Release 4.1:

Execution of this command on a network element retrieves the attributes associated with that network element system, but not associated with any particular facility or equipment unit.

The system level attributes are the information that is provisioned by the TL1 **ENT-SYS** command.

Release 5.0:

Execution of this command on a network element retrieves the attributes associated with that network element system or CIT port. The system level attributes are the information that is provisioned by the TL1 **ENT-SYS** command. The CIT port attributes are provisioned via the CIT-PC command and TL1 **ENT-CID-SECU** (Releases 7.2 and later) command.

Release 6.0 through 7.2:

Execution of this command on a network element retrieves the attributes associated with that network element's system or X.25 ports. The X.25 port attributes are the information that is provisioned by the **set-network element** CIT-PC command and TL1 **ENT-SYS** command.

Releases 8.0 and later:

Execution of this command on a Network Element retrieves the attributes associated with that Network Element's system or X.25 ports. The system level and X.25 port attributes are the information that is provisioned by the **set-network element** CIT-PC command and TL1 **ENT-SYS** command.



Release 4.1:

The **RTRV-SYS** command can be initiated by a user to retrieve network element attributes associated with that network element at the system level or with the X.25 port parameters that are currently in effect, but not associated with any particular facility or equipment unit.

Release 5.0:

The **RTRV-SYS** command can be initiated by a user to retrieve network element attributes associated with that network element at the system level or with the CIT ports that are currently in effect.

Releases 6.0 and later:

The **RTRV-SYS** command can be initiated by a user to retrieve network element attributes associated with that network element at the system level or with the X.25 or CIT port parameters that are currently in effect.

Releases 8.0 and later:

The **RTRV-SYS** command can be initiated by a user to retrieve Network Element attributes associated with that network element at the system level or with the X.25 port parameters that are currently in effect.

## INPUT PARAMETERS

- |             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response commands. |

## OUTPUT FORMAT

For Release 4.1, if there is system information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "tid=system_name, nid=n, dsne=x, gne=x, sadd=x, sadd=y"
;
```

For Release 5.0, if there is system information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "tid=system_name, nid=n, dsne=x, sadd=x, sadd=y"
  "dce=protocol, baud_t11-dce=n, dte=protocol, baud_t11-dte=n"
;
```

For Release 6.0, if there is system information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "tid=system_name, dsne=x, x25ps=x, sadd=x, sadd=y"
  "almgrp=n, agne=x
  "dce=protocol, baud_tl1-dce=n, dte=protocol, baud_tl1-dte=n"
;
```

For Releases 7.0 through 7.2, if there is system information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "tid=system_name, dsne=x, x25ps=x, sadd=x, sadd=y"
  "almgrp=n, agne=x, tsagran=x"
  "dce=protocol, baud_tl1-dce=n, dte=protocol, baud_tl1-dte=n"
;
```

For Releases 8.0 and later:

If there is system information to report, the following output message is returned:

```
sid date time
M ctag COMPLD
  "tid=system_name, x25ps=x, sadd=x, sadd=x"
  "tsagran=x"
;
```

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**. Additional parameters that specifically apply to this command response are defined below.

*tid* Target Identifier. This is the system name.

For Releases 4.1 through 7.0:  
The original value for *tid* is *ATT-FT-2000*.

For Releases 7.1 and later:  
The original value for *tid* is *LT-FT-2000*.

*nid* Node Identifier.

For Releases 4.1 through 5.0:  
The *nid* is the Self Healing Ring address of the NE. *nid* is an integer with a range of 0-15.

*dsne* For Releases 4.1 through 7.2:  
The *dsne* indicates whether or not the network element identified by the *tid* is serving as the Directory Service-network element in a Self Healing Ring or subnetwork. It takes the values *yes* or *no*.

*x25ps* For Releases 6.0 and later:  
X.25 Packet Size. *x25ps* may have a value of 256 or 128. This parameter determines the TL1 packet size for the X.25 interface.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>gne</i>          | <p>Gateway Network Element.</p> <p>For Release 4.1:<br/>This indicates whether this system is a gateway network element (GNE), providing a direct TL1 interface. It has a value of yes or no.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>agne</i>         | <p>Alarm Gateway Network Element.</p> <p>For Releases 6.0 through 7.2:<br/><i>agne</i> may have a value of yes or no. This parameter determines whether the local NE serves its Alarm Group or SMSB as an AGNE or not.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>agne_address</i> | <p>For Releases 6.0 through 7.2:<br/>The <i>agne_address</i> is the TID of the <i>agne</i> for the <i>almgrp</i> of the addressed NE. It can be the TID of the addressed NE or any other NE in the <i>almgrp</i>. More than one NE can be an <i>agne</i> for redundancy reasons. If more than one <i>agne</i> exists for the <i>almgrp</i> for the addressed NE, they are reported by repeating the <i>agne_address=TID</i> construct. If there are no <i>agnes</i> defined for the <i>almgrp</i> of the addressed NE, then this parameter is not included in the NE output.</p>                                                                                                                                                |
| <i>dsne_address</i> | <p>For Releases 7.0 through 7.2, the <i>dsne_address</i> is the TID of the <i>dsne</i> for the subnetwork that the addressed NE is a member of. It can be the TID of the addressed NE or any other NE in the subnetwork. No more than one NE can be a <i>dsne</i> at any given time. If there are no <i>dsnes</i> defined for the <i>almgrp</i> of the addressed NE, then this parameter is not included in the NE output.</p>                                                                                                                                                                                                                                                                                                  |
| <i>almgrp</i>       | <p>For Releases 6.0 through 7.2:<br/>Alarm Group, [also known as Sonet Maintenance Sub-Branch or SMSB]. <i>almgrp</i> may have an integer value between 0 and 255, inclusive. This parameter determines the set of remote NEs with which the local NE can exchange remote alarm information. A 0 value indicates that no remote alarm information is exchanged and that the network element does not belong to any alarm group.</p> <p>All NEs in the given DCC domain (subnetwork), whether nearby or not, that have the AG number are members of the same group. All members of the AG will share NE Status information with each other but not with NEs of different AGs though they may also be in the same DCC domain.</p> |
| <i>tsagran</i>      | <p>TSA Granularity. For Releases 7.0 and later, this parameter indicates the TSA capability of the network element. It can take one of the following values:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

STS1 This is an indication that the time slot assignment can be done at the STS-1 level.

STS3 This is an indication that the time slot assignment can be done at the STS-3 level.

*idle* IdleChannelSignal determines whether or not an AIS or Unequipped signal should be inserted toward the SONET line in VT1.5 and STS-1 channels that are not cross-connected. The value may be *ais* (default) or *unequipped*.

*sadd* Site Address. The *sadd* parameters are the confirmed addresses of the network element as reported independently from both directions of the Self Healing Ring.

If autoprovisioning has not yet completed, autoprovisioning has failed, or the site address cannot be retrieved due to equipment failure or removal, the *sadd* is reported as a question mark (" ") in the last position of the *sadd*.

*dce, dte* Data Communications Equipment, Data Terminating Equipment.  
For Releases 5.0 through 7.2:  
These two entries in the report indicate the *protocol* used by the user panel and interconnect panel, (respectively), craft interface terminal ports. |

*protocol* For Releases 5.0 through 7.2:  
This indicates whether the *dce* and/or *dte* CIT ports are provisioned for use as *tl1-dce*, *tl1-dte* or *cit-dce*, *cit-dte*. The following values are used for *protocol*. |

*cit* Indicates that the port is used for connection to a CIT-PC.

*tl1* Indicates that the port is used for connection to a TL1-CIT.

*baud\_tl1-dce, baud\_tl1-dte* Baud TL1 Data Communications Equipment, Baud TL1 Data Terminating Equipment. For Releases 5.0 through 7.2, these two entries in the report indicate the data rate settings of the user panel and interconnect panel (respectively), craft interface terminal ports when used as a TL1-CIT. The possible values are 1200, 2400, 4800, and 9600. |

## EXAMPLE INPUT/OUTPUT

For Release 4.1:

```
RTRV-SYS:LT-PF-2000::123456;  
  
IP 123456  
<  
  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
  "tid=LT-PF-2000, nid=5, dsne=no, gne=yes, sadd=site-1e-0, sadd=site-1w-4"  
;
```

For Release 5.0:

```
RTRV-SYS:LT-PF-2000::123456;  
  
IP 123456  
<  
  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
  "tid=LT-PF-2000, nid=5, dsne=no, sadd=site-1e-0, sadd=site-1w-4"  
  "dce=cit, dte=tl1, baud_tl1-dte=9600"  
;
```

For Release 6.0:

**RTRV-SYS:LT-PF-2000::123456;**

IP 123456

<

LT-PF-2000 93-10-26 16:42:11

M 123456 COMPLD

"tid=LT-PF-2000, dsne=yes, x25ps=256, sadd=site-1e-4, sadd=site-1w-2"

"almgrp=10, agne=yes"

"dce=tl1, baud\_tl1-dce=9600, dte=cit"

;

For Release 7.0 through 7.2:

|

**RTRV-SYS:LT-PF-2000::123456;**

IP 123456

<

LT-PF-2000 93-10-26 16:42:11

M 123456 COMPLD

"tid=LT-PF-2000, dsne=yes, x25ps=256, sadd=site-1e-4, sadd=site-1w-2"

"almgrp=10, agne=yes, tsagran=STS1"

"dce=tl1, baud\_tl1-dce=9600, dte=cit"

;



For Releases 8.0 and later:

```
RTRV-SYS:LT-PF-2000::123456;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
"tid=LT-PF-2000, x25ps=256, sadd=site-1e-4, sadd=site-1w-2"
```

```
"tsagran=STS1"
```

```
;
```

## **ERROR RESPONSES**

Refer to the **RTRV-HDR** error response section. The error responses listed there apply to the **RTRV-SYS** command, also.

## **RELATED TL1 MESSAGES**

**ENT-SYS**

**RESET-SYS**

## NAME

**RTRV-TH:** Retrieve Threshold

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**RTRV-TH-modifier:***tid:aid:ctag::[montype],[lochn][,tmper];*

## DESCRIPTION

This command can be initiated by user to retrieve the threshold level for performance monitoring parameters that, when exceeded, will generate an autonomous status report (**REPT - EVT**), when threshold crossing alert (TCA) reporting is enabled.

## INPUT PARAMETERS

*modifier* Command code modifier. The valid modifiers are as follows:

- ALL** This retrieves the threshold level for all of the following facility types.
- EC1** This retrieves the threshold level for the electrical carrier signal level 1.
- OC3** This retrieves the threshold level for optical carrier signal level 3.  
For Releases 7.1 and later:  
The **OC3** *modifier* is also applicable for the IS3 signal.
- OC12** For Releases 7.1 and later:  
This retrieves the threshold level for optical carrier signal level 12.
- OC48** This retrieves the threshold level for optical carrier signal level 48.
- STS1** This retrieves the threshold level for synchronous transport signal level 1.
- T3** This retrieves the threshold level for the DS3 level.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This identifies the facility for which threshold levels are being retrieved.

For list of access identifiers, refer to Table 3-7 at the end of this section.

If the value of *modifier* is **ALL**, then the only allowed value of *aid* is **ALL**. When *modifier* is **ALL**:

if *montype* is a null value, the default is to all applicable monitored parameter types.

*timper* must either be **ALL** or a null value, which defaults to all applicable accumulation time periods.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*montype* Monitored parameter type. This is the PM parameter type for which a threshold is being retrieved.

For list of valid values, refer to Table 3-9 at the end of this section.

If null, the default value is **ALL**.

Applicable output lines are ordered as follows:

1. By *aidtype* and *aid* in order corresponding to the shelf architecture.
2. By applicable PM parameters/*montypes* per *aid*.
3. By requested time intervals (*timper*), starting with the current time interval.

*locn* Location. This is the location where the threshold is being retrieved and refers to the facility identified by the AID. The valid locations are:

**FEND** Far-end (STS1 path PM only).

**NEND** Near-end

If null, the default value is **NEND**.

*tmper* Time period. This requests PM data information for a specified time interval. This parameter may be null or have one of the following values:

|               |                                                                                                                                                                                          |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>15-MIN</b> | This requests PM data in 15-minute intervals (default).                                                                                                                                  |
| <b>1-DAY</b>  | This requests daily PM data.                                                                                                                                                             |
| <b>ALL</b>    | If <i>tmper</i> value is not given, the default value is 15-MIN, unless the <i>modifier</i> value is ALL,<br><br>If <i>modifier</i> value is ALL, the default <i>tmper</i> value is ALL. |

## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```

sid date time
M ctag COMPLD
  "aid, aidtype:montype, locn, dirn, thlev, tmper"
    .      .      .      .
    .      .      .      .
    .      .      .      .
  "aid, aidtype:montype, locn, dirn, thlev, tmper"
;

```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to the **RTRV-TH** command, also.

Additional parameters that specifically apply to this command are defined below.

*aid* Access identifier. This identifies the facility for which threshold levels are being reported.

*aidtype* The type of access identifier. Valid values for *aidtype* are as follows:

EC1 This is the threshold level for the electrical carrier signal level 1.

T3 This is the threshold level for the DS3 level.

OC48 This is the threshold level for the optical carrier signal level 48.

OC3 This is the threshold level for the optical carrier signal level 3.

For Release 7.1 and later:

The OC3 *aidtype* is also applicable for the IS3 signal.

OC12 This is the threshold level for the optical carrier signal level 12.

STS1 This is the threshold level for the synchronous transport signal level 1.

Starting in FT-2000 Release 7.0, the output lines for the **ALL** report are ordered as follows:

- EC1 thresholds,
- OC3/IS3 thresholds,
- OC12 thresholds,
- OC48 thresholds,
- STS1 thresholds, and
- T3 thresholds.

|                |                                                                                                                                                                                                                                |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>montype</i> | Monitored parameter for which threshold level is being report.                                                                                                                                                                 |
| <i>locn</i>    | Location. This is the location where the threshold is to be set and refers to the facility identified by the AID. The valid locations are:<br><br>FEND            Far-end (STS1 path PM only).<br><br>NEND            Near-end |
| <i>dirn</i>    | Direction. This specifies the direction in which the threshold is to be set and is relative to the facility identified by the AID. The value of direction must be NA ( <i>not applicable</i> ).                                |
| <i>thlev</i>   | Current threshold level for the monitored parameter.                                                                                                                                                                           |
| <i>tmper</i>   | Accumulation time period for the PM information.                                                                                                                                                                               |

### EXAMPLE INPUT/OUTPUT

This example shows the command used to retrieve the OC-3 CVL threshold parameter for Slot 3b:

```
rtrv-th-oc3:LT-PF-2000:ls-3b:123456::cvl,nend,1-day;  
  
IP 123456  
<  
  
LT-PF-2000 97-03-22 16:12:12  
M 123456 COMPLD  
  "ls-3b, OC3:CVL, NEND, NA, 140, 0, 1-DAY"  
;
```

This example shows the command used to retrieve the OC-12 CVL threshold parameter for quad 2:

```
rtrv-th-oc12:LT-FT-2000:ls-3a:123456::cvl,nend,1-day;  
IP 123456  
<  
    LT-FT-2000 94-03-22 16:12:12  
M 123456 COMPLD  
    "ls-3a,OC12.EXT"  
    "ls-3b,OC12:CVL,NEND,NA,140,0,1-DAY"  
    "ls-4a,OC12.EXT"  
    "ls-4b,OC12.EXT"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to **RTRV-TH**.

The network element returns the following error response if the *aid* value is missing, invalid, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
  IIAC
  /* Input, Invalid Access Identifier missing or inconsistent with
  modifier values*/
;
```

The network element returns the following error response if the *montype* value is not supported, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
  IDNV
  /* Input, Data Not Valid, invalid MONTYPE */
;
```



The network element returns the following error response if the *locn* value is invalid, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LOCN */
;
```

The network element returns the following error response if the *tmper* value is invalid or conflicts with the command code modifier.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid TMPER */
;
```

## RELATED TL1 MESSAGES

REPT EVT

RTRV-PM

SET-TH

## NAME

**RTRV-TMSLT-rr**: Retrieve Time Slot.

This command is available in FT-2000 Releases 7.1 and later.

## INPUT FORMAT

**RTRV-TMSLT-*modifier*:*tid*:*aid*:*ctag***;

## DESCRIPTION

This command can be initiated by users to retrieve a Tributary Map report, organized by node, for all nodes in a ring. The report shows all cross-connections on a single user-specified time slot throughout the entire ring, indicating parts of the ring available for new circuits.

When the network element receives an **RTRV-TMSLT-rr** command, the network element will retrieve all applicable timeslot information according to the parameter settings in the command.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                      |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>modifier</i> | This is the message modifier and may only have the following value: <b>STS1</b> .                                                                                                                                                                                                                                                    |
| <b>STS1</b>     | This specifies that STS-1 line tributary, that is,, an STS-1 timeslot, information be retrieved.                                                                                                                                                                                                                                     |
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                        |
| <i>aid</i>      | Access identifier. This is the address of the tributary for which the information is to be retrieved and must be a valid FT-2000 access identifier value.<br><br>The <i>aid</i> must identify a single STS-1 tributary.<br><br>Refer to Table 3-7 at the end of this section for a list of valid STS-1 Tributary access identifiers. |
| <i>ctag</i>     | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                |

## OUTPUT FORMAT

If the network element fully complies with the timeslot retrieval request, the following output message is returned:

```

    sid date time
M ctag COMPLD
  "src_aid,dest_aid::RINGNODE=NODE-TID[,LOCA=loca][,LOCZ=locz][:sst]"
  "src_aid,dest_aid::RINGNODE=NODE-TID[,LOCA=loca][,LOCZ=locz][:sst]"
    .      .      .      .      .      .      .
    .      .      .      .      .      .      .
  "src_aid,dest_aid::RINGNODE=NODE-TID[,LOCA=loca][,LOCZ=locz][:,sst]"
;

```

The report starts at the timeslot specified by the *aid* on the local node and continues around the ring in a West-to-East direction ending at the node immediately to the "West" of the local node.

For example, the second entry in the report represents the node immediately "East" of the node at which the report was requested.

The cross-connection data for each entry, that is, Ring\_Node, is formatted following the rules for the **RTRV-CRS-rr** TL1 command. Refer to the **RTRV-CRS-rr** TL1 command for these formatting rules.

All tributaries, that is, source and destination for east and west, are reported, including those tributaries not cross-connected at a node.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

Additional parameters that specifically apply to this command response are defined below.

*src\_aid* Source access identifier. This is the source address of the line tributary or low speed interface that is cross connected to the *dest\_aid*.

*dest\_aid* Destination access identifier. This is the destination address of the line tributary or low speed interface that is cross connected to the *src\_aid*.

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                                                               |      |                                                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------|
| <i>ring_node</i> | <p>Although not obvious from the output format, this parameter is a name defined parameter since it is part of a <i>spec_block</i>, which is by Bellcore definition, a name-value pair parameter block.</p> <p>Ring Node Identifier. This parameter specifies the target identifier (TID) of the node at which the specified <i>src_aid</i> and <i>dest_aid</i> exist. It is reported in the format "RINGNODE=NODE-TID". The <i>NODE-TID</i> value provided is a valid TID for a node on the ring subnetwork. If no known <i>NODE-TID</i> for a given cross-connection is available or if it is an invalid format (for example, if the cross-connection map has somehow become corrupted), then the following value is provided in the response: "RINGNODE=TID-UNKNOWN?".</p> |     |                                                                               |      |                                                                                |
| <i>loca</i>      | <p>Ring location A. This parameter specifies the ring "source" terminal identifier (TID). It is specified in the format: "LOCA=SOURCE-TID". The value provided is a valid TID value for a node on the ring subnetwork.</p> <p>If the source TID <i>loca</i> for a given cross-connection is not available or if it is an invalid format (for example, if the cross-connection map has somehow become corrupted), then the following <i>loca</i> value is provided in the response: "LOCA=TID-UNKNOWN?"</p>                                                                                                                                                                                                                                                                    |     |                                                                               |      |                                                                                |
| <i>locz</i>      | <p>Ring location Z. This parameter specifies the ring "destination" terminal identifier (TID). It is specified in the format: "LOCZ=DEST-TID". The value provided is a valid TID value for a node on the ring subnetwork.</p> <p>If the tributary is not cross-connected at a node, this parameter is not reported.</p> <p>If the destination TID <i>locz</i> for a given cross-connection is not available or if it is an invalid format (for example, if the cross-connection map has somehow become corrupted), then the following <i>locz</i> value is provided in the response: "LOCZ=TID-UNKNOWN?"</p>                                                                                                                                                                  |     |                                                                               |      |                                                                                |
| <i>sst</i>       | <p>Secondary state. This parameter value is position-defined. It reports the status of DRI ("1WAYDRI"), 1+1 protected OC-3 interface and 1+1 protected OC-12 interface cross-connections. Otherwise this parameter is not reported. When reported, the <i>sst</i> value can be one of the following:</p> <table> <tr> <td>ACT</td><td>for active DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections.</td></tr> <tr> <td>STBY</td><td>for standby DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections.</td></tr> </table>                                                                                                                                                                                                                         | ACT | for active DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections. | STBY | for standby DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections. |
| ACT              | for active DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                                                               |      |                                                                                |
| STBY             | for standby DRI, OC-3 1+1 protected, or OC-12 1+1 protected cross-connections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                                                               |      |                                                                                |

### EXAMPLE INPUT/OUTPUT

The following example retrieves cross-connections associated with STS1 tributary sts1-1e-1-2.

```
rtrv-tmslt-sts1:LT-PF-2000-3:sts1-1e-1-2:123456;
```

```
IP 123456
```

```
<
```

```
<lf>
```

```
LT-FT-2000-3 97-11-26 16:42:11
```

```
M 123456 COMPLD
```

```
"sts1-1w-1-2, ls-1a-3::RING_NODE=Worcester-MA, LOCA=Quabbin-MA, LOCZ=Worcester-MA"
```

```
"ls-1a-1, sts1-1e-1-2::RING_NODE=Worcester-MA, LOCA=Worcester-MA, LOCZ=Salem-NH"
```

```
"sts1-1e-1-2, ls-1b-3::RING_NODE=Worcester-MA, LOCA=Chicopee-MA, LOCZ=Worcester-MA"
```

```
"sts1-1w-1-2, ls-7a-2::RING_NODE=Salem-NH, LOCA=Worcester-MA, LOCZ=Salem-NH"
```

```
"ls-2a-2, sts1-1e-1-2::RING_NODE=Salem-NH, LOCA=Salem-NH, LOCZ=Chicopee-MA:, ACT"
```

```
"ls-2b-2, sts1-1e-1-2::RING_NODE=Salem-NH, LOCA=Salem-NH, LOCZ=Chicopee-MA:, STBY"
```

```
"sts1-1e-1-2, sts1-1w-1-2::RING_NODE=Salem-NH, LOCA=Chicopee-MA, LOCZ=Worcester-MA"
```

```
"sts1-1w-1-2, sts1-1e-1-2::RING_NODE=Concord-MA, LOCA=Salem-NH, LOCZ=Chicopee-MA"
```

```
"sts1-1e-1-2, sts1-1w-1-2::RING_NODE=Concord-MA, LOCA=Chicopee-MA, LOCZ=Worcester-MA"
```

```
"sts1-1w-1-2, ls-4a-2::RING_NODE=Chicopee-MA, LOCA=Salem-NH, LOCZ=Chicopee-MA"
```

```
"ls-4a-1, sts1-1w-1-2::RING_NODE=Chicopee-MA, LOCA=Chicopee-MA, LOCZ=Worcester-MA"
```

```
"ls-6a-1, sts1-1e-1-2::RING_NODE=Quabbin-MA, LOCA=Quabbin-MA, LOCZ=Worcester-MA"
```

```
;
```

## ERROR RESPONSES

In addition to the non-message-specific error responses listed in the **RTRV-HDR** error responses description, the following error responses apply to the **RTRV-TMSLT-rr** command.

If the network element receives this command with an invalid *aid* value, with an *aid* value that is invalid for the modifier provided, or without an *aid* value the following error response is returned:

```
sid date time
M ctag DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives an otherwise valid **RTRV-TMSLT-rr** command, but the ring's topology is not available at the local node (for example, the ring is incomplete/open), the following error response is returned:

```
sid date time
M ctag DENY
SROF
/* Status, Requested Operation Failed,
Tributary Map Report data unavailable. The Ring is incomplete/open.
*/
;
```

## RELATED TL1 MESSAGES

**RTRV-CRS-rr**  
**RTRV-CKT-rr**

## NAME

**RTRV-ULSDCC-L3:** Retrieve Upper Layer Section DCC - Layer 3

This command is available starting in FT-2000 ADR Release 8.0.

## INPUT FORMAT

**RTRV-ULSDCC-L3:***tid*[:*aid*]:*ctag*;

## DESCRIPTION

**RTRV-ULSDCC** commands retrieve provisionable parameters of Layers 3 through 7 of the Open Systems Interconnection (OSI) 7-layer protocol stack. This stack refers to the OSI reference model which is a logical structure for network operations. This model defines a standard communication protocol between network elements as specified by the International Standards Organization (ISO).

**RTRV-ULSDCC-L3** is used to retrieve the parameters in Layer 3 of the OSI stack, many of which are provisioned by the **ENT-ULSDCC-L3** command. Layer 3 parameters include the fields of the Network Services Access Point (NSAP) address and the enable/disable Level-2 Intermediate System (IS) capability.

The NSAP is a 20-byte address that provides unique identification for each network element in a SONET subnetwork.

### ⇒ NOTE:

This command is available to all users.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>aid</i>  | Access identifier. The <i>aid</i> value may be <b>ALL</b> or null.                                                                                                                    |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
      tid date time
M  ctag COMPLD
   ":L3IDP=X"
   ":L3DFI=X"
   ":L3ORG=X"
   ":L3RES=X"
   ":L3RD=X"
   ":L3AREA=X"
   ":L3SYS=X"
   ":L3SEL=X"
   ":L3LV2IS=X"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also. Additional parameters that specifically apply to this command response are defined below.

The following eight parameters *L3IDP*, *L3DFI*, *L3ORG*, *L3RES*, *L3RD*, *L3AREA*, *L3SYS*, *L3SEL*, identify specific fields of the NSAP address for the target network element specified by the *tid* parameter.

The NSAP address is a 20-byte address required by OSI to provide unique identification within the OSI network and consists of a number of fields, some of which are pre-defined and some of which are user-settable. The structure of the NSAP is shown in the display in the **ENT-ULSDCC-L3** command description.

*L3IDP*                      The "Initial Domain Part" (IDP) of the NSAP address consists of the first 3 bytes (6-digit hexadecimal) of the address. The three subfields of the IDP are allocated and assigned according to ISO 8348 Addendum 2. For SONET systems, the value of the AFI/IDI/IDI PAD subfields are set to 39/840/F (hex) respectively, to indicate that U.S. ANSI is the registration authority responsible for the allocation and assignment of NSAP addresses. Data in this field is encoded as a binary coded decimal and displayed in hexadecimal.



|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>L3DFI</i>   | The "DSP (Domain Specific Part) Format Identifier" (DFI) consists of the next byte (2-digit hexadecimal) of the NSAP address. The purpose of this byte is to specify the format for the rest of the address. For SONET systems, the value of DFI is set to 80 (hex) to specify that a format in alignment with GOSIP Version 2 is to be used.                                                                                                                                 |
| <i>L3ORG</i>   | The "Organization ID" consists of the next three bytes (6-digit hexadecimal) of the NSAP address. This field is user settable, as each Network Service Provider may provision this field according to the Company Code assigned to them by the ANSI-administered USA Registration Authority for OSI Organization Names.                                                                                                                                                       |
| <i>L3RES</i>   | The next two bytes (4-digit hexadecimal) of the NSAP address are currently "reserved" and have a default value of "0000" hex. Since, in the future, a use for these bytes may be defined by ANSI, they are user settable.                                                                                                                                                                                                                                                     |
| <i>L3RD</i>    | The "Routing Domain" parameter consists of next two bytes (4-digit hexadecimal) of the NSAP address. This field is user settable. However, until the standard use of this field has been defined, this parameter should not be provisioned to a value other than its default value.                                                                                                                                                                                           |
| <i>L3AREA</i>  | The "Area" parameter consists of next two bytes (4-digit hexadecimal) of the NSAP address and is used to identify the area to which the NSAP address belongs. This field is user settable.                                                                                                                                                                                                                                                                                    |
| <i>L3SYS</i>   | The "System Identifier" consists of the next six bytes (12-digit hexadecimal) of the NSAP address. The purpose of this field is to guarantee that the NSAP address is globally unique. In order to insure this for U.S.-manufactured systems (non-U.S.-manufactured systems would have a different IDP value), IEEE administers the allocation of addresses within this field to equipment providers.                                                                         |
| <i>L3SEL</i>   | The "NSAP Selector" consists of the last byte (2-digit hexadecimal) of the NSAP address. Its purpose is to differentiate multiple NSAP addresses associated with the same End system. Its value is not fixed but is set in a PDU according to its usage. It is set to "AF" hex when TARP is run over CLNP. It has a value of "1D" hex when TP4 is run over CLNP. It may be set to "00" hex for other uses. When retrieved and displayed, it will always be shown as "00" hex. |
| <i>L3LV2IS</i> | This parameter indicates if the target NE is enabled as an Level 2 IS. <i>L3LV2IS</i> it may have the value <b>enable</b> or <b>disable</b> .                                                                                                                                                                                                                                                                                                                                 |

## EXAMPLE INPUT/OUTPUT

This example shows the **RTRV-ULSDCC-L3** results:

```
RTRV-ULSDCC-L3:LT-PF-2000::123456;  
IP 123456  
<  
    LT-PF-2000 98-03-22 16:12:12  
M 123456 COMPLD  
  ":L3IDP=39840F"  
  ":L3DFI=80"  
  ":L3ORG=0000000"  
  ":L3RES=0000"  
  ":L3RD=0000"  
  ":L3AREA=0000"  
  ":L3SYS=08006A112345"  
  ":L3SEL=00"  
  ":L3LV2IS=enable"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command.

The network element returns the following error response if the *aid* value is missing or invalid.

```
sid date time  
M ctag DENY  
  IIAC  
  /* Input, Invalid Access Identifier */  
;
```

**RELATED TL1 MESSAGES**

**ENT - ULSDCC - L3**

## NAME

**RTRV-ULSDCC-L4:** Retrieve Upper Layer Section DCC - Layer 4

This command is available starting in FT-2000 ADR Release 8.0.

## INPUT FORMAT

**RTRV-ULSDCC-L4:***tid*[:*aid*]:*ctag*[:*tdc*];

## DESCRIPTION

**RTRV-ULSDCC** commands retrieve provisionable parameters of Layers 3 through 7 of the Open Systems Interconnection (OSI) 7-layer protocol stack. This stack refers to the OSI reference model which is a logical structure for network operations. This model defines a standard communication protocol between network elements as specified by the International Standards Organization (ISO).

**RTRV-ULSDCC-L4** is used to retrieve the parameters in Layer 4 of the OSI stack, many of which are provisioned by the **ENT-ULSDCC-L4** command. Layer 4 parameters include the TARP PDU lifetime parameter, TARP timers, TARP Loop Detection Buffer and TARP Data Cache provisioned parameters. The TARP Manual Adjacencies and TARP Data Cache entries may be retrieved also.

### ⇒ NOTE:

This command is available to all users.

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>aid</i>  | Access identifier. This identifies the associated facility. The <i>aid</i> value may be <b>ALL</b> or null. Specifying the <i>aid</i> optional.                                       |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the Network Element in the response to allow the user to associate the command and response messages. |

*tdc* TARP Data Cache. Specifying this optional parameter retrieves the TID (**L4TDCTID**), NSAP address (**L4TDCNSAP**), and protocol address type (**L4TDCPRO**) for every entry in the TARP Data Cache for the target Network Element (specified by the *tid* parameter).

*tdc* can only have the value **TDC**. If *tdc* is not specified, the TARP Data Cache entries are not retrieved.

## OUTPUT FORMAT

If the Network Element fully complies with the request, and if the retrieval of the TARP Data Cache is not enabled, the following normal completion response is returned:

```

sid date time
M ctag COMPLD
":L4TLIF=x"
":L4T1TM=x"
":L4T2TM=x"
":L4T3TM=x"
":L4T4TM=x"
":L4LFTM=x"
":L4LETM=x"
":L4ETDC=x"
":L4AJNSAP=y1
":L4AJNSAP=y2
;
```

If the Network Element fully complies with the request, and if the TARP Data Cache entries are requested and if there are  $n$  entries in the TARP Data Cache and the TARP Data Cache is enabled on the target Network Element (specified by the *tid* parameter), the following normal completion response is returned:

```
sid date time
M ctag COMPLD
":L4TLIF=x"
":L4T1TM=x"
":L4T2TM=x"
":L4T3TM=x"
":L4T4TM=x"
":L4LFTM=x"
":L4LETM=x"
":L4ETDC=x"
":L4AJNSAP=y1
":L4AJNSAP=y2
":L4TDCTID=x1:L4TDCNSAP=y1:L4TDCPRO=z1"
":L4TDCTID=x2:L4TDCNSAP=y2:L4TDCPRO=z2"
":L4TDCTID=x3:L4TDCNSAP=y3:L4TDCPRO=z3"
.
.
.
":L4TDCTID=xn:L4TDCNSAP=yn:L4TDCPRO=zn"
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also. Additional parameters that specifically apply to this command response are defined below.

Enabling the retrieval of the TARP Manual Adjacency list and/or the TARP Data Cache will display the NSAP address of other NEs that are contained in these data arrays on the target NE. Because these data arrays may have many entries, each entry, including all of the fields of the NSAP address are displayed on a single line.

### *L4TLIF*

TARP Lifetime. This parameter indicates the TARP lifetime parameter that is set in TARP PDUs originated by the target NE (i.e., the NE identified by the *tid* parameter). The TARP lifetime specifies the maximum number of hops allowed for a TARP PDU. When this value is exceeded, the TARP PDU will not be forwarded. *L4TLIF* may have a value in the range from 1 to 65535. *L4TLIF* has an original value of 100.

*L4T1TM*

TARP Timer T1. T1 is the maximum time waiting for a response to a TARP Type 1 request PDU (search within area).

*L4T1TM* may have a value in the range from **1** to **3600** seconds. *L4T1TM* has an original value of **15** seconds.

*L4T2TM*

TARP Timer T2. T2 is the maximum time waiting for a response to a TARP Type 2 request PDU (search outside of the area). *L4T2TM* may have a value in the range from **1** to **3600** seconds. *L4T2TM* has an original value of **25** seconds.

*L4T3TM*

TARP Timer T3. T3 is the maximum time waiting for a response to an Address Resolution request (Type 5, i.e., requesting the TID when the NSAP address is known). *L4T3TM* may have a value in the range from **1** to **3600** seconds. *L4T3TM* has an original value of **40** seconds.

*L4T4TM*

TARP Timer T4. Timer T4 starts when T2 expires. It is used for error recovery. *L4T4TM* may have a value in the range from **1** to **3600** seconds. *L4T4TM* has an original value of **20** seconds.

*L4LFTM*

TARP Loop Detection Buffer - Flush Timer. This parameter sets the time period for flushing the TARP Loop Detection Buffer. *L4LFTM* may have a value in the range from **1** to **1440** minutes. *L4LFTM* has an original value of **5** minutes.

*L4LETM*

TARP Loop Detection Buffer - LDB Entry Timer. This is the LDB time period for discarding TARP PDUs with a sequence number equal to zero.

*L4ETDC*

This parameter specifies if the TARP Data Cache is enabled or disabled. *L4ETDC* may take the value **enable** or **disable**. *L4ETDC* has a default value of **enable**.

*L4AJNSAP*

This parameter specifies the NSAP address of a TARP Manual Adjacency.

The NSAP address is a 20-byte (40 hex characters) address required by OSI to provide unique identification within the OSI network and consists of a number of fields, some of which are pre-defined and some of which are user-settable. The structure of the NSAP is shown in Display 1 in the **ENT-ULSDCC-L3** command description.

The display format for *L4AJNSAP* is:

*iiiiii ff oooooo rrrr dddd aaaa ssssssssssss ll*  
where *iiiiii* is the 6-digit hexadecimal **IDP** field,  
where *ff* is the 2-digit hexadecimal **DFI** field, where

*oooooo* is the 6-digit hexadecimal **L4AJORG** field, where  
*rrrr* is the 4-digit hexadecimal **L4AJBRES** field, where  
*dddd* is the 4-digit hexadecimal **L4AJRD** field, where  
*aaaa* is the 4-digit hexadecimal **L4AJAREA** field, where  
*sssss* is the 12-digit hexadecimal **L4AJSYS** field, where  
*ll* is the 2-digit hexadecimal **SEL** field.

This following three parameters, *L4TDCTID*, *L4TIDNSAP* and *L4TDC1PRO*, comprise a complete single entry in the TARP Data Cache. These three parameters are output as a set for each entry in the TARP Data Cache if the retrieval of these entries is requested with the *tdc* parameter.

***L4TDCTID***

This parameter specifies the Target Identifier (TID) portion of an entry in the TARP Data Cache.

***L4TDCNSAP***

This parameter specifies the NSAP address portion of an entry in the TARP Data Cache.

The display format for *L4TDCNSAP* is:

*iiiiii ff oooooo rrrr dddd aaaa ssssssssssss ll*  
 where *iiiiii* is the 6-digit hexadecimal **IDP** field, where *ff* is the 2-digit hexadecimal **DFI** field, where *oooooo* is the 6-digit hexadecimal **L4TDCORG** field, where *rrrr* is the 4-digit hexadecimal **L4TDCRES** field, where *dddd* is the 4-digit hexadecimal **L4TDCRD** field, where *aaaa* is the 4-digit hexadecimal **L4TDCAREA** field, where *sssss* is the 12-digit hexadecimal **L4TDCSYS** field, where *ll* is the 2-digit hexadecimal **SEL** field.

***L4TDCPRO***

This parameter specifies the protocol address type portion of an entry in the TARP Data Cache.



### EXAMPLE INPUT/OUTPUT

This example shows the **RTRV-ULSDCC-L4** results with no optional retrieval parameters specified:

```
RTRV-ULSDCC-L4:LT-PF-2000::123456;  
IP 123456  
<  
  LT-PF-2000 98-03-22 16:12:12  
M 123456 COMPLD  
  ":L4TLIF=100"  
  ":L4T1TM=15"  
  ":L4T2TM=25"  
  ":L4T3TM=40"  
  ":L4T4TM=20"  
  ":L4LFTM=5"  
  ":L4LETM=5"  
  ":L4ETDC=enable"  
  ":L4AJNSAP=39840F 80 000000 0000 0000 0000 08006A112123 00"  
  ":L4AJNSAP=39840F 80 000000 0000 0000 0000 08006A112739 00"  
;
```

This example shows the **RTRV-ULSDCC-L4** with the retrieval of the TARP Data Cache entries specified:

```
RTRV-ULSDCC-L4:LT-PF-2000::123456::tdc;
IP 123456
<
  LT-PF-2000 98-03-22 16:12:12
M 123456 COMPLD
  ":L4TLIF=100"
  ":L4T1TM=15"
  ":L4T2TM=25"
  ":L4T3TM=40"
  ":L4T4TM=20"
  ":L4LFTM=5"
  ":L4LETM=5"
  ":L4ETDC=enable"
  ":L4AJNSAP=39840F 80 000000 0000 0000 0000 08006A112123 00"
  ":L4AJNSAP=39840F 80 000000 0000 0000 0000 08006A112739 00"
  ":L4TDCTID=LT-PF2001:L4TDCNSAP=39840F 80 000000 0000 0000 0000 08006A112123 00:
L4TDCPRO=FE"
  ":L4TDCTID=LT-PF2003:L4TDCNSAP=39840F 80 000000 0000 0000 0000 08006A112739 00:
L4TDCPRO=FE"
  ":L4TDCTID=LT-PF2002:L4TDCNSAP=39840F 80 000000 0000 0000 0000 08006A117453 00:
L4TDCPRO=FE"
  ":L4TDCTID=LT-PF2007:L4TDCNSAP=39840F 80 000000 0000 0000 0000 08006A112398 00:
L4TDCPRO=FE"
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to this command. The Network Element returns the following error response if the *aid* value is invalid.

```
sid date time
M ctag DENY
  IIAC
  /* Input, Invalid Access Identifier */
;
```

The Network Element returns the following error response if the *tdc* value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid TDC */
;
```

#### RELATED TL1 MESSAGES

ENT-ULSDCC-L4

DLT-ULSDCC-L4

## NAME

**RTRV-USER-SECU:** Retrieve User Security

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**RTRV-USER-SECU:***tid:[uid]:ctag;*

## DESCRIPTION

**RTRV-USER-SECU** command is used by an appropriate administrator to retrieve the security parameters associated with a user, except for the user's password, which cannot be retrieved.

### ⇒ NOTE:

This command is available only to privileged users.

## INPUT PARAMETERS

- |             |                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                          |
| <i>uid</i>  | This is the User Identifier of a user. For FT-2000, its valid values are a case-sensitive alphanumeric string of 1 to 10 characters. Only a single <i>uid</i> or a null value meaning ALL is supported in the command. |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                  |

## OUTPUT FORMAT

If the network element has logins to report, the following normal completion response is returned:

```
      sid date time  
M    ctag COMPLD  
      "uid:,uap"  
      ;
```

If the network element receives an **RTRV-USER-SECU** command with a non-existing *uid*, the following normal completion response is returned:

```
      sid date time  
M    ctag COMPLD  
      ;
```

If the network element receives an **RTRV-USER-SECU** with a null value for *uid*, it returns all the user accounts with privileged users first, followed by general users, then reports-only users.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

*uap* For Releases 5.0 and later:  
User Access Privilege. It takes one of the following values:  
**privileged**, **general** or **reports-only**.

For Releases 7.1 and later:  
See the **ACT-USER** command for more information regarding the  
*uap* values.

## EXAMPLE INPUT/OUTPUT

```
RTRV-USER-SECU:LT-PF-2000:kjlee:123456;  
IP 123456  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
    "kjlee:,general"  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **RTRV-USER-SECU** command, also.

For Release 5.0, if the network element receives a **RTRV-USER-SECU** command with an invalid *uid*, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid UID */
;
```

For Release 6.0 and later, if the network element receives a **RTRV-USER-SECU** command with an invalid *uid*, the following error response is returned:

```
sid date time
M ctag DENY
  PIUI
/* Privilege, Illegal User Identity, invalid UID */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**ACT-USER**

**ENT-USER-SECU**

**ED-USER-SECU**

**DLT-USER-SECU**

## NAME

**SET-ATTR-ALM:** Set Attribute Alarm

Support for this message is available in Releases 7.0 and later.

## INPUT FORMAT

**SET-ATTR-ALM:** *tid::ctag[::spec\_block]*;

## DESCRIPTION

For Release 7.0, the **SET-ATTR-ALM** command can be initiated by general users to provision the incoming signal alarm delay and the alarm clear delay intervals.

For Release 7.1 and later, the **SET-ATTR-ALM** command can be initiated by users to provision the reporting of tributary level conditions, also.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*spec\_block* Specific Block. The *spec\_block* and the parameters within it are all optional. This parameter field is used for modification of alarm attributes. Parameters within the *spec\_block* are specified using a name defined construct of: **PARAMETER=va lue** in a comma separated list.

For the **SET-ATTR-ALM** command, the *spec\_block* may contain none or more of the following parameters.

For Release 7.0, the supported *spec\_block* parameters, **almdel** and **clrdel**, are specified in the following format to set the values for these parameters: **almdel=AlarmDelay**, and **clrdel=ClearDelay**.

For Release 7.1 and later, in addition to the above supported *spec\_block* parameters, the **tribrept** parameter is also supported. It is specified in the following format to set its value: **tribrept=TributaryReport**.



*AlarmDelay*

Alarm Delay. The **almdel** is the incoming signal alarm delay parameter. If included in the *spec\_block* at all, the *AlarmDelay* is an integer from **0** to **120** that sets the time (in seconds) that the network element will wait, after it finds an incoming signal alarm condition before reporting the condition.

The original value for this parameter is **2** seconds.

A null value leaves the parameter unchanged from the previous setting.

*ClearDelay*

Clear Delay. The **clrdel** is the incoming signal alarm clear delay parameter. If included in the *spec\_block* at all, the *ClearDelay* is an integer from **0** to **120** that sets the time (in seconds) that the network element will wait, after an incoming signal alarm condition clears before reporting the condition cleared.

The original value for this parameter is **2** seconds.

A null value leaves the parameter unchanged from the previous setting.

*TributaryReport*

Tributary Report.

For Releases 7.1 and later:

This is the value for the **tribrept** parameter. This parameter determines the alarm notification code associated with the tributary failed condition. If included in the *spec\_block*, it may take one of the following values:

|           |                |
|-----------|----------------|
| <b>CR</b> | Critical alarm |
| <b>MJ</b> | Major alarm    |
| <b>MN</b> | Minor alarm    |
| <b>NA</b> | Not alarmed    |
| <b>NR</b> | Not reported.  |
| <b>NO</b> | Not indicated. |

The original value of this parameter is **NO**.

A null value leaves the parameter unchanged.

## OUTPUT FORMAT

If the network element fully complies with the **SET-ATTR-ALM** request, the following normal completion response is returned.

```
sid date time  
M ctag COMPLD  
;
```

If the **SET-ATTR-ALM** command does not alter the existing attributes, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **SET-ATTR-ALM** command, also.

### EXAMPLE INPUT/OUTPUT

The following example shows a **SET-ATTR-ALM** command that provisions the incoming signal delay to 10 seconds and provisions the alarm clear delay to 30 seconds.

```
SET-ATTR-ALM:LT-PF-2000::123456:::almdel=10,clrdel=30;
```

```
IP 123456  
<
```

```
LT-PF-2000 96-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a **SET-ATTR-ALM** command that provisions the alarm clear delay to 14 seconds.

```
SET-ATTR-ALM:LT-PF-2000::123456:::clrdel=14;
```

```
IP 123456  
<
```

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows a **SET-ATTR-ALM** command that alters the Tributary Reporting parameters from its Original Value of **NO**.

```
SET-ATTR-ALM:LT-PF-2000::123456::tribrept=CR;
```

```
IP 123456  
<
```

```
LT-PF-2000 97-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSE

Refer to the Error Response section of **RTRV-HDR**. The error responses listed there apply to the **SET-ATTR-ALM** command, also.

If an **SET-ATTR-ALM** command is received with an invalid **almdel** parameter, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54  
M 123456 DENY  
IDNV  
/* Input, Data Not Valid, invalid almdel parameter */  
;
```

If an **SET-ATTR-ALM** command is received with an invalid **clrdel** parameter, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IDNV
/* Input, Data Not Valid, invalid clrdel parameter */
;
```

For Releases 7.1 and later:

If the network element receives a **SET-ATTR-ALM** command with an invalid **tribrept** parameter, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IDNV
/* Input, Data Not Valid, invalid tribrept parameter */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-ATTR-ALM**

## NAME

**SET-ATTR-CONT:** Set Attribute Control

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**SET-ATTR-CONT:***tid:aid:ctag::[conttype]*;

## DESCRIPTION

The **SET-ATTR-CONT** command can be initiated by general users to provision (define) the description associated with an external control. The **RTRV-ATTR-CONT** command is used by general users to retrieve these descriptions so that, for example, a remote user can verify that a control is associated with a fan (and not a sprinkler) before operating the control.

## INPUT PARAMETERS

|                 |                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>      | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                                                                                                                                          |
| <i>aid</i>      | Access identifier. The <i>aid</i> identifies the external miscellaneous discrete control for which the description is being specified.<br><br>For a list of valid addresses, refer to Table 3-7 at the end of this section.<br><br>The <i>aid</i> value cannot be null and cannot be CONT-ALL.                                                                         |
| <i>ctag</i>     | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                  |
| <i>conttype</i> | The <i>conttype</i> is the text string associated with the addressed miscellaneous discrete control. It is an alphanumeric string, upper and lower case, spaces and periods allowed, up to 26 characters long. <i>conttype</i> is case sensitive and must be enclosed with escaped quotes ( <code>\</code> ).<br><br>The <code>©conttype</code> field can not be null. |

## OUTPUT FORMAT

If the network element fully complies with the **SET-ATTR-CONT** request, the following normal completion response is returned.

```
LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

If the **SET-ATTR-CONT** command does not alter the already provisioned description, the network element will not deny the command. Instead the system will respond with the completion message (shown above).

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **SET-ATTR-CONT** command, also.

### EXAMPLE INPUT/OUTPUT

The following example shows a **SET-ATTR-CONT** command that provisions the text string for miscellaneous discrete control 3 to *"fan3"*.

**SET-ATTR-CONT:LT-PF-2000:CONT-3:123456::**

```
IP 123456
<

    LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```

The following example shows a **SET-ATTR-CONT** command that provisions the text string for miscellaneous discrete control 3 to *"StartGenerator"*

**SET-ATTR-CONT:LT-PF-2000:CONT-3:123456::**

```
IP 123456
<

    LT-PF-2000 93-10-26 16:42:11
M 123456 COMPLD
;
```



## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **SET-ATTR-CONT** command, also.

If a **SET-ATTR-CONT** command is received with an invalid access identifier, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IIAC
/* Input, Invalid Access Identifier */
;
```

If a **SET-ATTR-CONT** command is entered with an unimplemented parameter, the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
INUP
/* Input, Non-null Unimplemented Parameter */
;
```

If a **SET-ATTR-CONT** command is entered with an invalid *conttype* parameter the following error response is returned:

```
LT-PF-2000 94-04-12 23:11:54
M 123456 DENY
IDNV
/* Input, Data Not Valid, invalid CONTTYPE */
;
```

#### **RELATED TL1 COMMANDS/MESSAGES**

**RTRV-ATTR-CONT**

**OPR-EXT-CONT**

**RLS-EXT-CONT**

**RTRV-ALM**

## NAME

**SET-ATTR-ENV:** Set Attribute Environment

This command is available in FT-2000 Releases 7.0 and later.

## INPUT FORMAT

SET-ATTR-ENV:*tid:aid:ctag::[ntfcncde],,almmsg;*

## DESCRIPTION

**SET-ATTR-ENV** commands can be initiated to request the network element to set the notification code (alarm level) and alarm message (condition description) associated with environmental alarm/status points.

Environmental *alarm* conditions are reported by TL1 autonomous REPT ALM ENV messages. Environmental *status* conditions are reported by TL1 autonomous REPT EVT COM messages and periodically via REPT COND. The provisioned notification code, alarm type, and alarm message are included in the TL1 messages reporting the occurrence of an environmental condition.

## INPUT PARAMETERS

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the environmental points to be provisioned.

For a list of valid addresses, refer to Table 3-7 at the end of this section.

A null value is not permitted with this parameter.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*ntfcncde* Notification code. This is the alarm level to be associated with the addressed environmental point, and may have one of the following values:

**CR** Critical alarm  
**MJ** Major alarm  
**MN** Minor alarm  
**NA** Not alarmed  
**NR** Not reported.  
**NO** do not report any alarms

The original value for the *ntfcncde* is **MN**.

*almmsg* Alarm message. This is the condition description to be associated with the addressed environmental point. The description may be a string of up to 26 characters consisting of case-sensitive (upper-case and lower-case) alphanumerics, spaces, and "." (periods). The description must be enclosed using delimiters. The delimiter to be used is "\" (for example, backslash followed by quotes).

This parameter is an exception to the general rule of TL1 input parameters being case-insensitive.

## OUTPUT FORMAT

If the network element fully complies with the **SET-ATTR-ENV** request, the following normal completion response is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the network element receives a valid **SET-ATTR-ENV** command, but the command does not alter the existing alarm attributes, the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

```
SET-ATTR-ENV:LT-FT-2000:env-10:123456::MJ,,\"environment 10\";  
IP 123456  
<  
    LT-FT-2000 97-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **SET-ATTR-ENV** command, also.

If the network element receives a **SET-ATTR-ENV** command with an invalid *aid* value, the following error response is returned:

```
    sid date time  
M ctag DENY  
  IIAC  
/* Input, Invalid Access Identifier */  
;
```

If the network element receives a **SET-ATTR-ENV** command with an invalid *ntfcncde* value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid NTFNCDE */
;
```

If the network element receives a **SET-ATTR-ENV** command with an invalid *almsg* value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid ALMSG */
;
```

## RELATED TL1 MESSAGES

REPT ALM ENV

REPT COND

REPT EVT

**RTRV-ALM-ENV**

**RTRV-ATTR-ENV**

**RTRV-COND**

## NAME

**SET-ATTR-rr:** Set Attribute

Support for this command is available in Releases 5.0 and later.

## INPUT FORMAT

**SET-ATTR-*modifier*:***tid:aid:ctag:[ntfcncde][,,,,];*

## DESCRIPTION

**SET-ATTR-rr** command instructs an NE to set the notification code associated with an incoming signal failure event.

For incoming DS3 signals, failure events are:

- incoming (from DSX) DS3 LOS
- incoming (from DSX) DS3 SD.

For incoming EC1 signals, failure events are:

- incoming (from STSX1) EC1 LOF
- incoming (from STSX1) EC1 LOP
- incoming (from STSX1) EC1 LOS
- incoming (from STSX1) EC1 SD

For incoming OC3 signals, failure events are:

- incoming OC3 LOF
- incoming OC3 LOS
- incoming OC3 SD
- incoming OC3 SF

For incoming IS3 signals, failure events are:

- incoming OC3 LOF
- incoming OC3 LOS
- incoming OC3 SD
- incoming OC3 SF



Releases 7.1 and later:

For incoming OC12 signals, failure events are:

- incoming OC12 LOF
- incoming OC12 LOS
- incoming OC12 SD
- incoming OC12 SF

For list of alarms and condition descriptions, refer to Table 3-8 at the end of this section.

This attribute governs whether the event notification is alarmed (reported via REPORT ALARM) or not alarmed (reported via REPORT EVENT).

A no-report option is also available.

## INPUT PARAMETERS

*modifier* This is the command code modifier and must have one of the following values:

**EC1** This sets the attribute for the electrical carrier signal level 1.

**T3** This sets the attribute for the DS3 level.

**OC3** This sets the attribute for the requested OC3 signal.

For Releases 7.1 and later:

The **OC3** *modifier* is also applicable for the IS3 signal.

**OC12** For Releases 7.1 and later:

This sets the attribute for the requested OC12 signal.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier.

For Releases 5.0 to 7.0:

This is the address of the **T3** or **EC1** low speed slot and port, or OC3 slot.

For Releases 7.1 and later:

This is the address of the **T3**, **EC1**, **OC3**, or IS3 low speed slot or port, or **OC12** quad or port.

The value for a **EC1** low speed *port* address must be ALL.

The *aid* value must match the signal rate specified in the ©modifier.

For a list of valid addresses, refer to Table 3-7 at the end of this section.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*ntfcncde* Notification code. This is the alarm level for an incoming signal failure event. This parameter may take on the following values:

**CR** Critical alarm

**MJ** Major alarm

**MN** Minor alarm

**NA** Not alarmed

**NR** Not reported

**NO** Not indicated

For Releases 6.0 through 7.0, (for example, no report is made at all.) Only valid for the **OC3** and **SUPR** modifiers.

A null value defaults to **CR**.

## OUTPUT FORMAT

If the network element fully complies with the **SECT-ATTR-rr** request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the network element receives a valid **SET-ATTR-rr** command, but the command does not alter the existing alarm attributes, the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## EXAMPLE INPUT/OUTPUT

The following FT-2000 example shows the input string to provision port 2's notification code to critical for a DS3 pack in slot 1a.

```
SET-ATTR-T3:LT-PF-2000:ls-1a-2:123456::CR;  
IP 123456  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

The following example shows the input string to provision OC-3 slot 2a's notification code to not indicated:

```
SET-ATTR-OC3:LT-FT-2000:ls-2a:123456::N0;  
IP 123456  
<  
    LT-FT-2000 94-06-02 10:25:33  
M 123456 COMPLD  
;
```

For Release 7.1 and later:

The following example shows the input string to provision IS-3 slot 7a's notification code to not reported:

```
SET-ATTR-OC3:LT-FT-2000:ls-7a:123456::NR;  
IP 123456  
<  
    LT-FT-2000 97-06-02 10:25:33  
M 123456 COMPLD  
;
```

For Release 7.1 and later:

The following FT-2000 example shows the input string to provision an OC-12's notification code to not indicated:

```
SET-ATTR-OC12:LT-FT-2000:ls-3b:123456::NO;  
IP 123456  
<  
    LT-FT-2000 97-06-20 10:25:33  
M 123456 COMPLD  
;
```

For Releases 5.0 through 7.0:

The following FT-2000 example shows the input string to provision the notification code to major for a STS1E pack in slot 2a:

```
SET-ATTR-EC1:LT-FT-2000:ls-2a-all:123456::MJ;  
IP 123456  
<  
    LT-FT-2000 97-06-02 10:25:33  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **SET-ATTR** command, also.

If the network element receives a **SET-ATTR** command with an invalid command modifier, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If the network element receives a **SET-ATTR-rr** command with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier, AID missing or
   inconsistent with modifier value */
;
```

If the network element receives a **SET-ATTR-rr** command with an invalid *ntfcncde* value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid NTFNCDE */
;
```

If the network element receives a **SET-ATTR-rr** command with a *ntfcncde* value of **NO** but the *modifier* value of the command is not **OC3**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, NTFNCDE inconsistent with modifier */
;
```

## RELATED TL1 MESSAGES

**RTRV-ATTR-rr**

**ENT-rr**

**RTRV-rr**

## NAME

**SET-PM-STIME:** Set-Performance Monitoring-Start Time

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**SET-PM-STIME:***tid::ctag::start\_hour;*

## DESCRIPTION

The **SET-PM-STIME** command specifies the start time for the measurement of all twenty-four hour performance monitoring parameters. The new start time becomes effective at the next occurrence of the specified time. The current day bin is extended or shortened to synchronize with the new start time. The time specified in this command is set relative to the current system clock and time zone settings. When the time zone changes due to the Daylight Savings feature, the provisioned time remains the same and the absolute start time shifts with the time zone. For example, if the start time is set to 01:00 (AM) Eastern Standard Time (EST), the start time will continue to be 01:00 when the time zone shifts to Eastern Daylight Savings Time (EDT).



### CAUTION:

*Execution of this command will result in all current bins being marked as corrupt.*

## INPUT PARAMETERS

- |                   |                                                                                                                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                            |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                    |
| <i>start_hour</i> | Start Hour. The <i>start_hour</i> is a position defined parameter which specifies the start hour for day bin measurements. It can take the value of an integer between <b>0</b> and <b>23</b> , inclusive. This is a required parameter. |



## OUTPUT FORMAT

If the network element fully complies with the **SET-PM-STIME** request, the following normal completion response is returned.

```
sid date time
M ctag COMPLD
;
```

If the **SET-PM-STIME** command does not alter the existing attributes, the network element will not deny the command. Instead the network element provides a normal completion response.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there apply to the **SET-PM-STIME** command, also.

## EXAMPLE INPUT/OUTPUT

The following example shows a command **SET-PM-STIME** for the network element.

```
SET-PM-STIME:LT-PF-2000::123456::22;
```

```
IP 123456
<

LT-PF-2000 98-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSE

Refer to the **RTRV-HDR ERROR RESPONSE** section. The error responses listed there apply to the **SET-PM-STIME** command, also.

If the network element receives a **SET-PM-STIME** command with an invalid *start\_hour* value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid START_HOUR */
;
```

## RELATED TL1 COMMANDS/MESSAGES

**RTRV-PM-STIME**

**RTRV-PM**

## NAME

**SET-SID:** Set the Target/Source IDentifier (TID/SID) of the network element.

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**SET-SID:***tid::ctag::sid;*

## DESCRIPTION



### CAUTION:

*Network element access is affected by this command.*



### NOTE:

This command is available to privileged users only.

When the network element receives a **SET-SID** command, the network element will update its Target/Source identifier as requested.

The Target/Source identifier remains active until changed (for example, by the TL1 command **ENT-SYS** command).

## INPUT PARAMETERS

- |             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the currently active name of the network element to which the command is addressed.                                                                        |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |
| <i>sid</i>  | Target/Source identifier. This is the new name of the network element to which the command is addressed.                                                                              |



### NOTE:

For proper operation of the TL1 interfaces, the *sid* must be unique for each network element.

## OUTPUT FORMAT

Refer to the **RTRV-HDR OUTPUT FORMAT** section. The output format listed there applies to the **SET-SID** command, also.

If the network element receives a valid **SET-SID** command, but the command does not change the network element's current *tid* value, the network element provides a normal completion response.

## **OUTPUT PARAMETERS**

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The requirements listed there apply to the **SET-SID** command, also.

## **EXAMPLE INPUT/OUTPUT**

The following FT-2000 OC-48 example requests a change of the target identifier to LT-FT-2000 from LT-PF-2000:

```
set-sid:LT-PF-2000::123456::LT-FT-2000;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 93-10-26 16:42:11
```

```
M 123456 COMPLD
```

```
;
```

**ERROR RESPONSES**

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **SET-SID** command, also.

If the network element receives a **SET-SID** with an otherwise valid set of input parameter values but the *sid* specified in the command is syntactically incorrect, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid SID */
;
```

If the network element receives a **SET-SID** without the *sid* parameter, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, missing SID */
;
```

If the network element receives a **SET-SID** with an otherwise valid set of input parameter values but the command could not be completed by the network element, the following error response is returned:

```
      sid date time
M  ctag DENY
   SROF
/* Status, Requested Operation Failed */
;
```

## RELATED TL1 MESSAGES

ENT-SYS

RTRV-SYS

## NAME

**SET-TH:** Set Threshold

This command is available for FT-2000 OC-48 Releases 7.0 and later.

## INPUT FORMAT

**SET-TH-**  
**modifier:***tid:aid:ctag::montype, thlev, [locn], [dirn][, tmper];*

## DESCRIPTION

This command can be initiated by user to set the threshold level for performance monitoring parameters that, when exceeded, will generate an autonomous status report (**REPT-EVT**), when threshold crossing alert (TCA) reporting is enabled.

## INPUT PARAMETERS

*modifier* Command code modifier. The valid modifiers are:

**EC1** This sets the threshold level for the electrical carrier signal level 1.

**OC3** This sets the threshold level for optical carrier level 3.

For Release 7.1:

The **OC3** *modifier* also applies to the IS3 circuit pack.

**OC12** For Releases 7.1 and later:

This sets the threshold level for optical carrier signal level 12.

**OC48** This sets the threshold level for optical carrier signal level 48.

**STS1** This sets the threshold level for synchronous transport signal level 1.

**T3** This sets the threshold level for the DS3 level.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

|                |                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>aid</i>     | Access identifier. This identifies the facility to which the threshold applies.<br><br>For a list of valid addresses, refer to Table 3-7 at the end of this section.                                                                                                                                                                                                                          |
| <i>ctag</i>    | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                                                                                                                                                         |
| <i>montype</i> | Monitored parameter type. This is the PM parameter type for which a threshold is being set.<br><br>For list of valid values, refer to Table 3-10 at the end of this section.                                                                                                                                                                                                                  |
| <i>thlev</i>   | Threshold level. This is the threshold level to be set for the particular <i>montype</i> .                                                                                                                                                                                                                                                                                                    |
| <i>locn</i>    | Location. This is the location where the threshold is to be set and refers to the facility identified by the AID. The valid locations are:<br><br><b>FEND</b> Far-end (STS1 path PM only).<br><b>NEND</b> Near-end<br><br>If null, the default value is <b>NEND</b> .                                                                                                                         |
| <i>dirn</i>    | Direction. This specifies the direction in which the threshold is to be set and is relative to the facility identified by the AID. The value of direction must be null or <b>NA</b> ( <i>not applicable</i> ). If null, the default value is <b>NA</b> .                                                                                                                                      |
| <i>tmper</i>   | Time period. The threshold are set for PM data information for a specified time interval. This parameter may be null or have one of the following values:<br><br><b>15-MIN</b> This requests PM data in 15-minute intervals (default).<br><b>1-DAY</b> This requests daily PM data.<br><br>If the <i>tmper</i> value is null, the network element responds to the OS using the default value. |



## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
sid date time  
M ctag COMPLD  
;
```

If the requested **SET-TH** command does not alter the existing condition, the network element provides a normal completion response.

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to the **SET-TH** command, also.

## EXAMPLE INPUT/OUTPUT

For Releases 7.0 and later:

This example sets the cvl day bin threshold for the OC3 interface in slot ls-3b to -7.

```
set-th-oc3:LT-PF-2000:ls-3b:123456::cvl,-7,nend,,1-day;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 96-08-22 16:12:11
```

```
M 123456 COMPLD
```

```
;
```

For Releases 7.1 and later:

This example enables TCA reporting for the OC12 Quad 2 day bins.

```
set-th-oc12:LT-PF-2000:ls-3b:123456::TCA_RPT,1,,1-day;
```

```
IP 123456
```

```
<
```

```
LT-PF-2000 97-03-22 16:12:11
```

```
M 123456 COMPLD
```

```
;
```

**ERROR RESPONSES**

Refer to the **RTRV-HDR** error responses section. The error responses listed there also apply to **SET-TH**.

The network element returns the following error response if the *aid* value is missing, invalid, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

The network element returns the following error response if the *montype* value is missing, not supported, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid MONTYPE */
;
```

The network element returns the following error response if the *thlev* value is missing or out of range.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid THLEV */
;
```

The network element returns the following error response if the *locn* value is invalid, or conflicts with the command code modifier.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid LOCN */
;
```

The network element returns the following error response if the *dirn* value is invalid.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

The network element returns the following error response if the *tmper* value is invalid or conflicts with the command code modifier.

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid TMPER */
;
```

**RELATED TL1 MESSAGES**

REPT EVT

RTRV-PM

RTRV-TH

## NAME

**SW-TOPROTN:** Switch To Protection

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**SW-TOPROTN**-*modifier*:*tid*:*aid*:*ctag*::*mode*[*,dirn*];

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

**SW-TOPROTN** commands can be initiated to instruct the network element to perform an equipment (circuit pack) protection switch on low speed electrical (DS3 or STS1E) transmission circuit packs or synchronization circuit packs.

When the network element receives a **SW-TOPROTN** command with an address indicating a low speed transmission *service* circuit pack slot, a low speed hardware switch is operated with one of the following *modes* (in priority order): lockout, forced switch, or normal (manual) switch.

When the network element receives a **SW-TOPROTN** command with an address indicating a low speed transmission *protection* circuit pack slot, a low speed hardware switch is operated with a *mode* of lockout.

When the network element receives a **SW-TOPROTN** command with an address indicating a synchronization circuit pack slot, a hardware switch is operated with a *mode* of normal (manual) switch.

## INPUT PARAMETERS

*modifier* Modifier. This is a message modifier to the **SW-TOPROTN** message and may only have the following value:

**EQPT** Equipment. This is currently the only available modifier for use with this command.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the slot address within the network element for which the **SW-TOPROTN** command is intended.

Other than the use of the **all** construct within the *aid* field, grouping and/or ranging of *aid* values for this command is not allowed. Further, use of the **all** construct is only applicable when addressing low speed transmission circuit pack slots with a *mode*

value of **LOCKOUT**. Refer to Table 3-7 at the end of this section for a list of valid low speed transmission and synchronization circuit pack *slot* addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*mode* Protection switch mode (priority). This is the protection switch request priority of the command. The *mode* parameter must have one of the following values, listed in order of priority:

**LOCKOUT** Lockout. This requests a **lockout** of protection switching and is applicable only when the *aid* value indicates a low speed transmission circuit pack slot(s). The effect of this type of protection switching request is to lockout protection switching requests for the addressed entity.

- If the lockout addresses a *protection* slot, any traffic that is currently on the protection circuit pack is unconditionally switched back to the service circuit pack, and no further traffic from any service circuit pack can be switched to the protection circuit pack.
- If the lockout addresses a *service* slot, any traffic on that service circuit pack that was previously switched to protection is unconditionally switched back to the service circuit pack, and no further traffic can be switched from that service circuit pack to the protection circuit pack.

The protection switching lockout remains in effect until a protection switching **reset** is entered (for example, **SW-TOWKG** with *mode* = **RESET**).

**FRCD** Forced. This requests an equipment protection switch with a priority of **forced** and is accepted unless another manual protection switch request of equal or higher priority is in effect. This *mode* value is applicable only when the *aid* value indicates a low speed electrical transmission circuit pack slot. The forced protection switch remains in effect until a protection switching **lockout** (when applicable) or **reset** is entered.

**NORM** Normal. This requests an equipment protection switch with a priority of **manual** and is accepted if no other automatic or manual protection switch requests of equal or higher priority are in effect. This *mode* value is applicable when the *aid* value indicates either a



low speed transmission circuit pack slot or a synchronization circuit pack slot. The manual protection switch remains in effect until a protection switching **reset** is entered.

Addressing the lockout switch request to a low speed electrical circuit pack *protection* slot (in a protection group of service and protection circuit pack slots) has the same effect as addressing the lockout switch request to *all* of the *service* circuit pack slots in the protection group. However, in this case, the state of the service circuit pack slots does not change.

*dirn* Direction. This parameter is intended to specify the direction of transmission affected by the protection switch. This parameter field may be null or have the [default] value **BTH** (both) for all **SW-TOPROTN-EQPT** commands to the network element.

## OUTPUT FORMAT

If the protection switch request completes successfully, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the network element receives a valid **SW-TOPROTN** command, but protection switching request does not alter the existing protection switching state and/or priority, the network element provides a normal completion response. A generalized example of this is when the low speed protection circuit pack slot is already locked out and a request is made for lockout of protection.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.

## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **SW-TOPROTN** command, also.

If the network element receives a **SW-TOPROTN** command with a command code modifier other than **EQPT**, the following error response is returned:

```
      sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid, invalid modifier */
;
```

If the network element receives a **SW-TOPROTN** command without an *aid* value or with an *aid* value that is invalid in any case for this command (independent of the input *mode* value), the following error response is returned:

```
      sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid Access Identifier */
;
```

If the network element receives a **SW-TOPROTN** command without a *mode* value or with an invalid *mode* value (either due to a conflict with the *aid* value or a *mode* value that is not supported in any case by this command), the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid MODE */
;
```

If the network element receives a **SW-TOPROTN** command with a non-null *dirn* value that is other than **BTH**, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If the network element receives a **SW-TOPROTN** command that would otherwise change the protection switching state and/or priority and is lower or equal to the priority of the pre-existing protection switching state, the following error response is returned:

```
sid date time
M ctag DENY
SSRD
/* Status, Switch Request Denied,
   equal or higher priority switch request exists */
;
```

If the network element receives a **SW-TOPROTN** command with mode=*FRCD* or *NORM* but no protection circuit pack slot in the protection group is equipped with a circuit pack of the same type as in the service circuit pack slot, the following error response is returned:

```
sid date time
M ctag DENY
ENPS
/* Equipage, Not equipped with Protection Switching */
;
```

If the network element receives a **SW-TOPROTN** command and both low speed switch circuit packs are not equipped, the following error response is returned:

```
sid date time
M ctag DENY
  ENPS
/* Equipage, Not equipped with Protection Switching */
;
```

If the network element receives a **SW-TOPROTN** command directed to a single unequipped low speed service circuit pack slot, with a *mode* other than **LOCKOUT**, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid,
   inconsistent with provisioned configuration */
;
```

If the network element receives a **SW-TOPROTN** command directed to a low speed transmission circuit pack slot equipped with an OC3 or OC12 circuit pack (for which the **SW-TOPROTN** command does not apply), the following error response is returned:

```

    sid date time
M  ctag DENY
   SSRD
   /* Status, Switch Request Denied,
      equipped OC circuit pack incompatible with switch request */
;

```

If the network element receives a **SW-TOPROTN** command but the command cannot be completed because a hardware problem exists when the command is executed, the following error response is returned:

```

    sid date time
M  ctag DENY
   SPFA
   /* Status, Protection unit FAiled,
      hardware problem with protection switching mechanism */
;

```

## **RELATED TL1 MESSAGES**

**SW-TOWKG**

## NAME

**SW-TOWKG:** Switch To Working

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**SW-TOWKG**-*modifier:tid:aid:ctag::mode[,dirn]*;

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service.*

**SW-TOWKG** commands can be initiated to instruct the network element to reset equipment (circuit pack) protection switching on low speed electrical (DS3 or STS1E) transmission circuit packs or synchronization circuit packs.

When the network element receives a **SW-TOWKG** command with an address indicating a valid circuit pack switching entity, a hardware switch is operated with a *mode* of **reset**.

## INPUT PARAMETERS

*modifier* Modifier. This is a message modifier to the **SW-TOPROTN** message and may only have the following values:

**EQPT** Equipment. This is currently the only available modifier for use with this command.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the slot address within the network element for which the **SW-TOWKG** command is intended.

Other than the use of the **all** construct within the *aid* field for all slots within one low-speed group, grouping, and/or ranging of *aid* values for this command is not allowed.

Refer to Table 3-7 at the end of this section for a list of valid low speed and synchronization circuit pack *slot* addresses.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*mode* Protection switch mode (priority). This provides the protection switch request priority of the command. The *mode* parameter must have the following value:

**RESET** Reset. This requests a **reset** of protection switching. The effect of this type of protection switching request is to reset any previous manual protection switching requests for the addressed entity.

*dirn* Direction. This parameter is intended to specify the direction of transmission affected by the protection switch reset. This parameter field may be null or have the [default] value **BTH** (both) for all **SW-TOWKG-EQPT** commands to the network element.

## OUTPUT FORMAT

If the protection switch request completes successfully, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

If the network element receives a valid **SW-TOWKG** command, but the protection switching reset request does not alter the existing protection switching state and/or priority, the network element provides a normal completion response.

## OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR**.



## ERROR RESPONSES

Refer to the **RTRV-HDR** error responses section. The error responses listed there apply to the **SW-TOWKG** command, also.

If the network element receives a **SW-TOWKG** command with a command code modifier other than **EQPT**, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid modifier */
;
```

If the network element receives a **SW-TOWKG** command without an *aid* value or with an invalid *aid* value, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives a **SW-TOWKG** command without a *mode* value or with an invalid *mode* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid MODE */
;
```

If the network element receives a **SW-TOWKG** command with a non-null *dirn* value that is other than **BTH**, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid DIRN */
;
```

If the network element receives a **SW-TOWKG** command directed to a low speed transmission circuit pack slot equipped with an OC3 or OC12 circuit pack (for which the **SW-TOWKG** command does not apply), the following error response is returned:

Note the parallel with an "invalid AID" error. In the example below, electrical low-speed protection is being misdirected specifically to a slot address equipped with incompatible OC3 or OC12 1+1 optical circuit packs; in an "invalid AID" error, the AID value is not supported by this command for unspecified reasons.

```
sid date time
M ctag DENY
  SSRD
/* Status, Switch Request Denied,
   equipped OC circuit pack incompatible with switch request */
;
```

If the network element receives a **SW-TOWKG** command but the command cannot be completed because a hardware problem exists when the command is executed, the following error response is returned:

```
sid date time
M ctag DENY
  SPFA
/* Status, Protection unit FAiled,
   hardware problem with protection switching mechanism */
;
```

## RELATED TL1 MESSAGES

**SW-TOPROTN**

## NAME

**TEST-AUTO:** Test - Auto Turnup

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**TEST-AUTO-*modifier*:tid:[aid]:ctag;**

## DESCRIPTION

The **TEST-AUTO** command is used for turnup testing of the network element in an automated manner.

The output of this command is an indication of whether the test passed or failed.

It is recommended that the **TEST-AUTO-LOCAL** test be performed before the **TEST-AUTO-DSX** test to determine the health of the system prior to testing the external interfaces.

### **NOTE:**

This command is available to privileged users, only.

### **CAUTION:**

*This test interrupts transmission. It must not be performed on an in-service system.*

The user should reference the ***FT-2000 OC-48 Lightwave System, User/Service Manual*** for detailed instructions on how and when to use the **TEST-AUTO** commands.

### **NOTE:**

The **TEST-AUTO-LOCAL** command may take up to 20 minutes to complete, during which time any other TL1 commands may be queued for execution after the **TEST-AUTO-LOCAL** command is completed.

### **NOTE:**

The **TEST-AUTO-DSX** command may take up to six minutes to complete, during which time any other TL1 commands may be queued for execution after the **TEST-AUTO-DSX** command is completed.

## INPUT PARAMETERS

*modifier* Modifier. The *modifier* determines which part of the system is to be automatically tested.

The *modifier* must have the one of the following values.

**DSX** Low Speed Cabling Test. This test verifies that the low speed cabling between the terminal and the external equipment has been installed properly and supports transmission. In addition to testing the low speed cabling, the test also exercises transmission through the low speed switch packs.

**LOCAL** Local Self Test. This test checks the connectivity and health of equipped slots within the terminal. The test verifies transmission between the low speed and high speed packs as well as between the high speed packs. The timing packs are tested by testing transmission with each equipped timing pack. The low speed switch packs are tested only to the extent of being able to perform a low speed protection switch. However, for optical low speed packs there is no protection switching performed. Each of the optical low speed packs are tested individually. The Local test also tests continuity of the DCC path from any equipped optical low speed circuit packs to an equipped Tributary Overhead Controller circuit pack.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the low speed slot for which this command is intended, or the value **all** when the *modifier* is **DSX**. When the *modifier* is **LOCAL**, the *aid* must be **all** or null.

If null, the *aid* defaults to **all**.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

## OUTPUT FORMAT

In response to a valid **TEST-AUTO** command, the following output report is returned.

```

      sid date time
M  ctag COMPLD
  "aid::result_status"
  "aid::result_status"
      .      .      .      .      .      .      .
      .      .      .      .      .      .      .
  "aid::result_status"
;
```

When a **TEST-AUTO-DSX** command is directed to a single slot, only the three ports associated with the requested slot will be reported.

In response to a valid **TEST-AUTO-LOCAL** command, the output report is sorted as follows:

1. TRMTR slot data,
2. RCVR slot data,
3. TG slot data,
4. LSSW slot data,
5. OHCTL slot data,
6. LNCTL slot data,
7. TOHCTL slot data, and
8. LS slot data.

Within each group the entries are sorted by *aid* value.

## OUTPUT PARAMETER

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

Additional parameters that specifically apply to this command response are defined below.

*aid* Access identifier. This is the address of the slot for which the test result is being reported.

*result\_status* The result status field is used for returning the result of the test and it takes on the following values:

good This indicates a good or successful test result.

FAIL This indicates a failed or unsuccessful test result.

Not Tested This indicates that the entity is not equipped.

When a **TEST-AUTO-DSX** command is reporting the *result-status* of an OC3 or IS3 optical circuit pack, the test results will be reported under port 1 only. For an OC12 circuit pack, *result\_status* is reported on port 1 of the Command slot only. Nothing is output for ports 2 and 3 of a slot equipped with OC3 and IS3 optical circuit packs. For the OC12 optical circuit pack, nothing is output for ports 2 and 3 of the Command slot or for any ports of the EXT slots.

## EXAMPLE INPUT/OUTPUT

The example below shows the response to a **TEST-AUTO-LOCAL** command from the network element.

```
test-auto-local:LT-PF-2000::789012;
IP 789012
<
  LT-PF-2000 98-10-26 16:42:11
M 789012 COMPLD
  "trmtr-1e::good"
  "trmtr-1w::good"
  "rcvr-1e::good"
  "rcvr-1w::good"
  "tg-1::good"
  "tg-2::good"
  "lssw-in::good"
  "lssw-out::good"
  "ohctl-1e::good"
  "ohctl-1w::good"
  "lnctl-1w::good"
  "tohctl::good"
  "ls-1a::good"
  "ls-1b::good"
  "ls-2a::good"
  "ls-2b::good"
  "ls-3a::good"
  "ls-3b::good"
  "ls-4a::good"
  "ls-4b::good"
  "ls-5a::good"
  "ls-5b::good"
  "ls-6a::good"
  "ls-6b::good"
  "ls-7a::Not Tested"
  "ls-7b::Not Tested"
  "ls-8a::Not Tested"
  "ls-8b::Not Tested"
  "ls-p1::good"
  "ls-p2::good"
;
```



The example below shows the response to a **TEST-AUTO-DSX** command for a single low speed slot equipped with an electrical low speed interface.

```
test-auto-dsx:LT-PF-2000:ls-3a:789012;  
IP 789012  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 789012 COMPLD  
    "ls-3a-1::good"  
    "ls-3a-2::good"  
    "ls-3a-3::good"  
;
```

The example below shows the response to a **TEST-AUTO-DSX** command for all of the low speed ports in the network element. Slots 1A, 1B, 4A, and 4B are equipped with DS3 Interfaces. Slots 2B, 6A, and 6B are equipped with STS1E Interfaces. Slots 3A and 3B are equipped with OC3 Interfaces. Slot 5A is equipped with an IS3 Interface. Quad 4 is equipped with an OC12 Interface. Slots 2A and 5B are unequipped.

```
test-auto-dsx:LT-PF-2000:ls-all:789012;  
IP 789012  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 789012 COMPLD  
    "ls-1a-1::good"  
    "ls-1a-2::good"  
    "ls-1a-3::good"  
    "ls-1b-1::FAIL"  
    "ls-1b-2::good"  
    "ls-1b-3::FAIL"  
    "ls-2a-1::Not Tested"  
    "ls-2a-2::Not Tested"  
    "ls-2a-3::Not Tested"  
    "ls-2b-1::good"  
    "ls-2b-2::good"  
    "ls-2b-3::good"  
    "ls-3a-1::good"  
    "ls-3a-2::"  
    "ls-3a-3::"  
  
Continued next page  
;
```

(Continued from previous page)

```
"ls-3b-1::good"
"ls-3b-2::"
"ls-3b-3::"
"ls-4a-1::good"
"ls-4a-2::good"
"ls-4a-3::good"
"ls-4b-1::good"
"ls-4b-2::good"
"ls-4b-3::good"
"ls-5a-1::good"
"ls-5a-2::"
"ls-5a-3::"
"ls-5b-1::Not Tested"
"ls-5b-2::Not Tested"
"ls-5b-3::Not Tested"
"ls-6a-1::good"
"ls-6a-2::good"
"ls-6a-3::good"
"ls-6b-1::good"
"ls-6b-2::good"
"ls-6b-3::good"
"ls-7a-1::"
"ls-7a-2::"
"ls-7a-3::"
"ls-7b-1::good"
"ls-7b-2::"
"ls-7b-3::"
"ls-8a-1::"
"ls-8a-2::"
"ls-8a-3::"
"ls-8b-1::"
"ls-8b-2::"
"ls-8b-3::"
```

;

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **TEST-AUTO** command, also.

If the network element receives a **TEST-AUTO** command with an invalid *aid*, the following error response is returned:

```
sid date time
M ctag DENY
  IIAC
/* Input, Invalid Access Identifier */
;
```

If the network element receives a **TEST-AUTO-DSX** command addressed to a single slot in the that is not equipped, the following error response is returned:

```
sid date time
M ctag DENY
  SNVS
/* Status, Not in Valid State
The requested command can not be executed because of the improper
status of the specified entity.
*/
;
```

If the network element receives a **TEST-AUTO** command while a condition that (a) is not associated with the entity under test, and (b) causes NE-ACTY to be lighted if the test wasn't running occurs, the following error response is returned:

```
sid date time
M ctag DENY
SSTP
/* Status, Stopped
The requested test can not be completed because of a condition
(or conditions) giving rise to Near End Activity.
*/
;
```

#### RELATED TL1 MESSAGES

None

## NAME

**TEST-EQPT:** Test Equipment

This command is available in FT-2000 Releases 7.2 and later.

## INPUT FORMAT

**TEST-EQPT-*modifier*:*tid*:[*aid*]:*ctag*[::*spec\_block*];**

## DESCRIPTION

The **TEST-EQPT** command can be initiated by users to test the audible and visible office alarms in the target network element's location or the target network element's LEDs.

### ⇒ NOTE:

This command is available to reports-only users, also.

## INPUT PARAMETERS

*modifier* Modifier. The *modifier* determines which part of the system is to be automatically tested.

The *modifier* must have one of the following values.

**ALM** Alarms. When the **TEST-EQPT-ALM** command is entered, the system will exercise the local audible and visible office alarms at the network element location. The corresponding User Panel LEDs will be illuminated simultaneously with each office alarm.

**LED** LED. When the **TEST-EQPT-LED** command is entered, the LED(s) of the target network element which is under test is turned on for ten seconds, then off for 10 seconds, after which it reverts to its normal operation.

The **TEST-EQPT-LED** command does not affect the operation of the office alarms.

*tid* Target identifier. This is the name of the network element to which the command is addressed.

*aid* Access identifier. This is the address of the entity for which this command is intended. When the *modifier* is **ALM**, the *aid* must be **all** or null. When the *modifier* is **LED**, the *aid* value determines the slot, line, or User Panel address whose LED is to be tested.

If null, the *aid* defaults to **all**.

*ctag* Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.

*spec\_block* Specific Parameter Block. This parameter field is used for the modification of temporary login attributes. Parameters within the *spec\_block* are specified using a name defined construct of: **PARAMETER=value** in a comma separated list.

For the **TEST-EQPT** command, the *spec\_block* may contain none, one or both of the following parameters:

*mode* Mode. This is the alarm level being tested. This parameter may only be used when the *modifier* is **ALM**. The format for this parameter is "**MODE=mode**".

If specified, *mode* may have one of the following values: **CR**, **MJ**, **MN**, or **ALL**.

If null, *mode* defaults to **ALL**.

When a **TEST-EQPT-ALM** command is executed with a *mode* value of **ALL**, the following sequence occurs:

- a. All indicators under test are turned off for four seconds. If the ACO is on before the test it goes off. Pressing the ACO/LOCTR pushbutton has no effect.
- b. The CR indicators are turned on for four seconds. The ACO can be turned on by pressing the ACO/LOCTR pushbutton.
- c. The CR indicators are turned off. This turns off the ACO if it was turned on during the previous interval. The MJ indicators are turned on for four seconds. The ACO can be turned on by pressing the ACO/LOCTR pushbutton.
- d. The MJ indicators are turned off. This turns off the ACO if it was turned on during the previous interval. The MN indicators are turned on for four seconds. The ACO can be turned on by pressing the ACO/LOCTR pushbutton.

- e. If the *repeat* value is greater than **1**, and this was not the last cycle then go back to step b.
- f. All indicators under test are turned off for four seconds. This turns off the ACO if it was turned on during the previous interval. Pressing the ACO/LOCTR pushbutton has no effect.
- g. Control of the indicators under test is returned to the normal maintenance functions. If the ACO was on when the test began and if the alarm state of the system is unchanged when the test ends the ACO will be left on.

When the **TEST-EQPT-ALM** command is executed with a *mode* value of **CR**, **MJ**, or **MN**, the following sequence occurs:

- a. The selected indicator is turned on for ten seconds. If the ACO was on before the test it is turned off when the test begins. The ACO can be turned on by pressing the ACO/LOCTR pushbutton.
- b. The selected indicator is turned off for ten seconds. This turns off the ACO if it was turned on during the previous interval. Pressing the ACO/LOCTR pushbutton has no effect.
- c. If the *repeat* value is greater than **1**, and this was not the last cycle then go back to step a.
- d. Control of the selected indicator is returned to the normal maintenance functions. If the ACO was on when the test began and if the alarm state of the system is unchanged when the test ends the ACO will be left on.

*repeat* Repeat. This indicates the number of times the requested test will be run. The format for this parameter is "**REPEAT=repeat**".

If specified, *repeat* may be an integer between **1** and **10** or null.

If null, *repeat* defaults to **1**.

## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

```
test-eqpt-a lm:LT-PF-2000::123456::MODE=CR, REPEAT=1;
IP 123456
<
LT-PF-2000 98-10-26 16:42:11
M 123456 COMPLD
;
```



```
test-eqpt-led:LT-PF-2000:ls-all:123456::REPEAT=1;  
IP 123456  
<  
    LT-PF-2000 98-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **TEST-EQPT** command, also.

If the network element receives a **TEST-EQPT** command with an invalid *aid* value, the following error response is returned:

```
    sid date time  
M ctag DENY  
  IIAC  
/* Input, Invalid Access Identifier */  
;
```

If the network element receives a **TEST-EQPT-ALM** command with an invalid *mode* value, the following error response is returned:

```
sid date time
M ctag DENY
  IDNV
/* Input, Data Not Valid, invalid MODE */
;
```

If the network element receives a **TEST-EQPT-LED** command with an otherwise valid *mode* value, the following error response is returned:

```
sid date time
M ctag DENY
  ICNV
/* Input, Command Not Valid, invalid spec_block parameter */
;
```

If the network element receives a **TEST-EQPT** command with an invalid *repeat*, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid REPEAT */
;
```

## RELATED TL1 MESSAGES

TEST-TLM

## NAME

**TEST-TLM:** Test Telemetry

This command is available starting in FT-2000 Release 7.2. This command is not available in FT-2000 Releases 8.0 and later.

## INPUT FORMAT

**TEST-TLM**-*modifier*:*tid*::*ctag*[::*spec\_block*];

## DESCRIPTION

The **TEST-TLM-PAR** command can be initiated by the user to perform tests of the parallel telemetry and miscellaneous discrete control points. The test turns the requested parallel telemetry and miscellaneous discrete control points on for 20 seconds, then off for 20 seconds, and then reverts to normal operation.

## INPUT PARAMETERS

|                   |                                                                                                                                                                                                                                                        |           |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <i>modifier</i>   | Modifier. The <i>modifier</i> determines which type of telemetry data is to be tested.                                                                                                                                                                 |           |
|                   | The <i>modifier</i> must have the following value.                                                                                                                                                                                                     |           |
| <b>PAR</b>        | Parallel. This specifies that the parallel telemetry and miscellaneous discrete control points are to be tested.                                                                                                                                       |           |
| <i>tid</i>        | Target identifier. This is the name of the network element to which the command is addressed.                                                                                                                                                          |           |
| <i>ctag</i>       | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages.                                                                  | <br> <br> |
| <i>spec_block</i> | Specific Parameter Block. This parameter field is used for the modification of temporary login attributes. Parameters within the <i>spec_block</i> are specified using a name defined construct of: <b>PARAMETER=va lue</b> in a comma separated list. |           |

For the **TEST - TLM** command, the *spec\_block* may contain none, one or both of the following parameters:

*mode* Mode. This is the name of the telemetry data point being tested. The format for this parameter is "**MODE=mode**".

If specified, *mode* may have one of the following values:

- CRNE** The CRitical-Near End parallel telemetry point will be exercised.
- MJNE** The MaJor-Near End parallel telemetry point will be exercised.
- MNNE** The MiNor-Near End parallel telemetry point will be exercised.
- CRFE** The CRitical-Far End parallel telemetry point will be exercised.
- MJFE** The MaJor-Far End parallel telemetry point will be exercised.
- MNFE** The MiNor-Far End parallel telemetry point will be exercised.
- CONT1** Miscellaneous discrete control point 1 will be exercised.
- CONT2** Miscellaneous discrete control point 2 will be exercised.
- CONT3** Miscellaneous discrete control point 3 will be exercised.
- CONT4** Miscellaneous discrete control point 4 will be exercised.
- ALL** All parallel telemetry and miscellaneous discrete control points will be exercised.

If null, *mode* defaults to **ALL**.

*repeat* Repeat. This indicates the number of times the requested test will be run. The format for this parameter is "**REPEAT=repeat**".

If specified, *repeat* may be an integer between **1** and **10** or null.

If null, *repeat* defaults to **1**.

## OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
sid date time
M ctag COMPLD
;
```

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response apply to this command, also.

## EXAMPLE INPUT/OUTPUT

```
test-tlm-par:LT-PF-2000::123456::MODE=CRNE, REPEAT=1;
IP 123456
<
LT-PF-2000 98-10-26 16:42:11
M 123456 COMPLD
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR ERROR RESPONSES** section. The error responses listed there apply to the **TEST-TLM** command, also.

If the network element receives a **TEST-TLM** command with an invalid *mode* value, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid MODE */
;
```

If the network element receives a **TEST-TLM** command with an invalid *repeat*, the following error response is returned:

```
sid date time
M ctag DENY
IDNV
/* Input, Data Not Valid, invalid REPEAT */
;
```

## RELATED TL1 MESSAGES

### TEST-EQPT

## NAME

**UPD-SYS:** Update the network element

This command is available for FT-2000 OC-48 Releases 5.0 and later.

## INPUT FORMAT

**UPD-SYS:***tid::ctag;*

## DESCRIPTION



### CAUTION:

*Execution of this command may affect service on a protected line or slot if the associated circuit packs are missing.*

## INPUT PARAMETERS

|             |                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>tid</i>  | Target identifier. This is the name of the network element to which the command is addressed.                                                                                         |
| <i>ctag</i> | Correlation tag. This is included in the command by the user and is repeated by the network element in the response to allow the user to associate the command and response messages. |

## OUTPUT FORMAT

Refer to the **RTRV-HDR OUTPUT FORMAT** section. The output format listed there apply to the **UPD-SYS** command, also.

If the network element receives a valid **UPD-SYS** command, the network element provides a normal completion response even if the update resulted in no change to the database of the network element.

|  
|  
|

## OUTPUT PARAMETERS

Refer to the **RTRV-HDR OUTPUT PARAMETERS** section. The output parameters listed there apply to the **UPD-SYS** command, also.



## EXAMPLE INPUT/OUTPUT

The following example illustrates the command/response associated with an update:

```
upd-sys:LT-PF-2000::123456;  
IP 123456  
<  
    LT-PF-2000 93-10-26 16:42:11  
M 123456 COMPLD  
;
```

## ERROR RESPONSES

Refer to the **RTRV-HDR error responses** section. The error responses listed there apply to the **UPD-SYS** command, also.

If FT-2000, receives a **UPD-SYS** command while the SYSCTL and SYSMEM have incompatible software versions, the following error response is returned:

```
sid date time  
M ctag DENY  
SSTP  
/* Status, SToPped  
    The execution of this command stopped because SYSCTL and SYSMEM  
    have incompatible software versions.  
*/  
;
```

## RELATED TL1 MESSAGES

**INIT-SYS**

**PARAMETER DETAIL TABLES**

---

The following tables provide specific parameter details as follows:

- Table 3-7 Access Identifiers (AID)
- Table 3-8 Condition Descriptions
- Table 3-9 Monitored Parameter Types
- Table 3-10 Monitored Parameter Types With User-Settable Thresholds
- Table 3-11 Condition Types
- Table 3-12 TL1 Character Set Definitions

**FT-2000 ADR Terminal AID Table**

Table 3-7 lists valid addresses for the FT-2000 OC-48 Add/Drop-Rings Terminal. The "-all" address is listed as a valid address, but is not used in TL1 output messages.

**Table 3-7. FT-2000 ADR Terminal AID (Address) Table**

| Object                       | Entity                                  | Address                                      | Example(s)                     |
|------------------------------|-----------------------------------------|----------------------------------------------|--------------------------------|
| <i>System</i>                | FT-2000 OC-48 System                    | system                                       | system                         |
| <i>Lines</i>                 | OC-48 Line                              | line-{all,1e,1w}                             | line-1e                        |
| <i>Slots</i>                 | Optical Transmitter Slot (TRMTR)        | trmtr-{all,1e,1w}                            | trmtr-1w                       |
|                              | Optical Receiver Slot (RCVR)            | rcvr-{all,1e,1w}                             | rcvr-1e                        |
|                              | Low Speed Slot (LS INTFC)               | ls-all<br>ls-{1a-8b,p1,p2}                   | ls-all<br>ls-p2                |
|                              | Timing Slot (TG)                        | tg-all<br>tg-{1,2}                           | tg-all<br>tg-2                 |
|                              | Low Speed Switch Slot (LSSW)            | lssw-all<br>lssw-{out,in}                    | lssw-all<br>lssw-out           |
|                              | System Controller Slot (SYSCTL)         | sysctl                                       | sysctl                         |
|                              | System Memory Slot (SYSMEM)             | sysmem                                       | sysmem                         |
|                              | Line Controller Slot (LNCTL)            | lnctl-{1w}                                   | lnctl-1w                       |
|                              | Overhead Controller Slot (OHCTL)        | ohctl-all<br>ohctl-{1e,1w}                   | ohctl-all<br>ohctl-1w          |
| <i>Ports</i>                 | DS3 or EC1 Port                         | ls-all<br>ls-{1a-8b}-all<br>ls-{1a-8b}-{1-3} | ls-all<br>ls-1a-all<br>ls-5b-2 |
|                              | OC-3 or IS3* Port                       | ls-all<br>ls-{1a-8b,p1,p2}                   | ls-all<br>ls-3b                |
|                              | OC-12*                                  | ls-{all,1b,3b,5b,7b}                         | ls-1b                          |
|                              | Port Timing Out (TIMING OUT)            | DS1-out-all<br>DS1-out-{1,2}                 | DS1-out-all<br>DS1-out-2       |
|                              | Port Timing In (TIMING IN)              | DS1-in-{all,pri,secy}<br>OC48-in-{1e,1w}     | DS1-in-pri<br>OC48-in-1e       |
| <i>Operations Interfaces</i> | User Panel                              | user panel                                   | user panel                     |
|                              | Craft Interface Terminal (CIT)          | cit-{dce,dte,dcc}                            | cit-dcc                        |
|                              | Data Communication Channel (DCC)        | dcc-{all,1e,1w}                              | dcc-1w                         |
|                              | Miscellaneous Discrete 1 (MISC DSCRT 1) | misc dscrt 1                                 | misc dscrt 1                   |
|                              | Miscellaneous Discrete 2 (MISC DSCRT 2) | misc dscrt 2                                 | misc dscrt 2                   |
|                              | Office Alarms (OFFICE ALARMS)           | office alms                                  | office alms                    |
|                              | Parallel Telemetry† (PAR TLM)           | par tlm                                      | par tlm                        |
|                              | Serial Telemetry 1† (SER TLM 1)         | ser tlm 1                                    | ser tlm 1                      |
|                              | Serial Telemetry 2† (SER TLM 2)         | ser tlm 2                                    | ser tlm 2                      |
|                              | X.25 Interface                          | x25                                          | x25                            |

**Table 3-7. FT-2000 ADR Terminal AID (Address) Table (Contd)**

| <b>Object</b>                  | <b>Entity</b>             | <b>Address</b>                                                            | <b>Example(s)</b>                       |
|--------------------------------|---------------------------|---------------------------------------------------------------------------|-----------------------------------------|
| <i>Tributaries</i>             | STS-1 Tributary           | sts1-all<br>sts1-{all,1e,1w}-all<br>sts1-{all,1e,1w}-{all,1-16}-{all,1-3} | sts1-all<br>sts1-1e-all<br>sts1-1e-12-2 |
|                                | STS-3 Tributary           | sts3-all<br>sts3-{all,1e,1w}-all<br>sts3-{all,1e,1w}-{1-16}               | sts3-all<br>sts3-1w-all<br>sts3-1w-11   |
| <i>Miscellaneous Discretes</i> | Environmental Input Point | env-{all,1-16}                                                            | env-1                                   |
|                                | Control Output Point      | cont-{all,1-4}                                                            | cont-1                                  |
| <i>Shelf</i>                   | Shelf                     | shlf-{1e,1w}-hs<br>shlf-ls                                                | shlf-1w-hs<br>shlf-ls                   |
| <i>Repeater Bay</i>            | Repeater Bay Site ID      | site-{1,p}-{0-31}                                                         | site-1-27                               |

\* Support is available for ports IS3 and OC12 in Releases 7.1 and later.

† Releases 8.0 and later **DO NOT** support parallel telemetry and serial telemetry (TBOS).

## FT-2000 Condition Description Table

Table 3-8 contains a list of alarm and condition descriptions and their likely causes.



### CAUTION:

***This table is for information only and should not be used for trouble clearing.*** Refer to the Operation and Maintenance (TOP) section of 365-575-102, *FT-2000 OC-48 Lightwave System, User/Service Manual* for trouble clearing information.

**Table 3-8. Condition Descriptions**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APS channel failure                      | The automatic protection switching (APS) channel on the protection line has failed.<br>Likely causes: Failure of protection line, far-end TRMTR, near-end RCVR, or far-end LNCTL circuit packs. |
| APS provisioning conflict                | The line protection switching configuration (1xN or 1+1) or directionality (unidirectional or bidirectional) is provisioned differently at the two ends of the line.                            |
| circuit audit suspended                  | The circuit provisioning audits are not functioning.                                                                                                                                            |
| circuit provisioning error               | Intermediate source/destination node TID is incorrect, or the add/drop source/destination node TID is incorrect.                                                                                |
| clock out of range                       | One or both of the TG3 circuit packs supplying synchronization to the TRMTR circuit pack has gone out of the recommended range.                                                                 |
| CP reset in progress                     | A circuit pack has been installed and that the necessary software is being downloaded to the circuit pack.                                                                                      |
| CP (unknown type) failure                | The circuit pack in the indicated slot has failed but its type is unknown.                                                                                                                      |
| CP (unknown type) removed                | The circuit pack in the indicated slot has been removed but its type is unknown.                                                                                                                |
| CPYPGM:IP tid                            | Copy program in progress.                                                                                                                                                                       |
| DCC startup in progress                  | The DCC is starting up.                                                                                                                                                                         |
| DRI auto switch                          | An automatic DRI switch is active.                                                                                                                                                              |
| DRI manual switch                        | A manual DRI switch is active.                                                                                                                                                                  |
| DS3 INTFC failure                        | A DS3 circuit pack failure.                                                                                                                                                                     |
| DS3 INTFC removed                        | A DS3 circuit pack is missing from a slot.                                                                                                                                                      |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DS3 loopback                             | A DS3 loopback is in effect. DS3 signals coming from the cross-connect panel are preempted by the loopback.                                                                                                                                                                                                                                                                                          |
| DS3 path unequipped                      | A path unequipped signal has been detected on an incoming OC-48 line.<br>Likely cause: A cross-connection was deleted in an upstream node.                                                                                                                                                                                                                                                           |
| DS-NE not reachable*                     | One of the network elements in the ring network has not been provisioned "DS-NE", far end communications has been disabled to the "DS-NE", or communication to the provisioned "DS-NE" has been interrupted.                                                                                                                                                                                         |
| duplicate node ID defined                | A recently entered node identifier (NID) value is a duplicate of the NID of another network element in the ring network.                                                                                                                                                                                                                                                                             |
| duplicate TID defined*                   | A recently entered target identifier (TID) value is a duplicate of the TID of another network element in the ring network.                                                                                                                                                                                                                                                                           |
| EC1 loopback                             | An EC-1 loopback is in effect. EC-1 signals coming from the cross-connect panel are preempted by the loopback.                                                                                                                                                                                                                                                                                       |
| excessive holdover                       | The network element was either manually or automatically switched to internal synchronization and has remained in that synchronization mode for 24 hours. This excessive time (holdover) may cause degraded performance on the transmitted and/or received signals.<br>Likely causes: Failure of TG3 or RCVR (when looped timed) circuit packs, or failure of an external synchronization reference. |
| extra traffic preempted                  | The extra traffic routed over the protection tributaries (9 through 16) has been preempted by a line protection switch.                                                                                                                                                                                                                                                                              |
| fan failure                              | There is a tripped circuit breaker or defective fan assembly.                                                                                                                                                                                                                                                                                                                                        |
| FT-LBA fan failure                       | There is a tripped circuit breaker or defective fan assembly at the FT-LBA.                                                                                                                                                                                                                                                                                                                          |
| FT-LBA fuse/power failure                | The FT-LBA has a blown fuse, a power failure to a shelf, or a power failure within the bay.                                                                                                                                                                                                                                                                                                          |
| FT-LBA 1EW failure                       | Failure of the 1EW LBA.                                                                                                                                                                                                                                                                                                                                                                              |
| FT-LBA 1WE failure                       | Failure of the 1WE LBA.                                                                                                                                                                                                                                                                                                                                                                              |

\* For Releases 8.0 and later, DS-NE and duplicate ID are not supported.

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| fuse/power failure A                     | The network element has a blown fuse in feeder A, a power failure to a shelf, or a power failure within the bay.<br>Likely causes: A blown 10A fuse or a defective 1186A filter board in the filter panel.                                                                                                                                                                                                                              |
| fuse/power failure B                     | The network element has a blown fuse in feeder B, a power failure to a shelf, or a power failure within the bay.<br>Likely causes: A blown 10A fuse or a defective 1186A filter board in the filter panel.                                                                                                                                                                                                                              |
| inc. (from DS1) sync ref fail            | A failure of the incoming DS1 synchronization reference has been detected.                                                                                                                                                                                                                                                                                                                                                              |
| inc. (from OC3) DCC failure              | The local network element cannot communicate through the SONET OC-3 data communications channel (DCC).                                                                                                                                                                                                                                                                                                                                  |
| inc. (from OC3 path AIS                  | A Path AIS has been on an incoming STS-1 tributary of an OC3 signal. The OC3 port in question is provisioned as a DRI cross-connect (1-way-DRI, 2-way-DRI, or 2-way-DRI-Pri).<br><br>Likely causes: Failure of upstream equipment, which includes the STS-1 path (for example, failure of an OC-3 pack in the upstream equipment). If the upstream NE is an FT-2000 then a "delete" of a drop cross-connection may have been performed. |
| inc. (from OC48) DCC failure             | The local network element cannot communicate through the SONET OC-48 data communications channel (DCC).                                                                                                                                                                                                                                                                                                                                 |
| inc(from OC48) path RFI/yellow           | An STS-1 path RDI signal has been detected on a DS3 signal coming from the line. Path yellow indicates the far-end terminal is receiving a "path AIS."                                                                                                                                                                                                                                                                                  |
| inc. (from OC48) sync ref fail           | A failure of the incoming line synchronization reference from the incoming OC-48 signal has been detected.                                                                                                                                                                                                                                                                                                                              |
| inc(from STSX) line RFI/yellow           | An incoming line RFI/yellow condition has been detected on an incoming EC-1 line from the STSX-1.<br>Likely causes: Failure of an outgoing EC-1 line (transmit) or local STS1E circuit pack.                                                                                                                                                                                                                                            |

\* For Releases 8.0 and later, DS-NE and duplicate ID are not supported.

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| incoming DCC failure                     | <p>The local network element cannot communicate through the SONET data communications channel (DCC). A defective incoming DCC can affect the following:</p> <ul style="list-style-type: none"> <li>- remote logins</li> <li>- FE ACTY LED on the user panel*</li> <li>- reporting of far-end conditions on TBOS links*</li> <li>- TL1 messages.</li> </ul> <p>Likely causes: Failure of far-end OHCTL, SYSMEM, or SYSCTL circuit packs; failure of both TG3 circuit packs.</p> |
| incoming (from DSX) DS3 LOS              | <p>Failure of one or more of the DS3 signals coming from the low speed cross-connect panel. A DS3 signal failure causes insertion of DS3 AIS at a remote FT-2000 terminal.</p> <p>Likely cause: Incoming DS3 loss of signal.</p>                                                                                                                                                                                                                                               |
| incoming (from DSX) DS3 SD               | <p>A signal degrade (SD) condition has been detected on one or more of the DS3 signals coming from the low speed cross-connect panel.</p>                                                                                                                                                                                                                                                                                                                                      |
| incoming (from OC3/OC12) STS LOP         | <p>An STS-1 loss-of-pointer (LOP) condition has been detected on an incoming synchronous transport signal (STS-1) from an OC-3 or OC12 line.</p> <p>Likely cause: Failure of the upstream TRMTR circuit pack.</p>                                                                                                                                                                                                                                                              |
| incoming OC12 AIS                        | <p>A OC12 alarm condition signal (AIS) has been detected on one or more of the OC-12 signals coming from an OC-48 line.</p> <p>Likely causes: Failure of an upstream OC-12 source equipment or OC12 circuit pack.</p>                                                                                                                                                                                                                                                          |
| incoming (from OC-12) path AIS           | <p>A Path AIS has been on an incoming STS-1 tributary of an OC12 signal. The OC12 port in question is provisioned as a DRI cross-connect (1-way-DRI, 2-way-DRI, or 2-way-DRI-Pri).</p> <p>Likely causes: Failure of upstream equipment, which includes the STS-1 path (for example, failure of an OC-12 pack in the upstream OC12 equipment). If the upstream NE is an FT-2000 then a "delete" of a drop cross-connection may have been performed.</p>                         |
| incoming (from OC-48) DS3 AIS            | <p>A DS3 alarm indication signal (AIS) has been detected on one or more of the DS3 signals coming from an OC-48 line.</p> <p>Likely causes: Failure of an upstream DS3 source equipment.</p>                                                                                                                                                                                                                                                                                   |



**Table 3-8. Condition Descriptions (Contd)**

| <b>Description (from Retrieve-Alarm Report)</b> | <b>Meaning</b>                                                                                                                                                                                                                      |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| incoming (from OC-48) DS3 LOF                   | A DS3 loss of frame (LOF) condition has been detected on an incoming DS3 signal from the OC-48 line.<br>Likely causes: Failure of an upstream DS3 source equipment or DS3 circuit pack.                                             |
| incoming (from OC48) path AIS                   | An STS-1 path alarm indication signal (AIS) has been detected on one or more of the STS-1 tributaries of the OC-48 line.<br>Likely cause: Failure of far-end DS3 or STS1E circuit pack.                                             |
| incoming (from OC48) STS LOP                    | An STS-1 loss-of-pointer (LOP) condition has been detected on an incoming synchronous transport signal (STS-1) from an OC-48 line.<br>Likely cause: Failure of the upstream TRMTR circuit pack.                                     |
| incoming(from STSX1) EC1 LOF                    | An EC-1 loss-of-frame (LOF) condition has been detected on an incoming EC-1 line from the STSX-1.                                                                                                                                   |
| incoming(from STSX1) EC1 LOP                    | An EC-1 loss-of-pointer (LOP) condition has been detected on an incoming EC-1 line from the STSX-1.                                                                                                                                 |
| incoming(from STSX1) EC1 LOS                    | An EC-1 loss-of-signal (LOS) condition has been detected on an incoming EC-1 line from the STSX-1.                                                                                                                                  |
| incoming(from STSX1) EC1 SD                     | A signal degrade (SD) condition has been detected on an incoming EC-1 line.                                                                                                                                                         |
| incoming(from STSX1) line AIS                   | An EC-1 alarm indication signal (AIS) has been detected on an incoming EC-1 line.                                                                                                                                                   |
| incoming(from STSX1) path AIS                   | A Path AIS has been on an incoming STS-1 tributary of an OC3 signal. The OC3 port in question is provisioned as a DRI cross-connect (1-way-DRI, 2-way-DRI, or 2-way-DRI-Pri).<br>Likely causes: Failure of upstream EC-1 equipment. |
| incoming OC3/OC12 AIS                           | An STS-1 path alarm indication signal (AIS) has been detected on one or more of the STS-1 signals within an STS-3/STS-12 signal coming from an OC-48 line.<br>Likely cause: Failure of an upstream REGENR or TRMTR circuit pack.    |
| incoming OC3/OC12 APS byte fail                 | This condition is associated with a signal degrade (SD) or an automatic protection switch (APS) channel failure on the protection line.                                                                                             |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| incoming OC3/OC12 line RFI/yellow        | The far end OC-3/OC-12 terminal is receiving a line failure from the local FT-2000 terminal. The far end terminal is notifying the local FT-2000 terminal of the failure.<br>Likely causes: Failure of an outgoing OC-3/OC-12 line (transmit fiber). Failure of local OC3/OC-12 circuit pack or far end OC3/OC-12 circuit pack. |
| incoming OC3/OC12 LOF                    | An OC-3/OC-12 loss-of-frame (LOF) condition has been detected on an incoming OC-3/OC-12 line. Likely cause: Failure of the far end OC3/OC12 circuit pack or local OC3/OC12 circuit pack.                                                                                                                                        |
| incoming OC3/OC12 LOS                    | An OC-3/OC-12 loss-of-signal (LOS) condition has been detected on an incoming OC-3/OC-12 line.<br>Likely causes: Failure of the far end OC3/OC12 circuit pack, the incoming OC-3/OC-12 line (receive fiber) or the local OC3/OC12 circuit pack.                                                                                 |
| incoming OC3/OC12 SD                     | A signal degrade (SD) condition has been detected on an incoming OC-3/OC-12 line. The line parity error rate threshold setting has been exceeded ( $10^{-5}$ through $10^{-9}$ with an original value of $10^{-6}$ ).<br>Likely causes: Failure of the far end OC3/OC12 circuit pack or the local OC3/OC12 circuit pack.        |
| incoming OC3/OC12 SF                     | A signal failure (SF) condition has been detected on an incoming OC3/OC12 line.<br>Likely causes: Failure of the far end OC3/OC12 circuit pack, the incoming OC-3/OC-12 line (receive fiber), or the local OC3/OC12 circuit pack.                                                                                               |
| inconsistent DCC Values                  | The OC3 or OC12 DCC orientation (user or network) is the same at both ends of the DCC, but should be different.                                                                                                                                                                                                                 |
| OC12 mode conflict (equipment)           | The alarm condition that occurs when the addressed slot or slot pair is provisioned for 1+1 mode and one or both slots are not in the "equipped" state.                                                                                                                                                                         |
| OC12 mode conflict (quad pair)           | The alarm condition that occurs when the addressed slot or slot pair is provisioned for 1+1 mode and the other slot is provisioned for 0x1 mode (in the same direction).                                                                                                                                                        |
| OC12 mode conflict (x-connect)           | The alarm condition that occurs when the addressed slot, of the slot pair, is provisioned for 1+1 mode and the two slots are cross-connected to different tributaries.                                                                                                                                                          |
| OC12 INTFC failure                       | A OC12 circuit pack failure.                                                                                                                                                                                                                                                                                                    |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OC12 INTFC removed                       | A OC12 circuit pack is missing from a slot.                                                                                                                                                                                                                                           |
| OC12 auto switch at far-end              | An automatic switch has occurred at the far-end.                                                                                                                                                                                                                                      |
| OC12 auto switch at near-end             | An automatic switch has occurred at the near-end.                                                                                                                                                                                                                                     |
| OC12 forced switch at the far-end        | A forced switch has been performed on the far-end.                                                                                                                                                                                                                                    |
| OC12 forced switch at the near-end       | A forced switch has been performed at the near-end.                                                                                                                                                                                                                                   |
| incoming OC-48 LOF                       | An OC-48 loss-of-frame (LOF) condition has been detected on an incoming OC-48 line.<br>Likely cause: Failure of an upstream TRMTR or REGENR circuit pack or local RCVR.                                                                                                               |
| OC12 inhibit at near-end                 | Line protection switching is disabled at the near end of the OC-12 line.                                                                                                                                                                                                              |
| OC12 lockout at far-end                  | The protection line is locked out and will not be used to protect a service line failure at the far end of the OC-12 line.                                                                                                                                                            |
| OC12 lockout at near-end                 | The protection line is locked out and will not be used to protect a service line failure at the near end of the OC-12 line.                                                                                                                                                           |
| OC12 loopback (from OC48)                | The STS-12/12c signal from the OC-48 line is looped back to the OC-48 line.                                                                                                                                                                                                           |
| OC12 path unequipped                     | A path unequipped condition has been detected on an STS-1 tributary of an OC12 signal. The OC12 port in question is provisioned as a DRI cross-connect (1-way-DRI, 2-Way-DRI or 2-Way-DRI-Pri).<br><br>Likely causes: A cross-connect in an upstream OC12 equipment has been deleted. |
| incoming OC-48 AIS                       | An OC-48 alarm indication signal (AIS) has been detected on an incoming OC-48 line.<br>Likely cause: Failure of an upstream REGENR or TRMTR circuit pack.                                                                                                                             |
| incoming OC-48 APS byte fail             | This condition is associated with a signal degrade (SD) or an automatic protection switch (APS) channel failure on the protection line.                                                                                                                                               |
| incoming OC-48 APS default byte          | This condition is normally a transient condition caused by a "Reset in Progress" condition at an upstream OC-48 source.                                                                                                                                                               |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| incoming OC48 B1 parity error            | <p>A parity error has been detected in the B1 SONET overhead byte at a repeater bay site. Likely cause: Failure of the upstream TRMTR or REGENR circuit pack, or the local RCVR or REGENR. clT} _ incoming OC-48 invalid F byte;T{ An invalid SONET overhead F byte has been detected at a repeater bay site.</p> <p>Likely cause: Failure of the upstream TRMTR or REGENR circuit pack, or the local RCVR or REGENR.</p> |
| incoming OC-48 line RFI/yellow           | <p>The remote FT-2000 terminal is receiving a line failure from the local FT-2000 terminal. The remote FT-2000 terminal is notifying the local FT-2000 terminal of the failure.</p> <p>Likely causes: Failure of an outgoing OC-48 line (transmit fiber). Failure of local TRMTR circuit pack, remote RCVR circuit pack, or intervening REGENR circuit packs.</p>                                                         |
| incoming OC-48 LOS                       | <p>An OC-48 loss-of-signal (LOS) condition has been detected on an incoming OC-48 line.</p> <p>Likely causes: Failure of an upstream TRMTR or REGENR circuit pack, the incoming OC-48 line (receive fiber), or the local RCVR circuit pack.</p>                                                                                                                                                                           |
| incoming OC48 LOS/LOF                    | <p>An OC-48 loss-of-signal (LOS) and/or loss-of-frame (LOF) condition has been detected on an incoming OC-48 line.</p> <p>Likely causes: Failure of an upstream TRMTR or REGENR circuit pack, the incoming OC-48 line (receive fiber), or the local RCVR circuit pack.</p>                                                                                                                                                |
| incoming OC-48 SD                        | <p>A signal degrade (SD) condition has been detected on an incoming OC-48 line. The line parity error rate threshold setting has been exceeded (<math>10^{-5}</math> through <math>10^{-9}</math> with an original value of <math>10^{-6}</math>).</p> <p>Likely causes: Failure of the upstream TRMTR or REGENR circuit pack, or the local RCVR circuit pack.</p>                                                        |
| incoming OC-48 SF                        | <p>A signal failure (SF) condition has been detected on an incoming OC-48 line.</p> <p>Likely causes: Failure of the upstream TRMTR or REGENR circuit pack, or the local RCVR circuit pack.</p>                                                                                                                                                                                                                           |
| incoming sync ref failure                | <p>A failure of the incoming synchronization reference has been detected.</p> <p>Likely causes: Failure of a synchronization reference (signal source).</p>                                                                                                                                                                                                                                                               |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report)                                            | Meaning                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| inhibit alarms-office alarms                                                        | Alarm reporting via the office alarms interface is disabled.                                                                                                                                                                                                                                                                                           |
| inhibit alarms-parallel telem*                                                      | Alarm reporting via the parallel telemetry* interface is disabled.                                                                                                                                                                                                                                                                                     |
| inhibit alarms-X.25                                                                 | Alarm reporting via the X.25 (TL1) interface is disabled.                                                                                                                                                                                                                                                                                              |
| laser bias currnt-out-of-range                                                      | This condition indicates that one or more of the optical parameters of a RCVR, TRMTR, or REGENR circuit pack has exceeded the recommended range.                                                                                                                                                                                                       |
| line auto switch                                                                    | An automatic line protection switch is active.<br>Likely causes: Failure of incoming OC-48 line.                                                                                                                                                                                                                                                       |
| line FERF                                                                           | The remote FT-2000 terminal is receiving a line failure from the local FT-2000 terminal. The remote FT-2000 terminal is notifying the local FT-2000 terminal of the failure.<br>Likely causes: Failure of an outgoing OC-48 line (transmit fiber). Failure of local TRMTR circuit pack, remote RCVR circuit pack, or intervening REGENR circuit packs. |
| line forced switch                                                                  | An automatic line protection switch is active with a priority of "forced switch."                                                                                                                                                                                                                                                                      |
| line forced switch at far end                                                       | An automatic line protection switch is active with a priority of "forced switch" at the far end of the OC-48 line.                                                                                                                                                                                                                                     |
| line forced switch at near end                                                      | An automatic line protection switch is active with a priority of "forced switch" at the near end of the OC-48 line.                                                                                                                                                                                                                                    |
| line lockout                                                                        | The protection line is locked out and will not be used to protect a service line failure.                                                                                                                                                                                                                                                              |
| line lockout at far end                                                             | The protection line is locked out and will not be used to protect a service line failure at the far end of the OC-48 line.                                                                                                                                                                                                                             |
|  | <p><b>NOTE:</b></p> <p>If either one of the two OC48 lines are "locked-out" from any node on the ring; then, protection is inhibited throughout the whole ring.</p>                                                                                                                                                                                    |

\* Releases 8.0 annd later, O NOT support parallel telemetry.

Table 3-8. Condition Descriptions (Contd)

| Description (from Retrieve-Alarm Report)                     | Meaning                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div> <div></div> <div>line lockout at near end</div> </div> | <p>The protection line is locked out and will not be used to protect a service line failure at the near end of the OC-48 line.</p> <p><b>NOTE:</b><br/>If either one of the two OC48 lines are "locked-out" from any node on the ring; then, protection is inhibited throughout the whole ring.</p> |
| line manual switch                                           | An automatic line protection switch is active with a priority of "manual switch."                                                                                                                                                                                                                   |
| line manual switch at far end                                | An automatic line protection switch is active with a priority of "manual switch" at the far end of the OC-48 line.                                                                                                                                                                                  |
| line manual switch at near end                               | An automatic line protection switch is active with a priority of "manual switch" at the near end of the OC-48 line.                                                                                                                                                                                 |
| line switch inhibit                                          | High speed line switching is disabled.                                                                                                                                                                                                                                                              |
| line switch inhibit - far end                                | High speed line switching is disabled at the far end of the OC-48 line.                                                                                                                                                                                                                             |
| line switch inhibit - near end                               | High speed line switching is disabled at the near end of the OC-48 line.                                                                                                                                                                                                                            |
| line TCA                                                     | A threshold crossing alert (TCA) has been issued. The alert means the signal degrade threshold has been exceeded for an incoming OC-48 line.                                                                                                                                                        |
| LNCTL failure                                                | Failure of LNCTL circuit pack.                                                                                                                                                                                                                                                                      |
| LNCTL removed                                                | LNCTL circuit pack is missing from slot.                                                                                                                                                                                                                                                            |
| logins inhibited                                             | Logins are disabled.                                                                                                                                                                                                                                                                                |
| LS auto switch                                               | <p>A low speed interface circuit pack has been automatically switched to protection.</p> <p>Likely cause: Failure of the DS3 or STS1E circuit pack.</p>                                                                                                                                             |
| LS forced switch                                             | A low speed slot was switched to the protection slot with a priority of "forced switch."                                                                                                                                                                                                            |
| LS lockout                                                   | A low speed slot is locked out and will not be switched.                                                                                                                                                                                                                                            |
| LS loopback                                                  | <p>A low speed receive signal from a high speed line is electronically looped back to the transmit signal for the high speed line. Signals coming from the low speed cross-connect panel are preempted by the loopback.</p> <p>Likely cause: <b>Operate-Loopback</b> has been executed.</p>         |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LS manual switch                         | A low speed slot was switched to protection with a priority of "manual switch."                                                                                                                                                                                         |
| LSSW failure                             | Failure of LSSW circuit pack.                                                                                                                                                                                                                                           |
| LSSW removed                             | LSSW circuit pack is missing from slot.                                                                                                                                                                                                                                 |
| multiple DS-NEs defined*                 | Two or more network elements in a ring network have their "Directory Server" (DS-NE)* parameter provisioned to "Yes." There must be one and only one DS-NE in the ring network.                                                                                         |
| NE status comm failure                   | The NE is not associated with an AGN* or the AGNE cannot establish associations with all of the NEs in the alarm group. If the AGNE loses power, all NEs in the alarm group will report this condition; however, the condition may not be reported for several minutes. |
| node ID conflict                         | This normally indicates a transient condition at the local network element.                                                                                                                                                                                             |
| non-preemptible protn access             | The Low Speed Shelf - Complementary is connected to the protection line during the switching function and <b>cannot be preempted</b> by an automatic switch to protection.                                                                                              |
| OC3 auto switch at far end               | An automatic line protection switch is active at the far end of the OC-3 line.                                                                                                                                                                                          |
| OC3 auto switch at near end              | An automatic line protection switch is active at the near end of the OC-3 line.                                                                                                                                                                                         |
| OC3 INTFC failure                        | Failure of OC3 circuit pack.                                                                                                                                                                                                                                            |
| OC3 INTFC removed                        | OC3 circuit pack is missing from slot.                                                                                                                                                                                                                                  |
| OC3 forced switch at far end             | An automatic line protection switch is active with the priority of "forced switch" at the far end of the OC-3 line.                                                                                                                                                     |
| OC3 forced switch at near end            | An automatic line protection switch is active with the priority of "forced switch" at the far end of the OC-3 line.                                                                                                                                                     |
| OC3 inhibit at near end                  | Line protection switching is disabled at the near end of the OC-3 line.                                                                                                                                                                                                 |
| OC3 lockout at far end                   | The protection line is locked out and will not be used to protect a service line failure at the far end of the OC-3 line.                                                                                                                                               |

\* Releases 8.0 and later, **DO NOT** support DS-NE or AGNE.

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                   |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OC3 removed                              | OC3 circuit pack is missing from slot.                                                                                                                                                                                                                                                    |
| OC3 lockout at near end                  | The protection line is locked out and will not be used to protect a service line failure at the near end of the OC-3 line.                                                                                                                                                                |
| OC3 loopback (from OC3)                  | The input from the OC-3 line is looped back to the output of the OC-3 line.                                                                                                                                                                                                               |
| OC3 loopback (from OC48)                 | The STS-3/3c signal from the OC-48 line is looped back to the OC-48 line.                                                                                                                                                                                                                 |
| OC3 mode conflict (equipment)            | One slot of a slot pair provisioned for 1+1 operation is equipped with an OC3 circuit pack and the other slot of the slot pair is equipped with a DS3 or STS1E circuit pack.                                                                                                              |
| OC3 mode conflict (slot pair)            | One slot of a slot pair is provisioned "1+1" and the other slot of the slot pair is provisioned "0x1."                                                                                                                                                                                    |
| OC3 mode conflict (x-connect)            | The two slots of a slot pair provisioned for 1+1 operation are cross-connected to two different STS-3 tributaries.                                                                                                                                                                        |
| OC3 path unequipped                      | <p>A path unequipped condition has been detected on an STS-1 tributary of an OC3 signal. The OC3 port in question is provisioned as a DRI cross-connect (1-way-DRI, 2-Way-DRI or 2-Way-DRI-Pri).</p> <p>Likely causes: A cross-connect in an upstream OC3 equipment has been deleted.</p> |
| OHCTL failure                            | Failure of OHCTL circuit pack.                                                                                                                                                                                                                                                            |
| OHCTL removed                            | OHCTL circuit pack is missing from slot.                                                                                                                                                                                                                                                  |
| optical parameter out-of-range           | The laser bias current level, optical power transmit level, or optical power receive level has exceeded the allowed range at an ^FT-2000 repeater bay.                                                                                                                                    |
| path AIS                                 | <p>An STS-1 path alarm indication signal (AIS) has been detected on one or more of the STS-1 tributaries of the OC-48 line.</p> <p>Likely cause: Failure of far-end DS3 or STS1E circuit pack.</p>                                                                                        |
| path integrity failure                   | A cross-connection within a circuit has been broken.                                                                                                                                                                                                                                      |
| path TCA                                 | A threshold crossing alert (TCA) has been issued. The alert means the signal degrade threshold has been exceeded.                                                                                                                                                                         |



**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| path yellow                              | An STS-1 path yellow has been detected on a DS3 signal coming from the line. Path yellow indicates the far-end terminal is receiving a "path AIS."<br>Likely causes: Unprotected failure of far-end DS3 circuit pack.                                                                                                                                                                                    |
| preemptible protn access                 | The Low Speed Shelf - Complementary is connected to the protection line during the switching function and <b>can be preempted</b> by an automatic switch to protection.                                                                                                                                                                                                                                  |
| provisionedcontrolpt                     | The specified control point (miscellaneous discrete output) is active. Note: The actual message that appears in the condition description report for this condition can be provisioned; this is the default message. See the <b>Retrieve-Attribute-Control</b> and <b>Set-Attribute-Control</b> commands.<br>Likely cause: The system was instructed to close the control point by a TBOS control point. |
| provisionedenvironmentalpt               | A contact closure is present at an environmental input point of the network element. Note: The actual message that appears in the condition description report for this condition can be provisioned; this is the default message. See the <b>Retrieve-Attribute-Control</b> and <b>Set-Attribute-Control</b> commands.                                                                                  |
| RCVR failure                             | Failure of RCVR circuit pack.                                                                                                                                                                                                                                                                                                                                                                            |
| RCVR removed                             | RCVR circuit pack is missing from slot.                                                                                                                                                                                                                                                                                                                                                                  |
| receiver parametr-out-of-range           | One or more of the operating parameters of a RCVR, TRMTR, or REGENR circuit pack has exceeded the recommended range.                                                                                                                                                                                                                                                                                     |
| REGENR failure                           | Failure of REGENR circuit pack.                                                                                                                                                                                                                                                                                                                                                                          |
| REGENR removed                           | REGENR circuit pack is missing from slot.                                                                                                                                                                                                                                                                                                                                                                |
| repeater bay environment input           | An environmental input has been activated at the indicated repeater site.                                                                                                                                                                                                                                                                                                                                |
| repeater bay equipment failure           | An equipment failure has occurred at the indicated repeater site.                                                                                                                                                                                                                                                                                                                                        |
| reset in progress                        | The FT-2000 network element is in progress of downloading its software from SYSMEM to SYSCTL, to LNCTLs, to OHCTLs, and to all other circuit pack board controllers.<br>Likely cause: <b>Reset</b> or <b>Initialize-System</b> has been executed.                                                                                                                                                        |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ring incomplete/open                     | The designated DS-NE network element is unable to create a complete ring map because of a controller or transmission failure in the ring network.                                    |
| ring startup in progress                 | This is normally a transient condition that indicates the ring network is starting up.                                                                                               |
| section TCA                              | A threshold crossing alert (TCA) has been issued. The alert means the signal degrade threshold has been exceeded.                                                                    |
| site provisioning conflict               | Two network elements in a network are provisioned as "Site 0." One and only one FT-2000 terminal in a network must be provisioned to be "Site 0."                                    |
| software download in progress            | A software download from the PC-CIT to the SYSMEM is currently in progress.                                                                                                          |
| STS1 squelch map conflict                | The controller circuits are unable to associate any network element's target identifier (TID) with the value supplied for a source or destination node of an STS-1 cross-connection. |
| STS1E INTFC failure                      | Failure of STS1E circuit pack.                                                                                                                                                       |
| STS1E INTFC removed                      | STS1E circuit pack is missing from slot.                                                                                                                                             |
| STS1 squelch map inconsistent            | The intermediate source/destination node TIDs are incorrect for the circuit.                                                                                                         |
| STS3 squelch map conflict                | The controller circuits are unable to associate any network element's target identifier (TID) with the value supplied for a source or destination node of an STS-3 cross-connection. |
| STS3 squelch map inconsistent            | The intermediate source/destination node TIDs are incorrect for the circuit.                                                                                                         |
| squelch map conflict                     | The controller circuits are unable to associate any network element's target identifier (TID) with the value supplied for a source or destination node of a cross-connection.        |
| sync mode auto switch                    | An automatic switch from the provisioned operating mode to holdover mode has occurred. Likely cause: All incoming synchronization references have failed.                            |
| sync mode forced switch                  | A forced switch from the provisioned operating mode to holdover mode has occurred.                                                                                                   |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sync reference auto switch               | The FT-2000 terminal has automatically switched its synchronization reference.<br>Likely causes: When provisioned for phase-locked synchronization mode, failure of the external DS1 synchronization reference. When provisioned for loop timed mode, failure of the incoming OC-48 line, failure of the RCVR circuit pack, or failure of the external DS1 synchronization reference. |
| sync reference forced switch             | The FT-2000 terminal has switched its synchronization reference with a priority of "forced switch."                                                                                                                                                                                                                                                                                   |
| sync reference lockout                   | A synchronization reference signal is locked out and FT-2000 terminal will go into holdover mode if it fails.                                                                                                                                                                                                                                                                         |
| sync reference manual switch             | The FT-2000 terminal has switched its synchronization reference with a priority of "manual switch."                                                                                                                                                                                                                                                                                   |
| SYSCTL failure                           | Failure of SYSCTL circuit pack.                                                                                                                                                                                                                                                                                                                                                       |
| SYSMEM failure                           | Failure of SYSMEM circuit pack.                                                                                                                                                                                                                                                                                                                                                       |
| SYSMEM removed                           | SYSMEM circuit pack is missing from slot.                                                                                                                                                                                                                                                                                                                                             |
| SYSMEM/SYSCTL code mismatch              | A software mismatch has been detected between the software stored in the SYSMEM circuit pack and the software version running in the FT-2000 network element. Likely cause: A software upgrade procedure is in progress.                                                                                                                                                              |
| SYSMEM unrecognizable code               | The software stored in the SYSMEM circuit pack has become corrupted and is no longer usable.<br>Likely causes: Corrupted software download to SYSMEM circuit pack or spontaneous corruption of the software in the SYSMEM circuit pack.                                                                                                                                               |
| test alarm in progress                   | An office alarm test is in progress.                                                                                                                                                                                                                                                                                                                                                  |
| test auto turnup in progress             | An auto turnup test is in progress.                                                                                                                                                                                                                                                                                                                                                   |
| test telemetry in progress               | A telemetry test is in progress.                                                                                                                                                                                                                                                                                                                                                      |
| TG auto switch                           | A TG3 circuit pack has been automatically switched to protection.<br>Likely cause: Failure of a TG3 circuit pack, removal of a TG3 circuit pack, or a TG3 circuit pack warming up.                                                                                                                                                                                                    |
| TG manual switch                         | A TG3 circuit pack was switched to protection with a priority of "manual switch."                                                                                                                                                                                                                                                                                                     |

**Table 3-8. Condition Descriptions (Contd)**

| Description (from Retrieve-Alarm Report) | Meaning                                                                                                                             |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| TG warming up                            | A TG circuit pack has been installed and is warming up to a stable operating temperature.                                           |
| TG3 failure                              | Failure of TG3 circuit pack.                                                                                                        |
| TG3 removed                              | TG3 circuit pack is missing from slot.                                                                                              |
| TID address map full                     | The local subnetwork has exceeded the maximum size of 64 network elements.                                                          |
| TL-1 link failure                        | An incoming TL1 link failure has been detected.                                                                                     |
| TOHCTL failure                           | Failure of TOHCTL circuit pack.                                                                                                     |
| TOHCTL removed                           | TOHCTL circuit pack is missing from slot.                                                                                           |
| traffic squelched                        | Multiple failures in the ring network have resulted in traffic being squelched to eliminate any possibility of its being misrouted. |
| transmit parametr-out-of-range           | One or more of the operating parameters of a RCVR, TRMTR, or REGENR circuit pack has exceeded the recommended range.                |
| TRMTR failure                            | Failure of TRMTR circuit pack.                                                                                                      |
| TRMTR removed                            | TRMTR circuit pack is missing from slot.                                                                                            |
| unexpected CP type                       | A circuit pack has been replaced with a defective circuit pack.                                                                     |
| x-conn provisioned but not est           | A cross-connection has been entered between a tributary of an OC-48 line and a low speed interface slot in the AUTO state.          |

### FT-2000 Monitored Parameter Types

Table 3-9 lists the subset of the monitored parameter types (*montype*) from Bellcore's TR-TSY-000833, Issue 3, that are supported by FT-2000. Also included in this table is a cross-reference to the standard T1M1.3 performance-monitoring terminology and a listing of the applicable signal (*modifier*) values for each parameter.

**Table 3-9. FT-2000 Monitored Parameter Types (*montype*)**

| <b>Description<br/>(<i>montype</i>)</b> | <b>Meaning</b>                                                                                                                                                                                                                                          | <b>T1M1.3<br/>Standard Name</b> | <b>Signals<br/>(<i>modifier</i>)</b>            |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------|
| CVL                                     | Coding violation count - line                                                                                                                                                                                                                           | CV-L                            | OC48<br>OC12<br>OC3<br>EC1                      |
| CVP                                     | Coding violation count - path                                                                                                                                                                                                                           | CV-P<br>CVP-P                   | STS1 (near end)<br>T3 (P-bit)                   |
| CVS                                     | Coding violation count - section                                                                                                                                                                                                                        | CV-S                            | OC48                                            |
| ESL                                     | Errored second count - line                                                                                                                                                                                                                             | ES-L                            | OC48<br>OC12<br>OC3<br>EC1<br>T3                |
| ESP                                     | Errored second count - path                                                                                                                                                                                                                             | ES-P<br>ES-PFE<br>ESP-P         | STS1 (near end)<br>STS1 (far end)<br>T3 (P-bit) |
| ESS                                     | Errored second count - section                                                                                                                                                                                                                          | ES-S                            | OC48                                            |
| FEBE                                    | Far end block error count - path                                                                                                                                                                                                                        | CV-PFE                          | STS1 (far end)                                  |
| LBCL                                    | Laser bias current level. In REPT EVT, TCA messages and RTRV-PM responses for <i>montype</i> =LBCL, <i>monval</i> are provided in terms of the normalized laser bias current level. When data has not yet been collected, <i>monval</i> is set to zero. | LBC                             | EQPT<br>or<br>OC48<br>or<br>OC12, OC3           |
| LPR                                     | Light power intensity received. In REPT EVT, TCA messages and RTRV-PM responses for <i>montype</i> =LPR, <i>monval</i> =1 if out of range and <i>monval</i> =0 if in range. When data has not yet been collected, <i>monval</i> is set to zero.         | OPR                             | EQPT<br>or<br>OC48<br>or<br>OC12, OC3           |

**Table 3-9. FT-2000 Monitored Parameter Types** (*montype*) (Contd.)

| <b>Description</b><br>( <i>montype</i> ) | <b>Meaning</b>                                                                                                                                                                                                                                     | <b>T1M1.3</b><br><b>Standard Name</b> | <b>Signals</b><br>( <i>modifier</i> )           |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------|
| LPT                                      | Light power intensity transmitted. In REPT EVT, TCA messages and RTRV-PM responses for <i>montype</i> =LPT, <i>monval</i> =1 if out of range and <i>monval</i> =0 if in range. When data has not yet been collected, <i>monval</i> is set to zero. | OPR                                   | EQPT<br>or<br>OC-48<br>or<br>OC12, OC3          |
| PSC                                      | Protection switch count                                                                                                                                                                                                                            | PSC                                   | OC48, OC12, OC3                                 |
| PYERR-L                                  | Parity error count - DS3 line                                                                                                                                                                                                                      | CV-L                                  | T3                                              |
| SASP                                     | SES/AIS Seconds count - path                                                                                                                                                                                                                       | SAS-P                                 | T3                                              |
| SEFS                                     | Severely errored framing seconds<br><br>count - section OOF                                                                                                                                                                                        | SEFS-S                                | OC48<br>OC12<br>OC3<br>EC1                      |
| SESL                                     | Severely errored second count - line                                                                                                                                                                                                               | SES-L                                 | OC48<br>OC12<br>OC3<br>EC1                      |
| SESP                                     | Severely errored second count - path                                                                                                                                                                                                               | SES-P<br>SES-PFE<br>SESP-P            | STS1 (near end)<br>STS1 (far end)<br>T3 (P-bit) |
| SESS                                     | Severely errored second count - section                                                                                                                                                                                                            | SES-S                                 | OC48                                            |
| UASL                                     | Unavailable second count - line                                                                                                                                                                                                                    | UAS-L                                 | OC48<br>OC12<br>OC3<br>EC1                      |
| UASP                                     | Unavailable second count - path                                                                                                                                                                                                                    | UAS-P<br>UAS-PFE<br>UAS-P             | STS1 (near end)<br>STS1 (far end)<br>T3         |

**FT-2000 Monitored Parameter Types with User-Settable Thresholds**

Table 3-10 lists the monitored parameter types (*montype*) with User-Settable Thresholds from Bellcore's TR-TSY-000833, Issue 3. Also included in this table is a cross-reference to the standard T1M1.3 performance-monitoring terminology and a listing of the applicable signal (*modifier*) values for each parameter.

**Table 3-10. FT-2000 Monitored Parameter Types (*montype*) with User-Settable Thresholds**

| Description<br>( <i>montype</i> ) | Meaning                                            | T1M1.3<br>Standard Name    | Signals<br>( <i>modifier</i> )                  |
|-----------------------------------|----------------------------------------------------|----------------------------|-------------------------------------------------|
| CVL                               | Coding violation count - Line                      | CV-L                       | OC48<br>OC12<br>OC3<br>EC1                      |
| CVP                               | Coding violation count - Path                      | CV-P<br>CVP-P              | STS1 (near end)<br>T3 (P-bit)                   |
| CVS                               | Coding violation count - Section                   | CV-S                       | OC48<br>OC12<br>OC3                             |
| ESL                               | Errored second count - Line                        | ES-L                       | OC48<br>OC12<br>OC3<br>EC1<br>T3                |
| ESP                               | Errored second count - Path                        | ES-P<br>ES-PFE<br>ESP-P    | STS1 (near end)<br>STS1 (far end)<br>T3 (P-bit) |
| ESS                               | Errored second count - Section                     | ES-S                       | OC48<br>OC12<br>OC3                             |
| SASP                              | SES/AIS seconds count - Path                       | SAS-P                      | T3                                              |
| SEFS                              | Severe errored framing seconds count - Section OOF | SEFS-S                     | OC48<br>OC12<br>OC3<br>EC1                      |
| SESL                              | Severe errored second count - Line                 | SES-L                      | OC48<br>OC12<br>OC3<br>EC1                      |
| SESP                              | Severe errored second count - Path                 | SES-P<br>SES-PFE<br>SESP-P | STS1 (near end)<br>STS1 (far end)<br>T3 (P-bit) |
| SESS                              | Severe errored second count - Section              | SES-S                      | OC48<br>OC12<br>OC3                             |
| UASL                              | Unavailable second count - Line                    | UAS-L                      | OC48<br>OC12<br>OC3<br>EC1                      |

**Table 3-10. FT-2000 Monitored Parameter Types (*montype*) with User-Settable Thresholds (Contd)**

| <b>Description<br/>(<i>montype</i>)</b> | <b>Meaning</b>                  | <b>T1M1.3<br/>Standard Name</b> | <b>Signals<br/>(<i>modifier</i>)</b>     |
|-----------------------------------------|---------------------------------|---------------------------------|------------------------------------------|
| UASP                                    | Unavailable second count - Path | UAS-P                           | OC48 (near end)<br>STS1 (far end)<br>T3  |
| TCA_RPT                                 | TCA Reporting*                  | NONE                            | EC1<br>OC12<br>OC3<br>OC48<br>STS1<br>T3 |

\* The input TCA level can be {0,1} where '0' disables all TCA reporting and '1' enables all TCA reporting for a given modifier of given bin (15min,day). |



## FT-2000 Condition Types

Table 3-11 lists the subset of the condition types (*condtype*) from Bellcore's TR-TSY-000833, Issue 3\*, that are supported by FT-2000.

**Table 3-11. FT-2000 Condition Types (*condtype*)**

| Description | Meaning                                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACOMAN      | A manual alarm cutoff detected.                                                                                                                                                                                                                                                                            |
| AIS         | Alarm indication signal detected.                                                                                                                                                                                                                                                                          |
| APSB        | APS byte failure detected.                                                                                                                                                                                                                                                                                 |
| APSC        | APS channel failure detected.                                                                                                                                                                                                                                                                              |
| APSPROV     | APS provisioning conflict detected.                                                                                                                                                                                                                                                                        |
| AUTORESET   | Automatic circuit pack reset in progress. When referring to an overhead controller slot, this is used to report a OHCTL CP being reset due to directory services provisioning actions. When referring to a low speed slot, this is used to report a CP (of unknown type) being reset after pack insertion. |
| CKTAUDSNP   | The circuit audit function is temporarily suspended.                                                                                                                                                                                                                                                       |
| CONTR       | Control processor failure. Used to report controller circuit pack failures or removals when feasible.                                                                                                                                                                                                      |
| CRSMAP-UPD  | The cross-connect map has been updated.                                                                                                                                                                                                                                                                    |
| DCC-INIT    | DCC start-up in progress.                                                                                                                                                                                                                                                                                  |
| DSNE-NR†    | Directory services network element not reachable.                                                                                                                                                                                                                                                          |
| DUPL-NID†   | Duplicate node IDs defined (rings applications).                                                                                                                                                                                                                                                           |
| DUPL-TID    | Duplicate TID detected.                                                                                                                                                                                                                                                                                    |
| EC1TERM     | STS1E circuit pack failure.                                                                                                                                                                                                                                                                                |
| EOC         | Embedded operations channel.                                                                                                                                                                                                                                                                               |
| FERF        | Remote defect indicator (RDI [FERF]).                                                                                                                                                                                                                                                                      |

† Releases 8.0 and later **DO NOT** support DSNE-NR and DUPL-TID.

\* Some *condtype* values, particularly those relating to rings and OSI (for example, OSI *Directory Services* application) applications have no equivalent to be found in TR-833. In those cases Lucent Technologies has derived its own *condtype* values from the conditions to be reported and plans to comply per Bellcore TR-833 once equivalents are defined.

**Table 3-11. FT-2000 Condition Types (*condtype*) (Contd)**

| <b>Description</b>    | <b>Meaning</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLT - CPY - SW - PRGM | <p>A copy program request has failed. The TID of the target (copy to) network element and a further explanation of the failure is shown in the description field. The description field may contain the following entries:</p> <ul style="list-style-type: none"> <li>■ check fail - The copied software is bad.</li> <li>■ comm. fail - Communications link failed during the copy.</li> <li>■ dcc denied - The target network element has disabled dcc access.</li> <li>■ erase fail - A SYSMEM hardware failure at the target network element.</li> <li>■ flash busy - A software download is already in progress at the target network element.</li> <li>■ mismatch - The software platform running on the target network element is not the same as the local (copy from) network element.</li> <li>■ write fail - A SYSMEM hardware failure at the target network element.</li> </ul> |
| HLDOVRSYNC            | Holdover synchronization mode. Used when entering holdover synchronization mode due to a forced switch request or loss of all external timing references.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| IMPROPRMVL            | A circuit pack has been removed from an FT-2000 terminal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| INHMSG                | Autonomous messages to OS inhibited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| INHSWPR               | Inhibited switch to protection. Used to report manual lockout of service or protection and inhibit of automatic line protection switching from service to protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| INIT - 1              | The system is initializing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| INIT - 2              | The system is updating.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| IP - CPY - SW - PRGM  | A copy program operation is in progress. The TID of the target (copy to) network element is shown in the description field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**Table 3-11. FT-2000 Condition Types (*condtype*) (Contd)**

| Description  | Meaning                                                                                                                                                                                   |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LHI          | Loss of holdover integrity. Used for excessive synchronization holdover.                                                                                                                  |
| LOF          | Loss of frame.                                                                                                                                                                            |
| LOP          | Loss of pointer.                                                                                                                                                                          |
| LOS          | Loss of signal.                                                                                                                                                                           |
| LPBKNETWORK  | Loopback, network. Used to report all loopbacks and transmission tests.                                                                                                                   |
| MAN          | Manually caused abnormal condition. Used to report user login and logout.                                                                                                                 |
| MANWKSWPR-X  | DRI manual switch.                                                                                                                                                                        |
| MISC         | Miscellaneous condition. Used to report miscellaneous discrete environmental input states for the near end terminal.                                                                      |
| MODE - CNFLT | The OC-3 and IS3* protection switching mode for a slot pair is not the same.                                                                                                              |
| MODE - EQPT  | The OC-3 and IS3* protection switching mode for a slot pair is set to 1+1 but the slot pair is equipped with one or more electrical low speed circuit pack.                               |
| MODE - XCONN | The OC-3 and IS3* protection switching mode for a slot pair is set to 1+1 but an incompatible cross-connection is present.                                                                |
| MULT - DSNE  | Multiple directory services NEs detected.                                                                                                                                                 |
| NID - CONFL  | Node ID conflict (ring applications). Default K-bytes are being received or the received source node ID in the K2 byte is inconsistent with the provisioned values in the local ring map. |
| NORMAL       | Normal condition. Used for REPT~EVT condition "clears" only, with clarification of which condition has cleared in the condition description field.                                        |
| OC3TERM      | OC-3 and IS3* terminating equipment failure.                                                                                                                                              |
| OC12TERM     | OC-12* terminating equipment failure.                                                                                                                                                     |
| OC48TERM     | OC-48 terminating equipment failure.                                                                                                                                                      |

\* Support is available for IS3 and OC12 in Releases 7.1 and later.

**Table 3-11. FT-2000 Condition Types (*condtype*) (Contd)**

| Description          | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OK - CPY - SW - PRGM | A copy program operation has completed successfully. The TID of the target (copy to) network element is shown in the description field.                                                                                                                                                                                                                                                                                       |
| PAINTGRT             | DS3 path unequipped.                                                                                                                                                                                                                                                                                                                                                                                                          |
| PAPRVERR             | The circuit audit has detected a provisioning error in the circuit dropping at this address.                                                                                                                                                                                                                                                                                                                                  |
| PRCDRERR             | Unexpected circuit pack type or repeater site provisioning conflict.                                                                                                                                                                                                                                                                                                                                                          |
| PWR                  | Power failure.                                                                                                                                                                                                                                                                                                                                                                                                                |
| REGR                 | Repeater bay equipment failure.                                                                                                                                                                                                                                                                                                                                                                                               |
| REGR - MISC          | Repeater bay miscellaneous condition. Used to report that miscellaneous discrete environmental input state is active (for either far end terminal or repeater bay).                                                                                                                                                                                                                                                           |
| RNG - INC            | Open or incomplete ring detected (start-up condition).                                                                                                                                                                                                                                                                                                                                                                        |
| RNG - INIT           | Ring start-up in progress.                                                                                                                                                                                                                                                                                                                                                                                                    |
| RNG - PREEMPT        | Preemption of ring extra traffic has occurred. Extra traffic (using the protection tributaries) has been preempted (AIS inserted on the appropriate low speed interfaces) at the node reporting this condition, due to a ring protection switch.                                                                                                                                                                              |
| RNG - SQUELCH        | Squelching of some ring traffic has occurred due to ring segmentation. One or more ring nodes are isolated (lost communications) from the node reporting the failure. This <i>condtype</i> is reported by the nodes detecting the failure at the boundaries of the segmentation and is reported only if cross-connections with a source or destination node identifier in the range of the segmented node(s) are established. |
| SQMAP - CONFL        | Ring squelch map conflict. Used to report a conflict in the established ring squelch map. A terminating node <i>tid</i> (either source or destination) has been provided for a ring cross-connection for which there is no known ring node identifier (NID).                                                                                                                                                                  |
| SQMAP - INCST        | The circuit audit has detected an inconsistency in the squelch map entries for the circuit dropping at this address.                                                                                                                                                                                                                                                                                                          |
| SQMAP - UPD          | Ring squelch map update. The established ring squelch map at the reporting node has been updated, either via local (CIT or OS access) provisioning activity or via an update from the ring directory services function.                                                                                                                                                                                                       |
| SWEQPT               | Protection switching equipment failure.                                                                                                                                                                                                                                                                                                                                                                                       |

**Table 3-11. FT-2000 Condition Types (*condtype*) (Contd)**

| Description          | Meaning                                                                                                                                                                                                                                                                                                            |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYNC                 | Loss of timing on a protected synchronization link.                                                                                                                                                                                                                                                                |
| SYNCOOS              | Loss of timing on an unprotected synchronization link.                                                                                                                                                                                                                                                             |
| SYNCCLK              | Synchronization unit failure. Used to report internal timing circuit pack equipment failures and removals.                                                                                                                                                                                                         |
| SYNCCLK-WU           | Timing generator is warming up.                                                                                                                                                                                                                                                                                    |
| SYSBOOT              | System reset in progress.                                                                                                                                                                                                                                                                                          |
| T3TERM               | DS3 terminating equipment failure.                                                                                                                                                                                                                                                                                 |
| T-BERL               | Threshold violation for incoming line signal BERs.                                                                                                                                                                                                                                                                 |
| T-LBCL               | Laser bias current level out of range.                                                                                                                                                                                                                                                                             |
| T-LPR                | Laser power out of range.                                                                                                                                                                                                                                                                                          |
| T-OPTICS             | An optical (receive or transmit) parameter is out of range at an FT-2000 terminal or repeater bay site.                                                                                                                                                                                                            |
| T - x                | Used for autonomous threshold crossing alerts, where <i>x</i> is one of the parameter types monitored ( <i>montype</i> ) by FT-2000. Refer to Table 3-9 for valid monitored parameter types.                                                                                                                       |
| UIDDLT               | A user login identifier has been deleted from the active data base.                                                                                                                                                                                                                                                |
| UIDEXPRD             | A user login identifier has expired.                                                                                                                                                                                                                                                                               |
| WKSWPR               | Preemptible or nonpreemptible protection access for extra traffic has been established.                                                                                                                                                                                                                            |
| WKSWPR - <i>p</i>    | Working facility/equipment switched to the protection unit.                                                                                                                                                                                                                                                        |
| WKSWPR - <i>secy</i> | Working facility/equipment switched to the secondary reference.                                                                                                                                                                                                                                                    |
| WKSWPR - <i>x</i>    | Working facility/equipment switched to protection unit <i>x</i> , where <i>x</i> is the address of the protection unit (see Table 3-7). This is used to report manual, forced, and automatic protection switching to protection. For OC-3 protection switching, the protection entity is a low speed service slot. |
| YEL                  | Remote Failure Indication (RFI [RAI/Yellow]) signal received; outgoing facility failure.                                                                                                                                                                                                                           |

## TL1 Character Set Definitions

Table 3-12 provides the TL1 character set definitions. The table separates these definitions by symbolic, numeric, and alphabetic characters.

**Table 3-12. TL1 Character Set Definitions**

---

| <i>Symbolic Characters</i> |            |              |                  |
|----------------------------|------------|--------------|------------------|
| <b>Dec</b>                 | <b>Hex</b> | <b>ASCII</b> | <b>Keystroke</b> |
| 33                         | 21         | !            | !                |
| 34                         | 22         | "            | "                |
| 37                         | 25         | %            | %                |
| 39                         | 27         | '            | '                |
| 40                         | 28         | (            | (                |
| 41                         | 29         | )            | )                |
| 42                         | 2A         | *            | *                |
| 43                         | 2B         | +            | +                |
| 45                         | 2D         | -            | -                |
| 46                         | 2E         | .            | .                |
| 47                         | 2F         | /            | /                |
| 60                         | 3C         | <            | <                |
| 62                         | 3E         | >            | >                |
| 91                         | 5B         | [            | [                |
| 93                         | 5D         | ]            | ]                |
| 94                         | 5E         | ^            | ^                |
| 96                         | 60         | `            | `                |
| 123                        | 7B         | {            | {                |
| 124                        | 7C         |              |                  |
| 125                        | 7D         | }            | }                |
| 126                        | 7E         | ≈            | ≈                |

---

**Table 3-12. TL1 Character Set Definitions (Contd)**

---

| <i>Numeric Characters</i> |            |              |                  |
|---------------------------|------------|--------------|------------------|
| <b>Dec</b>                | <b>Hex</b> | <b>ASCII</b> | <b>Keystroke</b> |
| 48                        | 30         | 0            | 0                |
| 49                        | 31         | 1            | 1                |
| 50                        | 32         | 2            | 2                |
| 51                        | 33         | 3            | 3                |
| 52                        | 34         | 4            | 4                |
| 53                        | 35         | 5            | 5                |
| 54                        | 36         | 6            | 6                |
| 55                        | 37         | 7            | 7                |
| 56                        | 38         | 8            | 8                |
| 57                        | 39         | 9            | 9                |

---

**Table 3-12. TL1 Character Set Definitions (Contd)**

| <i>Alphabetic Characters</i> |            |              |                  |            |            |              |                  |
|------------------------------|------------|--------------|------------------|------------|------------|--------------|------------------|
| <b>Dec</b>                   | <b>Hex</b> | <b>ASCII</b> | <b>Keystroke</b> | <b>Dec</b> | <b>Hex</b> | <b>ASCII</b> | <b>Keystroke</b> |
| 65                           | 41         | A            | A                | 97         | 61         | a            | a                |
| 66                           | 42         | B            | B                | 98         | 62         | b            | b                |
| 67                           | 43         | C            | C                | 99         | 63         | c            | c                |
| 68                           | 44         | D            | D                | 100        | 64         | d            | d                |
| 69                           | 45         | E            | E                | 101        | 65         | e            | e                |
| 70                           | 46         | F            | F                | 102        | 66         | f            | f                |
| 71                           | 47         | G            | G                | 103        | 67         | g            | g                |
| 72                           | 48         | H            | H                | 104        | 68         | h            | h                |
| 73                           | 49         | I            | I                | 105        | 69         | i            | i                |
| 74                           | 4A         | J            | J                | 106        | 6A         | j            | j                |
| 75                           | 4B         | K            | K                | 107        | 6B         | k            | k                |
| 76                           | 4C         | L            | L                | 108        | 6C         | l            | l                |
| 77                           | 4D         | M            | M                | 109        | 6D         | m            | m                |
| 78                           | 4E         | N            | N                | 110        | 6E         | n            | n                |
| 79                           | 4F         | O            | O                | 111        | 6F         | o            | o                |
| 80                           | 50         | P            | P                | 112        | 70         | p            | p                |
| 81                           | 51         | Q            | Q                | 113        | 71         | q            | q                |
| 82                           | 52         | R            | R                | 114        | 72         | r            | r                |
| 83                           | 53         | S            | S                | 115        | 73         | s            | s                |
| 84                           | 54         | T            | T                | 116        | 74         | t            | t                |
| 85                           | 55         | U            | U                | 117        | 75         | u            | u                |
| 86                           | 56         | V            | V                | 118        | 76         | v            | v                |
| 87                           | 57         | W            | W                | 119        | 77         | w            | w                |
| 88                           | 58         | X            | X                | 120        | 78         | x            | x                |
| 89                           | 59         | Y            | Y                | 121        | 79         | y            | y                |
| 90                           | 5A         | Z            | Z                | 122        | 7A         | z            | z                |



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# FT-2000 OC-48 Serial Telemetry (TBOS)

# 4

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## Contents

|                                                                                                                           |      |
|---------------------------------------------------------------------------------------------------------------------------|------|
| <b>Overview</b>                                                                                                           | 4-1  |
| <b>Introduction</b>                                                                                                       | 4-1  |
| <b>TBOS Test</b>                                                                                                          | 4-7  |
| <b>TBOS Alarm and Status Points</b>                                                                                       | 4-8  |
| ■ FT-2000 OC-48 Common Alarm and Status Points for Add/Drop-Rings Terminal, Release 3.0/3.0.1                             | 4-18 |
| ■ FT-2000 OC-48 TBOS Alarm and Status Points for OC-48 Add/Drop-Rings Terminals, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 | 4-29 |
| ■ FT-2000 OC-48 TBOS Alarm and Status Points for Repeater Sites                                                           | 4-39 |
| ■ FT-2000 OC-48 TBOS Status Points for Repeater Sites                                                                     | 4-41 |
| <b>TBOS Control Points</b>                                                                                                | 4-43 |
| <b>TBOS Alarm and Status Point — TL1 Translation</b>                                                                      | 4-50 |
| <b>TBOS Control Point — TL1 Translation</b>                                                                               | 4-57 |
| <b>NMA Scan Point Definition</b>                                                                                          | 4-57 |
| ■ NMA Service Effect                                                                                                      | 4-57 |
| ■ NMA “Threshold Level” (Condition Description)                                                                           | 4-57 |
| ■ NMA Signal Levels                                                                                                       | 4-58 |
| ■ NMA Equipment Data Base Definition                                                                                      | 4-58 |

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# **FT-2000 OC-48 Serial Telemetry (TBOS)**

# **4**

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## **Overview**

This section presents information on serial telemetry operations systems (OS) interfaces, using telemetry byte-oriented serial (TBOS) protocol. This section includes TBOS-related information on provisioning, testing, alarm and status points, control points, Transaction Language (TL1) translations of TBOS alarm and status points, and basic information concerning the use of the Bellcore network monitoring and analysis (NMA) OS to monitor the FT-2000 OC-48 Lightwave System.

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## **Introduction**

FT-2000 supports serial telemetry using the TBOS protocol. The serial telemetry interface transfers alarm, status, and control capabilities to and from a remote maintenance center via a 2400-baud EIA-422 point-to-point link, providing more detail and control than parallel telemetry.

FT-2000 supports two TBOS links at each end terminal in a point-to-point system and at each node in an add/drop-ring application. There are no TBOS links at repeater sites. Serial telemetry link number 1 (SER TLM 1) interface on the interconnection panel of the Low Speed Shelf - System Controller supports maintenance of an FT-2000 OC-48 1x1 End Terminal and an FT-2000 OC-48 Add/Drop Rings Terminal. Serial telemetry link number 2 (SER TLM 2) interface on the interconnection panel of the Low Speed Shelf - System Controller supports maintenance for the FT-2000 OC-48 Repeater Sites.

Table 4-1 shows the TBOS link for the End Terminal, Releases 1.1 and 2.1. The link is composed of eight displays. The first four displays are used to monitor alarm, status, and control (A/S/C) points for the service (S) and protection (P) line at both the near (NE) and far end (FE). The latter four displays are reserved for future use as performance-monitoring points using the same service/protection and near/far end configuration. The table also shows the corresponding explanation table found later in this section.

The TBOS display information is exchanged between FT-2000 OC-48 1x1 End Terminals using the data communications channel (DCC) of the OC-48 high speed line. Thus, the remote terminals TBOS displays can be forwarded to the telemetry remote via the local terminal (SER TLM 1, displays 3 and 4). The table also shows the direction of the information and the corresponding explanation table found later in this section.

**Table 4-1. FT-2000 OC-48 TBOS Port Display Configuration for 1x1 End Terminal (SER TLM 1) - Releases 1.1 and 2.1**

| Display | Explanation                                                      | Table |
|---------|------------------------------------------------------------------|-------|
| 1       | Alarm, status, and control displays for near end service line    | 4-6   |
| 2       | Alarm, status, and control displays for near end protection line | 4-6   |
| 3       | Alarm, status, and control displays for far end service line     | 4-6   |
| 4       | Alarm, status, and control displays for far end protection line  | 4-6   |
| 5       | Reserved for future use                                          |       |
| 6       | Reserved for future use                                          |       |
| 7       | Reserved for future use                                          |       |
| 8       | Reserved for future use                                          |       |

A second TBOS link (SER TLM 2) is used for displaying repeater site information. It is composed of eight displays, configured as shown in Table 4-2. The first four displays are used to monitor alarm and status points for the service and protection lines of repeaters 1 through 6. The latter four displays are used for fault locating. The table also shows the direction of the information and the corresponding explanation table found later in this section.

**Table 4-2. FT-2000 OC-48 TBOS Port Display Information for Repeater Sites 1 through 6 (SER TLM 2) - Release 2.1**

| Display | Explanation                                                   | Sites | Direction (Note) | Table |
|---------|---------------------------------------------------------------|-------|------------------|-------|
| 1       | Alarm and status displays for Repeater sites service lines    | 1-3   | E&W              | 4-12  |
| 2       | Alarm and status displays for Repeater sites protection lines | 1-3   | E&W              | 4-12  |
| 3       | Alarm and status displays for Repeater sites service lines    | 4-6   | E&W              | 4-12  |
| 4       | Alarm and status displays for Repeater sites protection lines | 4-6   | E&W              | 4-12  |
| 5       | Fault locating for repeater sites service lines               | 1-6   | EW               | 4-13  |
| 6       | Fault locating for repeater sites protection lines            | 1-6   | EW               | 4-13  |
| 7       | Fault locating for repeater sites service lines               | 1-6   | WE               | 4-13  |
| 8       | Fault locating for repeater sites protection lines            | 1-6   | WE               | 4-13  |

**Note:**

E&W - Reported at both ends of a repeater span

EW - From regenerators in an RA shelf with slots labeled "( )EW"

WE - From regenerators in an RA shelf with slots labeled "( )WE"

For the OC-48 Add/Drop-Rings terminal, Release 3.0/3.0.1, the first TBOS link (SER TLM 1) is used to display information as shown in Table 4-3. The number 1 display is used to monitor alarm, status, and control (A/S/C) points for the OC-48 high speed line 1E. The number 3 display is used to monitor alarm and status (A/S) points for the OC-48 high speed line 1W, as well as for all the low speed lines. The other displays are reserved for future use. The table also shows the corresponding explanation table found later in this section.

**Table 4-3. FT-2000 OC-48 TBOS Port Display Configuration for Add/Drop-Rings Terminal (SER TLM 1) - Release 3.0/3.0.1**

| Display | Explanation                                                                                         | Table |
|---------|-----------------------------------------------------------------------------------------------------|-------|
| 1       | Alarm, status, and control displays for OC-48 high speed line 1E                                    | 4-7   |
| 2       | Reserved for future use                                                                             | —     |
| 3       | Alarm, status, and control displays for OC-48 high speed line 1W and all low speed points (E and W) | 4-8   |
| 4       | Reserved for future use                                                                             | —     |
| 5       | Reserved for future use                                                                             | —     |
| 6       | Reserved for future use                                                                             | —     |
| 7       | Reserved for future use                                                                             | —     |
| 8       | Reserved for future use                                                                             | —     |

Table 4-4 shows the first TBOS link (SER TLM 1) display information for the OC-48 Add/Drop-Rings terminal, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1. The number 3 display is used to monitor alarm, status, and control (A/S/C) points for the general system and common equipment. The number 5 and 7 displays are used to monitor alarm, status, and control (A/S/C) points for the OC-48 high speed lines 1E and 1W. All low speed failures and threshold-crossing alerts (TCAs) are always reported on the displays used to monitor alarm and status points for OC-48 high speed line 1W. The other displays are reserved for future use. The table also shows the corresponding explanation table found later in this section.

**Table 4-4. FT-2000 OC-48 TBOS Port Display Configuration for Add/Drop-Rings Terminal (SER TLM 1) - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| Display | Explanation                                                                     | Table |
|---------|---------------------------------------------------------------------------------|-------|
| 1       | Reserved for future use                                                         | —     |
| 2       | Reserved for future use                                                         | —     |
| 3       | Alarm, status, and control displays for the general system and common equipment | 4-9   |
| 4       | Reserved for future use                                                         | —     |
| 5       | Alarm and status displays for OC-48 high speed line 1E                          | 4-10  |
| 6       | Reserved for future use                                                         | —     |
| 7       | Alarm and status displays for OC-48 high speed line 1W                          | 4-11  |
| 8       | Reserved for future use                                                         | —     |

A second TBOS link (SER TLM 2) is also used for the FT-2000 OC-48 Add/Drop-Rings Terminal, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1. It is composed of eight displays, configured as shown in Table 4-5. The number 1 and 3 displays are used to monitor common alarm and status points for the service lines of repeater sites 1 through 6. The number 5 and 7 displays are used for fault locating. The table also shows the direction of the information and the corresponding explanation table found later in this section.

**Table 4-5. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Port Display Configuration (SER TLM 2) - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| Display | Explanation                                  | Site | Direction (Note) | Table |
|---------|----------------------------------------------|------|------------------|-------|
| 1       | Alarm and status displays for Repeater sites | 1-3  | E&W              | 4-12  |
| 2       | Reserved for future use                      | —    | —                | —     |
| 3       | Alarm and status displays for Repeater sites | 4-6  | E&W              | 4-12  |
| 4       | Reserved for future use                      | —    | —                | —     |
| 5       | Fault locating displays for Repeater sites   | 1-6  | inc. E           | 4-13  |
| 6       | Reserved for future use                      | —    | —                | —     |
| 7       | Fault locating for Repeater sites            | 1-6  | inc. W           | 4-13  |
| 8       | Reserved for future use                      | —    | —                | —     |

**Note:**

E&W - Reported at both ends of a repeater span

inc. E - Line 1E receive direction

inc. W - Line 1W receive direction

---

In point-to-point applications, each FT-2000 terminal transmits its TBOS display information to the other FT-2000 terminal to which it is connected via OC-48 facilities. The TBOS display updates are exchanged using the synchronous optical network (SONET) section data communications channel (DCC) in the OC-48 signals. Thus, the far end FT-2000s TBOS displays can be forwarded to the telemetry remote via the near end FT-2000.

There are two cases when TBOS displays are *not* exchanged between FT-2000 OC-48 terminals:

1. If the section DCC channel is disabled by the FT-2000 personal computer craft interface terminal (PC-CIT) command `Set-Far End Communication` (refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*).
2. If the section DCC channel or both OC-48 lines fail and the section DCC channel has not been disabled (per the previous case). In this case, the FT-2000 with access to the TBOS link responds for the isolated FT-2000s by freezing all TBOS points in the isolated FT-2000s display until the DCC channel is reestablished. The FT-2000 adjacent to the section DCC channel failure would report TBOS point 17 section DCC failure in its own TBOS display (in addition to any other active TBOS alarm or status points).

For ring applications, local TBOS information is displayed at each node. Ring nodes do not exchange TBOS information. However, repeater site information is available at both ends of the repeater span.

## **TBOS Test**

---

FT-2000 supports serial telemetry (TBOS) display testing via the PC-CIT user interface command `Test-Telemetry-Serial`. Refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*. The TBOS tests consist of setting the user-specified alarm or status points "on" and all other points "off" for a user-definable multiple (between 1 and 40) of 20 seconds and then revert to normal operation. The user can include any or all TBOS points in a test, as follows:

- a. Any one point (except for point 64)
- b. All even-numbered points (except for point 64)
- c. All odd-numbered points
- d. All points (1 through 63).



## **TBOS Alarm and Status Points**

---

The following pages show the alarm and status displays that are available for the FT-2000 1x1 End Terminal, Add/Drop-Rings Terminal, and Repeater Sites.

Alarm and status displays for the End Terminal, Releases 1.1 and 2.1, are listed in Table 4-6, with explanations of each point following the table.

Alarm and status displays for the Add/Drop-Rings Terminal, Release 3.0/3.0.1, are listed in Tables 4-7 and 4-8, with explanations of each point following the table. Alarm and status displays for the Add/Drop-Rings Terminal, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 are listed in Tables 4-9, 4-10, and 4-11. Table 4-9 lists the TBOS general system and common equipment alarm and status points. Tables 4-10 and 4-11 list the TBOS alarm and status points for lines 1W and 1E, respectively. Table 4-17, in addition to use as a cross-reference of alarm and status points to TL1 messages, can be used to determine the type of alarm or status message associated with each point.

Alarm and status displays for the FT-2000 Repeater Site are listed in Tables 4-12 and 4-13. Table 4-12 specifies common alarm and status displays associated with repeater sites, and Table 4-13 lists fault-locating displays for repeater sites.

**Table 4-6. FT-2000 OC-48 1x1 End Terminal TBOS Alarm and Status Points (SER TLM 1) - Releases 1.1 and 2.1 (Note)**

| <b>Point</b> | <b>Type (Note)</b> | <b>Condition (Note)</b>                     |
|--------------|--------------------|---------------------------------------------|
| 1            | SA                 | Incoming DS3 (LOS/SD)                       |
| 2            | -                  | Reserved for Future Alarm Use               |
| 3            | -                  | Reserved for Future Alarm Use               |
| 4            | NSA                | Incoming OC-48 Signal Fail (LOS/LOF/SF/AIS) |
| 5            | SA                 |                                             |
| 6            | NSA                | STS LOP                                     |
| 7            | SA                 |                                             |
| 8            | NSA                | Incoming OC-48 Signal Degrade (SD)          |
| 9            | SA                 |                                             |
| 10           | NSA                | Loss of Primary Incoming Sync. Reference    |
| 11           | NSA                | Loss of Secondary Incoming Sync. Reference  |
| 12           | NSA                | Timing Generator Failure                    |
| 13           | SA                 |                                             |
| 14           | -                  | Excessive Holdover                          |
| 15           | NSA                | Fuse/Power Circuit Failure                  |
| 16           | NSA                | Controller Failure                          |
| 17           | NSA                | Incoming DCC Failure                        |
| 18           | NSA                | Protection Switch Equipment Failure         |
| 19           | SA                 |                                             |
| 20           | NSA                | APS Channel Failure/K-Byte Failure          |
| 21           | NSA                | OC-48 Receiver Failure                      |
| 22           | SA                 |                                             |
| 23           | NSA                | OC-48 Transmitter Failure                   |
| 24           | SA                 |                                             |
| 25           | NSA                | DS3 Terminating Equipment Failure           |
| 26           | SA                 |                                             |
| 27           | NSA                | Site or APS Provisioning Conflict           |
| 28           | NSA                | Invalid F-Byte                              |
| 29           |                    | Reserved for Future Alarm Use               |
| 30           |                    | Reserved for Future Alarm Use               |
| 31           | SA                 | Incoming STS Path AIS                       |
| 32           | NSA                | Invalid Command Received                    |
| 33           | -                  | Miscellaneous Discrete Alarm #1             |
| 34           | -                  | Miscellaneous Discrete Alarm #2             |
| 35           | -                  | Miscellaneous Discrete Alarm #3             |
| 36           | -                  | Miscellaneous Discrete Alarm #4             |
| 37           | -                  | Miscellaneous Discrete Alarm #5             |
| 38           | -                  | Miscellaneous Discrete Alarm #6             |
| 39           | -                  | Miscellaneous Discrete Alarm #7             |
| 40           | -                  | Miscellaneous Discrete Alarm #8             |
| 41           | -                  | Miscellaneous Discrete Alarm #9             |
| 42           | -                  | Miscellaneous Discrete Alarm #10            |
| 43           | -                  | Miscellaneous Discrete Alarm #11            |

See note and footnote at end of table.

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**Table 4-6. FT-2000 OC-48 1x1 End Terminal TBOS Alarm and Status Points (SER TLM 1) - Releases 1.1 and 2.1 (Note) (Contd)**

| Point | Type (Note) | Condition (Note)                                                    |
|-------|-------------|---------------------------------------------------------------------|
| 44    | -           | Miscellaneous Discrete Alarm #12                                    |
| 45    | -           | Miscellaneous Discrete Alarm #13                                    |
| 46    | -           | Miscellaneous Discrete Alarm #14                                    |
| 47    | -           | Miscellaneous Discrete Alarm #15                                    |
| 48    | -           | Miscellaneous Discrete Alarm #16                                    |
| 49    | status      | Automatic Switch to Protection/OC-48                                |
| 50    | status      | Manual Switch or Forced Switch or Lockout(inhibit)/OC-48            |
| 51    | status      | Manual Switch or Forced Switch or Lockout(inhibit)/LS               |
| 52    | status      | Automatic Switch to Protection/LS                                   |
| 53    | status      | Protection Access                                                   |
| 54    | status      | Manual Switch or Forced Switch or Lockout/Synchronization Reference |
| 55    | status      | Manual Switch/Timing Generator                                      |
| 56    | status      | Forced Switch/Synchronization Mode                                  |
| 57    | status      | Automatic Switch to Protection/Synchronization                      |
| 58    | status      | Manually Caused Abnormal Condition                                  |
| 59    | status      | OC-N RFI FERF                                                       |
| 60    | status      | OC-N RFI FERF                                                       |
| 61    | status      | Reserved for Future Status Use                                      |
| 62    | status      | Optical Parameter OOR                                               |
| 63    | status      | Valid Command Received                                              |
| 64    | status      | Reserved for Telemetry Link Failure                                 |

**Note:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.

The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:

Points 1 - 48 = alarms

Points 49 - 63 = status.

AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP = Loss of Pointer,  
LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure

Points are displayed as follows:

Display 1 Near End Service Line

Display 2 Near End Protection Line

Display 3 Far End Service Line

Display 4 Far End Service Line

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The following explanations are provided for the TBOS alarm and status points for the 1x1 End Terminal, Releases 1.1 and 2.1. The specific conditions that may trigger each point are listed, using exactly the same condition descriptions used in the FT-2000 user interface alarm and status report, for example, incoming (from DSX) DS3 failure. For detailed explanations and likely causes of these conditions, refer to the Alarm and Status Condition Description Table located in Section 3 of this document.

**Alarm Point 1 — Incoming DS3 (LOS/SD)/EC-1 (LOS/LOS/AIS/SD)** indicates the following has been detected:

- incoming from (DSX) DS3 or EC-1 failure

**Alarm Points 2 and 3 — Reserved for Future Alarm Use** may be assigned in a later release.

**Alarm Points 4 and 5 — Incoming OC-48 Signal Fail (LOS/LOF/AIS/SF/SD)** indicates at least one of the following has been detected:

- incoming OC-48 AIS
- incoming OC-48 SF
- incoming OC-48 LOF
- incoming OC-48 LOS

The condition associated with alarm point 4 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 5 is not protected and is thus service-affecting (SA).

**Alarm Points 6 and 7 — STS LOP** indicate the following has been detected:

- incoming STS LOP

The condition associated with alarm point 6 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 7 is not protected and is thus service-affecting (SA).

**Alarm Points 8 and 9 — Incoming OC-48 Signal Degrade (SD)** indicate the following has been detected:

- incoming OC-48 SD

The condition associated with alarm point 8 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 9 is not protected and is thus service-affecting (SA).

**Alarm Point 10 — Loss of Primary Incoming Sync. Reference** indicates the following has been detected:

- incoming sync reference failure (on primary DS1 synchronization reference input)

The condition is protected and is thus non-service-affecting (NSA).

**Alarm Point 11 — Loss of Secondary Incoming Sync. Reference** indicates the following has been detected:

- incoming sync reference failure (on secondary DS1 synchronization reference input)

The condition is protected and is thus non-service-affecting (NSA).

**Alarm Points 12 and 13 — Timing Generator Failure** indicate at least one of the following has been detected in a TG slot:

- TG3 removed
- TG3 failed
- unexpected CP type

The condition associated with alarm point 12 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 13 is not protected and is thus service-affecting (SA).

**Alarm Point 14 — Excessive Holdover** indicates the following has been detected:

- excessive holdover

This condition is reached when holdover timing synchronization has been in effect for over 24 hours. The condition is non-service-affecting (NSA).

**Alarm Point 15 — Fuse/Power Circuit Failure** indicates at least one of the following has been detected:

- fuse/power failure A
- fuse/power failure B

The condition is protected and is thus non-service-affecting (NSA).

**Alarm Point 16 — Controller Failure** indicates at least one of the following has been detected:

- SYSCTL failure
- SYSMEM failure
- OHCTL failure
- LNCTL failure
- SYSMEM removed
- OHCTL removed
- LNCTL removed
- unexpected CP type (for controller slot)
- SYSMEM unrecognizable code
- SYSMEM/SYSCTL code mismatch

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Point 17 — Incoming DCC Failure** indicates the following has been detected:

- incoming DCC failure

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Points 18 and 19 — Protection Switch Equipment Failure** indicate at least one of the following has been detected in a low speed (LS) slot:

- LSSW removed
- LSSW failure
- unexpected CP type (for LSSW slot)

The condition associated with alarm point 18 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 19 is not protected and is thus service-affecting (SA).

**Alarm Point 20 — APS Channel Failure/K-Byte Failure** indicates the following has been detected:

- APS channel failure

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Points 21 and 22 — OC-48 Receiver Failure** indicate at least one of the following has been detected:

- RCVR failure
- RCVR removed
- unexpected CP type (for RCVR slot)

The condition associated with alarm point 21 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 22 is not protected and is thus service-affecting (SA).

**Alarm Points 23 and 24 — OC-48 Transmitter Failure** indicate at least one of the following has been detected:

- TRMTR failure
- TRMTR removed
- unexpected CP type (for TRMTR slot)

The condition associated with alarm point 23 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 24 is not protected and is thus service-affecting (SA).

**Alarm Points 25 and 26 — DS3 Terminating Equipment Failure** indicate at least one of the following has been detected in a low speed interface (LS) slot:

- DS3 INTFC failure
- DS3 INTFC removed
- unexpected CP type (for LS interface slot)

The condition associated with alarm point 25 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 26 is not protected and is thus service-affecting (SA).

**Alarm Point 27 — Site or APS Provisioning Conflict** indicates the following has been detected:

- site provisioning conflict

The condition associated with alarm point 27 is protected and is thus non-service-affecting (NSA).

**Alarm Point 28 — Invalid F-Byte** indicates the following has been detected:

- incoming OC-48 invalid F-byte

The condition associated with alarm point 28 is protected and is thus non-service-affecting (NSA).

**Alarm Point 29 — Reserved for Future Alarm Use** (may be assigned in a future release).

**Alarm Point 30 — Reserved for Future Alarm Use** (may be assigned in a future release).

**Alarm Point 31 — Incoming STS Path AIS** indicates the following has been detected:

- path AIS

The condition associated with alarm point 31 is not protected and is thus service-affecting (SA).

**Alarm Point 32 — Invalid Command Received** indicates a TBOS control point command has been received for a control point which is reserved for future use (refer to Table 4-6 containing a list of FT-2000 OC-48 TBOS Control Points). This condition is non-service-affecting (NSA). The Invalid TBOS Command Received alarm point will only be set “on” for the minimum 20 seconds, then turned “off” automatically for each such control point received.

**Alarm Points 33 - 48 — Miscellaneous Discrete Alarm #1 through #16** indicate the corresponding points are active.

These conditions are non-service-affecting (NSA). The text description of the actual condition monitored and reported by each miscellaneous discrete environmental point can be provisioned by the user via the PC-CIT.

**Status Point 49 — Automatic Switch to Protection/OC-48** indicates the following has been detected:

- line auto switch

**Status Point 50 — Manual Switch or Forced Switch or Lockout(inhibit)/OC-48** indicates at least one of the following has been detected:

- line manual switch
- line forced switch
- line lockout

**Status Point 51 — Manual Switch or Forced Switch or Lockout(inhibit)/LS(or OC-3)** indicates at least one of the following has been detected:

- LS manual switch
- LS forced switch
- LS lockout

**Status Point 52 — Automatic Switch to Protection/LS** indicates the following has been detected:

- LS auto switch



**Status Point 53 — Protection Access** indicates at least one of the following has been detected:

- non-preemptible protn access
- preemptible protn access

**Status Point 54 — Manual Switch or Forced Switch or Lockout/Synchronization Reference** indicates at least one of the following has been detected:

- sync reference manual switch
- sync reference forced switch
- sync reference lockout

**Status Point 55 — Manual Switch/Timing Generator** indicates at least one of the following has been detected:

- TG manual switch
- TG forced switch

**Status Point 56 — Forced Switch/Synchronization Mode** indicates the following has been detected:

- sync mode forced switch

**Status Point 57 — Automatic Switch to Protection/Synchronization** indicates at least one of the following has been detected:

- sync reference auto switch
- TG auto switch
- sync mode auto switch

**Status Point 58 — Manually Caused Abnormal Condition** indicates one or more of the following manually initiated abnormal (ABN) conditions has been detected:

- Any of the status conditions associated with TBOS Status Points 50, 51, 53, 54, 55, or 56.
- LS loopback

**Status Points 59 and 60 — OC-N RFI FERF** indicate the following has been detected:

- line FERF

**Status Point 61 — Reserved for Future Status Use** (may be assigned in a future release).

**Status Point 62 — Optical Parameter OOR** indicates one of the following has been detected:

- receiver parameter out-of-range
- transmitter parameter out-of-range
- laser bias current out-of-range

**Status Point 63 — Valid Command Received** indicates a TBOS control point command has been received for a valid control point (refer to Table 4-3 containing a list of TBOS control functions). The Valid Command Received status point will only be set “on” for the minimum 20 seconds, then turned “off” automatically for each such control point received.

**Point 64** — This point is reserved for use by a telemetry remote between FT-2000 and the OS. It is used to indicate that the TBOS link to the FT-2000 has failed.

## **FT-2000 OC-48 Common Alarm and Status Points for Add/Drop-Rings Terminal, Release 3.0/3.0.1**

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Tables 4-7 and 4-8 list the TBOS alarm and status displays associated with the FT-2000 OC-48 Add/Drop-Rings Terminal (Release 3.0/3.0.1). Table 4-7 shows the TBOS points associated with line 1E. Table 4-6 shows the TBOS points associated with the high speed line 1W, as well as the points for all low-speed lines.

**Table 4-7. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points (EAST) - SER TLM 1, Display 1 - Release 3.0/3.0.1**

| <b>Point</b> | <b>Type<br/>(Note)</b> | <b>Condition<br/>(Note)</b>                        |
|--------------|------------------------|----------------------------------------------------|
| 1            |                        |                                                    |
| 2            |                        | Not used for line 1E                               |
| 3            |                        |                                                    |
| 4            | NSA                    | Incoming OC-48 Signal Fail (LOS/LOF/SF/AIS)        |
| 5            | SA                     |                                                    |
| 6            | NSA                    | STS LOP*                                           |
| 7            | SA                     |                                                    |
| 8            | NSA                    | Incoming OC-48 Signal Degrade (SD)                 |
| 9            | SA                     |                                                    |
| 10           |                        |                                                    |
| 11           |                        |                                                    |
| 12           |                        |                                                    |
| 13           |                        | Not used for line 1E                               |
| 14           |                        |                                                    |
| 15           |                        |                                                    |
| 16           |                        |                                                    |
| 17           | NSA                    | Incoming DCC Failure/DCC Start-up/TL1 Link Failure |
| 18           |                        |                                                    |
| 19           |                        | Not used for line 1E                               |
| 20           | NSA                    | APS Channel Failure/K-Byte Failure                 |
| 21           | NSA                    | OC-48 Receiver Failure                             |
| 22           | SA                     |                                                    |
| 23           | NSA                    | OC-48 Transmitter Failure                          |
| 24           | SA                     |                                                    |
| 25           |                        |                                                    |
| 26           |                        | Not used for line 1E                               |
| 27           |                        |                                                    |
| 28           |                        | Reserved for Future Alarm Use                      |
| 29           |                        | Reserved for Future Alarm Use                      |
| 30           |                        | Reserved for Future Alarm Use                      |
| 31           |                        |                                                    |
| 32           |                        |                                                    |
| 33           |                        |                                                    |
| 34           |                        | Not used for line 1E                               |
| 35           |                        |                                                    |
| 36           |                        |                                                    |

See note and footnote at end of table.

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**Table 4-7. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points (EAST) - SER TLM 1, Display 1 - Release 3.0/3.0.1 (Contd)**

| Point | Type<br>(Note) | Condition<br>(Note)                                      |
|-------|----------------|----------------------------------------------------------|
| 37    |                |                                                          |
| 38    |                |                                                          |
| 39    |                |                                                          |
| 40    |                |                                                          |
| 41    |                |                                                          |
| 42    |                |                                                          |
| 43    |                | Not used for line 1E                                     |
| 44    |                |                                                          |
| 45    |                |                                                          |
| 46    |                |                                                          |
| 47    |                |                                                          |
| 48    |                |                                                          |
| 49    | status         | Automatic Switch to Protection/OC-48                     |
| 50    | status         | Manual Switch or Forced Switch or Lockout(inhibit)/OC-48 |
| 51    |                |                                                          |
| 52    |                | Not used for line 1E                                     |
| 53    | status         | Reserved for Future Use                                  |
| 54    |                |                                                          |
| 55    |                |                                                          |
| 56    |                | Not used for line 1E                                     |
| 57    |                |                                                          |
| 58    |                |                                                          |
| 59    | status         | OC-48 FERF                                               |
| 60    | status         | Not used for line 1E                                     |
| 61    | status         | Reserved for Future Status Use                           |
| 62    | status         | Reserved for Future Status Use                           |
| 63    | status         | Not used for line 1E                                     |
| 64    | status         | Reserved for Telemetry Link Failure                      |

**Note:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.

The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:

Points 1 - 48 = alarms

Points 49 - 63 = status.

AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP = Loss of Pointer, LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure

\* LOP for the add/drop STS-3 tributaries is reported on OC-48 high speed Line 1W. LOP for the through STS-3 tributaries is reported on the OC-48 high speed line from which the signal is received.

**Table 4-8. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points (WEST) - SER TLM 1, Display 3 - Release 3.0/3.0.1**

| <b>Point</b> | <b>Type (Note)</b> | <b>Condition (Note)</b>                     |
|--------------|--------------------|---------------------------------------------|
| 1            | SA                 | Incoming DS3 (LOS/SD)                       |
| 2            |                    | Reserved for Future Alarm Use               |
| 3            |                    | Reserved for Future Alarm Use               |
| 4            | NSA                | Incoming OC-48 Signal Fail (LOS/LOF/SD/AIS) |
| 5            | SA                 |                                             |
| 6            | NSA                | STS LOP*                                    |
| 7            | SA                 |                                             |
| 8            | NSA                | Incoming OC-48 Signal Degrade (SD)          |
| 9            | SA                 |                                             |
| 10           | NSA                | Loss of Primary Incoming Sync. Reference    |
| 11           | NSA                | Loss of Secondary Incoming Sync. Reference  |
| 12           | NSA                | Timing Generator Failure                    |
| 13           | SA                 |                                             |
| 14           | -                  | Excessive Holdover                          |
| 15           | NSA                | Fuse/Power Circuit Failure                  |
| 16           | NSA                | Controller Failure                          |
| 17           | NSA                | Incoming DCC Failure                        |
| 18           | NSA                | Protection Switch Equipment Failure         |
| 19           | SA                 |                                             |
| 20           | NSA                | APS Channel Failure/K-Byte Failure          |
| 21           | NSA                | OC-48 Receiver Failure                      |
| 22           | SA                 |                                             |
| 23           | NSA                | OC-48 Transmitter Failure                   |
| 24           | SA                 |                                             |
| 25           | NSA                | DS3 Terminating Equipment Failure           |
| 26           | SA                 |                                             |
| 27           | NSA                | Node ID Conflict/Duplicate Node ID/TID      |
| 28           | -                  | Reserved for Future Alarm Use               |
| 29           | -                  | Reserved for Future Alarm Use               |
| 30           | -                  | Reserved for Future Alarm Use               |
| 31           | SA                 | Incoming STS Path AIS                       |
| 32           | NSA                | Invalid Command Received                    |
| 33           | -                  | Miscellaneous Discrete Alarm #1             |
| 34           | -                  | Miscellaneous Discrete Alarm #2             |
| 35           | -                  | Miscellaneous Discrete Alarm #3             |
| 36           | -                  | Miscellaneous Discrete Alarm #4             |
| 37           | -                  | Miscellaneous Discrete Alarm #5             |
| 38           | -                  | Miscellaneous Discrete Alarm #6             |
| 39           | -                  | Miscellaneous Discrete Alarm #7             |
| 40           | -                  | Miscellaneous Discrete Alarm #8             |
| 41           | -                  | Miscellaneous Discrete Alarm #9             |
| 42           | -                  | Miscellaneous Discrete Alarm #10            |
| 43           | -                  | Miscellaneous Discrete Alarm #11            |
| 44           | -                  | Miscellaneous Discrete Alarm #12            |
| 45           | -                  | Miscellaneous Discrete Alarm #13            |

See note and footnote at end of table.

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**Table 4-8. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points (WEST)- SER TLM 1, Display 3 - Release 3.0/3.0.1 (Contd)**

| <b>Point</b> | <b>Type<br/>(Note)</b> | <b>Condition<br/>(Note)</b>                                         |
|--------------|------------------------|---------------------------------------------------------------------|
| 46           | -                      | Miscellaneous Discrete Alarm #14                                    |
| 47           | -                      | Miscellaneous Discrete Alarm #15                                    |
| 48           | -                      | Traffic Squelched                                                   |
| 49           | status                 | Automatic Switch to Protection/OC-48                                |
| 50           | status                 | Manual Switch or Forced Switch or Lockout(inhibit)/OC-48            |
| 51           | status                 | Manual Switch or Forced Switch or Lockout(inhibit)/LS               |
| 52           | status                 | Automatic Switch to Protection/LS                                   |
| 53           | status                 | Reserved for Future Use                                             |
| 54           | status                 | Manual Switch or Forced Switch or Lockout/Synchronization Reference |
| 55           | status                 | Manual Switch/Timing Generator                                      |
| 56           | status                 | Forced Switch/Synchronization mode                                  |
| 57           | status                 | Automatic Switch to Protection/Synchronization                      |
| 58           | status                 | Manually Caused Abnormal Condition                                  |
| 59           | status                 | OC-48 FERF                                                          |
| 60           | status                 | Reserved for Future Status Use                                      |
| 61           | status                 | Reserved for Future Status Use                                      |
| 62           | status                 | Reserved for Future Status Use                                      |
| 63           | status                 | Valid Command Received                                              |
| 64           | status                 | Reserved for Telemetry Link Failure                                 |

**Note:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.

The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:

Points 1 - 48 = alarms

Points 49 - 63 = status.

AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP = Loss of Pointer, LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure

\* LOP for the add/drop STS-3 tributaries is reported on OC-48 high speed Line 1W. LOP for the through STS-3 tributaries is reported on the OC-48 high speed line from which the signal is received.

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The following explanations are provided for the TBOS alarm and status points for the FT-2000 OC-48 Add/Drop-Rings terminal, Release 3.0/3.0.1. The specific conditions that may trigger each point are listed, using exactly the same condition descriptions used in the FT-2000 user interface alarm and status report, for example, *incoming (from DSX) DS3 failure*. For detailed explanations and likely causes of these conditions, refer to the Alarm and Status Condition Description Table located in Section 3 of this document.

**Alarm Point 1 — Incoming DS3 (LOS/SD)** indicates the following has been detected:

- *incoming from (DSX) DS3*

**Alarm Points 2 and 3 — Incoming OC-3 (LOS/LOF/AIS/SF/SD)** indicate the following has been detected:

- *incoming from (DSX)*

**Alarm Points 4 and 5 — Incoming OC-48 Signal Fail (LOS/LOF/SD/AIS)** indicate at least one of the following has been detected:

- *incoming OC-48 AIS*
- *incoming OC-48 SF*
- *incoming OC-48 LOF*
- *incoming OC-48 LOS*

The condition associated with alarm point 4 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 5 is not protected and is thus service-affecting (SA).

**Alarm Points 6 and 7 — STS LOP** indicate the following has been detected:

- *incoming STS LOP*

The condition associated with alarm point 6 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 7 is not protected and is thus service-affecting (SA).

**Alarm Points 8 and 9 — Incoming OC-48 Signal Degrade (SD)** indicate the following has been detected:

- *incoming OC-48 SD*

The condition associated with alarm point 8 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 9 is not protected and is thus service-affecting (SA).

**Alarm Point 10 — Loss of Primary Incoming Sync. Reference** indicates the following has been detected:

- incoming sync reference failure (on primary DS1 synchronization reference input)

The condition is protected and is thus non-service-affecting (NSA).

**Alarm Point 11 — Loss of Secondary Incoming Sync. Reference** indicates the following has been detected:

- incoming sync reference failure (on secondary DS1 synchronization reference input)

The condition is protected and is thus non-service-affecting (NSA).

**Alarm Points 12 and 13 — Timing Generator Failure** indicate at least one of the following has been detected in a TG slot:

- TG3 removed
- TG3 failed
- unexpected CP type

The condition associated with alarm point 12 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 13 is not protected and is thus service-affecting (SA).

**Alarm Point 14 — Excessive Holdover** indicates the following has been detected:

- excessive holdover

This condition is reached when holdover timing synchronization has been in effect for over 24 hours. The condition is non-service-affecting (NSA).

**Alarm Point 15 — Fuse/Power Circuit Failure** indicates at least one of the following has been detected:

- fuse/power failure A
- fuse/power failure B

The condition is protected and is thus non-service-affecting (NSA).



**Alarm Point 16 — Controller Failure** indicates at least one of the following has been detected:

- SYSCTL failure
- SYSMEM failure
- OHCTL failure
- LNCTL failure
- SYSMEM removed
- OHCTL removed
- LNCTL removed
- unexpected CP type (for controller slot)
- SYSMEM unrecognizable code
- SYSMEM/SYSCTL code mismatch

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Point 17 — Incoming DCC Failure** indicates the following has been detected:

- incoming DCC failure

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Points 18 and 19 — Protection Switch Equipment Failure** indicate at least one of the following has been detected in a low speed (LS) slot:

- LSSW removed
- LSSW failure
- unexpected CP type (for LSSW slot)

The condition associated with alarm point 18 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 19 is not protected and is thus service-affecting (SA).

**Alarm Point 20 — APS Channel Failure/K-Byte Failure** indicates the following has been detected:

- APS channel failure

The condition is non-service-affecting (NSA) but may mask service-affecting (SA) conditions.

**Alarm Points 21 and 22 — OC-48 Receiver Failure** indicate at least one of the following has been detected:

- RCVR failure
- RCVR removed
- unexpected CP type (for RCVR slot)

The condition associated with alarm point 21 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 22 is not protected and is thus service-affecting (SA).

**Alarm Points 23 and 24 — OC-48 Transmitter Failure** indicate at least one of the following has been detected:

- TRMTR failure
- TRMTR removed
- unexpected CP type (for TRMTR slot)

The condition associated with alarm point 23 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 24 is not protected and is thus service-affecting (SA).

**Alarm Points 25 and 26 — DS3 Terminating Equipment Failure** indicate at least one of the following has been detected in a low speed interface (LS) slot:

- DS3 INTFC failure
- DS3 INTFC removed
- unexpected CP type (for LS interface slot)

The condition associated with alarm point 25 is protected and is thus non-service-affecting (NSA). The condition associated with alarm point 26 is not protected and is thus service-affecting (SA).

**Alarm Point 27 — Node ID Conflict/Duplicate Node ID/TID** indicates the following has been detected:

- node ID conflict
- duplicate node ID
- TID conflict
- multiple DS-NE defined
- ring startup in progress
- ring incomplete/open
- DS-NE not readable

The condition associated with alarm point 27 is protected and is thus non-service-affecting (NSA).

**Alarm Point 28 — Invalid F-Byte** indicates the following has been detected:

- incoming OC-48 invalid F-byte

The condition associated with alarm point 28 is protected and is thus non-service-affecting (NSA).

**Alarm Point 29 — Reserved for Future Alarm Use** (may be assigned in a future release).

**Alarm Point 30 — Reserved for Future Alarm Use** (may be assigned in a future release).

**Alarm Point 31 — Incoming STS Path AIS** indicates the following has been detected:

- path AIS

The condition associated with alarm point 31 is not protected and is thus service-affecting (SA).

**Alarm Point 32 — Invalid Command Received** indicates a TBOS control point command has been received for a control point which is reserved for future use (refer to Table 4-6 containing a list of FT-2000 OC-48 TBOS control points). This condition is non-service-affecting (NSA). The Invalid TBOS Command Received alarm point will only be set "on" for the minimum 20 seconds, then turned "off" automatically for each such control point received.

**Alarm Points 33 - 47 — Miscellaneous Discrete Alarm #1 through #15** indicate the corresponding points are active.

These conditions are non-service-affecting (NSA). The text description of the actual condition monitored and reported by each miscellaneous discrete environmental point can be provisioned by the user via the PC-CIT.

**Status Point 48 — Traffic Squelched** indicates the following has been detected:

- traffic squelched

**Status Point 49 — Automatic Switch to Protection/OC-48** indicates the following has been detected:

- line auto switch

**Status Point 50 — Manual Switch or Forced Switch or Lockout(inhibit)/OC-48** indicates at least one of the following has been detected:

- line manual switch
- line forced switch
- line lockout

**Status Point 51 — Manual Switch or Forced Switch or Lockout(inhibit)/LS(or OC-3)** indicates at least one of the following has been detected:

- LS manual switch
- LS forced switch
- LS lockout

**Status Point 52 — Automatic Switch to Protection/LS** indicates the following has been detected:

- LS auto switch

**Status Point 53 — Reserved for Future Status Use** (may be assigned in a future release).

**Status Point 54 — Manual Switch or Forced Switch or Lockout/Synchronization reference** indicates at least one of the following has been detected:

- sync reference manual switch
- sync reference forced switch
- sync reference lockout

**Status Point 55 — Manual Switch/Timing Generator** indicates at least one of the following has been detected:

- TG manual switch

**Status Point 56 — Forced Switch/Synchronization mode** indicates the following has been detected:

- sync mode forced switch

**Status Point 57 — Automatic Switch to Protection/Synchronization** indicates at least one of the following has been detected:

- sync reference auto switch
- TG auto switch
- sync mode auto switch

**Status Point 58 — Manually Caused Abnormal Condition** indicates one or more of the following manually initiated abnormal (ABN) conditions has been detected:

- Any of the status conditions associated with TBOS Status Points 50, 51, 54, 55, or 56.
- LS loopback

**Status Point 59 — OC-48 FERF** indicates the following has been detected:

- line FERF

**Status Points 60 - 62 — Reserved for Future Status Use** (may be assigned in a future release).

**Status Point 63 — Valid Command Received** indicates a TBOS control point command has been received for a valid control point (refer to Table 4-3 containing a list of TBOS control functions). The Valid Command Received status point will only be set “on” for the minimum 20 seconds, then turned “off” automatically for each such control point received.

**Point 64** — This point is reserved for use by a telemetry remote between FT-2000 and the OS. It is used to indicate that the TBOS link to the FT-2000 has failed.

**FT-2000 OC-48 TBOS Alarm and Status Points for  
OC-48 Add/Drop-Rings Terminals, Releases 4.0,  
4.1, 5.0, 6.0, 7.0 and 7.1**

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Tables 4-9, 4-10, and 4-11 list the TBOS alarm and status displays associated with the FT-2000 OC-48 Add/Drop-Rings Terminal, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1. Table 4-9 shows the TBOS points for the general system and common equipment. Table 4-10 shows the TBOS points for line 1E, and Table 4-11 shows the TBOS points for line 1W. Table 4-17, in addition to use as a cross-reference of alarm and status points to TL1 messages, can be used to determine the type of alarm or status message associated with each point.

**Table 4-9. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for General System and Common Equipment - SER TLM 1, Display 3 Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| <b>Point</b> | <b>Type<br/>(Note 1)</b> | <b>Condition<br/>(Note 2)</b>                                   | <b>Release<br/>(Note 3)</b> |
|--------------|--------------------------|-----------------------------------------------------------------|-----------------------------|
| 1            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 2            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 3            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 4            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 5            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 6            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 7            | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 8            | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1, 5.0               |
| 8            | NSA                      | Tributary Overhead Controller Failure                           | 6.0, 7.0-1                  |
| 9            | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1, 5.0               |
| 9            | NSA                      | Tributary Overhead Controller Removed                           | 6.0, 7.0-1                  |
| 10           | NSA                      | Loss of Primary Incoming Sync. Reference                        |                             |
| 11           | NSA                      | Loss of Secondary Incoming Sync. Reference                      |                             |
| 12           | NSA                      | Protection Switch Equipment Failure/Removed                     |                             |
| 13           | SA                       | Protection Switch Equipment Failure/Removed                     |                             |
| 14           | NSA                      | Excessive Holdover                                              |                             |
| 15           | NSA                      | Fuse/Power Circuit Failure                                      |                             |
| 16           | NSA                      | Line Controller/System Controller/System Memory Failure/Removed |                             |
| 17           | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1                    |
| 17           | NSA                      | DCC Start-up in Progress                                        | 5.0, 6.0, 7.0-1             |
| 18           | NSA                      | Duplicate Node ID or TID                                        |                             |
| 19           | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1, 5.0               |
| 19           | NSA                      | TID Address Map Full                                            | 6.0, 7.0-1                  |
| 20           | NSA                      | Squelch Map Conflict                                            |                             |
| 21           | NSA                      | Ring Startup in Progress                                        |                             |
| 22           | NSA                      | Ring Incomplete or Open                                         |                             |
| 23           | NSA                      | Multiple DS-NEs                                                 |                             |
| 24           | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1                    |
| 24           | NSA                      | Software Download in Progress                                   | 5.0, 6.0, 7.0-1             |
| 25           | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1, 5.0               |
| 25           | NSA                      | Circuit Audit Suspended                                         | 6.0, 7.0-1                  |
| 26           | alarm                    | Reserved for Future Alarm Use                                   | 4.0, 4.1, 5.0               |
| 26           | NSA                      | Reset in Progress                                               | 6.0, 7.0-1                  |
| 27           | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 28           | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 29           | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 30           | alarm                    | Reserved for Future Alarm Use                                   |                             |
| 31           | alarm                    | Reserved for Future Alarm Use                                   |                             |

See notes and footnote at end of table.

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**Table 4-9. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for General System and Common Equipment - SER TLM 1, Display 3 Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| <b>Point</b> | <b>Type<br/>(Note 1)</b> | <b>Condition<br/>(Note 2)</b>                                            | <b>Release<br/>(Note 3)</b> |
|--------------|--------------------------|--------------------------------------------------------------------------|-----------------------------|
| 32           | NSA                      | Invalid Command Received                                                 |                             |
| 33           | NSA                      | Miscellaneous Discrete Alarm #1                                          |                             |
| 34           | NSA                      | Miscellaneous Discrete Alarm #2                                          |                             |
| 35           | NSA                      | Miscellaneous Discrete Alarm #3                                          |                             |
| 36           | NSA                      | Miscellaneous Discrete Alarm #4                                          |                             |
| 37           | NSA                      | Miscellaneous Discrete Alarm #5                                          |                             |
| 38           | NSA                      | Miscellaneous Discrete Alarm #6                                          |                             |
| 39           | NSA                      | Miscellaneous Discrete Alarm #7                                          |                             |
| 40           | NSA                      | Miscellaneous Discrete Alarm #8                                          |                             |
| 41           | NSA                      | Miscellaneous Discrete Alarm #9                                          |                             |
| 42           | NSA                      | Miscellaneous Discrete Alarm #10                                         |                             |
| 43           | NSA                      | Miscellaneous Discrete Alarm #11                                         |                             |
| 44           | NSA                      | Miscellaneous Discrete Alarm #12                                         |                             |
| 45           | NSA                      | Miscellaneous Discrete Alarm #13                                         |                             |
| 46           | NSA                      | Miscellaneous Discrete Alarm #14                                         |                             |
| 47           | NSA                      | Miscellaneous Discrete Alarm #15                                         |                             |
| 48           | NSA                      | Miscellaneous Discrete Alarm #16                                         |                             |
| 49           | status                   | DS-NE Not Reachable                                                      |                             |
| 50           | status                   | Reserved for Future Status Use                                           | 4.0, 4.1                    |
| 50           | status                   | Extra Traffic Preempted                                                  | 5.0, 6.0, 7.0-1             |
| 51           | status                   | Reserved for Future Status Use                                           | 4.0, 4.1                    |
| 51           | status                   | Copy Program In-Progress                                                 | 5.0, 6.0, 7.0-1             |
| 52           | status                   | Reserved for Future Status Use                                           |                             |
| 53           | status                   | Reserved for Future Status Use                                           |                             |
| 54           | status                   | Manual Switch or Forced Switch or Lockout<br>(Synchronization Reference) |                             |
| 55           | status                   | Manual Switch (Timing Generator)                                         |                             |
| 56           | status                   | Forced Switch (Synchronization Mode)                                     |                             |
| 57           | status                   | Automatic Switch to Protection (Synchronization)                         |                             |
| 58           | status                   | Reserved for Future Status Use                                           |                             |
| 59           | status                   | Reserved for Future Status Use                                           |                             |
| 60           | status                   | Reserved for Future Status Use                                           |                             |
| 61           | status                   | Reserved for Future Status Use                                           |                             |
| 62           | status                   | Manually Caused Abnormal Condition                                       |                             |

See notes and footnote at end of table.



**Table 4-9. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for General System and Common Equipment - SER TLM 1, Display 3 Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| Point | Type<br>(Note 1) | Condition<br>(Note 2)               | Release<br>(Note 3) |
|-------|------------------|-------------------------------------|---------------------|
| 63    | status           | Valid Command Received              |                     |
| 64    | status           | Reserved for Telemetry Link Failure |                     |

- Note 1:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.
- The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:
- Points 1 - 48 = alarms  
Points 49 - 63 = status.
- Note 2:** AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP\* = Loss of Pointer, LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure
- Note 3:** An entry in the release column indicates the release(s) the associated point applies to. No entry in this column indicates that the associated point applies to all releases shown in the table title.
- \* LOP for the add/drop STS-3 tributaries is reported on OC-48 high speed Line 1W. LOP for the through STS-3 tributaries is reported on the OC-48 high speed line from which the signal is received.
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**Table 4-10. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for Line 1E - SER TLM 1, Display 5 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| Point | Type<br>(Note 1) | Condition<br>(Note 2)                                   | Release<br>(Note 3) |
|-------|------------------|---------------------------------------------------------|---------------------|
| 1     | -                | Not used for Line 1E                                    |                     |
| 2     | -                | Not used for Line 1E                                    |                     |
| 3     | -                | Not used for Line 1E                                    |                     |
| 4     | -                | Not used for Line 1E                                    |                     |
| 5     | NSA              | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF/AIS) | 4.1, 5.0            |
| 5     | NSA              | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF)     | 6.0, 7.0-1          |
| 6     | SA               | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF)     |                     |
| 7     | NSA              | STS LOP*                                                |                     |
| 8     | SA               |                                                         |                     |
| 9     | NSA              | Incoming (from Line) OC-48 Signal Degrade (SD)          |                     |
| 10    | SA               |                                                         |                     |
| 11    | NSA              | Incoming (from Line) DCC Failure                        | 4.1, 5.0            |
| 11    | NSA              | Incoming (from OC-3/OC-48) DCC Failure                  | 6.0, 7.0-1          |
| 12    | alarm            | Reserved for Future Alarm Use                           |                     |
| 13    | NSA              | OC-48 APS Channel Failure/APS Byte Failure              |                     |
| 14    | alarm            | Reserved for Future Alarm Use                           |                     |
| 15    | NSA              | OC-48 Receiver Failure/Removed                          |                     |
| 16    | SA               |                                                         |                     |
| 17    | NSA              | OC-48 Transmitter Failure/Removed                       |                     |
| 18    | SA               |                                                         |                     |
| 19    | -                | Not used for Line 1E                                    |                     |
| 20    | -                | Not used for Line 1E                                    |                     |
| 21    | -                | Not used for Line 1E                                    |                     |
| 22    | -                | Not used for Line 1E                                    |                     |
| 23    | -                | Not used for Line 1E                                    |                     |
| 24    | -                | Not used for Line 1E                                    |                     |
| 25    | NSA              | Incoming (from Line) STS Path AIS                       | 4.1, 5.0            |
| 25    | SA               | Reserved for Future Alarm Use                           | 4.0, 6.0, 7.0-1     |
| 26    | -                | Not used for Line 1E                                    |                     |
| 27    | -                | Not used for Line 1E                                    |                     |
| 28    | NSA              | Overhead Controller Failure/Removed                     |                     |
| 29    | NSA              | Traffic Squelched                                       |                     |
| 30    | NSA              | Incoming OC48 Invalid F-Byte                            |                     |
| 31    | NSA              | Site Provisioning Conflict                              |                     |
| 32    | NSA              | OC-3/OC-48 Optics Performance Summary TCA†              |                     |
| 33    | NSA              | OC-48 Line Performance Summary TCA†                     |                     |
| 34    | NSA              | OC-48 Section Performance Summary TCA†                  |                     |
| 35    | NSA              | STS-1 Path Performance Summary TCA†                     |                     |
| 36    | -                | Not used for Line 1E                                    |                     |
| 37    | -                | Not used for Line 1E                                    |                     |
| 38    | alarm            | Reserved for Future Alarm Use                           |                     |

See notes and footnotes at end of table.

**Table 4-10. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for Line 1E - SER TLM 1, Display 5 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| <b>Point</b> | <b>Type<br/>(Note 1)</b> | <b>Condition<br/>(Note 2)</b>                               | <b>Release<br/>(Note 3)</b> |
|--------------|--------------------------|-------------------------------------------------------------|-----------------------------|
| 39           | NSA                      | Node ID Conflict                                            |                             |
| 40           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 41           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 42           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 43           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 44           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 45           | NSA                      | Unknown/Unexpected CP Failure                               | 5.0, 6.0, 7.0-1             |
| 46           | SA                       | Unknown/Unexpected CP Failure                               | 5.0, 6.0, 7.0-1             |
| 47           | alarm                    | Reserved for Future Alarm Use                               |                             |
| 48           | NSA                      | Auto DRI Switch                                             | 6.0, 7.0-1                  |
| 49           | status                   | Automatic Switch to Protection (OC-48)                      |                             |
| 50           | status                   | Manual Switch or Forced Switch or Lockout (Inhibit) (OC-48) |                             |
| 51           | -                        | Not used for Line 1E                                        |                             |
| 52           | -                        | Not used for Line 1E                                        |                             |
| 53           | status                   | OC-48 RFI[FERF]                                             | 4.1, 5.0                    |
| 53           | status                   | OC-48 RFI[FERF]/AIS                                         | 6.0, 7.0-1                  |
| 54           | -                        | Not used for Line 1E                                        |                             |
| 55           | -                        | Not used for Line 1E                                        |                             |
| 56           | status                   | Incoming (from Line) STS Path AIS                           | 6.0, 7.0-1                  |
| 57           | -                        | Not used for Line 1E                                        |                             |
| 58           | status                   | Reserved for Future Status Use                              |                             |
| 59           | status                   | Incoming (from Line) DS3 AIS/LOF                            | 5.0, 6.0, 7.0-1             |
| 60           | status                   | Circuit Pack Reset in Progress                              | 5.0, 6.0, 7.0-1             |
| 61           | status                   | Reserved for Future Status Use                              |                             |
| 62           | status                   | Reserved for Future Status Use                              |                             |

See notes and footnotes at end of table.

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**Table 4-10. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for Line 1E - SER TLM 1, Display 5 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| Point | Type<br>(Note 1) | Condition<br>(Note 2)               | Release<br>(Note 3) |
|-------|------------------|-------------------------------------|---------------------|
| 63    | status           | Reserved for Future Status Use      |                     |
| 64    | -                | Reserved for Telemetry Link Failure |                     |

- Note 1:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.
- The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:
- Points 1 - 48 = alarms  
 Points 49 - 63 = status.
- Note 2:** AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP = Loss of Pointer, LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure
- Note 3:** An entry in the release column indicates the release(s) the associated point applies to. No entry in this column indicates that the associated point applies to all releases shown in the table title.
- \* LOP for the add/drop STS-3 tributaries is reported on OC-48 high speed Line 1W. LOP for the through STS-3 tributaries is reported on the OC-48 high speed line from which the signal is received.
- † A TCA is generated for either a bin A or bin B threshold crossing.

**Table 4-11. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for Line 1W - SER TLM 1, Display 7 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| Point | Type (Note 1) | Condition (Note 2)                                      | Release (Note 3) |
|-------|---------------|---------------------------------------------------------|------------------|
| 1     | SA            | Incoming (from DSX) DS3 (LOS/SD)                        |                  |
| 2     | SA            | Incoming (from STSX1) EC-1 (LOS/LOF/LOP/SD)             |                  |
| 3     | NSA           | Incoming (from LGX) OC-3 (LOS/LOF/SF/SD)                | 5.0, 6.0, 7.0-1  |
| 4     | SA            |                                                         |                  |
| 5     | NSA           | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF/AIS) | 4.1, 5.0         |
| 5     | NSA           | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF)     | 6.0              |
| 6     | SA            | Incoming (from Line) OC-48 Signal Fail (LOS/LOF/SF)     |                  |
| 7     | NSA           | STS LOP*                                                |                  |
| 8     | SA            |                                                         |                  |
| 9     | NSA           | Incoming (from Line) OC-48 Signal Degrade (SD)          |                  |
| 10    | SA            |                                                         |                  |
| 11    | NSA           | Incoming (from Line) DCC Failure                        | 4.1, 5.0         |
| 11    | NSA           | Incoming (from OC-3/OC-48) DCC Failure                  | 6.0, 7.0-1       |
| 12    | -             | TL1 Link Failure                                        | 5.0, 6.0, 7.0-1  |
| 13    | NSA           | OC-48 APS Channel Failure/APS Byte Failure              |                  |
| 14    | NSA           | APS Channel Failure/APS Byte Failure                    |                  |
| 15    | NSA           | OC-48 Receiver Failure/Removed                          |                  |
| 16    | SA            |                                                         |                  |
| 17    | NSA           | OC-48 Transmitter Failure/Removed                       |                  |
| 18    | SA            |                                                         |                  |
| 19    | NSA           | DS3 Circuit Pack Failure/Removed                        |                  |
| 20    | SA            |                                                         |                  |
| 21    | NSA           | STS1E Circuit Pack Failure/Removed                      |                  |
| 22    | SA            |                                                         |                  |
| 23    | NSA           | OC3 Circuit Pack Failure/Removed                        | 5.0, 6.0, 7.0-1  |
| 24    | SA            |                                                         |                  |
| 25    | NSA           | Incoming (from Line) STS Path AIS                       | 4.1, 5.0         |
| 25    | -             | Reserved for Future Alarm Use                           | 6.0, 7.0-1       |
| 26    | NSA           | Timing Generator Failure/Removed/Warming Up             |                  |
| 27    | SA            |                                                         |                  |
| 28    | NSA           | Overhead Controller Failure/Removed                     |                  |
| 29    | NSA           | Traffic Squelched                                       |                  |
| 30    | NSA           | Incoming OC48 Invalid F-Byte                            |                  |
| 31    | NSA           | Site Provisioning Conflict                              |                  |
| 32    | NSA           | OC-3/OC-48 Optics Performance Summary TCA†              |                  |
| 33    | NSA           | OC-48 Line Performance Summary TCA†                     |                  |
| 34    | NSA           | OC-48 Section Performance Summary TCA†                  |                  |
| 35    | NSA           | STS-1 Path Performance Summary TCA†                     |                  |
| 36    | NSA           | EC-1 Section and Line Performance Summary TCA†          |                  |
| 37    | NSA           | DS3 Line and Path Performance Summary TCA†              |                  |
| 38    | NSA           | OC-3 Section and Line Performance Summary TCA†          | 5.0, 6.0, 7.0-1  |

See notes and footnotes at end of table.

**Table 4-11. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for  
 Line 1W - SER TLM 1, Display 7 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1  
 (Contd)**

| <b>Point</b> | <b>Type<br/>(Note 1)</b> | <b>Condition<br/>(Note 2)</b>                               | <b>Release<br/>(Note 3)</b> |
|--------------|--------------------------|-------------------------------------------------------------|-----------------------------|
| 39           | NSA                      | Node ID Conflict                                            |                             |
| 40           | NSA                      | APS Provisioning Conflict                                   | 5.0, 6.0, 7.0-1             |
| 41           | NSA                      | OC3 Mode Conflict                                           | 5.0, 6.0, 7.0-1             |
| 42           | NSA                      | STS3 Squelch Map Inconsistency                              |                             |
| 43           | NSA                      | Circuit Provisioning Error                                  | 5.0, 6.0, 7.0-1             |
| 44           | NSA                      | Path Integrity Failure                                      | 5.0, 6.0, 7.0-1             |
| 45           | NSA                      | Unknown/Unexpected CP Failure                               | 5.0, 6.0, 7.0-1             |
| 46           | SA                       |                                                             |                             |
| 47           | NSA                      | Incoming (from STSX1) EC-1 (LOS)                            |                             |
| 48           | alarm                    | Automatic DRI Switch                                        | 5.0, 6.0, 7.0-1             |
| 49           | status                   | Automatic Switch to Protection (OC-48)                      |                             |
| 50           | status                   | Manual Switch or Forced Switch or Lockout (Inhibit) (OC-48) |                             |
| 51           | status                   | Manual Switch or Forced Switch or Lockout (LS)              | 5.0, 6.0, 7.0-1             |
| 52           | status                   | Automatic Switch to Protection (LS)                         | 5.0, 6.0, 7.0-1             |
| 53           | status                   | OC-48 RFI[FERF]                                             | 4.1, 5.0                    |
| 53           | status                   | OC-48 RFI[FERF]/AIS                                         | 6.0, 7.0-1                  |
| 54           | status                   | EC-1 RFI[FERF]/AIS                                          |                             |
| 55           | status                   | OC-3 RFI[FERF]/AIS                                          | 5.0, 6.0, 7.0-1             |
| 56           | status                   | Automatic DRI Switch                                        | 4.1                         |
| 56           | status                   | Reserved for Future Status Use                              | 5.0                         |
| 56           | status                   | Incoming (from Line) STS Path AIS                           | 6.0, 7.0-1                  |
| 57           | status                   | Manual DRI Switch                                           |                             |
| 58           | status                   | DS3 Path Unequipped                                         |                             |
| 59           | status                   | Incoming (from Line) DS3 AIS/LOF                            | 5.0, 6.0, 7.0-1             |
| 60           | status                   | Circuit Pack Reset in Progress                              | 5.0, 6.0                    |
| 61           | status                   | Reserved for Future Status Use                              |                             |
| 62           | status                   | Reserved for Future Status Use                              |                             |

See notes and footnotes at end of table.

**Table 4-11. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Alarm and Status Points for Line 1W - SER TLM 1, Display 7 - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| Point | Type (Note 1) | Condition (Note 2)                  | Release (Note 3) |
|-------|---------------|-------------------------------------|------------------|
| 63    | status        | Reserved for Future Status Use      |                  |
| 64    | status        | Reserved for Telemetry Link Failure |                  |

- Note 1:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.
- The alarm/status distinction specified in this table is for telemetry remote polling purposes. Alarm points are assured of being communicated to the OS, whereas status points may not be communicated to the OS when alarm or hybrid polling is used. It is recommended that the telemetry remote station constants assign attributes to the TBOS points as follows:
- Points 1 - 48 = alarms  
Points 49 - 63 = status.
- Note 2:** AIS = Alarm Indication Signal, LOF = Loss of Frame, LOP = Loss of Pointer, LOS = Loss of Signal, SD = Signal Degrade, SF = Signal Fail, FERF = Far End Receive Failure
- Note 3:** An entry in the release column indicates the release(s) the associated point applies to. No entry in this column indicates that the associated point applies to all releases shown in the table title.
- \* LOP for the add/drop STS-3 tributaries is reported on OC-48 high speed Line 1W. LOP for the through STS-3 tributaries is reported on the OC-48 high speed line from which the signal is received.
- † A TCA is generated for either a bin A or bin B threshold crossing.
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## FT-2000 OC-48 TBOS Alarm and Status Points for Repeater Sites

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Tables 4-12 and 4-13 show TBOS alarm and status displays for the FT-2000 OC-48 Repeater Sites, Releases 2.1, 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1. Table 4-12 shows the TBOS common alarm and status points, and Table 4-13 shows fault-locating status points for repeater sites.

**Table 4-12. FT-2000 OC-48 TBOS Common Alarm and Status Points for Repeater Sites - SER TLM 2 - Releases 2.1, 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| Point | Type<br>(Note 1) | Condition<br>(Note 2)                     |
|-------|------------------|-------------------------------------------|
| 1     | alarm            | Miscellaneous Discrete Alarm - Site X     |
| 2     | alarm            | Reserved for Future Alarm Use             |
| 3     | alarm            | Reserved for Future Alarm Use             |
| 4     | alarm            | Reserved for Future Alarm Use             |
| 5     | alarm            | Reserved for Future Alarm Use             |
| 6     | alarm            | Reserved for Future Alarm Use             |
| 7     | alarm            | Reserved for Future Alarm Use             |
| 8     | alarm            | Reserved for Future Alarm Use             |
| 9     | alarm            | Reserved for Future Alarm Use             |
| 10    | alarm            | Reserved for Future Alarm Use             |
| 11    | alarm            | Reserved for Future Alarm Use             |
| 12    | alarm            | Reserved for Future Alarm Use             |
| 13    | NSA              | Local Equipment Failure - Site X          |
| 14    | NSA              | Invalid F-Byte Detected - Site X          |
| 15    | alarm            | Reserved for Future Use                   |
| 16    | alarm            | Reserved for Future Use                   |
| 17    | NSA              | Miscellaneous Discrete Alarm - Site X + 1 |
| 18    | alarm            | Reserved fo Future Use                    |
| 19    | alarm            | Reserved fo Future Use                    |
| 20    | alarm            | Reserved fo Future Use                    |
| 21    | alarm            | Reserved fo Future Use                    |
| 22    | alarm            | Reserved fo Future Use                    |
| 23    | alarm            | Reserved fo Future Use                    |
| 24    | alarm            | Reserved fo Future Use                    |
| 25    | alarm            | Reserved fo Future Use                    |
| 26    | alarm            | Reserved fo Future Use                    |
| 27    | alarm            | Reserved fo Future Use                    |
| 28    | alarm            | Reserved fo Future Use                    |
| 29    | NSA              | Local Equipment Failure - Site X + 1      |
| 30    | NSA              | Invalid F-Byte Detected - Site X + 1      |

See notes at end of table.

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**Table 4-12. FT-2000 OC-48 TBOS Common Alarm and Status Points for Repeater Sites -  
SER TLM 2 - Releases 2.1, 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| <b>Point</b> | <b>Type<br/>(Note 1)</b> | <b>Condition<br/>(Note 2)</b>             |
|--------------|--------------------------|-------------------------------------------|
| 31           | alarm                    | Reserved for Future Use                   |
| 32           | alarm                    | Reserved for Future Use                   |
| 33           | NSA                      | Miscellaneous Discrete Alarm - Site X + 2 |
| 34           | alarm                    | Reserved for Future Use                   |
| 35           | alarm                    | Reserved for Future Use                   |
| 36           | alarm                    | Reserved for Future Use                   |
| 37           | alarm                    | Reserved for Future Use                   |
| 38           | alarm                    | Reserved for Future Use                   |
| 39           | alarm                    | Reserved for Future Use                   |
| 40           | alarm                    | Reserved for Future Use                   |
| 41           | alarm                    | Reserved for Future Use                   |
| 42           | alarm                    | Reserved for Future Use                   |
| 43           | alarm                    | Reserved for Future Use                   |
| 44           | alarm                    | Reserved for Future Use                   |
| 45           | NSA                      | Local Equipment Failure - Site X + 2      |
| 46           | NSA                      | Invalid F-Byte Detected - Site X + 2      |
| 47           | alarm                    | Reserved for Future Use                   |
| 48           | alarm                    | Reserved for Future Use                   |
| 49           | status                   | Reserved for Future Use                   |
| 50           | status                   | Reserved for Future Use                   |
| 51           | status                   | Reserved for Future Use                   |
| 52           | status                   | Reserved for Future Use                   |
| 53           | status                   | Reserved for Future Use                   |
| 54           | status                   | Reserved for Future Use                   |
| 55           | status                   | Reserved for Future Use                   |
| 56           | status                   | Reserved for Future Use                   |
| 57           | status                   | Reserved for Future Use                   |
| 58           | status                   | Reserved for Future Use                   |
| 59           | status                   | Reserved for Future Use                   |
| 60           | status                   | Reserved for Future Use                   |
| 61           | status                   | Reserved for Future Use                   |
| 62           | status                   | Reserved for Future Use                   |
| 63           | status                   | Reserved for Future Use                   |
| 64           | -                        | Reserved for Telemetry Link Failure       |

**Note 1:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.

**Note 2:** X = 1 or 4 (Example: Site X + 1 = Site 2 or Site 5)

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## **FT-2000 OC-48 TBOS Status Points for Repeater Sites**

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Table 4-13 summarizes the status displays associated with fault locating for an FT-2000 OC-48 Repeater site. This TBOS display supports up to six repeater sites at a time, providing four displays per site.

**Table 4-13. FT-2000 OC-48 TBOS Fault Locating Status Points for Repeater Sites - Releases 2.1, 4.0, 4.1, and 5.0**

| <b>Point</b> | <b>Type</b> | <b>Condition (Note)</b>          |
|--------------|-------------|----------------------------------|
| 1            | Status      | Reserved for Future Use          |
| 2            | Status      | Reserved for Future Use          |
| 3            | Status      | Reserved for Future Use          |
| 4            | Status      | Reserved for Future Use          |
| 5            | Status      | Reserved for Future Use          |
| 6            | Status      | Reserved for Future Use          |
| 7            | Status      | Reserved for Future Use          |
| 8            | Status      | Reserved for Future Use          |
| 9            | Status      | Reserved for Future Use          |
| 10           | Status      | Reserved for Future Use          |
| 11           | Status      | Reserved for Future Use          |
| 12           | Status      | Reserved for Future Use          |
| 13           | Status      | Reserved for Future Use          |
| 14           | Status      | Reserved for Future Use          |
| 15           | Status      | Reserved for Future Use          |
| 16           | Status      | Reserved for Future Use          |
| 17           | Status      | Reserved for Future Use          |
| 18           | Status      | Reserved for Future Use          |
| 19           | Status      | Incoming LOS/LOF - Site 1        |
| 20           | Status      | Optical Parameter OOR - Site 1   |
| 21           | Status      | Reserved for Future Use          |
| 22           | Status      | Invalid F-Byte Detected - Site 1 |
| 23           | Status      | B1 Errors Detected - Site 1      |
| 24           | Status      | Incoming LOS/LOF - Site 2        |
| 25           | Status      | Optical Parameter OOR - Site 2   |
| 26           | Status      | Reserved for Future Use          |
| 27           | Status      | Invalid F-Byte Detected - Site 2 |
| 28           | Status      | B1 Errors Detected - Site 2      |
| 29           | Status      | Incoming LOS/LOF - Site 3        |
| 30           | Status      | Optical Parameter OOR - Site 3   |
| 31           | Status      | Reserved for Future Use          |
| 32           | Status      | Invalid F-Byte Detected - Site 3 |

See note at end of table.

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**Table 4-13. FT-2000 OC-48 TBOS Fault Locating Status Points for Repeater Sites - Releases 2.1, 4.0, 4.1, and 5.0 (Contd)**

| <b>Point</b> | <b>Type</b> | <b>Condition (Note)</b>             |
|--------------|-------------|-------------------------------------|
| 33           | Status      | B1 Errors Detected - Site 3         |
| 34           | Status      | Incoming LOS/LOF - Site 4           |
| 35           | Status      | Optical Parameter OOR - Site 4      |
| 36           | Status      | Reserved for Future Use             |
| 37           | Status      | Invalid F-Byte Detected - Site 4    |
| 38           | Status      | B1 Errors Detected - Site 4         |
| 39           | Status      | Incoming LOS/LOF - Site 5           |
| 40           | Status      | Optical Parameter OOR - Site 5      |
| 41           | Status      | Reserved for Future Use             |
| 42           | Status      | B1 Errors Detected - Site 5         |
| 43           | Status      | Incoming LOS/LOF - Site 6           |
| 44           | Status      | Invalid F-Byte Detected - Site 5    |
| 45           | Status      | Optical Parameter OOR - Site 6      |
| 46           | Status      | Reserved for Future Use             |
| 47           | Status      | Invalid F-Byte Detected - Site 6    |
| 48           | Status      | B1 Errors Detected - Site 6         |
| 49           | Status      | Reserved for Future Use             |
| 50           | Status      | Reserved for Future Use             |
| 51           | Status      | Reserved for Future Use             |
| 52           | Status      | Reserved for Future Use             |
| 53           | Status      | Reserved for Future Use             |
| 54           | Status      | Reserved for Future Use             |
| 55           | Status      | Reserved for Future Use             |
| 56           | Status      | Reserved for Future Use             |
| 57           | Status      | Reserved for Future Use             |
| 58           | Status      | Reserved for Future Use             |
| 59           | Status      | Reserved for Future Use             |
| 60           | Status      | Reserved for Future Use             |
| 61           | Status      | Reserved for Future Use             |
| 62           | Status      | Reserved for Future Use             |
| 63           | Status      | Reserved for Future Use             |
| 64           | Status      | Reserved for Telemetry Link Failure |

**Note:** Each TBOS point is identified as either an alarm or status point. Alarm points are further distinguished as either service affecting (SA) or non-service affecting (NSA). Status points are always understood to be NSA.

LOF = Loss of Frame, LOP = Loss of Pointer, LOS = Loss of Signal  
 SD = Signal Degrade, SF = Signal Fail  
 FERF = Far End Receive Failure

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## **TBOS Control Points**

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Tables 4-14, 4-15, and 4-16 show the TBOS control display points for FT-2000. Table 4-14 lists the TBOS control display points for the FT-2000 OC-48 1x1 End Terminal.

Table 4-15 lists the general and system and common equipment control display points for the OC-48 Add/Drop Rings Terminal, Releases 3.0/3.0.1.

Table 4-16 lists the general and system and common equipment control display points for the OC-48 Add/Drop Rings Terminal, Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1.

The control function descriptions provided in Tables 4-14, 4-15, and 4-16 provide clear explanations of the control points. The equivalent CIT commands are also included in this table as a specific cross-reference to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*, if additional detailed explanation is required.

**Table 4-14. FT-2000 OC-48 TBOS Control Points for a 1x1 End Terminal - SER TLM 1 - Releases 1.1 and 2.1**

| <b>Control Point</b> | <b>Verification Status Point (Note)</b> | <b>Control Function</b>                                                 | <b>Display</b> |
|----------------------|-----------------------------------------|-------------------------------------------------------------------------|----------------|
| 1                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 1A | 1,2,3,4        |
| 2                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 1B | 1,2,3,4        |
| 3                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 2A | 1,2,3,4        |
| 4                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 2B | 1,2,3,4        |
| 5                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 3A | 1,2,3,4        |
| 6                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 3B | 1,2,3,4        |
| 7                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 4A | 1,2,3,4        |
| 8                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 4B | 1,2,3,4        |
| 9                    | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 5A | 1,2,3,4        |
| 10                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 5B | 1,2,3,4        |
| 11                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 6A | 1,2,3,4        |
| 12                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 6B | 1,2,3,4        |
| 13                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 7A | 1,2,3,4        |
| 14                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 7B | 1,2,3,4        |
| 15                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 8A | 1,2,3,4        |
| 16                   | 51 & 58 & 63                            | Manual LS Switch to Protection - LS (Line #1 or Protection), LS Slot 8B | 1,2,3,4        |
| 17                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 1A | 1,2,3,4        |
| 18                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 1B | 1,2,3,4        |
| 19                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 2A | 1,2,3,4        |
| 20                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 2B | 1,2,3,4        |
| 21                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 3A | 1,2,3,4        |
| 22                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 3B | 1,2,3,4        |
| 23                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 4A | 1,2,3,4        |
| 24                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 4B | 1,2,3,4        |
| 25                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 5A | 1,2,3,4        |
| 26                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 5B | 1,2,3,4        |
| 27                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 6A | 1,2,3,4        |
| 28                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 6B | 1,2,3,4        |
| 29                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 7A | 1,2,3,4        |
| 30                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 7B | 1,2,3,4        |
| 31                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 8A | 1,2,3,4        |
| 32                   | 51 & 58 & 63                            | Forced LS Switch to Protection - LS (Line #1 or Protection), LS Slot 8B | 1,2,3,4        |
| 33                   | 51 & 58 & 63                            | Lockout LS Switch to Protection - LS (Line #1 or Protection)            | 1,2,3,4        |
| 34                   | 51 clears & 58 clears & 63              | Reset LS Switching - LS (Line #1 or Protection)                         | 1,2,3,4        |
| 35                   | 50 & 58 & 63                            | Manual Switch to Protection - OC-48 (Line #1 only)                      | 1,3            |
| 36                   | 50 & 58 & 63                            | Forced Switch to Protection - OC-48 (Line #1 only)                      | 1,3            |
| 37                   | 53 & 58 & 63                            | Preemptible Protection Access - OC-48 (Protection Line only)            | 2,4            |
| 38                   | 53 & 58 & 63                            | Non-preemptible Protection Access - OC-48 (Protection Line only)        | 2,4            |

See note and footnote at end of table.

**Table 4-14. FT-2000 OC-48 TBOS Control Points for a 1x1 End Terminal - SER TLM 1 - Releases 1.1 and 2.1 (Contd)**

| <b>Control Point</b> | <b>Verification Status Point (Note)</b> | <b>Control Function</b>                                                 | <b>Display</b> |
|----------------------|-----------------------------------------|-------------------------------------------------------------------------|----------------|
| 39                   | 50 & 58 & 63                            | Lockout Switching to Protection - OC-48 (Protection Line only)          | 2,4            |
| 40                   | 50 clears & 58 clears & 63              | Reset Switching - OC-48 (Line #1 only)                                  | 1,3            |
| 41                   | 54 & 58 & 63                            | Manual Switch - Synchronization Reference (Line #1 only)                | 1,3            |
| 42                   | 54 & 58 & 63                            | Forced Switch - Synchronization Reference (Line #1 only)                | 1,3            |
| 43                   | 54 & 58 & 53                            | Lockout Synchronization Reference (Line #1 only)                        | 1,3            |
| 44                   | 54 clears & 58 clears & 63              | Reset Switching - Synchronization Reference (Line #1 only)              | 1,3            |
| 45                   | 55 & 58 & 63                            | Manual Switch - Synchronization Equipment [TG1] (Line #1 or Protection) | 1,2,3,4        |
| 46                   | 55 & 58 & 63                            | Manual Switch - Synchronization Equipment [TG2] (Line #1 or Protection) | 1,2,3,4        |
| 47                   | 32                                      | Reserved for Future Control Use                                         |                |
| 48                   | 32                                      | Reserved for Future Control Use                                         |                |
| 49                   | 55 clears & 58 clears & 63              | Reset Switching - Synchronization Equipment (Line #1 or Protection)     | 1,2,3,4        |
| 50                   | 56 & 58 & 63                            | Forced Switch - Synchronization Mode (Line #1 only)                     | 1,3            |
| 51                   | 56 clears & 58 clears & 63              | Reset Switching - Synchronization Mode (Line #1 only)                   | 1,3            |
| 52                   | 63                                      | Alarm Cutoff (Line #1)                                                  | 1,3            |
| 53                   | 63                                      | Reset System (Line #1)                                                  | 1,3            |
| 54                   | 63                                      | Miscellaneous Discrete Command #1 [latch] (Line #1)                     | 1,3            |
| 55                   | 63                                      | Miscellaneous Discrete Command #2 [latch] (Line #1)                     | 1,3            |
| 56                   | 63                                      | Miscellaneous Discrete Command #3 [latch] (Line #1)                     | 1,3            |
| 57                   | 63                                      | Miscellaneous Discrete Command #4 [latch] (Line #1)                     | 1,3            |
| 58                   | 63                                      | Miscellaneous Discrete Command #1 [release] (Line #1)*                  | 1,3            |
| 59                   | 63                                      | Miscellaneous Discrete Command #2 [release] (Line #1)*                  | 1,3            |
| 60                   | 63                                      | Miscellaneous Discrete Command #3 [release] (Line #1)*                  | 1,3            |
| 61                   | 63                                      | Miscellaneous Discrete Command #4 [release] (Line #1)*                  | 1,3            |
| 62                   | 63                                      | Activity-Far-End Indicator (RDS Ring Problem) (Line #1)                 | 1,3            |
| 63                   | 63                                      | Activity-Far-End Indicator (RDS Ring Problem) - cleared (Line #1)       | 1,3            |
| 64                   | 32                                      | Reserved for Future Control Use                                         |                |

**Note:** The verification status points identified as clearing in response to controls will be cleared *if* the verification status point was set prior to the TBOS control, and in the case of the Abnormal Condition Status Point 58, no other abnormal conditions exist.

\* The release command relay closes or leaves closed the output relay for a minimum of 300 milliseconds and then opens it. This command may be used to provide a momentary (300 millisecond) closure of the relay.

**Table 4-15. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Control Points for General System and Common Equipment (SER TLM 1) - Releases 3.0/3.0.1**

| <b>Control Point</b> | <b>Verification Status Point (Note)</b> | <b>Control Function</b>                           | <b>Display</b> |
|----------------------|-----------------------------------------|---------------------------------------------------|----------------|
| 1                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 1A        | 3              |
| 2                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 1B        | 3              |
| 3                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 2A        | 3              |
| 4                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 2B        | 3              |
| 5                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 3A        | 3              |
| 6                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 3B        | 3              |
| 7                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 4A        | 3              |
| 8                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 4B        | 3              |
| 9                    | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 5A        | 3              |
| 10                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 5B        | 3              |
| 11                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 6A        | 3              |
| 12                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 6B        | 3              |
| 13                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 7A        | 3              |
| 14                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 7B        | 3              |
| 15                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 8A        | 3              |
| 16                   | 51 & 58 & 63                            | Manual LS Switch to Protection, LS Slot 8B        | 3              |
| 17                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 1A        | 3              |
| 18                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 1B        | 3              |
| 19                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 2A        | 3              |
| 20                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 2B        | 3              |
| 21                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 3A        | 3              |
| 22                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 3B        | 3              |
| 23                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 4A        | 3              |
| 24                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 4B        | 3              |
| 25                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 5A        | 3              |
| 26                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 5B        | 3              |
| 27                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 6A        | 3              |
| 28                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 6B        | 3              |
| 29                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 7A        | 3              |
| 30                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 7B        | 3              |
| 31                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 8A        | 3              |
| 32                   | 51 & 58 & 63                            | Forced LS Switch to Protection, LS Slot 8B        | 3              |
| 33                   | 51 & 58 & 63                            | Lockout LS Switch to Protection - LS              | 3              |
| 34                   | 51 clears & 58 clears & 63              | Reset LS Switching - LS                           | 3              |
| 35                   | 50 & 58 & 63                            | Manual Switch to Protection - OC-48 (Line 1E, 1W) | 1,3            |
| 36                   | 50 & 58 & 63                            | Forced Switch to Protection - OC-48 (Line 1E, 1W) | 1,3            |
| 37                   | 53 & 58 & 63                            | Reserved for Future Use                           |                |
| 38                   | 53 & 58 & 63                            | Reserved for Future Use                           |                |

See note and footnote at end of table.

**Table 4-15. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Control Points for General System and Common Equipment (SER TLM 1) - Releases 3.0/3.0.1 (Contd)**

| <b>Control Point</b> | <b>Verification Status Point (Note)</b> | <b>Control Function</b>                      | <b>Display</b> |
|----------------------|-----------------------------------------|----------------------------------------------|----------------|
| 39                   | 50 & 58 & 63                            | Lockout Switching - OC-48 (Line 1E, 1W)      | 1,3            |
| 40                   | 50 clears & 58 clears & 63              | Reset Switching - OC-48 (Line 1E, 1W)        | 1,3            |
| 41                   | 54 & 58 & 63                            | Manual Switch - Synchronization Reference    | 3              |
| 42                   | 54 & 58 & 63                            | Forced Switch - Synchronization Reference    | 3              |
| 43                   | 54 & 58 & 53                            | Lockout Synchronization Reference            | 3              |
| 44                   | 54 clears & 58 clears & 63              | Reset Switching - Synchronization Reference  | 3              |
| 45                   | 55 & 58 & 63                            | Manual Switch - Timing Generator [TG1]       | 3              |
| 46                   | 55 & 58 & 63                            | Manual Switch - Timing Generator [TG2]       | 3              |
| 47                   | 55 & 58 & 63                            | Reserved for Future Control Use              |                |
| 48                   | 55 & 58 & 63                            | Reserved for Future Control Use              |                |
| 49                   | 55 clears & 58 clears & 63              | Reset Switching - Timing Generator           | 3              |
| 50                   | 56 & 58 & 63                            | Forced Switch - Synchronization Mode         | 3              |
| 51                   | 56 clears & 58 clears & 63              | Reset Switching - Synchronization Mode       | 3              |
| 52                   | 63                                      | Alarm Cutoff                                 | 3              |
| 53                   | 63                                      | Reset System3                                |                |
| 54                   | 63                                      | Miscellaneous Discrete Command #1 [latch]    | 3              |
| 55                   | 63                                      | Miscellaneous Discrete Command #2 [latch]    | 3              |
| 56                   | 63                                      | Miscellaneous Discrete Command #3 [latch]    | 3              |
| 57                   | 63                                      | Miscellaneous Discrete Command #4 [latch]    | 3              |
| 58                   | 63                                      | Miscellaneous Discrete Command #1 [release]* | 3              |
| 59                   | 63                                      | Miscellaneous Discrete Command #2 [release]* | 3              |
| 60                   | 63                                      | Miscellaneous Discrete Command #3 [release]* | 3              |
| 61                   | 63                                      | Miscellaneous Discrete Command #4 [release]* | 3              |
| 62                   | 63                                      | Reserved for Future Control Use              |                |
| 63                   | 63                                      | Reserved for Future Control Use              |                |
| 64                   | 32                                      | Reserved for Future Control Use              |                |

**Note:** The verification status points identified as clearing in response to controls will be cleared *if* the verification status point was set prior to the TBOS control and, in the case of the Abnormal Condition Status Point 58, no other abnormal conditions exist.

\* The release command relay closes or leaves closed the output relay for a minimum of 300 milliseconds and then opens it. This command may be used to provide a momentary (300 millisecond) closure of the relay.

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**Table 4-16. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Control Points for General System and Common Equipment (SER TLM 1) - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1**

| <b>Control Point</b> | <b>Verification Status Point (Note 1)</b> | <b>Control Function</b>                    | <b>Display (Note 2)</b> |
|----------------------|-------------------------------------------|--------------------------------------------|-------------------------|
| 1                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 1A | 7                       |
| 2                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 1B | 7                       |
| 3                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 2A | 7                       |
| 4                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 2B | 7                       |
| 5                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 3A | 7                       |
| 6                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 3B | 7                       |
| 7                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 4A | 7                       |
| 8                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 4B | 7                       |
| 9                    | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 5A | 7                       |
| 10                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 5B | 7                       |
| 11                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 6A | 7                       |
| 12                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 6B | 7                       |
| 13                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 7A | 7                       |
| 14                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 7B | 7                       |
| 15                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 8A | 7                       |
| 16                   | 7-51 & 3-63                               | Manual LS Switch to Protn - LS, LS Slot 8B | 7                       |
| 17                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 1A | 7                       |
| 18                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 1B | 7                       |
| 19                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 2A | 7                       |
| 20                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 2B | 7                       |
| 21                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 3A | 7                       |
| 22                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 3B | 7                       |
| 23                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 4A | 7                       |
| 24                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 4B | 7                       |
| 25                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 5A | 7                       |
| 26                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 5B | 7                       |
| 27                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 6A | 7                       |
| 28                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 6B | 7                       |
| 29                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 7A | 7                       |
| 30                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 7B | 7                       |
| 31                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 8A | 7                       |
| 32                   | 7-51 & 3-63                               | Forced LS Switch to Protn - LS, LS Slot 8B | 7                       |
| 33                   | 7-51 & 3-63                               | Lockout LS Switch to Protn - LS            | 7                       |
| 34                   | 7-51 clears & 3-63                        | Reset LS Switching - LS                    | 7                       |
| 35                   | 7-50 & 3-63                               | Manual Switch to Protn - OC-48             | 5 (1E),7 (1W)           |
| 36                   | 7-50 & 3-63                               | Forced Switch to Protn - OC-48             | 5 (1E),7 (1W)           |
| 37                   | 7-50 & 3-63                               | Lockout Switch to Protn - OC-48            | 5 (1E),7 (1W)           |
| 38                   | 7-50 clears & 3-63                        | Reset Switching - OC-48                    | 5 (1E),7 (1W)           |

See notes and footnote at end of table.

**Table 4-16. FT-2000 OC-48 Add/Drop-Rings Terminal TBOS Control Points for General System and Common Equipment (SER TLM 1) - Releases 4.0, 4.1, 5.0, 6.0, 7.0 and 7.1 (Contd)**

| <b>Control Point</b> | <b>Verification Status Point (Note 1)</b> | <b>Control Function</b>                      | <b>Display (Note 2)</b> |
|----------------------|-------------------------------------------|----------------------------------------------|-------------------------|
| 39                   | 3-55 & 3-63                               | Manual Switch - Timing Generator [TG1]       | 7                       |
| 40                   | 3-55 & 3-63                               | Manual Switch - Timing Generator [TG2]       | 7                       |
| 41                   | 3-55 clears & 3-63                        | Reset Switching - Timing Generator [TG1]     | 7                       |
|                      | 3-54 & 3-63                               | Manual Switch - Synchronization Reference    | 3                       |
| 42                   | 3-55 clears & 3-63                        | Reset Switching - Timing Generator [TG2]     | 7                       |
|                      | 3-54 & 3-63                               | Forced Switch - Synchronization Reference    | 3                       |
| 43                   | 3-54 & 3-53                               | Lockout - Synchronization Reference          | 3                       |
| 44                   | 3-54 clears & 3-63                        | Reset Switching - Synchronization Reference  | 3                       |
| 45                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 46                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 47                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 48                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 49                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 50                   | 3-56 & 3-63                               | Forced Switch - Synchronization Mode         | 3                       |
| 51                   | 3-56 clears & 3-63                        | Reset Switching - Synchronization Mode       | 3                       |
| 52                   | 3-63                                      | Alarm Cutoff                                 | 3                       |
| 53                   | 3-63                                      | Reset System                                 | 3                       |
| 54                   | 3-63                                      | Miscellaneous Discrete Command #1 [latch]    | 3                       |
| 55                   | 3-63                                      | Miscellaneous Discrete Command #2 [latch]    | 3                       |
| 56                   | 3-63                                      | Miscellaneous Discrete Command #3 [latch]    | 3                       |
| 57                   | 3-63                                      | Miscellaneous Discrete Command #4 [latch]    | 3                       |
| 58                   | 3-63                                      | Miscellaneous Discrete Command #1 [release]* | 3                       |
| 59                   | 3-63                                      | Miscellaneous Discrete Command #2 [release]* | 3                       |
| 60                   | 3-63                                      | Miscellaneous Discrete Command #3 [release]* | 3                       |
| 61                   | 3-63                                      | Miscellaneous Discrete Command #4 [release]* | 3                       |
| 62                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 63                   | —                                         | Reserved for Future Control Use              | 3,5,7                   |
| 64                   | —                                         | Reserved For Future Control Use              | 3,5,7                   |

**Notes:**

1. The verification status points identified as clearing in response to controls will be cleared *if* the verification status point was set prior to the TBOS control and, in the case of the Abnormal Condition Status Point 58, no other abnormal conditions exist. The verification status points are shown with the associated display. For example, 3-51 indicates display 3 and status point 51.

2. Any display not listed for a control point indicates that point is reserved for future use in that display.

\* The release command relay closes or leaves closed the output relay for a minimum of 300 milliseconds and then opens it. This command may be used to provide a momentary (300 millisecond) closure of the relay.

## **TBOS Alarm and Status Point — TL1 Translation**

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The following TL1 translation information is provided for customers who rely on proprietary telemetry remote/mediation devices to translate TBOS to TL1 (to the OS) instead of interfacing from the telemetry remote (to the OS) via E2 or E2A telemetry protocol.

Table 4-17 specifies the recommended translation of the FT-2000 TBOS alarm and status points to TL1 messages. The TL1 translation is provided to support the required provisioning of the OS (NMA) with the meaning of each FT-2000 TBOS alarm and status point. The recommended TL1 translation will smooth the transition from TBOS to TL1/X.25 OS interfaces for FT-2000. For each FT-2000 TBOS alarm and status point, Table 4-17 specifies the recommended parameter values in columns corresponding to the key parameters in TL1 REPT ALM and REPT EVT messages. The terminology used and parameter values specified are based on Bellcore TR-TSY-000833, Issue 3, Revision 1, dated July 1989. The NMA information is understood to be valid for NMA Release 3.2.1 based on Lucent Technologies FT-2000 operations systems modifications for intelligent network elements (OSMINE) project with Bellcore. It should be noted that because TBOS provides more limited alarm, status and control capabilities than the TL1 interface, for several FT-2000 TBOS alarm and status points there are several possible conditions (and "equivalent" TL1 messages) that may apply.

For convenience, the abbreviated column headings and most parameter values are spelled out in the Glossary at the end of this document. In the ALMCDE (Alarm Code) column in Table 4-17, the following codes are used:

- A Automatic message
- \* Minor alarm
- \*\* Major alarm
- \*C Critical alarm.

In Table 4-17, the choice of REPT ALM or REPT EVT message types and the values for the ALMCDE and NTFCNCDE fields are based on the FT-2000 default alarm levels.

**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages**

| TBOS Point     | Message Type | ALM C D E | AID           | SRVEFF or CONDEFF | N T F C N C D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDDESCR or ALMMSG          |
|----------------|--------------|-----------|---------------|-------------------|-----------------|----------------------------|------------------|-------------------------------|
| <b>A.01-07</b> |              |           |               |                   |                 |                            |                  | Reserved for Future Use       |
| <b>A.08</b>    | REPT ALM     | **        | Slot (TOHCTL) | NSA               | MJ              | CONTR                      | EQPT             | TOHCTL failure                |
| <b>A.09</b>    | REPT ALM     | **        | Slot (TOHCTL) | NSA               | MJ              | IMPROPRMVL                 | EQPT             | TOHCTL removed                |
| <b>A.10-11</b> | REPT ALM     | *         | Port (TMG IN) | NSA               | MN              | SYNC                       | T1               | incoming sync ref failure     |
| <b>A.12</b>    | REPT ALM     | *         | Slot (LSSW)   | NSA               | MN              | SWEQPT                     | EQPT             | LSSW failure                  |
|                | REPT ALM     | *         | Slot (LSSW)   | NSA               | MN              | IMPROPRMVL                 | EQPT             | LSSW removed                  |
| <b>A.13</b>    | REPT ALM     | *C        | Slot (LSSW)   | SA                | CR              | SWEQPT                     | EQPT             | LSSW failure                  |
|                | REPT ALM     | *C        | Slot (LSSW)   | SA                | CR              | IMPROPRMVL                 | EQPT             | LSSW removed                  |
| <b>A.14</b>    | REPT ALM     | **        | System        | NSA               | MJ              | LHI                        | COM              | excessive holdover            |
| <b>A.15</b>    | REPT ALM     | *         | Shelf         | NSA               | MN              | PWR                        | COM              | fuse/power failure A          |
|                | REPT ALM     | *         | Shelf         | NSA               | MN              | PWR                        | COM              | fuse/power failure B          |
| <b>A.16</b>    | REPT ALM     | **        | Slot (LNCTL)  | NSA               | MJ              | CONTR                      | EQPT             | LNCTL failure                 |
|                | REPT ALM     | **        | Slot (LNCTL)  | NSA               | MJ              | IMPROPRMVL                 | EQPT             | LNCTL removed                 |
|                | REPT ALM     | **        | Slot (SYSCTL) | NSA               | MJ              | CONTR                      | EQPT             | SYSCTL failure                |
|                | REPT ALM     | **        | Slot (SYSMEM) | NSA               | MJ              | CONTR                      | EQPT             | SYSMEM failure                |
|                | REPT ALM     | **        | Slot (SYSMEM) | NSA               | MJ              | IMPROPRMVL                 | EQPT             | SYSMEM removed                |
|                | REPT ALM     | **        | Slot (SYSMEM) | NSA               | MJ              | CONTR                      | EQPT             | SYSMEM unrecognizable code    |
|                | REPT ALM     | **        | Slot (SYSMEM) | NSA               | MJ              | CONTR                      | EQPT             | SYSMEM/SYSCTL code mismatch   |
| <b>A.17</b>    | REPT ALM     | **        | System        | NSA               | MJ              | DCC-INIT                   | COM              | DCC start-up in progress      |
| <b>A.18</b>    | REPT ALM     | **        | System        | NSA               | MJ              | DUPL-TID                   | COM              | duplicate TID defined         |
| <b>A.19</b>    | REPT ALM     | **        | System        | NSA               | MJ              | ADMPFL                     | COM              | TID address map full          |
| <b>A.20</b>    | REPT ALM     | *         | System        | NSA               | MN              | SQMAP-CONFL                | COM              | STS1 squelch map conflict     |
|                | REPT ALM     | *         | System        | NSA               | MN              | SQMAP-CONFL                | COM              | STS3 squelch map conflict     |
| <b>A.21</b>    | REPT ALM     | **        | System        | NSA               | MJ              | RNG-INITC                  | COM              | ring star-tup in progress     |
| <b>A.22</b>    | REPT ALM     | **        | System        | NSA               | MJ              | RNG-INC                    | COM              | ring incomplete/open          |
| <b>A.23</b>    | REPT ALM     | **        | System        | NSA               | MJ              | MULT-DSNE                  | COM              | multiple DS-NEs defined       |
| <b>A.24</b>    | REPT ALM     | **        | System        | NSA               | MJ              | CONTR                      | COM              | software download in progress |
| <b>A.25</b>    | REPT ALM     | *         | System        | NSA               | MN              | CKTAUDSNP                  | COM              | circuit audit suspended       |
| <b>A.26</b>    | REPT ALM     | **        | System        | NSA               | MJ              | SYSBOOT                    | COM              | reset in progress             |
| <b>A.27-32</b> |              |           |               |                   |                 |                            |                  | Reserved for Future Use       |

See note and footnote at end of table.

**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages**  
(Contd)

| TBOS Point      | Message Type | ALM C D E | AID             | SRVEFF or CONDEFF | N T F C N D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDDESCR or ALMMSG                |
|-----------------|--------------|-----------|-----------------|-------------------|---------------|----------------------------|------------------|-------------------------------------|
| <b>A.33-48†</b> | REPT ALM     | *         | Misc Disc (Env) | NSA               | MN            | MISC                       | ENV              | provisioned environmental pt        |
| <b>A.49</b>     | REPT EVT     |           | System          | NSA               | NA            | DSNE-NR                    | COM              | DS-NE not reachable                 |
| <b>A.50</b>     | REPT EVT     |           | System          | NSA               | NA            | RNG-PREEMPT                | COM              | extra traffic preempted             |
| <b>A.51</b>     | REPT EVT     |           | System          | NSA               | NA            | IP-CPY-SW-PRGM             | COM              | CPYPGM:IP <i>tid</i>                |
| <b>A.52-53</b>  |              |           |                 |                   |               |                            |                  | Reserved for Future Use             |
| <b>A.54</b>     | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | WKSWPR-secy                | T1/OC48          | sync reference forced switch        |
|                 | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | INHSWPR                    | T1/OC48          | sync reference lockout              |
|                 | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | WKSWPR-secy                | T1/OC48          | sync reference manual switch        |
| <b>A.55</b>     | REPT EVT     |           | Slot (TG)       | NSA               | ABN           | WKSWPR-x                   | EQPT             | TG manual switch                    |
| <b>A.56</b>     | REPT EVT     |           | System          | NSA               | ABN           | HLDOVRSYNC                 | COM              | sync mode forced switch             |
| <b>A.57</b>     | REPT EVT     |           | Port (TMG IN)   | NSA               | NA            | WKSWPR-secy                | T1/OC48          | sync reference auto switch          |
|                 | REPT EVT     |           | Slot (TG)       | NSA               | NA            | WKSWPR-x                   | EQPT             | TG auto switch                      |
|                 | REPT EVT     |           | System          | NSA               | NA            | HLDOVRSYNC                 | COM              | sync mode auto switch               |
| <b>A.58-61</b>  |              |           |                 |                   |               |                            |                  | Reserved for Future Use             |
| <b>A.62</b>     | REPT EVT     |           | Line            | NSA               | ABN           | WKSWPR-p                   | OC48             | line forced switch at near end      |
|                 | REPT EVT     |           | Line            | NSA               | ABN           | INHSWPR                    | OC48             | line lockout at near end            |
|                 | REPT EVT     |           | Line            | NSA               | ABN           | WKSWPR-p                   | OC48             | line manual switch at near end      |
|                 | REPT EVT     |           | Port (DS3)      | NSA               | ABN           | LPBKNETWORK                | T3               | DS3 loopback                        |
|                 | REPT EVT     |           | Port (DS3)      | NSA               | ABN           | LPBKNETWORK                | T3               | DS3 loopback                        |
|                 | REPT EVT     |           | Port (EC1)      | NSA               | ABN           | LPBKNETWORK                | EC1              | EC1 loopback                        |
|                 | REPT EVT     |           | Port (EC1)      | NSA               | ABN           | LPBKNETWORK                | EC1              | EC1 loopback                        |
|                 | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | WKSWPR-secy                | T1/OC48          | sync reference forced switch        |
|                 | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | INHSWPR                    | T1/OC48          | sync reference lockout              |
|                 | REPT EVT     |           | Port (TMG IN)   | NSA               | ABN           | WKSWPR-secy                | T1/OC48          | sync reference manual switch        |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | WKSWPR-x                   | EQPT             | LS forced switch                    |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | INHSWPR                    | EQPT             | LS lockout                          |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | WKSWPR-x                   | EQPT             | LS manual switch                    |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | WKSWPR-p                   | OC3              | OC3 forced switch at near end       |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | INHSWPR                    | OC3              | OC3 inhibit at near end             |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | INHSWPR                    | OC3              | OC3 lockout at near end             |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | LPBKNETWORK                | OC3              | OC3 loopback (from OC3)             |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | LPBKNETWORK                | OC3              | OC3 loopback (from OC3)             |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | LPBKNETWORK                | OC3              | OC3 loopback (from OC48)            |
|                 | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN           | LPBKNETWORK                | OC3              | OC3 loopback (from OC48)            |
|                 | REPT EVT     |           | Slot (TG)       | NSA               | ABN           | WKSWPR-x                   | EQPT             | TG manual switch                    |
|                 | REPT EVT     |           | System          | NSA               | ABN           | HLDOVRSYNC                 | COM              | sync mode forced switch             |
|                 | REPT EVT     |           | System          | NSA               | NA            | LPBKNETWORK                | OC48             | test auto turnup in progress        |
|                 | REPT EVT     |           | Trib (STS-3)    | NSA               | ABN           | MANWKSWPR-x                | STS3             | DRI manual switch                   |
| <b>A.63</b>     |              |           |                 |                   |               |                            |                  | Reserved for Future Use             |
| <b>A.64</b>     |              |           |                 |                   |               |                            |                  | Reserved for Telemetry Link Failure |

See note and footnote at end of table.

**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages  
(Contd)**

| TBOS Point  | Message Type | ALM C D E | AID             | SRVEFF or CONDEFF | N T F C N D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDDESCR or ALMMSG          |
|-------------|--------------|-----------|-----------------|-------------------|---------------|----------------------------|------------------|-------------------------------|
| <b>B.01</b> | REPT ALM     | *C        | Port (DS3)      | SA                | CR            | LOS                        | T3               | incoming (from DSX) DS3 LOS   |
|             | REPT ALM     | *C        | Port (DS3)      | SA                | CR            | T-BERL                     | T3               | incoming (from DSX) DS3 SD    |
| <b>B.02</b> | REPT ALM     | *C        | Port (EC1)      | SA                | CR            | LOF                        | EC1              | incoming (from STSX1) EC1 LOF |
|             | REPT ALM     | *C        | Port (EC1)      | SA                | CR            | LOP                        | EC1              | incoming (from STSX1) EC1 LOP |
|             | REPT ALM     | *C        | Port (EC1)      | SA                | CR            | LOS                        | EC1              | incoming (from STSX1) EC1 LOS |
|             | REPT ALM     | *C        | Port (EC1)      | SA                | CR            | T-BERL                     | EC1              | incoming (from STSX1) EC1 SD  |
| <b>B.03</b> | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN            | LOF                        | OC3              | incoming OC3 LOF              |
|             | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN            | LOS                        | OC3              | incoming OC3 LOS              |
|             | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN            | T-BERL                     | OC3              | incoming OC3 SD               |
|             | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN            | T-BERL                     | OC3              | incoming OC3 SF               |
| <b>B.04</b> | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR            | LOF                        | OC3              | incoming OC3 LOF              |
|             | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR            | LOS                        | OC3              | incoming OC3 LOS              |
|             | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR            | T-BERL                     | OC3              | incoming OC3 SD               |
|             | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR            | T-BERL                     | OC3              | incoming OC3 SF               |
| <b>B.05</b> | REPT ALM     | *         | Line            | NSA               | MN            | LOF                        | OC48             | incoming OC-48 LOF            |
|             | REPT ALM     | *         | Line            | NSA               | MN            | LOS                        | OC48             | incoming OC-48 LOS            |
|             | REPT ALM     | *         | Line            | NSA               | MN            | T-BERL                     | OC48             | incoming OC-48 SF             |
| <b>B.06</b> | REPT ALM     | *C        | Line            | SA                | CR            | LOF                        | OC48             | incoming OC-48 LOF            |
|             | REPT ALM     | *C        | Line            | SA                | CR            | LOS                        | OC48             | incoming OC-48 LOS            |
|             | REPT ALM     | *C        | Line            | SA                | CR            | T-BERL                     | OC48             | incoming OC-48 SF             |
|             | REPT ALM     | *C        | Line            | SA                | CR            | T-BERL                     | OC48             | incoming OC-48 SF             |
| <b>B.07</b> | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN            | LOP                        | OC3              | incoming (from OC3) STS LOP   |
|             | REPT ALM     | *         | Trib (STS-1)    | NSA               | MN            | LOP                        | STS1             | incoming (from OC48) STS LOP  |
|             | REPT ALM     | *         | Trib (STS-3)    | NSA               | MN            | LOP                        | STS3             | incoming (from OC48) STS LOP  |
| <b>B.08</b> | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR            | LOP                        | OC3              | incoming (from OC3) STS LOP   |
|             | REPT ALM     | *C        | Trib (STS-1)    | SA                | CR            | LOP                        | STS1             | incoming (from OC48) STS LOP  |
|             | REPT ALM     | *C        | Trib (STS-3)    | SA                | CR            | LOP                        | STS3             | incoming (from OC48) STS LOP  |
| <b>B.09</b> | REPT ALM     | *         | Line            | NSA               | MN            | T-BERL                     | OC48             | incoming OC-48 SD             |
| <b>B.10</b> | REPT ALM     | *C        | Line            | SA                | CR            | T-BERL                     | OC48             | incoming OC-48 SD             |
| <b>B.11</b> | REPT ALM     | *         | Op Intf (DCC-OC | NSA               | MN            | EOC                        | COM              | inc. (from OC3)               |
|             | REPT ALM     | *         | Op Intf (DCC-OC | NSA               | MN            | EOC                        | COM              | inc. (from OC48)              |
| <b>B.12</b> | REPT ALM     | **        | Op Intf (X.25)  | NSA               | MJ            | -                          | -                | TL-1 link failure             |
| <b>B.13</b> | REPT ALM     | **        | Line            | NSA               | MJ            | APSC                       | COM              | APS channel failure           |
|             | REPT ALM     | **        | Line            | NSA               | MJ            | APSB                       | OC48             | incoming OC-48 APS byte fail  |
| <b>B.14</b> | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA            | APSC                       | COM              | APS channel failure           |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA            | APSB                       | OC3              | incoming OC3 APS byte fail    |
| <b>B.15</b> | REPT ALM     | *         | Slot (RCVR)     | NSA               | MN            | OC48TERM                   | EQPT             | RCVR failure                  |
|             | REPT ALM     | *         | Slot (RCVR)     | NSA               | MN            | IMPROPRMVL                 | EQPT             | RCVR removed                  |
| <b>B.16</b> | REPT ALM     | *C        | Slot (RCVR)     | SA                | CR            | OC48TERM                   | EQPT             | RCVR failure                  |
|             | REPT ALM     | *C        | Slot (RCVR)     | SA                | CR            | IMPROPRMVL                 | EQPT             | RCVR removed                  |

See note and footnote at end of table.

**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages  
(Contd)**

| TBOS Point | Message Type | ALM C D E | AID             | SRVEFF or CONDEFF | N T F C N C D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDESCR or ALMMSG           |
|------------|--------------|-----------|-----------------|-------------------|-----------------|----------------------------|------------------|-------------------------------|
| B.17       | REPT ALM     | *         | Slot (TRMTR)    | NSA               | MN              | OC48TERM                   | EQPT             | TRMTR failure                 |
|            | REPT ALM     | *         | Slot (TRMTR)    | NSA               | MN              | IMPROPRMVL                 | EQPT             | TRMTR removed                 |
| B.18       | REPT ALM     | *C        | Slot (TRMTR)    | SA                | CR              | OC48TERM                   | EQPT             | TRMTR failure                 |
|            | REPT ALM     | *C        | Slot (TRMTR)    | SA                | CR              | IMPROPRMVL                 | EQPT             | TRMTR removed                 |
| B.19       | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | T3TERM                     | EQPT             | DS3 INTFC failure             |
|            | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | IMPROPRMVL                 | EQPT             | DS3 INTFC removed             |
| B.20       | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | T3TERM                     | EQPT             | DS3 INTFC failure             |
|            | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | IMPROPRMVL                 | EQPT             | DS3 INTFC removed             |
| B.21       | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | EC1TERM                    | EQPT             | STS1E INTFC failure           |
|            | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | IMPROPRMVL                 | EQPT             | STS1E INTFC removed           |
| B.22       | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | EC1TERM                    | EQPT             | STS1E INTFC failure           |
|            | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | IMPROPRMVL                 | EQPT             | STS1E INTFC removed           |
| B.23       | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | OC3TERM                    | EQPT             | OC3 INTFC failure             |
|            | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | IMPROPRMVL                 | EQPT             | OC3 INTFC removed             |
| B.24       | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | OC3TERM                    | EQPT             | OC3 INTFC failure             |
|            | REPT ALM     | *C        | Slot (LS INTFC) | SA                | CR              | IMPROPRMVL                 | EQPT             | OC3 INTFC removed             |
| B.25       |              |           |                 |                   |                 |                            |                  | Reserved for Future Use       |
| B.26       | REPT ALM     | *         | Slot (TG)       | NSA               | MN              | SYNCCLK-WU                 | EQPT             | TG warming up                 |
|            | REPT ALM     | *         | Slot (TG)       | NSA               | MN              | SYNCCLK                    | EQPT             | TG3 failure                   |
|            | REPT ALM     | *         | Slot (TG)       | NSA               | MN              | IMPROPRMVL                 | EQPT             | TG3 removed                   |
| B.27       | REPT ALM     | *C        | Slot (TG)       | SA                | CR              | SYNCCLK                    | EQPT             | TG3 failure                   |
|            | REPT ALM     | *C        | Slot (TG)       | SA                | CR              | IMPROPRMVL                 | EQPT             | TG3 removed                   |
| B.28       | REPT ALM     | **        | Slot (OHCTL)    | NSA               | MJ              | CONTR                      | EQPT             | OHCTL failure                 |
|            | REPT ALM     | **        | Slot (OHCTL)    | NSA               | MJ              | IMPROPRMVL                 | EQPT             | OHCTL removed                 |
| B.29       | REPT EVT     |           | Line            | NSA               | NA              | RNG-SQUELCH                | OC48             | traffic squelched             |
| B.30       | REPT ALM     | **        | Line            | NSA               | MJ              | EOC                        | OC48             | incoming OC-48 invalid F byte |
| B.31       | REPT ALM     | **        | Line            | NSA               | MJ              | PRCDRERR                   | OC48             | site provisioning conflict    |
| B.32       | REPT ALM     |           | Slot (LS INTFC) | NSA               |                 | T-x                        | EQPT             | TCA optics                    |
|            | REPT ALM     |           | Slot (RCVR)     | NSA               |                 | T-LPR                      | EQPT             | TCA optics:OC48 yyy:OPR       |
|            | REPT ALM     |           | Slot (TRMTR)    | NSA               |                 | T-x                        | EQPT             | TCA optics:OC48 yyy:xxxx      |
| B.33       | REPT ALM     |           | Line            | NSA               |                 | T-x                        | OC48             | TCA line:OC48 yyy:xxxx        |
| B.34       | REPT ALM     |           | Line            | NSA               |                 | T-x                        | OC48             | TCA section:OC48 yyy:xxxx     |
| B.35       | REPT ALM     |           | Trib (STS-1)    | NSA               |                 | T-x                        | STS1             | TCA STS1 yyy:xxxx             |
| B.36       | REPT ALM     |           | Port (EC1)      | NSA               |                 | T-x                        | EC1              | TCA EC1 yyy:xxxx              |
| B.37       | REPT ALM     |           | Port (DS3)      | NSA               |                 | T-x                        | T3               | TCA T3 yyy:xxxx               |
| B.38       | REPT ALM     |           | Slot (LS INTFC) | NSA               |                 | T-x                        | OC3              | TCA line:OC3 yyy:xxxx         |
|            | REPT ALM     |           | Slot (LS INTFC) | NSA               |                 | T-x                        | OC3              | TCA section:OC3 yyy:xxxx      |
| B.39       | REPT ALM     | **        | Line            | NSA               | MJ              | NID-CONFL                  | COM              | node ID conflict              |
| B.40       | REPT ALM     | **        | Slot (LS INTFC) | NSA               | MJ              | APSPROV                    | OC3              | APS provisioning conflict     |

See note and footnote at end of table.

**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages  
(Contd)**

| TBOS Point  | Message Type | ALM C D E | AID             | SRVEFF or CONDEFF | N T F C N C D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDDESCR or ALMMSG            |
|-------------|--------------|-----------|-----------------|-------------------|-----------------|----------------------------|------------------|---------------------------------|
| <b>B.41</b> | REPT ALM     | **        | Slot (LS INTFC) | NSA               | MJ              | MODE-EQPT                  | OC3              | OC3 mode conflict (equipment)   |
|             | REPT ALM     | **        | Slot (LS INTFC) | NSA               | MJ              | MODE-CNFLT                 | OC3              | OC3 mode conflict (slot pair)   |
|             | REPT ALM     | **        | Slot (LS INTFC) | NSA               | MJ              | MODE-XCONN                 | OC3              | OC3 mode conflict (x-connect)   |
| <b>B.42</b> | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | SQMAP-INCST                | STS3             | STS3 squelch map inconsistent   |
| <b>B.43</b> | REPT ALM     | *         | Slot (LS INTFC) | NSA               | MN              | PAPRVERR                   | STS3             | circuit provisioning error      |
| <b>B.44</b> | REPT ALM     | **        | Slot (LS INTFC) | NSA               | MJ              | PAINTGRT                   | STS3             | path integrity failure          |
| <b>B.45</b> | REPT ALM     | *         | Slot (*)        | NSA               | MN              | PRCDRERR                   | EQPT             | CP (unknown type) failure       |
|             | REPT ALM     | *         | Slot (*)        | NSA               | MN              | PRCDRERR                   | EQPT             | unexpected CP type              |
| <b>B.46</b> | REPT ALM     | *C        | Slot (*)        | SA                | CR              | PRCDRERR                   | EQPT             | CP (unknown type) failure       |
|             | REPT ALM     | *C        | Slot (*)        | SA                | CR              | IMPROPRMVL                 | EQPT             | CP (unknown type) removed       |
|             | REPT ALM     | *C        | Slot (*)        | SA                | CR              | PRCDRERR                   | EQPT             | unexpected CP type              |
| <b>B.47</b> | REPT ALM     | *         | Port (EC1)      | NSA               | MN              | LOS                        | EC1              | incoming(from STSX1) EC1 LOS    |
| <b>B.48</b> | REPT ALM     | *         | Trib (STS-3)    | NSA               | MN              | WKSWPR-x                   | STS3             | DRI auto switch                 |
| <b>B.49</b> | REPT EVT     |           | Line            | NSA               | NA              | WKSWPR-p                   | OC48             | line auto switch                |
| <b>B.50</b> | REPT EVT     |           | Line            | NSA               | NA              | WKSWPR-p                   | OC48             | line forced switch at far end   |
|             | REPT EVT     |           | Line            | NSA               | ABN             | WKSWPR-p                   | OC48             | line forced switch at near end  |
|             | REPT EVT     |           | Line            | NSA               | NA              | INHSWPR                    | OC48             | line lockout at far end         |
|             | REPT EVT     |           | Line            | NSA               | ABN             | INHSWPR                    | OC48             | line lockout at near end        |
|             | REPT EVT     |           | Line            | NSA               | NA              | WKSWPR-p                   | OC48             | line manual switch at far end   |
|             | REPT EVT     |           | Line            | NSA               | ABN             | WKSWPR-p                   | OC48             | line manual switch at near end  |
|             | REPT EVT     |           | Line            | NSA               | ABN             | WKSWPR-x                   | EQPT             | LS forced switch                |
| <b>B.51</b> | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | WKSWPR-x                   | EQPT             | LS lockout                      |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | INHSWPR                    | EQPT             | LS manual switch                |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | WKSWPR-x                   | EQPT             | LS manual switch                |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | WKSWPR-p                   | OC3              | OC3 forced switch at far end    |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | WKSWPR-p                   | OC3              | OC3 forced switch at near end   |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | INHSWPR                    | OC3              | OC3 inhibit at near end         |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | INHSWPR                    | OC3              | OC3 lockout at far end          |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | ABN             | INHSWPR                    | OC3              | OC3 lockout at near end         |
|             | REPT ALM     |           | Slot (LS INTFC) | NSA               |                 | WKSWPR-p                   | OC3              | OC3 manual switch at far end    |
|             | REPT ALM     |           | Slot (LS INTFC) | NSA               |                 | WKSWPR-p                   | OC3              | OC3 manual switch at near end   |
| <b>B.52</b> | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | WKSWPR-x                   | EQPT             | LS auto switch                  |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | WKSWPR-p                   | OC3              | OC3 auto switch at far end      |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | WKSWPR-p                   | OC3              | OC3 auto switch at near end     |
| <b>B.53</b> | REPT EVT     |           | Line            | NSA               | NA              | AIS                        | OC48             | incoming OC-48 AIS              |
|             | REPT EVT     |           | Line            | NSA               | NA              | YEL                        | OC48             | incoming OC-48 line RFI/yellow  |
|             | REPT EVT     |           | Trib (STS-1)    | NSA               | NA              | YEL                        | STS1             | inc (from OC48) path RFI/yellow |
| <b>B.54</b> | REPT EVT     |           | Port (EC1)      | NSA               | NA              | YEL                        | EC1              | inc (from STSX) line RFI/yellow |
|             | REPT EVT     |           | Port (EC1)      | NSA               | NA              | AIS                        | EC1              | incoming (from STSX1) line AIS  |
| <b>B.55</b> | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | AIS                        | OC3              | incoming OC3 AIS                |
|             | REPT EVT     |           | Slot (LS INTFC) | NSA               | NA              | YEL                        | OC3              | incoming OC3 line RFI/yellow    |
| <b>B.56</b> | REPT EVT     |           | Trib (STS-1)    | NSA               | NA              | AIS                        | STS1             | incoming (from OC48) path AIS   |

See note and footnote at end of table.



**Table 4-17. FT-2000 OC-48 TBOS Alarm and Status Point Translation to TL1 Messages (Contd)**

| TBOS Point | Message Type | ALM C D E | AID          | SRVEFF or CONDEFF | N T F C N D E | CONDTYPE or ALMTYPE (Note) | Message Modifier | CONDDDESCR or ALMMSG                |
|------------|--------------|-----------|--------------|-------------------|---------------|----------------------------|------------------|-------------------------------------|
| B.57       | REPT EVT     |           | Trib (STS-3) | NSA               | ABN           | MANWKSWPR-x                | STS3             | DRI manual switch                   |
| B.58       | REPT EVT     |           | Port (DS3)   | NSA               | NA            | PAINTGRT                   | T3               | DS3 path unequipped                 |
| B.59       | REPT EVT     |           | Port (DS3)   | NSA               | NA            | AIS                        | T3               | incoming (from OC-48) DS3 AIS       |
|            | REPT EVT     |           | Port (DS3)   | NSA               | NA            | LOF                        | T3               | incoming (from OC-48) DS3 LOF       |
| B.60       | REPT EVT     |           | Slot (*)     | NSA               | NA            | AUTORESET                  | EQPT             | CP reset in progress                |
| B.61-63    |              |           |              |                   |               |                            |                  | Reserved for Future Use             |
| B.64       |              |           |              |                   |               |                            |                  | Reserved for Telemetry Link Failure |

**Note:** Lucent Technologies recommends that the CONDTYPE (and ALMTYPE) values be appended with the TBOS control point number for the MISC and MAN CONDTYPEs. This will insure that the OS correctly associates each alarm and clear pair when a TBOS point is set “on” and later “off”.

† Because these miscellaneous discrete environmental alarm and status points are user settable, the *appropriate* parameter values to describe the actual condition monitored and reported by each miscellaneous discrete environmental alarm and status point **must** be provisioned at the OS. The parameter values included in this table are defaults only.

## **TBOS Control Point — TL1 Translation**

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No FT-2000 TBOS control point to TL1 message translation is required in NMA. NMA users activate TBOS controls by addressing a specific FT-2000 and specifying a TBOS control point number.

## **NMA Scan Point Definition**

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Table 4-18 provides a mapping between the field labels on the NMAs scan point definition screen and the corresponding TL1 parameter names as used in Table 4-17. The NMA field labels that appear on an NMA scan point definition screen depend on the message type (that is, REPT ALM, REPT ALM ENV, or REPT EVT). The NMA field labels are shown in the order they appear on the NMA scan point definition screens.

**Table 4-18. NMA Field Label to TL1 Parameter Name Mapping**

| <b>NMA Field Label</b> | <b>TL1 Parameter Name</b>                                                               |
|------------------------|-----------------------------------------------------------------------------------------|
| message type           | Message Type (REPT ALM or REPT EVT)<br>Message Type and Message Modifier (REPT ALM ENV) |
| condition type         | CONDTYPE (for REPT ALM and REPT EVT)                                                    |
| alarm type             | ALMTYPE (for REPT ALM ENV only)                                                         |
| service affecting      | SRVEFF (for REPT ALM and REPT ALM ENV)                                                  |
| direction              | DIRN (N/A)                                                                              |
| threshold level        | CONDDDESCR (for REPT ALM and REPT EVT))                                                 |
| alarm message          | ALMMMSG (for REPT ALM ENV only)                                                         |
| equipment alarm        | Message Modifier                                                                        |
| priority               | NTFCNCDE                                                                                |
| signal level           | Message Modifier (for REPT ALM and REPT EVT)                                            |
| condition effect       | CONDEFF (for REPT EVT only)                                                             |

### **NMA Service Effect**

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The service effect (SRVEFF) values included in Table 4-17 reflect the actual effect on customer traffic; that is, service-affecting (SA) or non-service-affecting (NSA).

### **NMA “Threshold Level” (Condition Description)**

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In Table 4-17, the CONDDDESCR field is limited to 20 characters to match the NMA scan point definition threshold level field maximum of 20 characters.

## NMA Signal Levels

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Until NMA supports generic SONET, NMA is expected to continue to allow only asynchronous signals (for example, T1, T3, etc.) to be entered in the NMA *signal level* field. Therefore, it is recommended that the SONET signals be mapped to the following "equivalent" asynchronous signals for purposes of provisioning NMA *signal level* field (refer to Table 4-19).

**Table 4-19. SONET Signal Mapping**

| <b>SONET Signal</b> | <b>"Equivalent"<br/>Asynchronous Signal</b> |
|---------------------|---------------------------------------------|
| OC48                | T7X                                         |
| STS = STS1          | T3                                          |

### ⇒ NOTE:

The asynchronous signal level which is the nearest equivalent to the OC-48 signal is actually "T9X;" however, NMA currently supports asynchronous transmission signal rates up to the T7X level. Thus, this is the recommended level to be entered in NMA's signal level field in order to support proper trouble ticket priority assignments of OC-48 alarms. Failure to use this mapping may result in OC-48-level alarms being treated inappropriately.

## NMA Equipment Data Base Definition

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The minimal NMA equipment data base provisioning required to monitor an FT-2000 via TBOS (or parallel telemetry) is documented in Bellcore Interim Methods (IMs). The IMs, which focus on monitoring FT-2000 via TL1/X.25, were prepared by Bellcore under the Operations Systems Modifications for Intelligent Network Elements (OSMINE) contract with Lucent Technologies. Contact the Lucent Technologies' Technical Support Organization or Regional Technical Assistance Center for a copy of this document.

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**FT-2000 OC-48 ADR Terminal  
Parallel Telemetry**

**5**

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**Contents**

|                                |     |
|--------------------------------|-----|
| <b>Overview</b>                | 5-1 |
| <b>Introduction</b>            | 5-1 |
| <b>Parallel Telemetry Test</b> | 5-3 |

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# **FT-2000 OC-48 ADR Terminal Parallel Telemetry**

# 5

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## **Overview**

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This section presents information on parallel telemetry interfaces to the operations system (OS). This includes information on provisioning and alarm and status points.

## **Introduction**

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As an alternative to Transaction Language 1 (TL1)/X.25 and telemetry byte-oriented serial (TBOS) protocol, the FT-2000 ring-terminal supports parallel telemetry. The FT-2000 parallel telemetry interface is dependent on the wiring of individual (parallel) leads to the telemetry remote.

Table 5-1 summarizes the FT-2000 parallel telemetry points.

**Table 5-1. FT-2000 Parallel Telemetry Points**

| <b>Point Name</b> | <b>Type (Note)</b> | <b>Point Description</b>  |
|-------------------|--------------------|---------------------------|
| CR-NE             | SA                 | Critical Alarm - Near End |
| CR-FE             | SA                 | Critical Alarm - Far End  |
| MJ-NE             | NSA                | Major Alarm - Near End    |
| MJ-FE             | NSA                | Major Alarm - Far End     |
| MN-NE             | NSA                | Minor Alarm - Near End    |
| MN-FE             | NSA                | Minor Alarm - Far End     |

**Note:** SA = service affecting; NSA = non-service affecting

---

Parallel telemetry wiring to a telemetry remote is only necessary at one end or the other of a point-to-point OC-48 interoffice application, because either FT-2000 ring terminal or repeater bay can report the parallel telemetry for the other. The parallel telemetry updates are exchanged using the synchronous optical network (SONET) section data communications channel (DCC) in the OC-48 signals. Thus, a far-end FT-2000s parallel telemetry alarm and status information is forwarded to the telemetry remote by the near-end FT-2000.

There are four cases when parallel telemetry updates will not be exchanged between FT-2000s in a subnetwork:

- a. If the section Data Communications Channel (DCC) is disabled by the FT-2000 personal computer craft interface terminal (PC-CIT) user interface command **ENT - FECOM** (UIR Set-Far End Communication). Refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*.
- b. If the section DCC (or the OC-48 itself) fails.
- c. If FT-2000 belongs to different alarm groups.
- d. If there is a NE Status Comm Failure when AGNE cannot communicate with subordinates.

## **Parallel Telemetry Test**

---

The FT-2000 supports parallel telemetry testing via the PC-CIT user interface command **Test - Telemetry - Parallel** (refer to 365-575-102, *FT-2000 OC-48 Lightwave System User/Service Manual*). The parallel telemetry test consists of setting the user-specified parallel telemetry points "on" for 20 seconds and then "off" for 20 seconds. The same test may be repeated up to 10 times. The user can include any one point or all points in a test.

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# Glossary

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## **1+1 Line Protection**

A 1+1 protection system has two bidirectional lines. The transmitting terminal transmits the same signal on both lines. The receiving terminal monitors each line independently and chooses one line as the working line and the other line as the standby line. When a protection switch occurs, the receiving terminal selects the signal from the standby line which causes the standby line to be the new working line. The original working line becomes the standby line. This status remains the same (nonrevertive) after the fault clears.

## **1x1 Line Protection**

A 1x1 protection system has two bidirectional lines. One line is designed as the service line, and the other line is designed as the protection line. The service line normally carries traffic. When a protection switch occurs, the protection line is selected to carry traffic. When the fault clears, the original service line is selected (revertive).

---

# A

## **ABN**

Abnormal (status condition)

## **ACO**

Alarm Cutoff — A pushbutton switch available on the user panel that can be used to retire an audible office alarm.

## **ACO/TST**

Alarm Cutoff and Test — The name of a pushbutton on the user panel.

## **Active**

Active identifies a 1+1 protected OC-N line which is currently selected by the receiver at either end as the payload carrying signal or a 1x1 or 1xn protected circuit pack that is currently carrying service. (See Standby.)

## **ADM**

Add/Drop Multiplexer

## **AID**

Access Identifier

## **AIS**

Alarm Indication Signal — A code transmitted downstream in a digital network that shows that an upstream failure has been detected and alarmed.



**ALMCDE**

Alarm code

**ALMSG**

Alarm message description

**ALMTYPE**

Alarm type

**AMI**

Alternate Mark Inversion — A line code that employs a ternary signal to convey binary digits, in which successive binary ones are represented by signal elements that are normally of alternating positive and negative polarity but equal in amplitude and in which binary zeros are represented by signal elements that have zero amplitude.

**ANSI**

American National Standards Institute

**APS**

Automatic Protection Switch

**AS&C**

Alarm, Status, and Control

**ASCII**

American Standard Code for Information Interchange — A standard 8-bit code used for exchanging information among data processing systems and associated equipment.

**ASN.1**

Abstract Syntax Notation 1

**ATM**

Asynchronous Transfer Mode

**Auto**

Automatic — One possible state of a DS1 or DS3 port. In this state, the port will automatically be put "in service" if a good signal is detected coming from the DSX panel.

**Automatic Protection Switch**

A protection switch that occurs automatically in response to an automatically detected fault condition.

**Automatic Synchronization Reconfiguration**

A feature that allows another synchronization source to be automatically selected and the synchronization source provisioning to be automatically reconfigured in the event of a synchronization source failure or network synchronization change (for example, a fiber cut).

**AUXCTL**

Auxiliary Control — The name of the slot to the left of the SYSCTL slot on the DDM-2000 OC-3 shelf.

**Available Time**

In performance monitoring, the 1-second intervals.

---

## **B**

**B3ZS**

Bipolar 3-Zero Substitution — A line coding method that replaces a string of three zeros with a sequence of symbols having some special characteristic.

**B8ZS**

Bipolar 8-Zero Substitution — A line coding method that replaces a string of eight zeros with a sequence of symbols having some special characteristic.

**BER**

Bit Error Ratio — The ratio of bits received in error to the total bits sent.

**BIP**

Bit Interleaved Parity — A method of error monitoring over a specified number of bits; that is, BIP-3 or BIP-8.

**BITS**

Building Integrated Timing Supply

**Broadband**

Any communications channel with greater bandwidth than a voice channel; sometimes used synonymously with wideband.

---

## **C**

**CAD**

Cable Diagram

**CC**

Clear Channel

**CCITT**

International Telephone and Telegraph Consultative Committee — An international advisory committee under United Nations' sponsorship that has composed and recommended for adoption worldwide standards for international communications.

**CEV**

Controlled Environment Vault

**CIMAP**

Circuit Installation and Maintenance Assistance Package operations system

**CIT**

Craft Interface Terminal

**CLF**

Carrier Line Failure Status

**CLK**

Clock

**CMOS**

Complementary-Symmetry Metal Oxide Semiconductor

**CO**

Central Office

**COACH**

Customized On-Line Aid for Customer Help

**CONDDESCR**

Condition description

**CONDEFF**

Condition effect

**CONDTYPE**

Condition type

**CP**

Circuit Pack

**CR**

Critical (alarm status)

**CSA**

Carrier Serving Area

**CS&O**

Customer Support and Operations

**CTAG**

Correlation tag

**CTS**

Clear To Send

**CU**

Channel Unit

**CUG**

Closed User Group

**CV**

Coding Violation (a performance-monitoring parameter)

**CVFE**

Coding Violation Far-End — An indication returned to the transmitting terminal that an errored block has been detected at the receiving terminal.

---

## D

**DACS**

Digital Access and Cross-Connect System

**DACS III-2000**

Digital Access and Cross-Connect System that provides clear channel switching at either the DS3 or the STS-1 rates, eliminating the need for manual DSXs.

**DACS IV-2000**

Digital Access and Cross-Connect System that provides electronic DS3/STS-1 or DS1/VT1.5 cross-connect capability, eliminating the need for manual DSXs.

**DCC**

Data Communications Channel — The embedded overhead communications channel in the SONET line. It is used for end-to-end communications and maintenance. It carries alarm, control, and status information between network elements in a SONET network.

**DCD**

Received line signal detector

**DCE**

Data Circuit-Terminating Equipment — In a data station, the equipment that provides the signal conversion and coding between the data terminal equipment (DTE) and the line. The DCE may be separate equipment or an integral part of the DTE or of intermediate equipment. A DCE may perform other functions usually performed at the network end of the line.

**DDM-1000**

Lucent Technologies' Dual DS3 Multiplexer — A digital multiplexer that multiplexes DS1, DS1C, or DS2 signals into a DS3 signal or optical signal.

**DDM-2000**

Lucent Technologies' next generation network multiplexer that multiplexes DS1, DS3, or STS-1E inputs into an STS-1E, OC-3 or OC-12 outputs.

**Default Provisioning**

The parameter values that are preprogrammed as shipped from the factory.

**Demultiplexing**

A process applied to a multiplexed signal for recovering signals combined within it and for restoring the distinct individual channels of these signals.

**DEMUX**

Demultiplexer - "the DEMUX direction" is from the fiber toward the DSX.

**Digital Multiplexer**

Equipment that combines by time-division multiplexing several digital signals into a single composite digital signal.

**DIRN**

Direction

**DLC**

Digital Loop Carrier

**DPLL**

Digital Phase-Locked Loop

**DRI**

Dual Ring Interworking. Two ring networks interconnected at two common nodes.

**Drop and continue**

A technique that allows redundant signal appearances at two central offices in a DRI network, allowing protection against central office failures.

**DS1**

Digital Signal Level 1 (1.544 M/bs)

**DS1 Circuit Pack**

The DS1 interface circuit pack interfaces to the DSX-1 panel.

**DS3**

Digital Signal Level 3 (44.736 M/bs)

**DS3 Circuit Pack**

The DS3 circuit pack interfaces to the DSX-3 panel.

**DSn**

Digital Signal Rate n — One of the possible digital signal rates at DDM-2000 interfaces: DS1 (1.544 Mb/s), DS3 (44.736 Mb/s).

**DSNE**

Directory Services Network Element — A designed network element that is responsible for administering a database that maps network element names (TIDs) to addresses [NSAPs (network service access points)] in an OSI subnetwork. There can only be one DSNE per subnetwork. There can also be an OSGNE.

**DSR**

DCE ready

**DTR**

DTE ready

**DSX**

Digital Cross-Connect Panel — A panel designed to interconnect equipment that operates at a designated rate. For example, a DSX-3 interconnects equipment operating at the DS3 rate.

**DT**

Distant Terminal

**DTE**

Data Terminating Equipment — That part of a data station that serves as a data source (originates data for transmission), a data sink (accepts transmitted data), or both.

**Dual 0x1**

See "Ring (0x1) Low Speed Interface".

**Dual Homing**

A network topology in which two shelves function as hosts supporting other systems. For example OC-1 rings on OC-3 shelves or OC-3 systems on OC-12 systems. Each system is interconnected between the two separate hosts. Also referred to as ring-on-ring.

---

**E****EC-1, EC-n**

Electrical Carrier — The basic logical building block signal with a rate of 51.840 Mb/s for an EC-1 signal and a rate of n times 51.840 Mb/s for an EC-n signal. An EC-1 signal can be built in two ways: A DS1 can be mapped into a VT1.5 signal and 28 VT1.5 signals can be multiplexed into an EC-1 (VT1.5 based EC-1), or a DS3 can be mapped directly into an EC-1 signal (DS3 based EC-1).

**ECI**

Equipment Catalog Item — The bar code number on the faceplate of each circuit pack used by some inventory systems.

**EEPROM**

Electrically Erasable Programmable Read-Only Memory

**EIA**

Electronic Industries Association

**EMC**

Electromagnetic Compatibility

**EMI**

Electromagnetic Interference

**EOOF**

Excessive Out of Frame

**EPN**

Endpoint Number

**EPROM**

Erasable Programmable Read-Only Memory

**EQ**

Equipped (memory administrative state)

**ES**

Errored Seconds — A performance-monitoring parameter. ES "type A" (ESA) is a second with exactly one error; ES "type B" (ESB) is a second with more than one and less than the number of errors in a severely errored second for the given signal. ES by itself means the sum of the type A and type B ESs.

**ESA**

Errored seconds type A. See ES.

**ESB**

Errored seconds type B. See ES.

**ESD**

Electrostatic Discharge

**ESF**

Extended Super Frame (format for DS1 signal)

**EST**

Environmental Stress Testing

---

**F****FCC**

Federal Communication Commission

**FDDI**

Fiber Distribution Data Interface

**FE**

Far End

**FE-ACTY**

Far End Activity — An LED on the user panel.

**FEBE**

Far End Block Error — An indication returned to near-end transmitting node that an errored block has been detected at the far end.

**FE ID**

Far End Identification — The 7-segment display on the faceplate of the SYSCTL circuit pack.

**FEPROM**

Flash EPROM — A new technology that combines the nonvolatility of EPROM with the in-circuit reprogrammability of EEPROM (electrically-erasable PROM).

**FERF**

Far-End-Receive Failure — An indication returned to a transmitting terminal that the receiving terminal has detected an incoming section failure.

**FE SEL**

Far End Select — An LED on the user panel.

**FIT**

Failures in  $10^9$  hours of operation

**FLS**

Frame Loss Seconds

**Free Running**

An operating condition of a clock in which its local oscillator is not locked to an internal synchronization reference and is using no storage techniques to sustain its accuracy.

**FT-2000**

Lucent Technologies' SONET OC-48 Lightwave System

**Function Unit (FN)**

Refers to any one of a number of different circuit packs that can reside in the A, B, or C function unit slots on the DDM-2000 OC-3 multiplexer, or in the A, B, C, or D function unit slots of the DDM-2000 OC-12 Multiplexer.



## **G**

**GNE**

Gateway Network Element — A network element provides the OS interface for itself and the other network elements in the subnetwork.

**GR**

Bellcore general requirement

**Group**

The eight slots that may be equipped.

**GTP**

General Telemetry Processor

**GUI**

Graphical User Interface



## **H**

**Holdover**

An operating condition of a clock in which its local oscillator is not locked to an external reference but is using storage techniques to maintain its accuracy with respect to the last known frequency comparison with a synchronization reference.

**HS**

High Speed



---

## **I**

**IC**

Internal Clock. Used in synchronization messaging.

**ID**

Identifier. See shelf ID and site ID.

**IEC**

International Electrotechnology Commission

**IIAC**

Input, Invalid Access Identifier

**IICM**

Input, Invalid Command

**IICT**

Input, Invalid Correlation Tag

**IIDT**

Input, Invalid Data Parameter

**IISP**

Input, Invalid Syntax or Punctuation

**IITA**

Input, Invalid Target Identifier

**IM**

Interim Methods

**IMF**

Infant Mortality Factor

**INC**

Incoming Status

**INCM**

A parallel telemetry point used to indicate incoming low-speed failures.

**I/O**

Input/Output

**IP**

Internetwork Protocol

**IR**

Intermediate Reach

**IS**

In Service — One possible state of a DS1, DS3, or STS-1E port. Other possible states are "auto" (automatic) and "nmon" (not monitored).

**IS-3**

Interconnect Signal Level 3

**ISO**

International Standards Organization

---

**J**

**Jitter**

Timing jitter is defined as short-term variations of the significant instants of a digital signal from their ideal positions in time.

---

**L**

**LAN**

Local Area Network

**LAPB**

Link Access Procedure "B"

**LAPD**

Link Access Procedure "D"

**LBO**

Line Build Out — An equalizer network between the DDM-2000 multiplexer and the DSX panel. It guarantees the proper signal level and shape at the DSX panel.

**LCN**

Local Communications Network

**LCN**

Logical Channel Number

**LEC**

Local Exchange Carrier

**LED**

Light Emitting Diode — Used on a circuit pack faceplate to show failure (red) or service state. It is also used to show the alarm and status condition of the system.

**LNCTL**

The FT-2000 OC-48 Lightwave System line controller circuit pack that performs line specific computations.

**LOF**

Loss of Frame. A failure to synchronize to an incoming signal.

**Loop Timing**

A timing mode in which the terminal derives its transmit timing from the received line signal.

**LOP**

Loss of Pointer

**LOS**

Loss of Signal

**LR**

Long Reach

**LS**

Low Speed

**LSSW**

The FT-2000 OC-48 Lightwave System low speed protection switch circuit pack that performs low speed interface protection switching.

**LTA**

Lightwave Terminating Assembly

---

**M****MD**

Mediation Device

**Midspan Meet**

The capability to interface between two lightwave terminals of different vendors. This applies to high-speed optical interfaces.

**MJ**

Major Alarm

**MM**

Multimode

**MML**

huMan-Machine Language defined by CCITT

**MN**

Minor Alarm

**MTBF**

Mean Time Between Failures

**MTBMA**

Mean Time Between Maintenance Activities

**Multiplexing**

The process of combining several distinct digital signals into a single composite digital signal.

**MUX**

Multiplex

**MXRVO Circuit Pack**

The MXRVO circuit pack multiplexes seven VT-G signals from the DS1 circuit packs to an STS-1 signal for connection to the OLIU circuit packs.

---

**N****NA**

No Acknowledgment

**NE**

Near End

**NE**

Network Element — The basic building block of a telecommunications network that meets SONET standards. Typical internal attributes of a network element include: one or more high- and low-speed transmission ports, built-in intelligence, synchronization and timing capability, access interfaces for use by technicians and/or operations systems. In addition, a network element may also include a time slot interchanger.

**NE-ACTY**

Near End Activity — An LED on the user panel.

**NEBS**

Network Equipment-Building System

**nm**

Nanometer ( $10^{-9}$  meters)

**NMA**

Network Monitoring and Analysis — An operations system designed by Bellcore which is used to monitor network facilities.

**NMON**

Not Monitored — A provisioning state for equipment that is not monitored or alarmed.

**Non-Revertive**

A protection switching mode in which, after a protection switch occurs, the equipment remains in its current configuration after any failure conditions that caused a protection switch to occur clear or after any external switch commands are reset. (See Revertive.)

**NRZ**

Nonreturn to Zero

**NSA**

Not Service Affecting

**NSAP**

Network Service Access Point

**NTF**

No Trouble Found

**Null**

Omitted; for example, no value, zero or space.

---

**O****OAM&P**

Operations, Administration, Maintenance, and Provisioning

**OC, OC-n**

Optical Carrier — The optical signal that results from an optical conversion of an STS signal; that is, OC-1 from STS-1 and OC-n from STS-n.

**OC-1**

Optical Carrier Level 1 Signal (51.84 Mb/s)

**OC-3 Interface Circuit Pack**

The FT-2000 OC-48 Lightwave System OC-3 interface circuit pack that interfaces with one bidirectional OC-3 signal.

**OC-3**

Optical Carrier Level 3 Signal (155 Mb/s)

**OC-3c (STS-3c)**

Optical Carrier Level 3 concatenated Signal — The low-speed broadband signal equivalent to 3 STS-1 signals linked together with a single path overhead

**OC-12**

Optical Carrier Level 12 Signal (622 Mb/s)

**OC-12 Interface Circuit Pack**

The FT-2000 OC-48 Lightwave System OC-12 interface circuit pack that interfaces with one bidirectional OC-12 signal.

**OC-48 RCVR**

The FT-2000 OC-48 Lightwave System OC-12 high speed receiver circuit pack that interfaces to the incoming OC-48 line (receive direction).

**OC-48 TRMTR**

The FT-2000 OC-48 Lightwave System OC-12 high speed transmitter circuit pack that interfaces to the outgoing OC-48 line (transmit direction).

**OHCTL**

The overhead controller circuit pack provides user access to the SONET overhead channels.

**OLIU**

Optical Line Interface Unit

**OOF**

Out of Frame

**OOL**

Out of Lock

**Operations Interface**

Any interface that provides information on the system performance or control. These include the equipment LEDs, user panel, CIT, office alarms, and all telemetry interfaces.

**OPS/INE**

Operations Systems/Intelligent Network Elements. This is an operations system that allows centralized provisioning of intelligent network elements.

**Original Value**

The value assigned to a parameter by the factory.

**OS**

Operations System — A central computer-based system used to provide operations, administration, and maintenance functions.

**OSI**

Open Systems Interconnect. This is a communications protocol of the International Standards Organization (ISO) for data communications.

**OSMINE**

Operations Systems Modifications for Intelligent Network Elements

**OSP**

Outside Plant

---

**P****Parameter**

A characteristic of the system that affects its operation.

**PC**

Personal Computer

**Phase Locked**

An operating condition of a clock in which it is locked to an external reference and is using time constants that are altered to quickly bring the local oscillator frequency into approximate agreement with the synchronization reference frequency.

**PID**

Private Identifier (or password).

**PINFET**

Positive Intrinsic Negative Field Effect Transistor

**PJC**

Pointer Justification Count

**Plesiochronous Network**

A network that contains multiple subnetworks, each internally synchronous and all operating at the same nominal frequency, but whose timing may be slightly different at any particular instant. For example in SONET networks, each timing traceable to their own Stratum 1 clock are considered plesiochronous with respect to each other.

**PLL**

Phased-Locked Loop

**PM**

Performance Monitoring — Measures the quality of service and identifies degrading or marginally operating systems (before an alarm would be generated).

**PMN**

Power Minor Alarm

**Proactive Maintenance**

Refers to the process of detecting degrading conditions not severe enough to initiate protection switching or alarming, but indicative of an impending signal fail or signal degrade defect (for example, performance monitoring).

**POH**

Path Overhead

**Port**

The physical, electrical, or optical interface on a system.

**Protection Line**

As defined by the SONET standard, the protection line is the pair of fibers (one transmit and one receive) that carry the SONET APS channel (K1 and K2 bytes in the SONET line overhead). On a DDM-2000 OC-3 system, a *protection* line is a pair of fibers that terminate on an OLIU circuit pack in the **main-2**, **fn-a-2**, **fn-b-2**, or **fn-c-2** slot. (See "Service Line.")

**PRM**

Performance Report Message

**PROTN**

Protection

**PSC**

Protection Switching Count

**PVC**

Permanent Virtual Circuit

**PWR**

Power

---

**R****RAM**

Random Access Memory

**RBOC**

Regional Bell Operating Company

**RC**

Receiver signal element timing (DCE to DTE)

**RD**

Received Data

**RL**

Repeat Later

**Reactive Maintenance**

Refers to detecting defects/failures and clearing them.

**Revertive**

A protection switching mode in which, after a protection switch occurs, the equipment returns to the nominal configuration (that is, the service equipment is active, and the protection equipment is standby) after any failure conditions that caused a protection switch to occur clear or after any external switch commands are reset. (See "Non-Revertive.")

**Ring**

A configuration of nodes comprised of network elements connected in a circular fashion. Under normal conditions, each node is interconnected with its neighbor and includes capacity for transmission in either direction between adjacent nodes. Path switched rings use a head-end bridge and tail-end switch. Line switched rings actively reroute traffic over a protection line.

**Ring (0x1) Low Speed Interface**

Formerly referred to as dual 0x1 or single 0x1. In ring applications, the DDM-2000 OC-3 and OC-12 Multiplexers use a 0x1 interface meaning both fibers carry service as opposed to a linear (1x1) low speed interface where one fiber is used for service and the other for protection.

**RT**

Remote Terminal — An unstaffed equipment enclosure that may have a controlled or uncontrolled environment.

**RTAC**

Lucent Technologies Regional Technical Assistance Center (1-800-225-RTAC)



**RTS**

Request To Send

**RZ**Return to Zero

---

**S****SA**

Service Affecting

**SA**

Service Area

**SCID**

SONET Carrier ID

**SD**

Signal Degrade

**SD**

Schematic Drawing

**SDH**

Synchronous Digital Hierarchy

**SDNR**

Status, Data Not Ready

**SEFS**

Severely Errored Frame Seconds

**Self-healing**

A ring architecture in which two or more fibers are used to provide route diversity. Node failures only affect traffic dropped at the failed node.

**SEFS**

Severely Errored Frame Seconds

**SEO**

Single-Ended Operations

**Service Line**

On a DDM-2000 OC-3 system, a service (or "working") line is a pair of fibers (one transmit and one receive) that terminate on an OLIU circuit pack in the **main-1**, or **fn-a-1**, or **fn-b-1**, or **fn-c-1** slot. As defined by the SONET standard, the SONET APS channel is not defined on a service (or "working") line. (See "Protection Line.")

**SES**

Severely Errored Seconds — A performance-monitoring parameter for an OC-3 line. A second with more than 32 errors is considered severely errored.

**SF**

Signal Fail

**Shelf ID**

A settable parameter with values of from 1 to 8. Used to log into a selected shelf in a bay using the CIT.

**SG**

Signal Ground

**SID**

Source Identifier and/or System Identifier

**Site ID**

A settable parameter with values of from 1 to 50. Displayed on SYSCTL circuit pack to indicate to which site the user panel alarms and LEDs apply.

**SM**

Single Mode

**SLC®-2000**

A next generation digital loop carrier (DLC) system with a built-in OC-3 SONET multiplexer. The system supports basic telephone service, a full complement of special services, Integrated Services Digital Network (ISDN), and Fiber in the Loop (FITL) through standard TR-08 and TR-303 interfaces.

**SONET**

Synchronous Optical Network

**SPE**

Synchronous Payload Envelope

**SQU**

Sync Quality Unknown. Used in synchronization messaging.

**SR**

Service Region

**SRD**

Software Release Description

**SROF**

Status, Requested Operation Failed

**SRVEFF**

Service affecting

**Standby**

Standby identifies a 1+1 protected OC-N line which is not currently selected by the receiver at either end as the payload carrying signal, or a 1x1 or 1xn protected circuit pack that is not currently carrying service. (See Active.)

**Star Topology**

For DDM-2000 FiberReach, this refers to a configuration of multiple point-to-point OC-1 extensions from a single DDM-2000 Multiplexer.

**Status**

The indication of a short-term change in the system.

**STS, STS-n**

Synchronous Transport Signal — The basic logical building block signal with a rate of 51.840 Mb/s for an STS-1 signal and a rate of n times 51.840 Mb/s for an STS-n signal.

**STS-1 SPE**

STS-1 Synchronous Payload Envelope — A 125-microsecond frame structure composed of STS path overhead and the STS-1 payload.

**STS-3c**

Synchronous Transport Level 3 concatenated Signal. See OC-3c.

**Subnetwork**

A subnetwork consists of a CO (or GNE) DDM-2000 and all the remote DDM-2000s connected via SONET section DCC that are enabled.

**SVC**

Switched Virtual Circuit

**Synchronous**

Refers to network elements that are timed from references traceable to a single Stratum-1 source.

**SYSCTL**

The system controller circuit pack that provides overall administrative control of the terminal.

---

**T****T1X1 and T1M1**

The ANSI committees responsible for telecommunications standards.

**TA**

Bellcore Technical Advisory

**TABS**

Telemetry Asynchronous Byte Serial (Protocol)

**TBOS**

Telemetry Byte-Oriented Serial (Protocol) — Defines one physical interface for direct connection between the telemetry remote and the monitored equipment. An RS-422 port is used to provide the operations system with sufficient alarm and status information to localize a problem to a given DDM-2000 and to determine the severity of the problem.

**TC**

Transmitter signal element timing (DCS to DTE)

**TCA**

Threshold-Crossing Alert — A condition set when a performance-monitoring counter exceeds a user-selected threshold. A TCA does not generate an alarm but is available

on demand through the CIT and is shown by TBOS and causes a message to be sent to NMA via the X.25/TL1 interface.

**TCVCXO**

Temperature-Compensated Voltage-Controlled Crystal Oscillator — A highly stable and accurate clock source used in the DDM-2000 TGS circuit pack.

**TD**

Transmitted Data

**TG3**

The FT-2000 OC-48 Lightwave System stratum 3 timing generator circuit pack that generates clock signals for distribution to the transmit circuits. It operates in the free-running, loop-timing, phase-lock, and holdover modes.

**TGS**

The timing generator circuit pack generates clock signals for distribution to the transmit circuits. It operates in the free-running, loop-timing, phase-lock, and holdover modes.

**TID**

Target Identifier — The Bellcore name for the system name.

**TL1**

Transaction Language 1 — A Bellcore machine-to-machine communications language that is a subset of CCITT's human-machine language.

**TLB**

Timing Looped Back. Used in synchronization messaging.

**TLMCTL**

The TLMCTL circuit pack provides the optional parallel telemetry interface in the central office DDM-2000 OC-3 Release 1.

**TOP**

Task Oriented Practice

**TR**

Bellcore Technical Requirement

**TSA**

Time Slot Assignment

**TSI**

Time Slot Interchange

**TSO**

Technical Support Organization — Supports RTAC and the customers.

---

## U

### UAS

Unavailable Seconds

### UID

User Identifier (or login).

### Unidirectional

A protection switching mode in which the system at each end of an optical span monitors both service and protection lines and independently chooses the best signal (unless overridden by an equipment failure or by an external request, such as a forced switch or lockout). In a system that uses unidirectional line switching, both the *service* and *protection* lines may be *active* simultaneously, with one line carrying traffic in one direction and the other line carrying traffic in the other direction. The K1 and K2 bytes in the SONET line overhead are used to convey to the far end which line the near end receiver has chosen, so that an "active" indication may be made at the far end.

### UPD/INIT

A pushbutton on the user panel.

---

## V

### VCS

Virtual Circuit Switch (for example, *Datakit®*)

### VF

Voice Frequency

### VLSI

Very Large Scale Integration — Refers to very complex state of the art integrated circuits.

### VM

Violation Monitor — A mode of the DS3 circuit pack in which it will monitor but not remove P-bit parity violations on the DS3 signal received from the fiber.

### VMR

Violation, Monitor, and Removal — A mode of the DS3 circuit pack in which it will monitor and remove P-bit parity violations on the DS3 signal received from the fiber.

### VT

Virtual Tributary — A structure designed for transport and switching of sub STS-1 payload.

### VT1.5

A 1.728 Mb/s virtual tributary

**VT-G**

Virtual Tributary Group — A 9-row by 12-column SONET structure (108 bytes) that carries one or more VTs of the same size. Seven VT groups (756 bytes) are byte-interleaved within the VT-organized STS-1 synchronous payload envelope.

---

**W****WAN**

Wide Area Network

**WFA**

Work Force Administration

---

**Z****Zero Code Suppression**

A technique used to reduce the number of consecutive zeros in a line-codes signal (B3ZS for DS3 signals and B8ZS for DS1 signals).

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# Index

---

## A

Allow or Inhibit Alarms, 2-2  
ASCII-based terminal, 2-11  
Automatic Tag (ATAG) Numbering, 2-9

---

## C

Cabling, 2-21  
Circuit Packs, 2-1  
CIT  
    ASCII-based terminal, 2-11  
    dumb terminal, 2-11  
COACH, xxx  
COACH user's guide, xxxii  
compatibility data, xxxii

---

## D

*Datakit®* Provisioning, 2-12  
diagnostic dictionary, xxxii  
Document ordering, xxxiii  
    one-time orders, xxxiii  
    standing orders, xxxiii  
Documentation,  
    electronic, xxxiv  
documentation support, xxxiii  
documents, xxi  
drawings, xxv  
Drawings, xxv  
DTE Configuration, 2-9  
dumb terminal, 2-11

---

## E

electronic, xxxiv

---

## F

FT-2000 Cabling, 2-21  
FT-2000 Parallel Telemetry, 5-1  
FT-2000 serial telemetry (TBOS), 4-1

---

## G

Gateway Network Element Provisioning, 2-3

---

## H

How to comment on this document, xxxiv  
How to order documents, xxxiii  
How to request standing orders for  
    documents, xxxiii  
How To Use This Document, xx

---

## I

Intended audiences, xix  
Introduction, 1-1  
Introduction to Operations Systems  
    Interfaces, 1-2  
Introduction to This Document, 1-1, 1-3

---

## L

Lucent Technologies 2000 Product Family, 1-1  
Lucent Technologies practices, xxi

---

## M

Miscellaneous Discrete Environmental Alarm  
    Level, 2-4  
Miscellaneous Discrete Environmental  
    Description, 2-4

---

## N

National Product Training Center, xxix  
news and bulletins, xxxii  
NMA, 2-1  
NMA equipment data base definition, 4-58  
NMA field label to TL1 parameter name  
    mapping, 4-57  
NMA service effect, 4-57  
NMA signal levels, 4-58  
NMA threshold level, 4-57

---

## O

One-time document orders, xxxiii  
one-time orders, xxxiii  
OS Types, 2-2  
OS types, 2-8

---

## P

Parallel telemetry test, 5-3  
PCNs, xxxv  
Port Configuration, 2-18  
Product change notifications, xxxv  
Product support,  
    documentation support, xxxiii  
    technical, xxx  
Provisioning Autonomous TL1 Messages for  
    Releases 5.0 and Later, 2-8

---

## R

Reason for Reissue, xix  
Related documentation, xxi  
    drawings, xxv  
    Lucent Technologies practices, xxi  
    related equipment, xxviii  
related equipment, xxviii  
Repeater Fault Locating, 2-5  
Repeater Site Provisioning, 2-3  
RTAC, xxx

---

## S

Security, 2-5  
Standing order document orders, xxxiii  
standing orders, xxxiii  
Support,  
    COACH, xxx  
    documentation support, xxxiii  
    documents, xxi  
    drawings, xxv  
    RTAC, xxx  
    technical, xxx  
    training courses, xxix

---

## T

Target Identifier (TID), 2-3  
TBOS alarm and status point — TL1  
    translation, 4-50  
TBOS alarm and status points, 4-8  
TBOS control points, 4-43  
TBOS test, 4-7  
technical, xxx  
Technical support,  
    COACH, xxx  
    COACH user's guide, xxxii  
    compatibility data, xxxii  
    diagnostic dictionary, xxxii  
    news and bulletins, xxxii  
    RTAC, xxx  
TL1 Autonomous Messaging in Release 4.1  
    and Earlier, 2-7  
TL1 commands through CIT(DCE) and  
    CIT(DTE), 2-11  
TL1/X.25 Interface, 2-1  
TL1/X.25 interface — PVC assignments, 2-7  
TL1/X.25 interface — SVC assignments, 2-7  
TL1/X.25 Interface — X.25 Packet Layer  
    Parameters, 2-9  
training courses, xxix  
Training courses, xxix



---

## **X**

X.25 Interface, 2-1

X.25 technical specifications, 2-7