

## What is NAP 2.3/TCS 2.4 Addendum 2

The NAP 2.3/TCS 2.4 Addendum 2 is the second addendum to NAP 2.3/TCS 2.3 Issue 1.

- Addendum 1 included all of the changes in moving from TCS 2.3 to TCS 2.4. The title of the book changed with that addendum.
- Addendum 2 contains a small number of changes to commands and procedures. The book name stays the same.

Your current manual (that you will change pages in) should be:

INTUITY™ CONVERSANT® System Network Adjunct Platform (NAP) 2.3  
with Transfer Connect Service (TCS) 2.4 Operation, Administration, and Maintenance

The updated book will consist of white pages from the original NAP 2.3/TCS 2.3 book interspersed with blue pages from Addendum 1, and yellow pages from Addendum 2.

## Change pages for NAP 2.3/TCS 2.4 Addendum 2

To create the NAP 2.3/TCS 2.4 Addendum 2, insert the enclosed change pages into the current NAP 2.3/TCS 2.4 manual as explained below:

What Are the Changes?	What to Do
Changes in title, comcode and document number	Replace title page with NEW title page
Changes throughout the book	Replace the book TOC with NEW book TOC
Changes in Chapter 4 (next item)	Replace Chapter 4 TOC with NEW Chapter 4 TOC
New procedure for making application image tapes	Replace pp. 4-83 through 4-86 with NEW 4-83 through 4-86
Changes in Chapter 5 (next 6 items)	Replace Chapter 5 TOC with NEW Chapter 5 TOC
New commands in command cross-reference table	Replace 5-7 through 5-10 with NEW 5-7 through 5-10
Changed example for <b>db_reload</b>	Replace 5-37.b/5-37.c with NEW 5-37.b / 5-37.c
New <b>dispclk</b> command	Replace 5-45/5-46 with NEW 5-45, 5-45.a, 5-45.b, and 5-46
New "See Also" for <b>resetclk</b>	Replace 5-125/5-126 with NEW 5-125/5-126
New <b>setclk</b> command	After 5-132, insert NEW 5-132.a/5-132.b
New procedure for using <b>snapshot</b>	Replace 5-135/5-136 with NEW 5-135/5-136
Changes in Chapter 6 (next item)	Replace Chapter 6 TOC with NEW Chapter 6 TOC
New sections for replacing a Communicore back-plane and connecting the intersubrack cable	Replace 6-37/6-38 with NEW 6-37 through 6-42
Changed references to using <b>snapshot</b>	Replace A-21/A-22 with NEW A-21/A-22
New index entries and some changed pagination	Replace the book index with the NEW book index

**Lucent Technologies**  
Bell Labs Innovations



**INTUITY™ CONVERSANT® System**  
Network Adjunct Platform (NAP) 2.3  
with Transfer Connect Service (TCS) 2.4  
Operation, Administration, and Maintenance  
Addendum 2

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Issue 1-1, December 1996

For additional documents, refer to the section in "About This Document" entitled "Related Resources."

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#### **Acknowledgment**

This document was prepared by the Product Documentation Development, Lucent Technologies, Denver, CO.

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## About This Book

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### **What's in This Book?**

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This book provides the following information for the AT&T INTUITY™ CONVERSANT® Network Adjunct Platform (NAP) 2.3:

- Understanding NAP 2.3 functionality, hardware, network configurations, external interface, and application software
- Understanding TCS Release 2.4 functionality, hardware, network configurations, external interface, and application software
- Preparing the installation site and installing the hardware
- Operating the platform hardware
- Installing, administering, and testing software
- Command references
- Platform and application alarm messages
- Maintaining, configuring, and repairing NAP hardware
- Upgrading hardware and software
- Maintaining, troubleshooting, and repairing NAP-specific connectivity, including StarLAN 10, the Datakit® wide-area network (DWAN), and fiber links to provisioning and maintenance (PM) hardware

## How to Use This Book

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Table 1 summarizes the major tasks explained in this book, and shows you where to go for the information you need.

**Table 1. Using This Book**

<b>Tasks</b>	<b>Go To</b>
Using this book and finding what you need	You're here!
Learning about hardware, software operation, network configurations, external interfaces, and application software features	Chapter 1, "Understanding NAP"
Preparing the NAP site and installing the hardware (voice processor, provisioning and maintenance machine, Communicore)	Chapter 2, "Hardware Installation"
Learning about the hardware switches and indicators	Chapter 3, "Operating Instructions"
Operating the platform hardware	Chapter 3, "Operating Instructions"
Installing and administering software	Chapter 4, "Software Installation and Administration"
Performing software acceptance testing	Chapter 4, "Software Installation and Administration"
Looking up commands for platform and application software	Chapter 5, "Command Reference"
Troubleshooting non-alarm problems	Chapter 6, "Troubleshooting"
Interpreting and troubleshooting system messages and alarms	Chapter 7, "Alarm Resolution"
Maintaining the NAP site	Chapter 8, "Maintenance"
Configuring circuit cards, modules and peripheral devices	Chapter 8, "Maintenance"
Upgrading and installing NAP and application hardware and software	Appendix A, "Upgrading to TCS Release 2.4"

*Continued on next page*

**Table 1. Using This Book — *Continued***

<b>Tasks</b>	<b>Go To</b>
Wiring diagrams for NAP equipment in both 5ESS and 4ESS cabinets	Appendix B, "Wiring Diagrams"
Checking hardware installation and software installation and administration	Appendix C, "Site Acceptance Procedures for Hardware and Software Installations"
Administering Datakit switch	Appendix D, "Datakit Switch Administration"

The index is the best and quickest way to find information. The glossary and list of abbreviations define terms and abbreviations used in NAP support. If you can't find what you are looking for, go to the index. If you are not familiar with a term or abbreviation, look at the glossary or list of abbreviations.

## **Intended Audiences**

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This book is a task-based, procedural book designed and written for the following audiences:

- The Onsite Work Force (OSWF) that operates, administers, maintains, and provisions the NAP platform and applications.
- Technology Control Center (TCC), tier II support, which is responsible for resolving basic hardware and software alarms, isolating faults, and diagnosing problems.
- Total Network Management (TNM), operational support system, which handles network alarms.
- National Electronic Systems Assistance Center (NESAC), tier III support, which is responsible for resolving hardware and software alarms and performing diagnostics.
- Production Management Organization (PMO), which supplies administration and maintenance support for NAP.

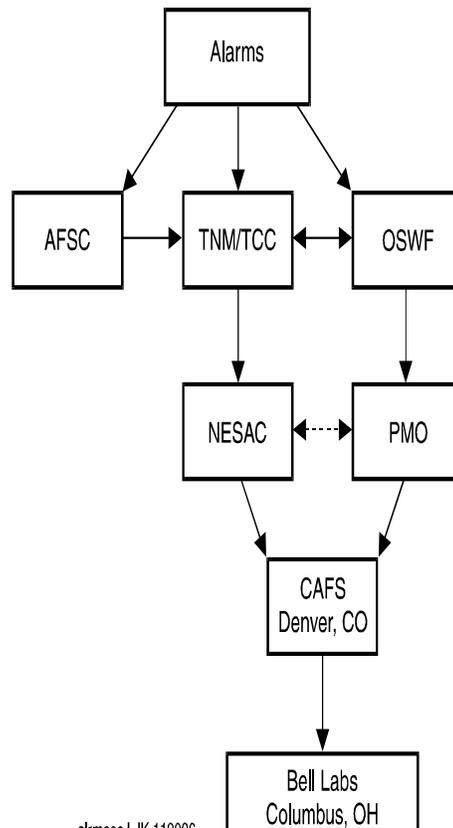
- CONVERSANT Applications Field Support (CAFS), tier IV support, which is responsible for hardware and software alarm resolution, fault isolation, maintenance, remote diagnostics, and, when necessary, for providing procedural assistance to persons installing or operating NAP hardware and software and application software.
- CONVERSANT Support, tier IV support, which serves as the escalation point for problems or questions that CAFS cannot resolve.

## Getting Technical Help

All alarms and informational messages are sent to the Total Network Management/Technology Control Center (TNM/TCC). The TCC, which can dispatch an onsite work force (OSWF), escalates to the National Electronic Systems Assistance Center (NESAC).

If necessary, the NESAC and the PMO can escalate troubles to the CONVERSANT Applications Field Support (CAFS), which is the development organization in Denver, Colorado. CAFS then, if necessary, can escalate troubles to the tier IV group in Columbus, Ohio.

Figure 1 shows the alarm escalation path.



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**Figure 1. Alarm Escalation Path**

## Related Resources

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The following books make up the CONVERSANT platform documentation. Of these books, a few are directly relevant to NAP.

You *must* have the books listed below to support NAP.

- *CONVERSANT Voice Information System (VIS) Version 4.0 Software Installation*, 585-350-111
- *CONVERSANT Voice Information System (VIS) Version 4.0 Maintenance*, 585-350-112

Additional CONVERSANT books that may be of use and that should be part of your CONVERSANT library include:

- *CONVERSANT Voice Information System (VIS) Version 4.0 Application Development*, 585-350-208
- *CONVERSANT Voice Information System (VIS) Version 4.0 Operations*, 585-350-703
- *CONVERSANT Voice Information System (VIS) Description*, 585-350-207
- *CONVERSANT Voice Information System (VIS) Planning*, 585-350-602
- *CONVERSANT Voice Information System (VIS) Version 4.0 Command Reference*, 585-350-209
- *CONVERSANT Voice Information System (VIS) Version 4.0 Installation Checklists*, 585-350-113
- *CONVERSANT Voice Information System (VIS) Version 4.0 Change Description*, 585-350-402
- *CONVERSANT Voice Information System (VIS) External Alarms*, 585-350-801
- *MAP/100C Voice Processing Hardware Installation*, 585-350-108
- *CONVERSANT Voice Information System (VIS) Version 4.0 Operations*, 585-350-703
- *CONVERSANT Voice Information System (VIS) Version 3 CompuLert/SCCS*, 106713274

Books that reference system security issues include:

- *GBCS Products Security Handbook*, 555-025-600
- *Security Watchdog for the AT&T Network (SWAN) User's Guide*, Release 2.0, Issue 1, February 1995

The following books are references for setting up LAN components.

- This book is necessary for installing the NAU:
  - *StarLAN 10 Network PC NAU Installation Guide*, 999-120-720

- You need one of the following books, depending on the LAN hub in your configuration:
  - *StarLAN 10 Network Hub Unit Installation Guide*, 999-120-722
  - *StarLAN 10 Network SmartHUB Installation and Operation Guide (for Model B and Model E)*, 999-120-771
  - *LattisHub™ 10BASE-T Workgroup Concentrators*, SynOptics Communications, Inc. December 1992, 893-573-A
- The following books may be helpful resources also:
  - *Datakit II Release 3.2 Host Interface for an AT&T 6386 WGS*, 255-110-105
  - *UNIX System V/386 Release 3.2(.3) System Administrator's Guide*
  - *UNIX System V/386 Release 3.2(.3) User's Guide*

## **Book Conventions**

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The following conventions are used throughout this book:

- Data that you must type is shown in bold type:

**cliadm**
- Variables, or strings for which you should substitute your own information, are shown in italics or bold italics, and are bracketed:

**cliadm [-d] [-r] [-l] [-v <cli>]**

Italics also introduce new terms or emphasize information.
- Information displayed on your computer terminal uses this typeface:

Enter a location code:
- Commands that require you to press **ENTER** after you type them begin with the word *Enter*. Pressing the keyboard key is implied. For example, you would type the word **audresult** and then press **ENTER** for the following step:

Enter the **audresult** command.
- Commands that *do not* require you to press **ENTER** begin with the word *Type*. For example:

Type **yes** when you see the system prompt.

When used in this book, the term *network* refers specifically to the AT&T 4ESS network, and only to that network.

The term *provisioning and maintenance (PM) machine* is synonymous with *OAM&P machine*.

## **How to Comment on This Book**

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# Understanding NAP

# 1

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## What's in This Chapter?

This chapter describes AT&T INTUITY CONVERSANT System Network Adjunct Platform (NAP) and its application software packages. This chapter contains an overview of the NAP components and configuration and descriptions of the:

- NAP platform software
- NAP hardware
- External interfaces to NAP
- Application software

If you cannot find what you need, or for more information, first check the index and then the list of related resources in the preface, "About This Book."

## **Overview of the NAP Platform**

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The AT&T INTUITY CONVERSANT System Network Adjunct Platform (NAP) is a hardware/software platform configured in a 4ESS network environment to provide voice-processing capabilities for software applications.

### **NAP Software Components**

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The NAP software components are:

**Table 1-1. NAP Software Components**

<b>Software Component</b>	<b>Function</b>
UNIX System V Release 3.2.3	Operating system
CONVERSANT 4.0	Generic Voice Information System (VIS) software
NAP software package	Platform background and OAM&P <sup>a</sup> commands
MAP <sup>b</sup> 2000 base system package	MAP 2000 platform software
MAP 2000 downloadable firmware package	Firmware for the Communicore
Core Maintenance Features (CMF)	Platform utilities and OAM&P commands and reports
Practical Extraction and Reporting Language (Perl)	Platform support utilities

a. operations, administration, maintenance, and provisioning

b. Multi-Application Platform

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For a detailed description of the NAP software components, refer to "Descriptions of NAP Software" on page 1-7.

## **NAP Hardware Components**

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The major NAP hardware components are:

**Table 1-2. NAP Hardware Components**

<b>Hardware Component</b>	<b>Function</b>
AT&T INTUITY CONVERSANT System MAP 2000 (MAP 2000), consisting of: <ul style="list-style-type: none"> <li>■ One MAP/100C</li> <li>■ One Communicore<sup>a</sup> switch</li> </ul>	Voice processing system
MAP/100C (besides the MAP/100C in the MAP 2000)	Provisioning and maintenance system
LAN hubs	Dual LAN connectivity

a. The Communicore has also been known as the UNICORN and the MCH-1000. (modular communications hub)

For a detailed description of the NAP hardware components, refer to "Descriptions of NAP Hardware" on page 1-21.

## **NAP Site**

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A NAP site includes:

- Voice-processing (VP) machines
- Provisioning and maintenance (PM) machines

Because each NAP site consists of multiple VPs, total site failure is unlikely barring fire or some other catastrophe. NAP-site isolation is more likely due to common network interface (CNI) ring and/or D-channel node failure.

Each NAP site is in a 4ESS central office (CO). Each VP connects to a 4ESS through an Integrated Services Digital Network Primary Rate Interface (ISDN-PRI). NAP sites back up other sites for overflow and disaster recovery. The customer-record database is identical at all sites that back up each other.

## **NAP System Configuration**

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The NAP system configuration includes the following site components and administrative network components:

Site components:

- From one to twenty VP machines  
Up to 20 VP machines (typically 10) can be networked together through dual LANs at a NAP site.  
The number of VPs depends on the type of application software.
- Preferred and secondary PM machines (MAP/100C machines configured as PMS)
- Dual LANs providing connectivity between VP and PM machines, and between preferred and secondary PMS
- ISDN-PRI T1 links between the VP and 4ESS

Administrative services network components:

- AT&T Network Services Datakit Wide Area Network (DWAN) for remote access to NAP sites
- Service Management Workstation (SMW) functions for remote provisioning
- Total Network Management (TNM) for remote alarming
- Data Collection and Reporting Operations System (DCROS) for NAP traffic-measurement reports

An example of NAP site configuration is shown in Figure 1-1. This example shows a TCS (Transfer Connect Service) site.

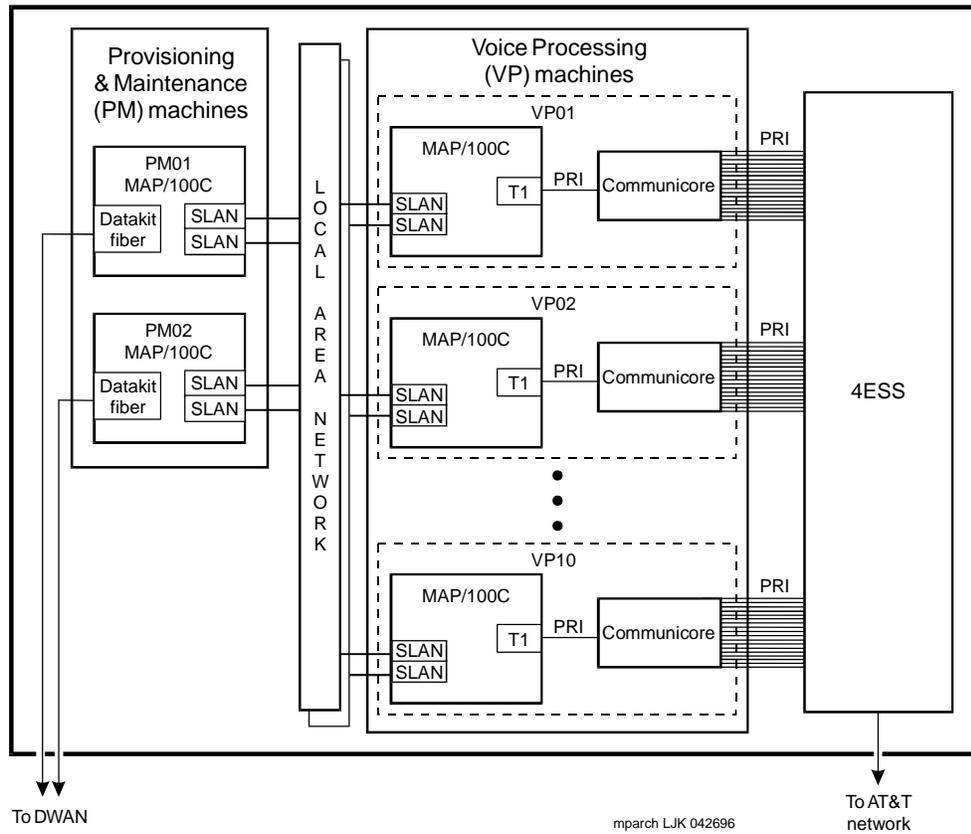
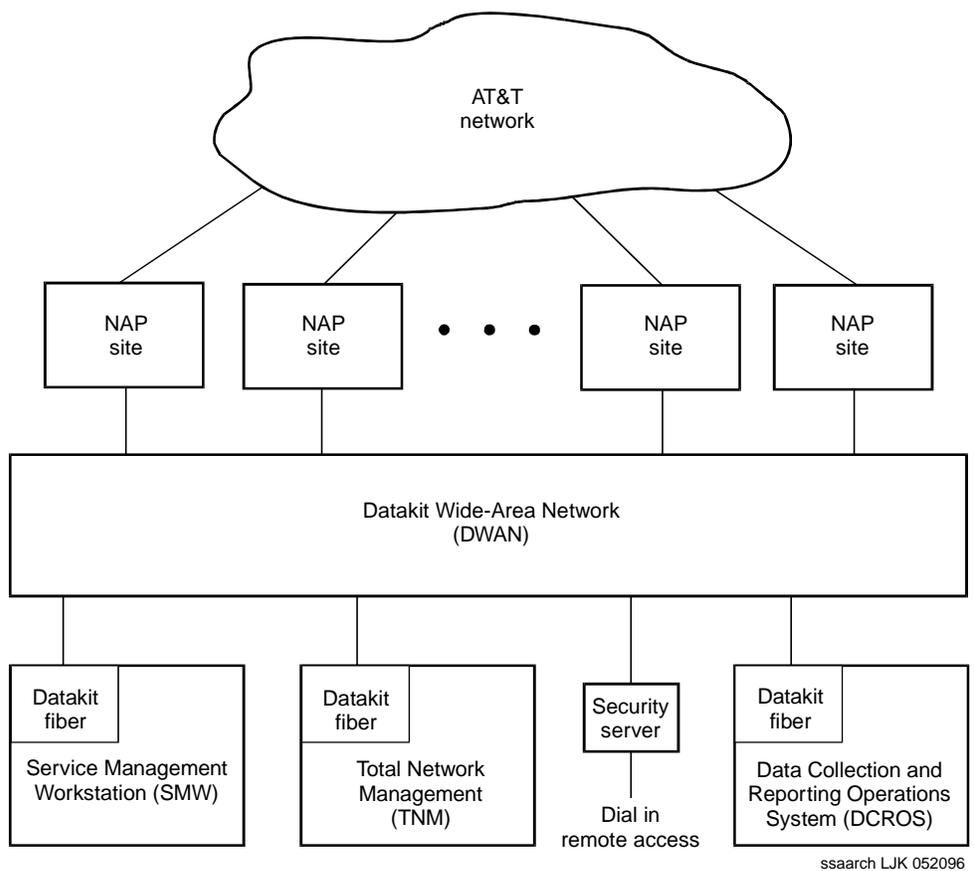


Figure 1-1. NAP Site Configuration for TCS

The relationships of NAP to the AT&T network and to administrative support services through DWAN is shown in this figure:

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**Figure 1-2. NAP Network Architecture**

## **Descriptions of NAP Software**

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The following pages describe the software components that make up the NAP platform, followed by brief descriptions of the application software packages that can run on the NAP platform.

### **NAP System Software**

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NAP platform software is based on two system packages:

- UNIX System V Release 3.2.3 operating system
- CONVERSANT 4.0 generic system software

### **Other NAP Software**

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#### **NAP Software Package**

The NAP software package provides NAP background processing and OAM&P support commands for the system.

#### **MAP 2000 Base System Package**

The MAP 2000 base system package implements and provides access to MAP 2000 capabilities.

#### **MAP 2000 Downloadable Firmware Package**

The MAP 2000 downloadable firmware package is a set of files that are downloaded to upgrade the firmware of the Communicore modules.

#### **Core Maintenance Features Package**

The Core Maintenance Features package provides standardized OAM&P support utilities, commands, and reports for the system.

#### **Perl Package**

The Practical Extraction and Reporting Language (Perl) provides utilities (a set of run-time libraries and an interpreter) that can be used with the NAP package.

## Other Software

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### SWAN Release 2.0 Software Security Package

Security Watchdog for the AT&T Network (SWAN) monitors security-related events and generates reports that point out where security vulnerabilities may lie.

SWAN Release 2.0 also features:

- A statistical report that provides a summary of deteriorating situations on the system
- Alarms that call attention to dangerous situations
- A menu-driven interface

#### **NOTE:**

SWAN Release 2.0 is not provided by the CAFS (CONVERSANT Applications Field Support) organization. To obtain SWAN, send email to the AT&T Network Security System at [atmail!swantech](mailto:atmail!swantech).

If you have problems with SWAN Release 2.0, either refer to the document that comes with the package [*Security Watchdog for the AT&T Network (SWAN) User's Guide* Release 2.0, Issue 1, February 1995] or call the AT&T Network Security System. The Denver CAFS organization cannot support SWAN.



#### **CAUTION:**

*Before installing SWAN Release 2.0, please carefully read the following guidelines.*



#### **WARNING:**

*Running SWAN on your system may impair machine performance.*

### SWAN Release 2.0 Guidelines

The package installs easily according to the directions in the user guide. A significant amount of hands-on customizing is required to set up the system initially, such as:

- Defining where the applications are
- Setting directory and file permissions
- Running the reports to get a baseline

Extensive requirements are imposed on system files to avoid warnings in the reports; for example, cron files should have no permissions.

Each time there is an upgrade to any critical file, the report that looks at that file must be baselined again.

Although the reports provide meaningful information, a security administrator needs to be responsible for:

- Viewing the reports regularly
- Determining corrective actions
- Handling the administration required by software upgrades

System performance may be degraded while the daily reports are run. In tests, the daily reports required 1½ to 2 hours to complete. This could cause system performance problems if the system is fairly active. Weekly and monthly reports may not be a problem because they are spread out over the week or month.

### **Application Software**

All the software described above make up the NAP platform and configure it to serve as a host for one or more applications. NAP can run application software for various applications such as Transfer Connect Service.

### **Transfer Connect Service**

The Transfer Connect Service<sup>SM</sup> (TCS) application provides post-answer call-redirection features for toll-free calls initiated in the AT&T network.

## **VP Software Functions**

VP machines provide the call processing and redirection capabilities for the application software.

VP machines also:

- Take database updates from PMs to keep customer-record information current
- Collect call measurements for all calls and send these to the PMs
- Monitor system functionality and send generated alarms to the PMs

Each of the functions listed above is caused by a series of software processes, which are summarized in the following sections.

### **Call Processing**

The data interface process (DIP) handles call-flow logic; the DIP is the focal point of NAP call handling. The DIP controls the VP script through interprocess communication (IPC) messages. One DIP handles all channels for a given VP. Other functions of the DIP are to:

- Receive incoming calls, or signaling and tones associated with incoming calls
- Query the VP database
- Play announcements
- Select outgoing trunks and set up calls

### **Database Management**

The process responsible for database handling in the VP is the database file manager (DBFM). The DBFM's functions are to:

- Listen to the PMs for call record updates
- Look up call-processing data for call-processing and routing tasks

When a call-setup message comes in from the 4ESS, the DIP requests the DBFM to look up the appropriate routing information in the customer database, and the DBFM then returns this information to the DIP.

### **Call Measurement Collection and Transmission**

The DIP also collects call measurement information for each call. At the end of each call, this measurement information is sent to a PM via the bundle process (BUNDLE).

## **System Monitoring and Alarm Transmission**

All VP software processes (whether platform software or application software) are monitored for errors. These errors are sent to the logdaemon/alerter process, which filters error conditions and determines whether alarms should be raised for those error conditions. If alarms are raised, the logdaemon/alerter sends them to the alarm manager (ALRM\_MGR), which in turn sends the alarms to ALRM\_SND (alarm send) on the PMs. ALRM\_SND on the primary PM then transmits these alarms to Total Network Management (TNM).

## **PM Software Functions**

Dual, identical PMs provide centralized administration, as well as alarm and database management and remote troubleshooting access for the VP machines at a NAP site. PMs download customer-record information to the VPs and the other PM, track and distribute alarms, and provide call measurements to DCROS. The following sections explain the PM functions.

The SMW allows the Advanced Features Service Center (AFSC) personnel to provision customer-record information for each NAP. The PM distributes duplicate copies of these records to all VPs at a site and to the other PM. A database of customer records is retained at each VP and each PM, and is used in processing calls received from the 4ESS.

### **⇒ NOTE:**

PMs are dual, identical machines. Both PMs at a NAP site are active at all times. One PM is administered as preferred, and this PM serves as the centralized collection point for measurement data and alarm messages from all VP machines at the site. The SMW system accesses both PMs on a daily rotating basis to ensure that both PMs are working at all times.

PMs perform the following functions:

- Manage customer-record databases for each site
- Manage call-measurement data collection for each site (they collect VP call measurements and file them for transfer to DCROS)
- Accept customer record additions, changes, deletions, and queries from the SMW
- Maintain the customer-record database; accept and store a copy of the master site database from the SMW; maintain VP adjunct-database integrity at a site
- Collect alarms for all VP machines and the other PM, and relay these alarms through Datakit to TNM
- Provide centralized access for VP and PM maintenance, diagnosis and provisioning, and system administration, both through TNM and through direct terminal access

- Synchronize clocks with DCROS by using daily timestamps from DCROS. The PMs change their internal clocks accordingly and send these revised system times to the VP machines.

Each of the functions listed above results from a series of software processes, which are summarized in the following sections.

## **PM-Related Software Processes**

### **Database Auditing**

The remote transmission (REMTRANS) process keeps track of all information entered into the system. In addition, an AUDIT process does the following:

- Runs once a day and can be run on demand through the NAP administration interface

The AUDIT can be triggered by bringing an administered inactive VP or PM to the active state, and by booting a VP that has no database. In addition, the AUDIT can run in real time, with customer records actually entering the system.

- Ensures that all machines are synchronized

The AUDIT does a checksum match on the database to check for machines in synch. If machines are not in synch, the AUDIT pulls customer-record files, compares them with master database files on the PM, and corrects errors line by line. This process also audits the SMW-provisionable files — speed dialing, jurisdictional screening, invalid NPA, (numbering plan area, or area code), and invalid NXX (first three digits of the phone number after the area code).

**Call Measurement Collection and Formatting.** The measurement collection (MCOL) process collects and formats data on the preferred PM as follows:

- The bundle process (BUNDLE) sends measurement data to MCOL on the preferred PM. If BUNDLE cannot talk to the preferred PM for some reason, BUNDLE sends the data to the secondary PM. It may take up to one minute for BUNDLE to realize that it cannot talk to the preferred PM, and it will then send the measurement data to the secondary machine.
- RESYNC periodically synchronizes data between PMs to ensure complete duplication.
- MUNGER collapses statistics and stores up to one week's worth of measurement data.
- DCRIP (DCROS interface process) generates measurement files for on-demand DCROS reports. DCROS polls these files just after midnight every day through the DCRIP process.

## SMW Interface Processes

**Customer-Record Provisioning.** Customer records are provisioned as follows:

- The SMW provisions NAP sites through existing connections to the PMs.
- The SMW interface process (SMWI) takes customer record add/update/delete operations, applies these to the local PM database, and then sends a message to the remote transaction (REMTRANS) process to propagate these records to all VP machines and the other PM.
- The SMWI waits for a reply message verifying that the record propagation to the other PM was successful or that it failed.

The SMW (administered with PM Datakit addresses and with predefined PM user IDs and passwords) and the PM Datakit administration are manually coordinated. This enables the SMW to dial into the NAP site, log in to the PM machines, and then invoke SMWI, which runs only for the duration of a given connection.

**Customer-Record Querying.** The SMW retrieves local database information from the PM database and places this information in files. When all data is in a file that the SMW can accept, the PM tells the SMW to get that file. At this point, the SMW copies the file from the PM to the SMW. Two connections can be made at the same time: one for individual record transactions and one for long transactions (such as database queries) where much data is transmitted.

**Customer-Record Updating.** Customer records are updated as follows:

- When the SMW delivers a propagation message to REMTRANS on the PM, REMTRANS records transaction start times and issues updates to the VP machines and to the other PM.
- For customer-record changes and additions, REMTRANS sends changes to the VP database file manager (DBFM) and to the other PM (OPM) processes, which then apply database changes to local copies of the database on that machine.

**⇒ NOTE:**

REMTRANS is a permanent software process running on the PM that takes any database transactions and applies them to all appropriate VP and PM machines. If a transaction does not go through, REMTRANS keeps trying and tracks those machines that are not updated successfully. An alarm will be generated for those machines that are not successfully updated.

**Data File Propagation.** DFP disseminates data to the VPs and makes sure that they have up-to-date data.

## TNM Software Processes

**Alarm Collection and Transfer.** All VP and PM software processes (both platform and application software) are monitored for errors. These errors are sent to the logdaemon/alerter process, which filters error conditions and determines whether alarms should be raised for those error conditions. If alarms are raised, the logdaemon/alerter sends them to the alarm manager, which in turn sends them to the alarm send process (ALRM\_SND), and ALRM\_SND then transmits these alarms to TNM.

 **NOTE:**

Although both the preferred and secondary PMs track alarms from the VPs, only one of the PMs actually raises and sends these alarms to TNM.

**Accessing Machines for Maintenance and Diagnosis.** Direct access to PM maintenance and diagnostic tools is available when you are logged into a PM directly through a remote terminal. If logged in this way, you can change machine states, perform remote maintenance and diagnostics on other machines, and perform communication checks and on-demand audits. Chapter 6, "Troubleshooting" explains maintaining and diagnosing NAP sites.

Chapter 5, "Command Reference" explains the commands for administering NAP.

## **Application Software**

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The following application software packages are currently available for the NAP platform:

- Transfer Connect Service (TCS)

### **Transfer Connect Service**

---

The Transfer Connect Service<sup>SM</sup> provides post-answer call-redirection features for toll-free calls initiated in the AT&T network.

- Transfer or redirect calls to another destination
- Conference additional people on a call
- Consult with another party without dropping the initial call

### **A Typical TCS Call Scenario**

Typically, TCS transfer and redirection works this way:

1. A caller (also called the calling party, or CP) dials an AT&T toll-free number and reaches a subscriber (also called the redirecting party or RP).
2. The subscriber (RP) asks for a call to be redirected by entering touch tones that include the request for redirection, as well as the toll-free number of the party receiving the call (also called the target party or TP).
3. When an RP requests redirection, the caller is put on hold. The 4ESS network sets up the call to the TP, and when the call is answered, the RP and TP may consult. (If the RP disconnects before or while the 4ESS network sets up a call to the TP, the network connects the caller to the TP as instructed by the RP.)

#### **⇒ NOTE:**

The previous example is a typical scenario. The possibilities for a specific call depend on the TCS feature used; for example, the RP cannot consult with the TP using Soft Transfer or Blind Transfer. The features are more fully explained in "TCS Features" on page 1-16.

TCS enables redirected calls to make efficient use of trunk resources, thereby saving customers money on calls redirected through the network.

### **Example of TCS Call Transfer and Redirection**

Here is an example of how TCS could be used for call transfer and redirection:

A caller phones a major clothes retailer, using the toll-free number in the retailer's catalog. The caller is concerned about a billing error. The attendant who receives the call corrects the billing error and gives the caller immediate credit. With TCS, the attendant can then suggest that the caller accept a call transfer to the catalog department, which might be located in another state, to take immediate advantage of the credit.

### **TCS Features**

The TCS call-redirection features include:

- Blind Transfer (BT) — allows a subscriber to transfer or redirect a call in progress to another destination without confirmation of transfer success
- Soft Transfer (ST) — allows a subscriber to transfer or redirect a call in progress to another destination and to stay on the call until confirmation of transfer success
- Enhanced Soft Transfer (EST) — allows a subscriber to transfer or redirect a call in progress to another destination (allows multiple redirections) and to consult with the third party before transferring the call
- Consultation and Conference (CC) — allows 3-way calls and multiple redirections

Each of the four features has two options: Human or Voice Response Unit.

- Human Agent option (H)
  - The redirecting party (RP) is a human agent.
  - TCS plays verbal announcements to the RP.
- Voice Response Unit option (V)
  - The redirecting party (RP) is a voice response unit (VRU).
  - TCS plays dual-tone multifrequency (DTMF) tones to the RP.

The following sections explain the TCS features in more detail.

### **Blind Transfer (BT-V and BT-H)**

Blind transfer is the most basic of TCS features. The blind transfer feature allows inbound subscribers to transfer or redirect a call in progress to another destination, without confirmation of transfer success to the RP. No conference, consultation, or monitoring of call progress is provided.

TCS supports out-of-band (OOB) data transfer from the RP to the TP upon TP call setup. Both BT-V and BT-HT with OOB are supported.

Rather than disconnecting the RP as soon as a valid transfer is requested, a provisionable timer gives the RP three seconds to send a disconnect message to the adjunct. The RP may send 100 octets of data within the disconnect message in two PRI information elements (IEs).

Here is how blind transfer works for call redirection:

An RP requests redirection of a call by entering touch tones that include the request for redirection as well as the TP's dialable number. The RP is dropped once the RP has entered 10 or 11 digits (or a valid speed dial code), and then the CP and TP are connected. This makes blind transfer faster than soft transfer, enabling the RP to handle more calls. This feature is cheaper for the customer, but allows less flexibility.

### **Soft Transfer (ST-V and ST-H)**

Soft transfer allows the person who answers an incoming call to transfer or redirect a call in progress to another destination, then stay on the line until the transfer is confirmed to be successful. No conference or consultation capabilities are provided.

Here is how soft transfer works for call redirection:

An RP requests redirection of a call by entering touch tones that include the request for redirection as well as the TP's dialable number. The RP can monitor call progress tones to determine whether the call will be connected. The RP may drop the call attempt at any time before connection. As soon as the TP answers, the RP hears an announcement that the call has been transferred and the RP is dropped; the CP and TP are connected.

### **Enhanced Soft Transfer (EST-V and EST-H)**

Enhanced soft transfer for human agents (EST-H) allows the RP to stay on the call and consult with a third party. The RP can redirect the call and consult with the TP. After consulting with the TP, the RP can:

- Drop out of the call, leaving the CP talking to the TP  
or
- Drop the TP, leaving the RP and the CP. In this case, the RP must explicitly remove the CP from hold to talk. The RP can then redirect to another (or the same) TP.

The EST feature *does not* allow for a 3-way call. The TP and CP can talk only when the RP disconnects. The RP can consult with a TP (up to four redirections as in the conference and consultation feature) but never have a conference with the CP and TP.

### **Consultation and Conference (CC-V and CC-H)**

Consultation and conference allows 3-way calls between the CP, the RP, and the TP, and multiple redirections. There are three types of CC:

- Consultation — The RP requests redirection and the caller is put on hold. A voice path is set up so that the RP can listen to call progress tones and announcements for the target party. The TP answers and the RP and TP consult while the CP remains on hold.
- Conference — The RP requests redirection and the CP is put on hold. A voice path is set up so that the RP can listen to call progress tones and announcements for the TP. The TP answers. The RP enters touch tones to add the caller. The Voice Processor then bridges the three parties together.
- CC Transfer — This is similar to a blind transfer; however, the RP is not automatically disconnected. If the RP disconnects before the call to the TP is established, it is considered a CC transfer.

Inbound consultation and conferences are used this way:

- With the call transfer capabilities provided by TCS, attendants can keep callers on the line while other departments are bridged onto the call. For example, the attendant could ask the caller to hold while the catalog department is added to the call.
- With both the consultation and conference capabilities provided by TCS, the effect is the same; the caller is kept on the line while she or he is served and opportunities for further service are made available.

## **Other TCS Capabilities**

### **PACR to POTS**

The PACR (Post-Answer Call-Redirection) to POTS feature allows a call to be redirected to non-toll-free numbers. Since some PACR customers may not want to allow their agents to redirect to non-toll-free numbers, the ability to redirect to POTS is provisionable.

### **Speed Dialing**

The Speed Dialing (SD) feature allows each subscribing toll-free number customer to provision a list of speed-dial codes and corresponding dialable numbers. The customer's agents can then use those speed-dial codes to dial the associated dialable numbers. A customer can let its agents redirect calls only to SD numbers, thus giving the customer more control over call redirection.

### **Recurrent Call Prompter (RCP)**

RCP enhances the existing network-provided call-prompter feature, which allows a toll-free number customer to choose a call destination by entering touchtones in response to network-provided prompts. With RCP, callers can make an initial selection from the network-provided prompts and, once that call is complete, return to those prompts without redialing.

Here is an example of how RCP could be used:

A CP hears the prompt and, using touchtones, chooses 1 for the sales department, 2 for maintenance, or 3 for billing information. The CP enters the touchtone digit and the network then routes the call to the selected destination, where the call is answered by the RP. At the end of the transaction between the CP and the RP, the RP asks the CP whether she or he has additional transactions. If no additional transactions are requested, both the RP and the CP disconnect. If additional transactions are requested and if the additional transactions cannot be handled by the RP, the RP instructs the CP to hold, returns the CP to the prompt, and then disconnects.

RCP redirects the call back to the original set of call prompts, triggering the network to replay the call prompter announcement. The caller enters a touchtone digit and the network routes the call to the selected destination.

Without RCP, customers using the call prompter menu could use prompts for call direction only once; network prompts cannot be accessed a second time. With RCP, customers can return to the same set of prompts without making a second call. Thus RCP saves (and makes) toll-free number subscribers money by keeping callers on the line.

### **INFO 3**

The INFO 3 service, or Information Forwarding, is no longer supported.

### **Out-Of-Band Data Transfer (OOBD)**

Blind Transfer subscribers (only) may optionally subscribe to the ability to transfer user-to-user data from the RP to the TP on redirections. The TCS call processing software will wait three seconds from the time it has received a successful redirection request for a PRI Disconnect message from the RP. The Disconnect message may contain up to 100 octets of user-to-user data in one or two User-to-User Information Elements (UUI IEs). If received, the data elements are sent to the TP in the SETUP message establishing the call to the TP.

## **Descriptions of NAP Hardware**

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### **Voice Processing System (VP)**

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The NAP platform resides at 4ESS central office (CO) sites. All application software at a NAP site runs on a VP machine.

For TCS, the VP machine is a MAP 2000 configured as a VP.

Each MAP 2000 consists of two main components:

- A Multi-Application Platform 100C (MAP/100C)
- A Communicore switch

### **VP Configuration of the MAP 2000**

The MAP/100C is a UNIX Operating System machine based on a 50-MHz Intel® 80486 processor. The machine is connected by T1 ISDN-PRI links to the Communicore, an ISDN switch that provides PRI connectivity to the 4ESS network.

The application software runs on the MAP/100C. The Communicore acts as a front-end switch for the VP and provides the following:

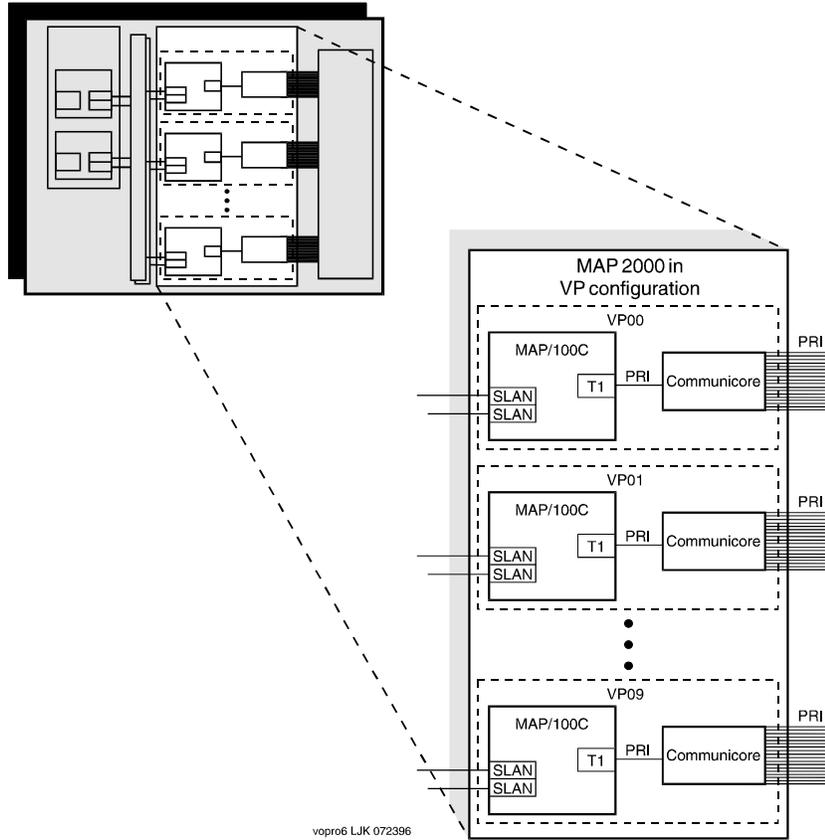
- Dual-tone multifrequency (DTMF) tone detection
- DTMF and call-progress tone generation

The MAP/100C controls all the Communicore's functions via control messages exchanged over the D-channel of the T1 link that connects the two machines. In most call scenarios, the MAP/100C tells the Communicore how to handle the call without becoming directly connected to the call. In some scenarios, such as when a recorded announcement is played for a call, the call is connected to the MAP/100C via B-channels on the T1 link.

An overview of MAP/100C and Communicore components and functions is given in the following subsections. For more detailed descriptions, see the following:

- *MAP/100C Voice Processing Hardware Installation*, 585-350-108
- "Equipment Configurations" on page 8-13

Figure 1-3 shows MAP 2000 VP machines in the NAP architecture.

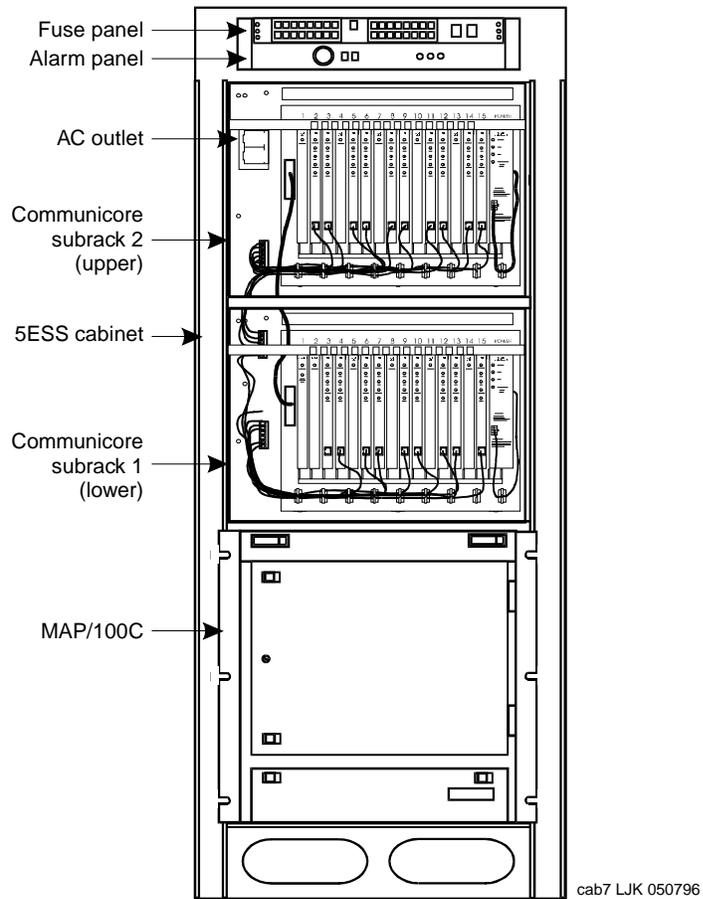


**Figure 1-3. MAP 2000 VP Machines in a NAP Site**

The Communicore and MAP/100C are mounted together in a 5ESS cabinet located in a central office frame bay as shown in Figure 1-4.

**⇒ NOTE:**

For information about the 4ESS frames that are in many preexisting sites, refer to Chapter B, "Wiring Diagrams".



**Figure 1-4. MAP 2000 VP in a 5ESS Cabinet**

## MAP/100C Circuit Cards in a VP

In a VP machine, the MAP/100Cs include circuit cards for control, connectivity, and voice processing:

- MAP/100C circuit cards for system control
  - 486DXC/50-MHz central processing unit (CPU)  
This card controls VP operation.
  - Video driver controller  
This is the interface between the CPU and the video monitor.
  - SCSI (small computer systems interface) host adapter  
This card is the interface between the CPU and SCSI devices.
- MAP/100C circuit cards for connectivity and voice processing
  - Two signal processor (SP) cards  
One SP card (AYC2C) provides voice announcements (with T1 cards); the second SP terminates the PRI for calls.
  - Trunk Interface (T1) card  
The T1 card (AYC11) provides one ISDN-PRI interface to the Communicore.  
  
The D-channel to the MAP/100C on the PRI interface carries D-channel signaling between the MAP/100C and the 4ESS network as well as control messages between the MAP/100C and the Communicore. B-channels connect calls from the network to the MAP/100C.
  - Alarm relay card  
This card provides visual and audible alarm indicators to the CO. It can also be connected to an alarm grid if necessary.
  - StarLAN 10 Network PC network access unit (NAU) cards (2 cards)  
These cards allow the PM and VP machines to communicate and share data.

The locations of the circuit cards in the MAP/100Cs in a VP vary with the application software. For details about the location of circuit cards on the MAP/100C backplane, refer to

- "Circuit Cards in a MAP/100C TCS VP Machine" on page 8-14

### **Other MAP/100C Components in the VP Configuration**

Each MAP/100C in the VP configuration has these peripheral devices and accessory components:

- Diskette drive  
A 3.5-inch, 1.44-Mbyte (megabyte) high-density diskette drive is used for boot-software loading and recovery.
- Hard disk drive  
A 1.765-Gbyte (gigabyte) or 2-Gbyte hard-disk drive stores the operating system, application software, and customer-record information.
- Cartridge tape drive  
A 2.5-Gbyte or 525-Mbyte SCSI cartridge tape drive located below the 3.5-inch diskette drive is used for initial software loading and system-software backups. The 2.5-Gbyte tape drive can read a tape that has been created by a 525-Mbyte tape drive, but not vice-versa.
- Cooling fans  
Four fans behind the CPU and the two fans in the peripheral drive bay provide forced-air cooling. They can be serviced onsite. A seventh fan in the dc power supply *cannot* be serviced onsite.
- Power supply  
The MAP/100C is powered by a -48 V dc power supply with external screw terminators.  
  
Apply power to the unit by pressing the POWER switch on the front of the unit, with the rear circuit breaker ON. External screw terminators for incoming -48 V dc CO power feeders are located on top of the unit in the power supply input module.

## Communicore Components

### Communicore Modules

The Communicore has two subracks, each holding 16 modules (a module is a circuit pack covered by a plastic shell). The application-specific configurations of these modules are shown in Chapter 8, "Maintenance".<sup>1</sup> Each module has a processor, a downloadable boot flash-programmable read-only memory (PROM), and a downloadable flash PROM for operational software. Each module performs its own periodic, in-line, and power-up diagnostics, and has light-emitting diodes (LEDs) that indicate its operational state. When powered up or returned to service, each module configures itself and reports its presence and configuration to the control 360 module, which then passes the information to the MAP/100C. The MAP/100C manages version control for the software running on each of the Communicore modules.

The Communicore modules perform the following functions:

- Control 360 module  
The control 360 module exchanges control messages with the MAP/100C via an ISDN temporary signaling connection (TSC) on the D-channel of the PRI module in slot 3. The control 360 module performs the following Communicore functions in response to instructions from the application running on the MAP/100C:
  - Managing circuit-switched and packet-switched connections
  - Testing backplane buses and clocks
  - Coordinating diagnostics between modules
  - Providing Stratum 4 Type 1 enhanced timing and synchronization
  - Managing software downloads to other modules and to itself
- Switch module  
The switch module establishes connections between time slots on the system bus and between serial channels on the access bus. This provides connectivity between interfaces on the various modules.
- PRI (T1) module  
Each of the PRI modules in the Communicore supports an ISDN-PRI interface at 1.544 Mbps (T1). One of these modules connects to the MAP/100C. The rest provide connectivity to the 4ESS network using nonfacility-associated signaling (NFAS). The interface uses a standard RJ-45 8-pin modular jack on the faceplate of the module.
- Tone-generator module

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1. Although the physical slot numbers on the modules are labeled 1 through 15 and POWER on each subrack, the *logical* numbering (the slot numbers you will see when troubleshooting using commands like **disp\_status**) are: 1 through 16 for the lower subrack, and 17 through 32 for the upper subrack.

The tone-generator module generates DTMF and call-progress tones on specific call channels according to instructions received from the MAP/100C via the control 360 module.

- Tone-detector module

The tone-detector module detects DTMF tones on call channels and reports them to the MAP/100C via the control 360 module.

- Power/maintenance module

The power/maintenance module receives a -48 V dc input through a cable connected to an 8-pin connector on the module's faceplate. The module performs the following functions:

- Supplying current-limited power to the Communicore backplane and all other modules on the subrack
- Performing maintenance functions for the backplane buses and other subrack hardware
- Registering alarms for over-temperature conditions

### **Keyboards and Video Monitors for the VP**

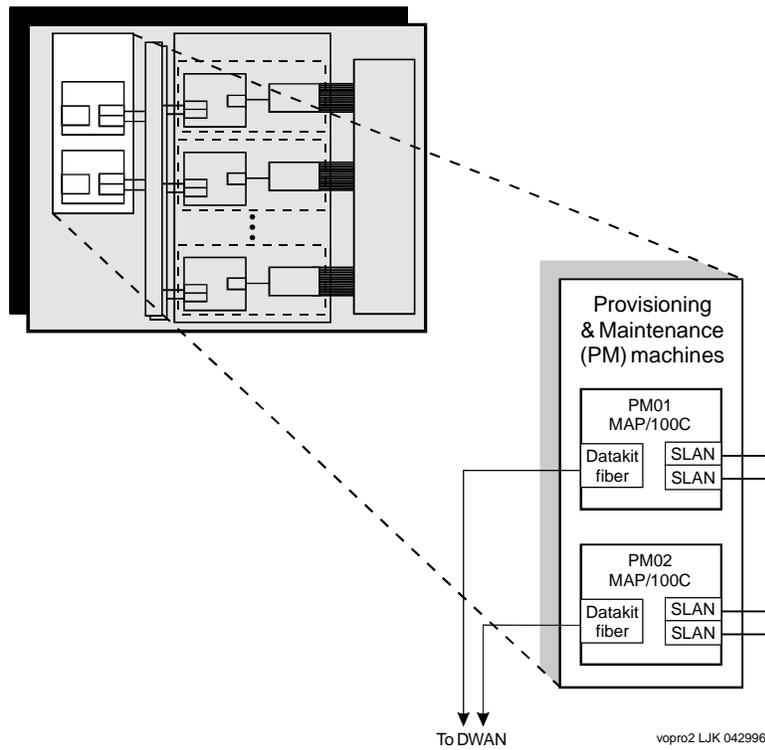
Two keyboards and two video monitors support all NAP site hardware. These are shipped with the dual PMs for each site, but can be temporarily connected to VPs as needed. Regardless of the number of VP machines used at a NAP site, all onsite support is done with these two keyboards and two monitors.

## **Provisioning and Maintenance System (PM)**

### **PM Configuration**

The PMs used in NAP are CONVERSANT MAP/100C machines configured for provisioning and maintenance.

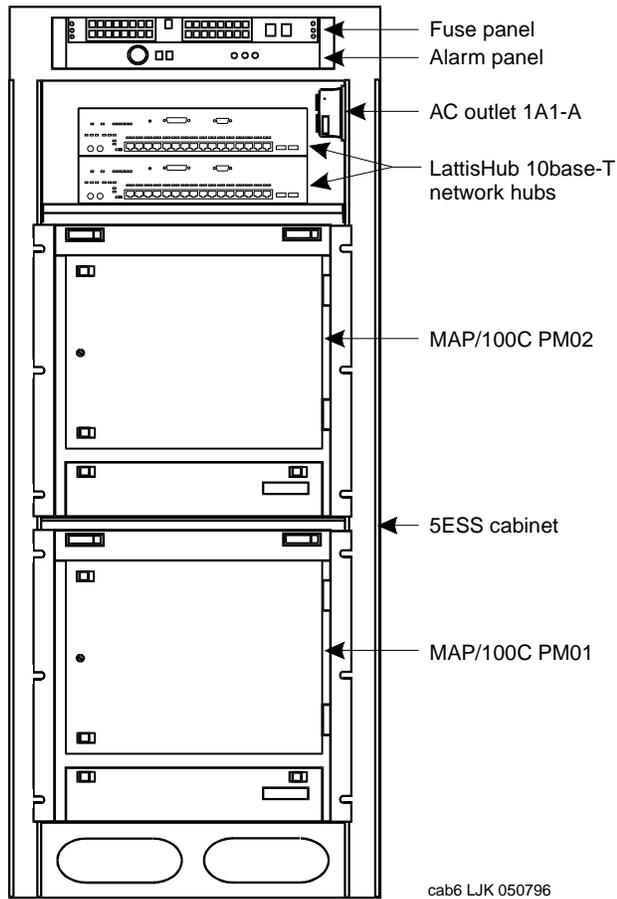
Figure 1-5 shows the PM machines in the NAP site architecture.



**Figure 1-5. NAP PM Machines**

Figure 1-6 shows the two NAP PMs in a 5ESS cabinet. Note that the two local area network (LAN) hubs are located above the PMs in the cabinet.

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**Figure 1-6. NAP PMs in a 5ESS Cabinet**

## PM Components

Each MAP/100C in the PM configuration has these peripheral devices and accessory components: :

- Diskette drive  
A 3.5-inch (1.44-Mbyte) high-density diskette drive is used for boot-software loading and recovery.
- Hard disk drive  
A 1.765-Gbyte or 2-Gbyte hard-disk drive stores the operating system, application software, and customer-record information.
- Cartridge tape drive  
A 2.5-Gbyte or 525-Mbyte SCSI cartridge tape drive located below the 3.5-inch diskette drive is used for initial software loading and system-software backups. The 2.5-Gbyte tape drive can read a tape that has been created by a 525-Mbyte tape drive, but not vice-versa.
- Cooling fans  
Four fans behind the CPU and the two fans in the peripheral drive bay provide forced-air cooling. They can be serviced onsite. A seventh fan in the dc power supply *cannot* be serviced onsite.
- Power supply  
The MAP/100C is powered by a -48 V dc power supply with external screw terminators.

## Circuit Cards for PM Machines

The configuration of circuit cards differs slightly from the MAP/100C in the VP configuration as follows:

- There are no SP or T1 cards.
- The PM configuration includes an HS386 Datakit card.

The HS386 Datakit card allows PMs to retrieve, communicate, and share information with:

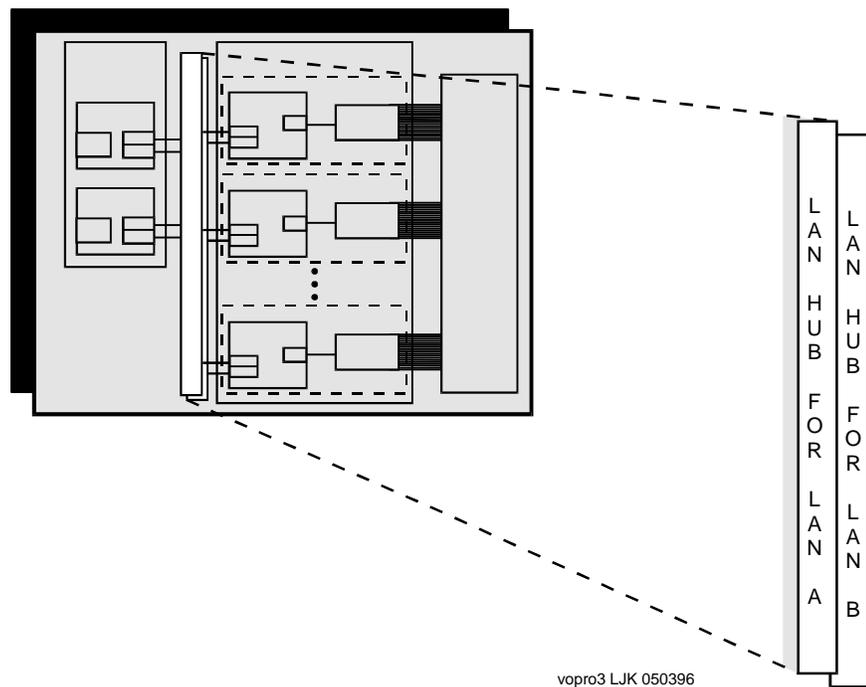
- Remote terminal users through the Network Services Datakit Wide Area Network (DWAN)
- Service Management Workstation (SMW)
- Total Network Management (TNM)
- Data Collection and Reporting Operations System (DCROS)

For information about the other circuit cards in the PM, refer to the circuit card descriptions in "MAP 2000 VP in a 5ESS Cabinet" on page 1-23. For information about circuit-card locations in the PM, refer to "Circuit Cards in a MAP/100C PM Machine" on page 8-15.

## Local Area Networks

The major hardware elements in each MAP 2000 communicate across dual LANs. There are two redundant LAN hubs: each LAN is based on a hub. The hubs connect to StarLAN 10 PC Network Access Unit (NAU) cards in the PMs and VPs, by unshielded twisted-pair wire.

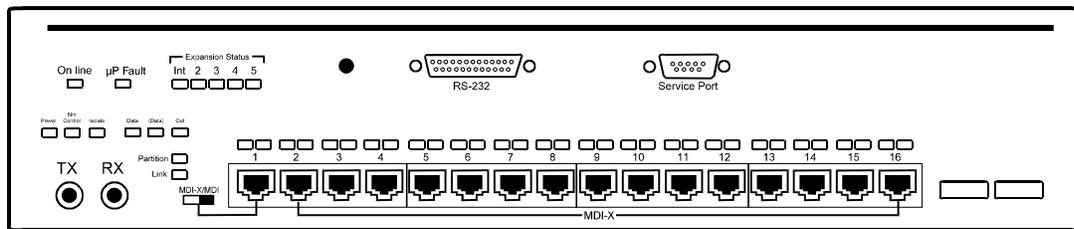
The hubs provide network connectivity between the VP and PM machines, and between the two PMs. Figure 1-7 shows how the PMs are interconnected through the hubs.



**Figure 1-7. Dual LAN Hubs at a NAP Site**

Recent MAP 2000 installations use a pair of SynOptics LattisHub 2814 10BASE-T hubs, located in the upper part of the PM cabinet, above the PMs (refer to Figure 1-6 on page 1-29).

This figure shows the front view of a LattisHub. Only one is required for each LAN.



**Figure 1-8. Front View of LattisHub 10BASE-T Hub**

To see pictures of the the StarLAN hubs that are currently at some sites, refer to Figure B-3 and Figure B-4 in Chapter B, "Wiring Diagrams".

## External Interfaces to NAP

### Site Connectivity: ISDN-PRI T1 Links

NAP uses ISDN signaling between the VP and 4ESS for all call control and feature signaling. The VP is connected to the 4ESS via an ISDN-PRI configuration referred to as Non-Facility-Associated Signaling (NFAS), in which a single ISDN D-channel handles all signaling for all bearer channels.

Figure 1-9 shows the ISDN-PRI T1 links in a NAP site where the VPs are MAP 2000s.

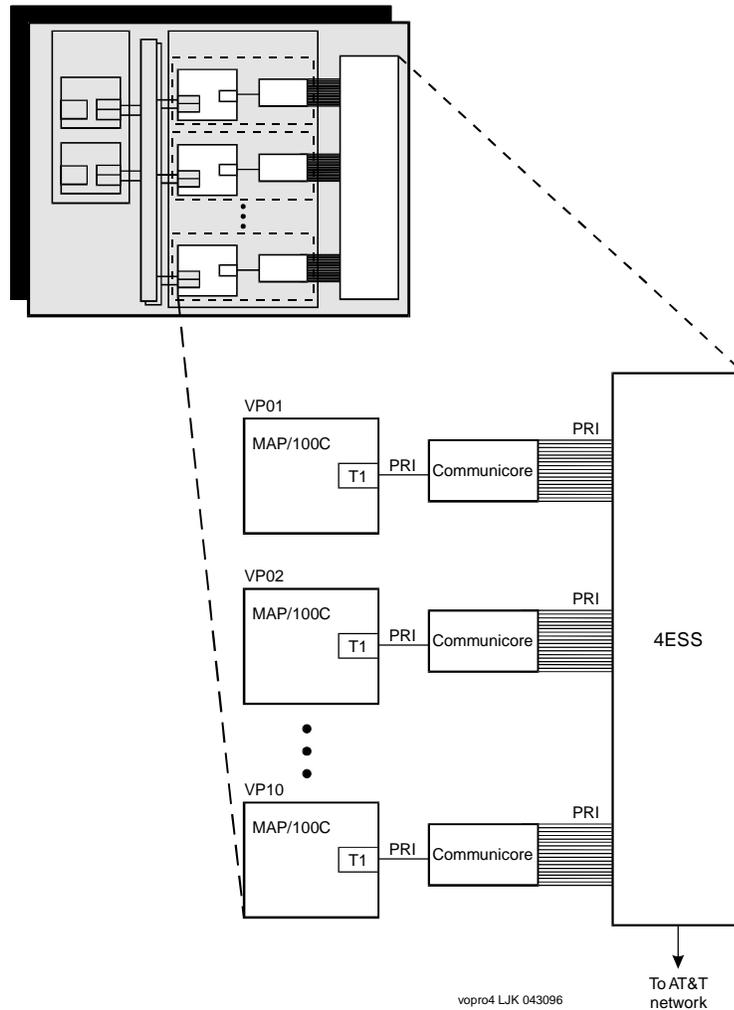


Figure 1-9. NAP Site Connectivity: ISDN-PRI T1 Links

ISDN signaling between the VP and 4ESS conforms to standard AT&T ISDN-PRI protocol specifications. Special NAP feature signaling is provided through small extensions of the protocol that are allowed as part of the standard specifications. For example, a facility information element (IE) may be added to a normal setup message for a specific NAP feature. Support of NAP from an ISDN perspective does not require specific knowledge of the contents of these signaling messages.

### **ISDN-PRI Configuration for TCS**

The configurations discussed in this section pertain only to TCS. The number and slot assignments of various modules may differ for other applications.

Each Communicore ISDN-PRI T1 module supports one 24-channel PRI interface administered for clear 64-Kbps B-channel communications (provided by common D-channel signaling) using:

- A noninverted data stream
  - Binary 1's are represented by alternating positive and negative line signals (AMI-alternate mark inversion); binary 0's are represented by no line signal.
- B8ZS (binary 8-zero substitution) line coding
  - Ensures basic synchronization in a noninverted data stream by replacing all-zero octets with either "000+-0-+" or "000-+0+-," depending on the polarity of the previous line signal.
- Extended superframe (ESF) framing structure

This multiframe structure, consisting of 24 193-bit frames (each with 24 bytes and a framing bit), improves synchronization by using every fourth framing bit to form the repeating frame-alignment signal "001011."

One PRI interface connects to the MAP/100C and the rest connect to the 4ESS network as shown in Figure 1-10.

The PRI interfaces connected to the 4ESS network are arranged in a NFAS configuration. The PRI module in slot 4, subrack 1 of the Communicore carries 23 B-channels and the D-channel that carries signaling for all 4ESS interfaces. This D-channel is frame-relayed to the MAP/100C over the D-channel on module 3 of the Communicore. The other PRI interfaces each carry 24 B-channels.

The PRI module in slot 3, subrack 1 of the Communicore connects to a T1 card on the MAP/100C. The D-channel on this interface (VP channel 23) carries control messages between the MAP/100C and the Communicore, as well as frame-relay D-channel signaling to the 4ESS network. When the MAP/100C must connect directly to a call from the network (to deliver a recorded announcement, for example) it uses B-channels on this interface (VP channels 0 through 22).

The D-channel relayed from the 4ESS to the MAP/100C is routed to a signal-processing (SP) card (also called a speech-processing card) where layers

2 and 3 of the ISDN protocol are terminated. An SP card must be administered to support ISDN-PRI on each MAP/100C in the VP. D-channel backup is not used with NAP.

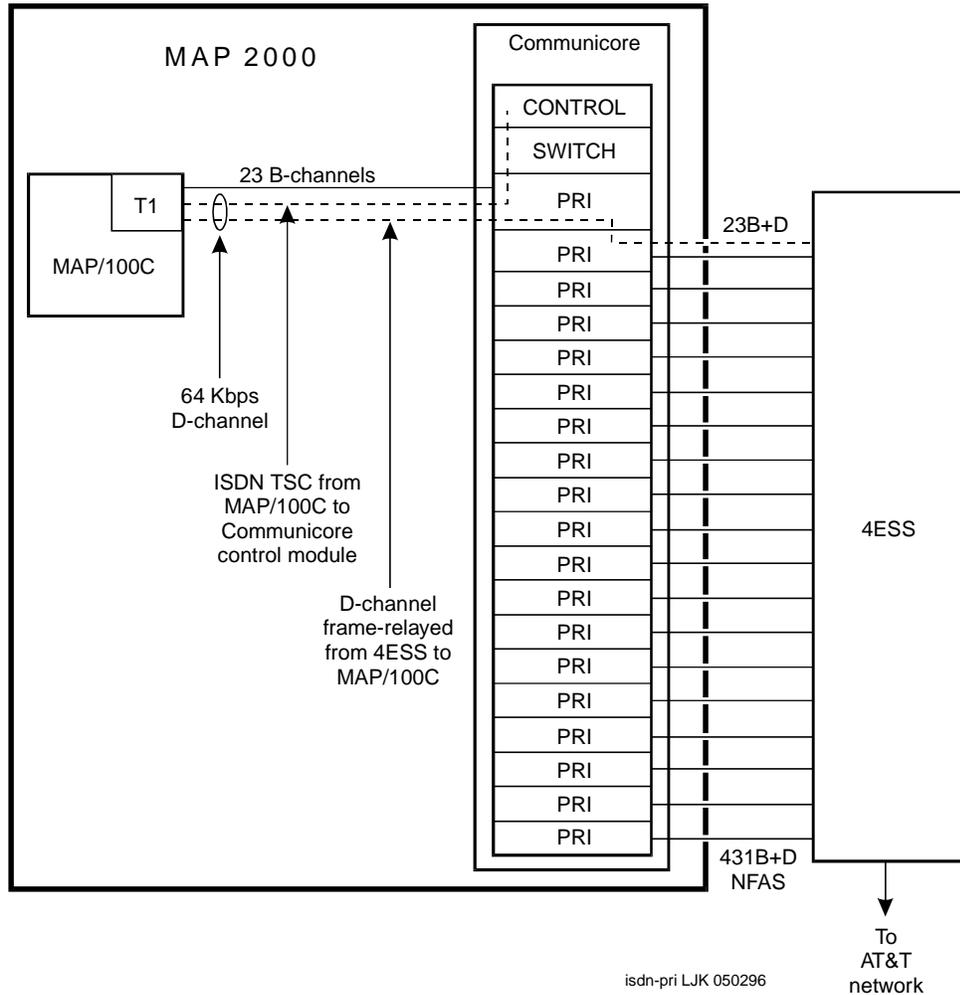


Figure 1-10. ISDN-PRI Connectivity for TCS

## ISDN-PRI Functions (TCS)

The functions discussed in this section pertain only to TCS. These functions may differ for other applications.

### Special 4ESS Administration

The channels of each interface must be uniquely identified when NFAS is used. Interfaces on Communicore PRI modules that are connected to the network are numbered 1 through 18. The D-channel is carried on channel 23 of interface 1, which is located in slot 4 of subrack 1. Interfaces on the other PRI modules are numbered consecutively; for example, channels 24 through 47. All B-channels are on interface 2, which is on the module in slot 6, subrack 1. PRI modules are interspersed among other types of modules, such as tone detectors. The facility number (FAC field) of the 4ESS must have this same administration to ensure that each channel is correctly identified.

Special 4ESS trunk subgroup administration is required to identify the trunks for NAP signaling. The SPAR3 field of trunk subgroup administration must be set to yes (y), the PRIT field must be set to SSA (small system adjunct). The TOT field should be set to PBX (private branch exchange). NAP supports call merge, which requires 4ESS 4E17R3 generic release or later software for compatibility.

### Supporting ISDN-PRI for NAP

Knowledge of the VP-to-4ESS connectivity and administration for ISDN-PRI signaling is all that is really required to support ISDN-PRI for NAP. Significant testing has been done to ensure that the special NAP feature signaling is correct and functional from an ISDN-PRI protocol perspective. ISDN-PRI support will then consist of maintaining the service state of the D- and B-channels by resolving any D-channel or T1 failures.

It is important to make sure that the 4ESS and VP trunk provisioning are correct at installation time or after any 4ESS upgrade, so check the trunk provisioning first when a signaling problem occurs (other than a D-channel or T1 failure).

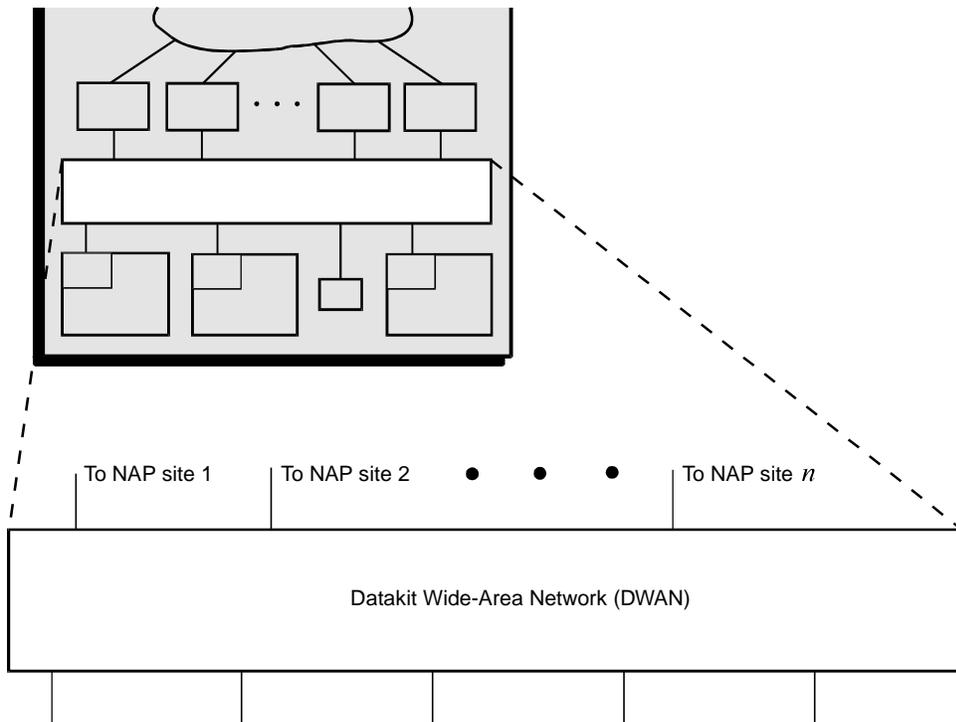
Any specific NAP feature problems that are considered or suspected to be signaling problems should be immediately escalated to the VP development organization. It may be necessary to obtain an ISDN-PRI protocol trace when escalating a problem. Protocol traces can be set up and obtained from the network protocol center.

## **DWAN Connectivity: Datakit**

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### **Datakit Network Configuration**

Datakit Wide Area Network (DWAN) is an internal AT&T Network Services network that uses Datakit to connect all 4ESS sites in the United States. Figure 1-11 shows DWAN connectivity for NAP.



**Figure 1-11. NAP Site Connectivity Via DWAN**

### **Datakit Functions**

The essential functions of DWAN are to:

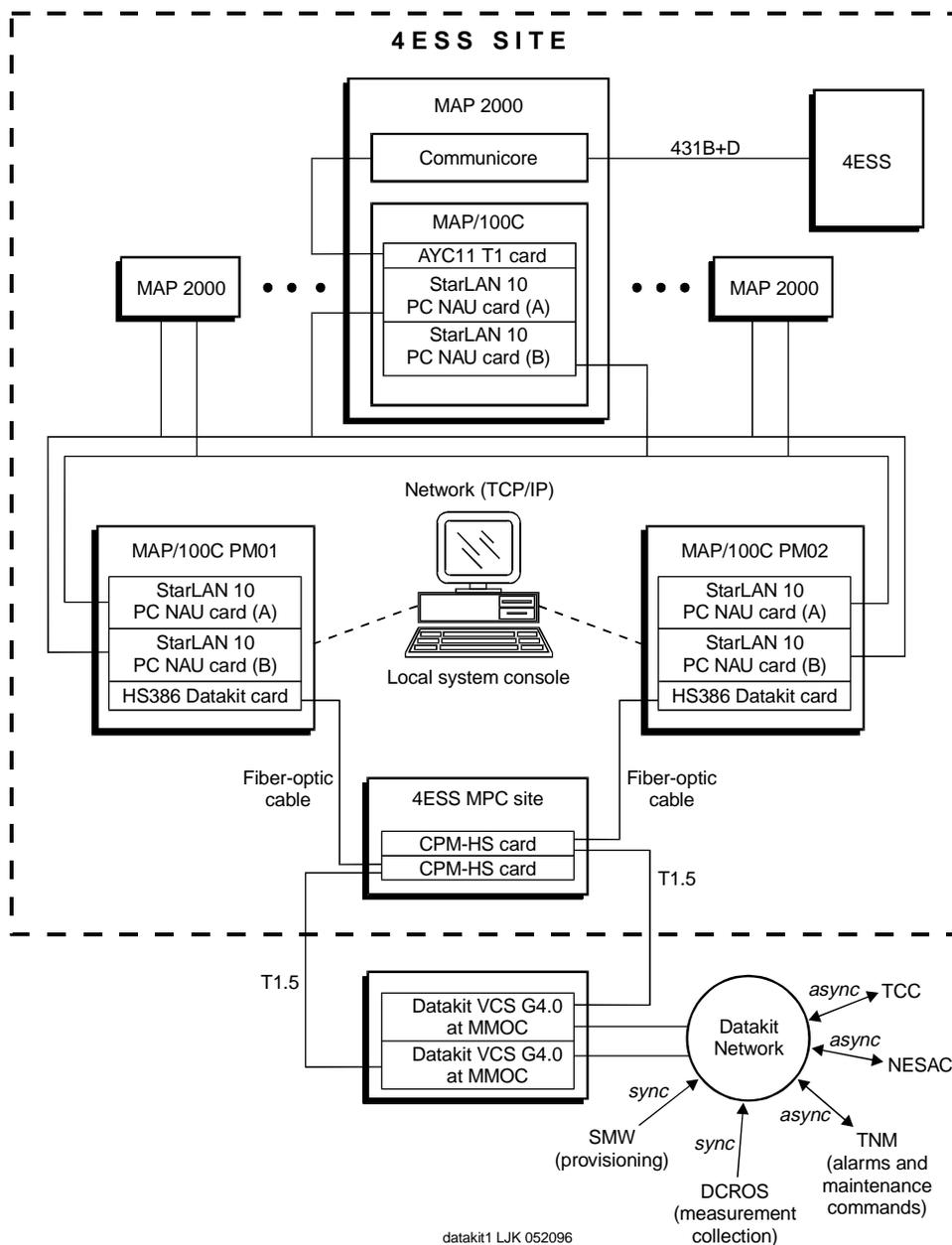
- Connect NAP sites with the SMW, TNM, and DCROS through a DWAN data security-server interface.
- Give terminal users access to PM machines through security servers.

DWAN access to a NAP site can be obtained in the following ways:

- TNM connection using the machine-to-human language (MML) interface (MMLI)
- DWAN security server dialup

### Datakit Connectivity

This figure shows the relationship of Datakit to the NAP architecture:



**Figure 1-12. Datakit Connectivity**

Each of the PMs connects to a CPM-HS card via a fiber optic cable. The CPM-HS card has up to 512 channels and supports transmission rates up to 8 Mbytes per second. The PMs are allocated up to 64 channels on the CPM-HS card.

The CPM-HS card can be installed onsite if there is a Multi-Purpose Concentrator (MPC) unit at the 4ESS site.

## SMW

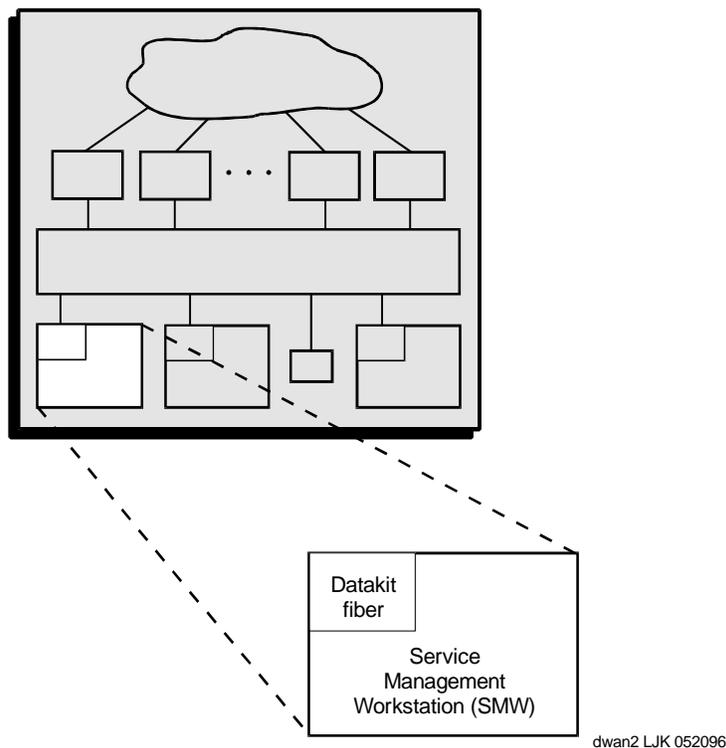
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The SMW is a Sun Microsystems®-based workstation system, located at the AFSC. It's used to provision and administer customer records for the NAP network. Figure 1-13 shows the SMW in the NAP network architecture.

**➤ NOTE:**

The AFSC is not at the CO site.

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**Figure 1-13. SMW**

For NAP, the SMW functions are to:

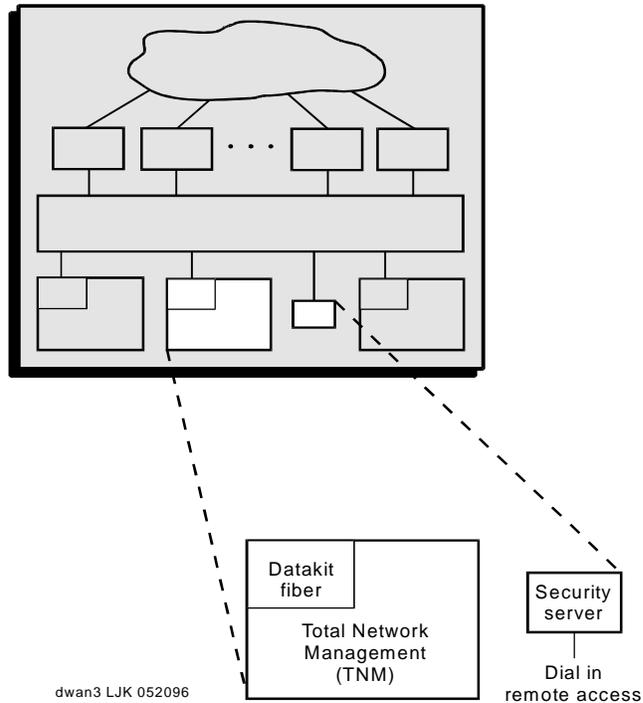
- Contain the master customer-record database for all NAP sites. The SMW provisions and administers these customer records at appropriate NAP sites throughout the network.
- Transmit site-specific records to a NAP site over DWAN. In addition, this system queries the site for:
  - Customer-record information
  - Customer-record audit results

## TNM

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TNM is an operational support system for the AT&T World Wide Intelligent Network that does alarm monitoring. TNM allows surveillance, control, and analysis of NAP components from the TCC (Technology Control Center) in Denver, Colorado. Figure 1-14 shows TNM in the NAP network architecture.

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**Figure 1-14. TNM**

These are the main functions of TNM:

- For NAP, TNM makes a DWAN connection to each PM, and monitors alarm status and system status for each NAP site.
- All NAP alarms are sent to TNM over the DWAN connection. Alarms are transmitted to TNM by the primary PM at a NAP site for VP alarms and by each PM for its own alarms.

Installation, connection, and command specifics for TNM are provided in *CONVERSANT VIS Version 3 CompuLert/SCCS*<sup>1</sup>, 106713274.

**⇒ NOTE:**

Administration and maintenance commands are listed in Chapter 5, "Command Reference". Most commands can be executed through the TNM interface.

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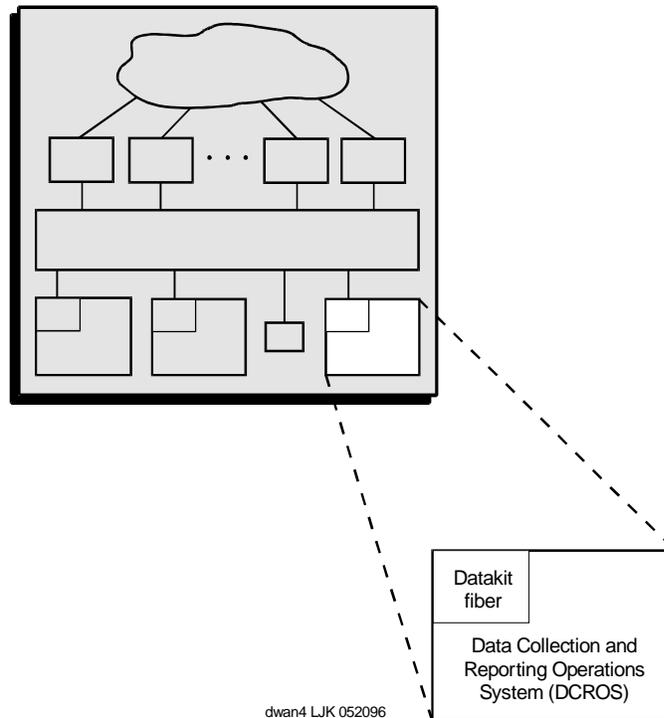
1. switching control center system

## DCROS

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DCROS is a MAP/100 business platform. It collects measurement data and provides on-demand reports in Kansas City, Missouri. Figure 1-15 shows the relationship of DCROS to NAP sites.

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**Figure 1-15. DCROS**

### DCROS Functions

DCROS is used by the application software. Shortly after midnight every day, DCROS does the following:

- Synchronizes with the external clock
- Removes from its tables any data that is too old to be retained at its present level of detail
- Polls application sites — DCROS attempts to connect to the first PM. If it cannot, it attempts to connect to the second PM. It then tries to obtain an application-level handshake with the PM. DCROS then asks the PM to synchronize to the DCROS clock.
- Asks the PM to format TCS call-measurement data from both PMs into one or more packed binary files

- Pulls the file to DCROS through DWAN
- When the file is received, restores the data to its original form and reformats it so that it can be efficiently loaded into the appropriate tables and made available for measurement reports
- Updates the marketing data table with new data (this is not done on a site-specific basis)

### **On-Demand Reports**

Call-measurement data is generated and packaged at each application site, retrieved by and stored in DCROS, and made available to the user through a variety of on-demand reports. DCROS can also poll a PM to get data for near real-time reports on the current 15-minute measurement interval plus the last eight 15-minute measurement intervals. In addition, for the current day, DCROS can request measurement information in hourly or daily granularity as specified.

DCROS measurement intervals for near-real time reports are standard 15-minute periods beginning on the hour and following at each quarter and half-hour mark. Measurements before the last two hours are in 1-hour or daily granularity as requested by the user.

### **DCROS Synchronization**

DCROS gets its system time from a time server at Murray Hill, NJ. Some calls by DCROS to DCRIP on the PMs include a request for the PMs at an application site to set their clocks. (DCRIP is started when a connection from DCROS is established.) The PMs then forward the current time to the VP machines when the PM next communicates with the VPs.

#### **⇒ NOTE:**

Clock synchronizing and polling are not coupled; DCROS can ask a PM to reset its clock without polling it, and DCROS can poll a PM without setting its clock.

**What's in This Chapter?**

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This chapter provides instructions for installing:

- A 5ESS Multi-Application Platform (MAP) 2000 cabinet
- A 5ESS Provisioning and Maintenance (PM) system cabinet

The information given in this chapter may not be in the order in which you do the work at your site. That order is usually determined by local conditions, such as when equipment arrives. The hardware and cabling layouts are discussed first for planning purposes.

## Site Requirements

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Listed below are requirements for each Network Adjunct Platform (NAP) site.

Temperature	The temperature range for a NAP is 50–104° F.
Humidity	The relative humidity range for a NAP site is 20–80% noncondensing.
EMI (electromagnetic interference)	The MAP 2000 and PM machines should be installed away from equipment that can cause EMI, such as high-power machinery or power lines.
MAP/100C CO Power	The MAP/100C runs on -48 V dc, and a fully-loaded unit consumes 13 amperes. Feeders are in an OR'ed arrangement. Either A or B feeder and fusing should be designed to carry full load current (that is, distribute for 26 amperes, design load for 13 amperes per MAP/100C).
Communicore CO Power	The Communicore runs on -48 V dc, and requires approximately 2 amps per subrack when fully loaded. Only one input is provided (either A or B) per subrack.
Network Hubs CO Power	Each LattisHub 10BASE-T Workgroup concentrator 120 V ac protected power (backed by battery) and consumes only 40 watts.
Frame AC Power	The video monitor requires a 120 V ac essential power outlet in every 5ESS cabinet.
MAP 2000 and PM Site CO Floor Space	<p>The footprint of the MAP 2000 as mounted in the 5ESS cabinet is 6'0" (height) by 30" (width) by 23.5" (depth). Total lineup length for ten MAP 2000 cabinets and one PM cabinet is 27'6".</p> <p>This equipment requires aisle spacing for 18-inch deep equipment in accordance with Section 23 of NEBS (Network Equipment Building System Requirements).</p>

## Safety Summary

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Review the following safety warnings before starting work:



**WARNING:**

*The strap on the shipping container is tensioned and sharp. Use care when cutting and removing the strap.*



**WARNING:**

*The 5ESS MAP 2000 cabinet configured as a VP weighs 465 pounds. The fully equipped 5ESS PM cabinet weighs 610 pounds. To prevent personnel injury, use a mechanical lifting device to move the cabinet.*

*Do **not** use the cable tie-down bars located on the rear of the MAP/100C to lift the cabinet.*



**WARNING:**

*Each MAP/100C weighs 140 pounds. If one is available, use a mechanical lifting device to move the MAP/100C to prevent personnel injury.*

*If a mechanical lifting device is not available, and you must lift the MAP/100C manually, use **three** people. Two can grasp the machine using the lip on the top of either side, and one person can help support the machine from the front.*

*Do **not** use the cable tie-down bars located on the rear of the MAP/100C to lift the cabinet.*



**WARNING:**

*Make sure that the cabinet is securely fastened to the floor, in accordance with AT&T central office (CO) common ESS (electronic switching system) switching equipment single-bay cabinet mounting instructions, and as appropriate for earthquake protection.*



**WARNING:**

*To prevent electrocution hazard and equipment damage, make sure that the ground connections are clean and the cables are secure.*

*Each MAP/100C must be grounded to a solid, stable, single-point ground — for personal protection, protection from electromagnetic interference (EMI), and immunity from circuit noise.*

*Ground the MAP/100C in accordance with *Grounding of Processing Equipment*, AT&T Practice (824102054), and National Electrical Codes.*

 **WARNING:**

*To prevent electrical shock, make sure that source power at the battery distribution fuse board (BDFB) is off and the circuit breaker is locked out of service when installing or servicing equipment.*

 **WARNING:**

*To prevent electrostatic discharge (ESD) damage, make sure that the 5ESS cabinet is properly grounded. Wear a ground wrist strap connected to the MAP/100C when servicing equipment.*

 **WARNING:**

*To prevent eye injury, wear safety glasses during installation and maintenance.*

## 5ESS Cabinet Hardware Installation

### Overview

This section describes how to unpack, install, cable, and inspect the MAP 2000 and PM hardware in 5ESS cabinets that make up a NAP site.

Figure 2-1 shows the MAP 2000 and PM cabinet layouts. A MAP 2000 cabinet contains one MAP/100C and one Communicore (the Communicore has two subracks). The PM cabinet contains two MAP/100C PM machines and two network hubs.

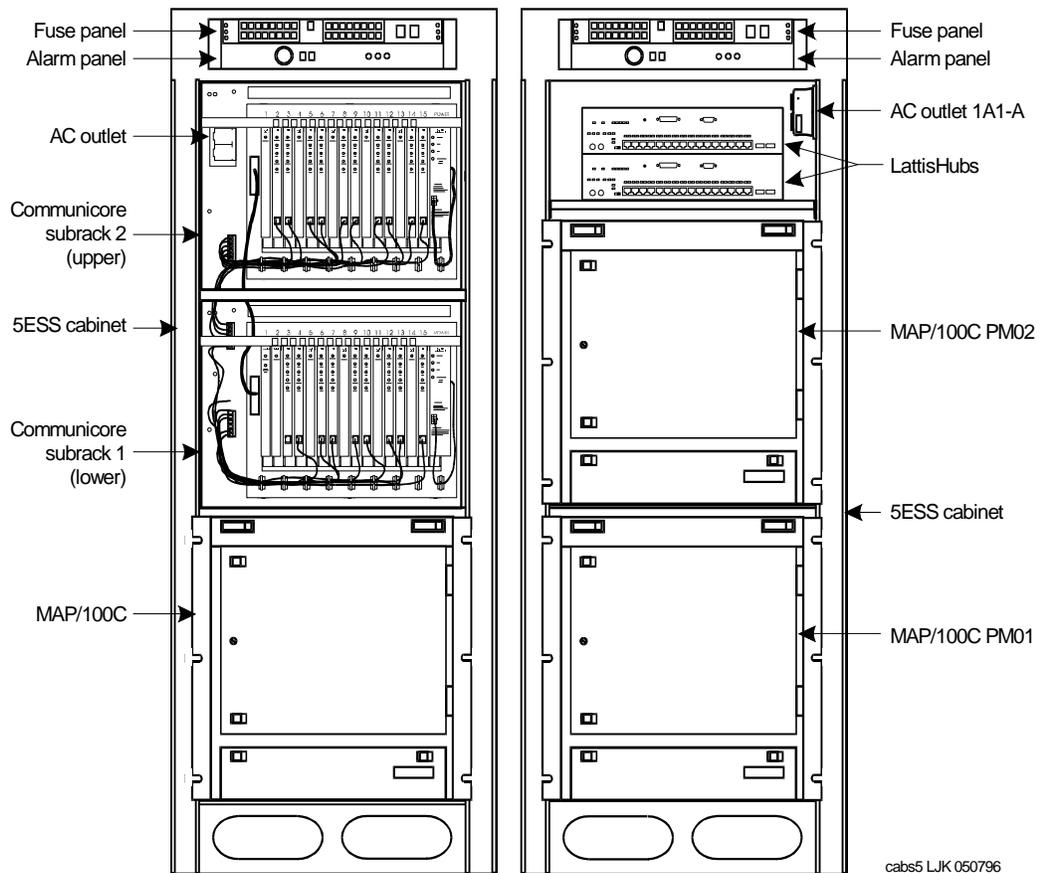


Figure 2-1. 5ESS MAP 2000 and PM Cabinet Configurations

## **5ESS NAP Site**

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A typical NAP site contains eleven 5ESS cabinets. Cabinets 1 through 5 and 7 through 11 contain MAP 2000 units. Cabinet 6 contains two MAP/100C PM units and two network hubs.

## **Unpacking the 5ESS Cabinet**

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Each 5ESS MAP 2000 or PM cabinet is shipped in two containers. One palletized container holds the 5ESS cabinet and the second contains the doors.

This procedure tells you how to inspect and remove the shipping container.

1. Check the status of the SHOCKWATCH<sup>®</sup> and/or TILTWATCH<sup>®</sup> indicators on the cardboard container. These indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicator will have turned red, indicating potential damage. Report any indication of damage using local instructions.
2. Move the cabinet near the row where it will be installed.
3. To remove the container and packing, follow the instructions printed on the shipping container.



**CAUTION:**

*The strap on the shipping container is tensioned and sharp. Use care when cutting and removing the strap.*

4. Cut and remove the shipping strap.
5. Remove the cardboard top cap.
6. Remove the top foam insert from the top of the cabinet.
7. Cut the tape on the front right side of the cardboard wrapper.
8. Remove the cardboard wrapper.
9. Remove the plastic bag from the cabinet.
10. Remove all packing materials from inside the cabinet.
11. Inspect the cabinet for damage caused during shipping. Report any indication of damage using local instructions.
12. Remove the carriage bolt nuts located in each bottom corner of the cabinet. These bolts secure the cabinet to the pallet.
13. Drive the carriage bolts downward until they clear the bottom of the cabinet.

## **Installing the 5ESS Cabinet**

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1. Refer to documents ED5D511-31 and ED5D785-70 and install concrete floor anchors. A minimum of four 1½-inch-deep anchors are required to secure a 5ESS cabinet. Use a minimum ½-inch x16 type bolt or threaded rod for floor mounting.



**WARNING:**

*The 5ESS MAP 2000 cabinet with VP hardware installed weighs 465 pounds. The fully equipped 5ESS PM cabinet weighs 610 pounds. To prevent personnel injury, use a mechanical lifting device to move the cabinet.*

2. Move the cabinet from the pallet to the floor.
3. Position the cabinet in the row. Refer to NT1P336 *Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Provisioning, Interconnect and Installation* for cabinet positions.
4. Level the cabinet using the shims as required.



**WARNING:**

*Make sure that the cabinet is securely fastened to the floor, in accordance with AT&T central office (CO) common ESS switching equipment single-bay cabinet mounting instructions.*

5. Secure the cabinet to the floor in accordance with local codes and CO specifications.

## **Cabbling the 5ESS Cabinet**

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You can start cabling before the equipment arrives and finish after the equipment is installed, depending on the conditions at your site. The CO provides site-specific facility wiring diagrams.

Refer to these diagrams for cabling information for sites manufactured before January 1996.

- NJ-00352-32 *GBCS Order Guide for Frames*
- NE-00356-32 *Fairfield, NJ ADE*
- NT-00352-32 *MAP 1000*
- NE-00356-30 *Alarm Panel*
- NT-00356-32 *Alarm Panel*
- NE-00262-31 *Fuse Panel*
- NT-00262-31 *Fuse Panel*

Refer to these diagrams for cabling information for sites manufactured after January 1996:

- PWR ARCH-018 *Power system Architecture for the MAP 2000*
- J1P336A-1 *Intuity Conversant MAP 2000 Voice Processing (VP) Cabinet*
- J1P336B-1 *Intuity Conversant MAP 2000 Provisioning and Maintenance (PM) Cabinet*
- NJ1P336 *Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Order Guide*
- NT1P336 *Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Provisioning, Interconnection and Installation*
- NE-00356-30 *Alarm Panel*
- NT-00356-32 *Alarm Panel*
- NE-00262-31 *Fuse Panel*
- NT-00262-31 *Fuse Panel*

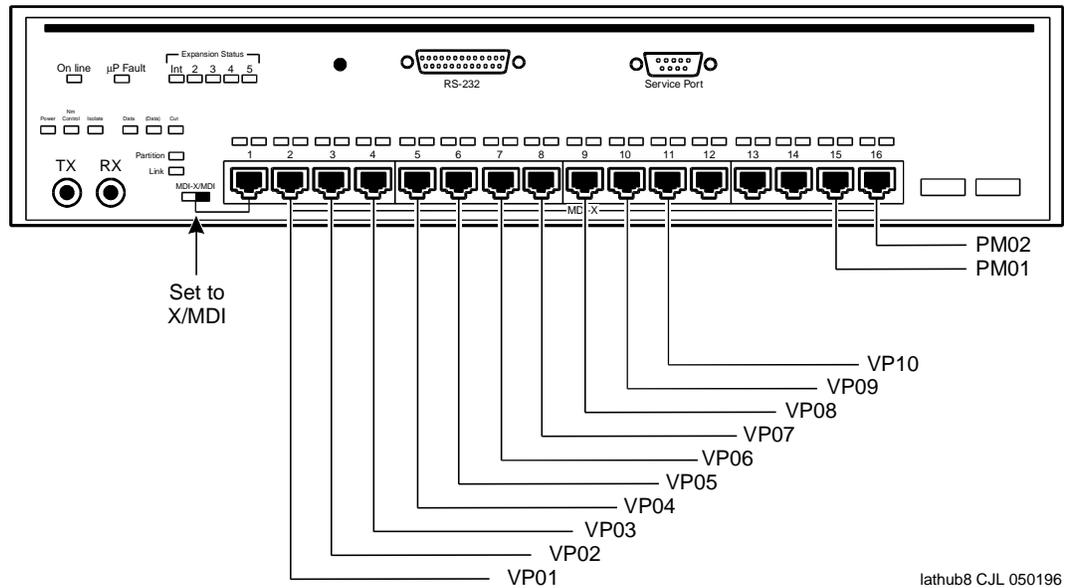
Refer to the J, NE, or NT wiring diagrams and install these cables. The facility cabling jobs are:

- Cabling the site power and ground from the battery distribution fuse board (BDFB) to the 5ESS cabinet fuse panels
- Cabling the CO alarm unit to the 5ESS cabinet alarm panels
- Cabling the DSX-1 (digital signal cross-connect) frame cables to the Communicores
- Cabling the HS386 Datakit circuit card on the MAP/100C PMs to the Datakit Multi-Purpose Concentrator (MPC) CPM-HS circuit card
- Cabling the network LAN A and LAN B hubs (located in cabinet 6) to the StarLAN 10 network PC NAU LAN A and LAN B circuit cards, respectively, on the MAP/100Cs

### **Cabling Site Power to the 5ESS Fuse Panel**

1. Refer to *PWR ARCH-018 for System Power Architecture* and *NT1P336 Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Provisioning, Interconnection and Installation* drawings and connect the power cables to the fuse panel -48 V load A and load B terminal strips.
2. Connect the return cables to the fuse panel -48 V RTN (return) A and B terminal strips.

- See Figure 2-2 and connect cables from each network hub to the StarLAN 10 network PC NAU circuit cards on each MAP/100C. LAN A cables are connected to the StarLAN 10 network PC NAU cards installed in slot 19. LAN B cables are connected to the StarLAN 10 network PC NAU cards installed in slot 21.



**Figure 2-2. Cabling the Network Hub to the StarLAN 10 Network PC NAU Circuit Cards**

### Verifying the 5ESS Cabinet Hardware Installation

Use this checklist to make sure that the hardware has been inspected and that the hardware installation procedures are complete.



**WARNING:**

*To prevent electrical shock, make sure that source power at the battery distribution fuse board (BDFB) is off and the circuit breaker is locked out of service.*

- Verify that the 5ESS cabinet is secured to the floor in accordance with AT&T CO common ESS switching-equipment single-bay cabinet-mounting instructions.
- Verify that all component-mounting screws are installed and secured tightly to the cabinet for these components:

- a. Fuse panel
- b. Alarm Panel
- c. Network hubs bracket and shelf
- d. Communicore
- e. MAP/100C



**WARNING:**

*To prevent electrostatic discharge (ESD) damage, make sure the 5ESS cabinet is properly grounded. Wear a ground wrist strap connected to the MAP/100C.*

3. Open each MAP/100C front door and check these items:
  - a. Check each circuit card for damage, loose components, and loose cables.
  - b. Check that each circuit card is properly seated and secured in the card-cage backplane.
  - c. Check that each connector of the TDM (time-division multiplexing) cable is firmly connected to its circuit card.
  - d. Check that the rubber standoffs on the circuit-card hold-down bracket are positioned in the slots occupied by half-height circuit cards and circuit cards that do not touch the bracket.
  - e. Check that each empty circuit-card slot has a blank I/O faceplate installed.
  - f. Close the front door.
4. Open the MAP/100C peripheral-bay access door on the rear of each cabinet and check that:
  - a. The SCSI bus cable is securely connected to the SCSI cartridge-tape drive and SCSI hard-disk drive.
  - b. The power cables are securely connected to the SCSI cartridge tape drive and the SCSI hard disk drive.
  - c. Check the cable and wire connections on the drive-bay power distribution card W/RMB (with remote maintenance board) located on the peripheral-bay access door.
  - d. Close the peripheral-bay access door.
5. On each Communicore, check these items:
  - a. Check that each module on subrack 1 is properly seated.
  - b. Check that each module on subrack 2 is properly seated.
  - c. Check that the interchassis cable and T1 interface cable are properly seated.

- d. Check that the module support brace is installed (applies to zones 3 and 4).
6. Verify that the following cables are connected on each of the VP cabinets (Refer to the CO site-specific wiring diagram for cable information):
  - a. MAP/100C: T1 card (slot 5) T1 cable to the Communicore lower-subrack module 3 PRI
  - b. MAP/100C: Alarm card (slot 18) external-alarm cable to the 5ESS cabinet alarm panel
  - c. MAP/100C: StarLAN 10 network PC NAU cards (slots 19 and 21) to the LAN hubs (cabinet 6) (two cables from each MAP/100C) — Check that the LAN A cables are connected to the cards in slot 19 and that LAN B cables are connected to the cards in slot 21.
  - d. MAP/100C: Alarm-relay wires (2 wires, part of external-alarm cable) to 5ESS-cabinet alarm panel (orange-red connects to NO and red-orange connects to C)
  - e. MAP/100C: -48 V dc power, return and ground cables to the 5ESS-cabinet fuse panel
  - f. Communicore: Assignment of T1 cables from the Communicore panel to the upper and lower subrack modules.
  - g. Communicore: Power/maintenance-module cable to 5ESS-cabinet fuse panel (power-connection diversity is site-selected)
  - h. Communicore: T1 to DSX-1 frame cables, three cables for each MAP 2000 cabinet
  - i. 5ESS cabinet: Alarm-panel cable to CO alarm unit
  - j. 5ESS cabinet: Fuse-panel -48 V dc, return, and ground cables to CO (BDFB)
7. Verify that fuses of the correct amperage for grids A and B are installed in the fuse panel of the 5ESS MAP 2000 cabinet.
8. Refer to the site-specific wiring diagram and verify that the following cables are connected on the PM cabinet:
  - a. MAP/100C PMs: HS386 Datakit-card fiber cable to Datakit MPC (multipurpose concentrator) or VCS (virtual circuit switch)
  - b. MAP/100C PMs: Alarm card (slot 18) external-alarm cable to the 5ESS-cabinet alarm panel
  - c. MAP/100C PMs: StarLAN 10 network PC NAU cards (slots 19 and 21) to the LAN hubs (cabinet 5) (two cables from each MAP/100C PM) — Check that the LAN A cables are connected to cards in slot 19 and that LAN B cables are connected to cards in slot 21.
  - d. MAP/100C PMs: Alarm-relay wires (2 wires, part of external alarm cable) to the 5ESS cabinet alarm panel

- e. MAP/100C PMs: -48 V dc power, return, and ground to the 5ESS-cabinet fuse panel
  - f. 5ESS cabinet: Alarm-panel external alarm cable to the CO alarm unit
  - g. 5ESS cabinet: Fuse-panel -48 V dc power, return, and ground to the CO battery distribution fuse board (BDFB)
9. Verify that fuses of the correct amperage for grids A and B are installed in the fuse panel of the 5ESS PM cabinet.

### **Installing the Cabinet Doors**

1. Remove the front doors from the shipping container and inspect them for damage.
2. Install the front doors using the instructions in the drawing package.
3. Install side panels, if used, at each end of the row.
4. Label each cabinet and each MAP/100C. Cabinets are labeled 1 through 11. VP-configured MAP/100Cs are labeled VP01 through VP10. PM-configured MAP/100Cs are labeled PM01 and PM02.

### **Installing the Video Monitor and Keyboard**

Two video monitors and two keyboards are provided for each site. After the installation is complete, connect the monitors and keyboards to the two PM machines, and from then on, perform all administration from the PMs. During installation, however, you should put one monitor and one keyboard on a cart. Connect to each VP machine as you install the software on it, so you can administer that machine.

This completes the hardware installation and inspection procedures.

**What's in This Chapter?**

This chapter contains information on:

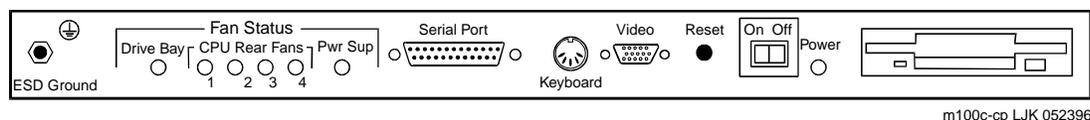
- Description of switches and indicators for the MAP/100C, tape drives, Communicore, alarm panel, fuse panel, and LAN
- Power-up procedures
- Operating procedures
- Normal shutdown procedures
- Emergency operation or degraded operation
- Power cycling
- Run levels on the VP and PM machines

## Switches and Indicators

This section describes the switches and indicators used by the onsite work force (OSWF) to operate and maintain the NAP system.

### MAP/100C Switches and Indicators

Each MAP/100C has a front panel like the one shown in the following figure. The panel is located below the large front door of the machine and just above the peripheral bay containing the tape drive and hard-disk drive. Some of the front-panel connectors are duplicated on the back panel.



**Figure 3-1. MAP/100C Front Panel**

- ⚠ WARNING:**  
*Anytime you open a MAP/100C door, use caution to prevent damage from electrostatic discharge (ESD):*
- *Wear a ground strap that is correctly connected to a grounding system.*
  - *Avoid any unnecessary handling of the cards.*
  - *Do not touch the gold contact edge of a card; this could cause contact corrosion.*

**Table 3-1. MAP/100C Front Panel**

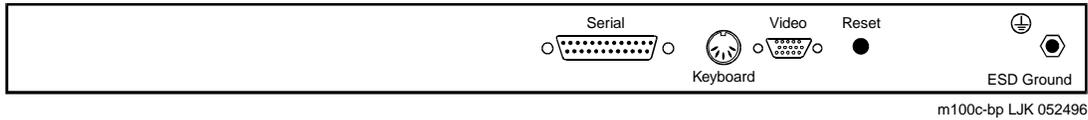
Switch/Indicator	Description
ESD Ground	Female jack for a grounding strap to prevent electrostatic discharge damage
Drive Bay	The green fan-status light for the fan in the peripheral drive bay is on when the cooling fan in the peripheral drive bay is running.
CPU Rear Fans 1 2 3 4	The green fan-status light is on for each of the four cooling fans in the rear of the MAP/100C anytime the particular fan is running.
Pwr Sup	The green fan-status light is on for the cooling fan inside the power supply while the fan is running.

***Continued on next page***

**Table 3-1. MAP/100C Front Panel — Continued**

<b>Switch/Indicator</b>	<b>Description</b>
COM 1 or Serial	DB-25 connector for RS-232C connection to a serial communications I/O port of the MAP/100C
Keyboard	5-pin circular DIN female connector for connecting a keyboard to the MAP/100C.
Video	15-pin female D subminiature connector for the signal cable of the video monitor
Reset	Pushbutton switch resets the MAP/100C processor.
On/Off switch	Rocker switch turns power to the MAP/100C on or off. The circuit breaker on the rear of the MAP/100C must be on to provide input power to the power supply.
Power light	Glows green when power is on to the MAP/100C
Diskette drive access indicator	Glows whenever the diskette drive is being accessed for a read or write operation

- -

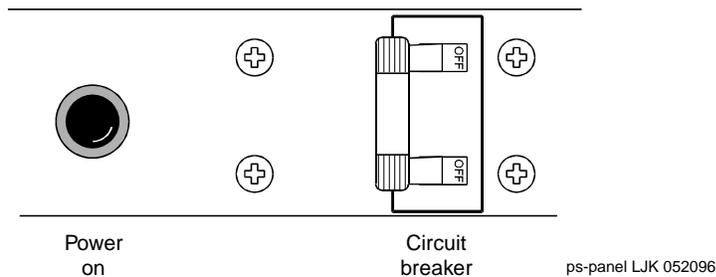


**Figure 3-2. MAP/100C Rear Panel**

The rear panel duplicates most of the connectors on the front panel, but not the power On/Off switch, power light, fan-status lights or diskette drive.

**Table 3-2. MAP/100C Rear Panel**

Switch/Indicator	Description
COM 1 or Serial	DB-25 connector for RS-232C connection to a serial I/O port of the MAP/100C
Keyboard	5-pin circular DIN female connector for connecting a keyboard to the MAP/100C
Video	15-pin female D subminiature connector for the signal cable of the video monitor
Reset	Pushbutton switch resets the MAP/100C processor.
ESD Ground	Female jack for a grounding strap to prevent electrostatic discharge damage



**Figure 3-3. MAP/100C Power-Supply Panel**

The power supply for the MAP/100C is at the top of the machine and is accessible from the rear. The power supply has a power-on light and a circuit breaker.

**Table 3-3. MAP/100C Power-Supply Panel**

<b>Switch/Indicator</b>	<b>Description</b>
Power-on light	A green light is on when the power supply is providing power to the MAP/100C. The light is off when the circuit breaker has tripped or when power has been turned off at the circuit breaker or the front-panel power switch.
Circuit breaker	Pushing the circuit-breaker handle to the right turns the power supply on. Pushing it to the left turns the power supply OFF. If the circuit breaker trips, the handle will be at the left. To reset the circuit breaker after it trips, make sure the front-panel power switch is on, then push the circuit-breaker handle fully to the right. The front-panel switch and circuit breaker must both be on for the power supply to be on.

## **Indicators on SCSI Cartridge Tape Drives**

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Each MAP/100C in a MAP 2000 VP or PM contains a SCSI cartridge tape drive that loads, backs up, and restores software. The tape drive is located at the right-hand side of the peripheral bay at the bottom of the MAP/100C. A MAP/100C currently may contain either of two kinds of tape drive, and your site might have some of each kind. The two types of tape drive have similar functions but their front panels look different and the light emitting diode LED indicators at the lower left of their front panels have different meanings.

### **2.5-Gbyte Cartridge Tape Drive**

The tape drive in the following figure shows a 2.5-Gbyte SCSI cartridge tape drive. When you insert tapes into this drive, the LED goes on and stays on until you remove the tape. The LED flashes while the drive is reading or writing. When read/write operations finish, the LED stays on steadily again. You may safely remove the tape from the 2.5-Gbyte drive when the light is on steadily.



2.5 Gbyte cartridge tape drive

stape1 KLC 052196

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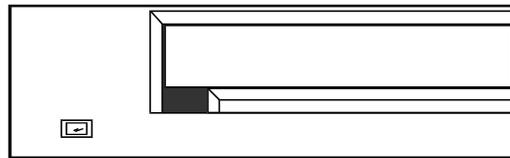
### **Figure 3-4. 2.5 Gbyte Tape Drive and LED Indicators**

If the LED stays off when the drive should be reading or writing, suspect one of these possibilities:

- There is no cartridge in the drive
- The drive has failed
- The connection between the drive and the LED has failed

### 525-Mbyte Cartridge Tape Drive

The tape drive in the next diagram is a 525-Mbyte SCSI cartridge tape drive. When you insert a tape into this drive, the LED does not go on automatically. The LED stays on steadily when the tape drive is reading or writing, and goes off when the drive has stopped and is retensioning the tape. You may safely remove a tape from the 525-Mbyte SCSI cartridge tape drive when the LED is off.



525 Mbyte cartridge tape drive

stape2 KLC 052196

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### Figure 3-5. 525 Mbyte Tape Drive and LED Indicators

If the LED stays off when the drive should be reading or writing, suspect one of these possibilities:

- There is no cartridge in the drive
- The drive has failed
- The connection between the drive and the LED has failed

## **Communicore Module Indicators**

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### **Communicore LED Strategy**

Each module has one STATUS LED that indicates the module's state of health. If a STATUS LED remains off after a module has been inserted, reseal the module and retest. If the module fails again, the module is faulty and should be replaced.



#### **CAUTION:**

*The status LED may be dark simply because the module has been administratively removed from the system. Check to see if the module has been administratively removed before replacing the module.*

Additional information about the operational state of the module is given by the display patterns of the STATUS LED and additional LEDs on some modules.

### Communicore LED States

The following terms describe the LED display patterns. The precise meanings of these vary from module to module, but they follow some general principles.

**Table 3-4. Communicore LED States**

<b>State</b>	<b>Display Pattern</b>	<b>Meaning</b>
ON	The LED is on steadily.	The module is in use. Removing a module in this state disrupts any services using it.
OFF	The LED is dark steadily.	<p>The module has failed and should be replaced. See</p> <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Removing Communicore Modules Hot" on page 8-10</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p><b>⇒ NOTE:</b> The status LED may be dark simply because the module has been administratively removed from the system. Check if the module has been administratively removed before you replace it.</p>
FLASH	The LED flashes once per second.	The module has passed diagnostics and is idle. For an external interface, this indicates that no equipment is connected to it, or that the connection or equipment is faulty.

**Table 3-4. Communicore LED States**

<b>State</b>	<b>Display Pattern</b>	<b>Meaning</b>
FAST FLASH	The LED flashes three times per second.	The module is running a demand diagnostic. This state normally lasts for a second or less.
SLOW FLASH	The LED flashes once every two seconds.	Indicates that communication has been lost with the control module.
FLUTTER	The LED flashes rapidly in a pattern that may be irregular.	Firmware is being downloaded to the module. Downloading resets the module and restores it to service, causing the LEDs to flash increasingly faster from FLASH to FLUTTER until initialization is complete and the LEDs are on. For a more detailed explanation see <i>LED Displays During Download</i> below.

### **LED Displays During Initialization**

During initialization or when restored to service, all LEDs on a module flash for at least five seconds. This allows you to confirm that the LEDs themselves are functional. During this process, the LEDs flash increasingly faster from FLASH to FLUTTER. After that, they display their normal operational states as defined in the following sections.

## LED Displays During Download

When downloading firmware to any Communicore module, whether during installation or upgrade, the LED flash patterns vary in accordance with the following download phases described in Table 3-5.



### **WARNING:**

*After a firmware download sequence, the control 360 module STATUS LED is ON and the NODE PROCR LINK LED is OFF. This sequence can take up to 10 to 15 seconds to complete. This is not a failure indication. Do not remove the control 360 module during this time or firmware erasable/programmable read-only memory (EPROM) damage will occur.*

**Table 3-5. LED Definitions.**

Phase	State	Display Pattern	Meaning
1	FAST FLASH	The LED flashes three times per second.	A copy of the firmware is being loaded into the RAM buffer.
2	ON	The LED is on steadily.	The PROM on the module is being erased.
3	FAST FLASH	The LED flashes three times per second.	Firmware is being downloaded to the module.
4	FLUTTER	The LED flashes rapidly in a pattern that may be irregular.	The module is restored to service, causing the LEDs to flash increasingly faster from FLASH to FLUTTER until initialization is complete and the LEDs are on.
5	ON	The LED is on steadily.	The download operation is complete.

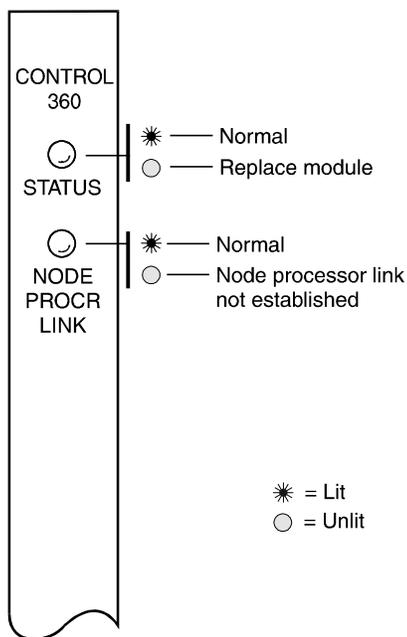
## LED Displays During Diagnostics

During diagnostics, all LEDs on a module flash.

When the module is removed from service, all LEDs are dark. When diagnostics are initiated, the LEDs flash. When diagnostics are finished, all LEDs are dark and the module can then be replaced or restored to service.

### Control 360 Module LEDs

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**Figure 3-6. Control 360 Module**

**⚠ WARNING:**  
*After a firmware download sequence, the control module's STATUS LED is ON and the NODE PROCR LINK LED is OFF. This sequence can take up to 10 to 15 seconds to complete. This is not a failure indication. Do not remove the control module during this time or firmware EPROM damage will occur.*

LED Label	State	Meaning
<b>Status</b>	ON	This is the normal operational state.  The module has passed diagnostics and is communicating with at least one other module across the control bus.
	OFF	 <b>NOTE:</b> The status LED does not go dark, even when administratively removed. If the module has been administratively removed, and the status LED is dark, most likely a download is going on. This status can last for 10 to 15 seconds.
	FLASH (one/second)	Not applicable.
<b>Node Procr Link</b>	ON	This is the normal operational state. The control module is communicating with the MAP/100C.
	OFF	The node processor is <i>not</i> communicating with the MAP/100C.  1. Reseat the module. Refer to "Installing Communicore Modules" on page 8-8  2. If reseating the control 360 module does not fix the problem, replace the module. See  ■ "Removing Communicore Modules" on page 8-9  ■ "Removing Communicore Modules Hot" on page 8-10  ■ "Installing Communicore Modules" on page 8-8  ■ The command description for "download" on page -70
<b>Both LEDs</b>	FAST FLASH (three/second)	The module is running demand diagnostics.
	FLASH increasing to FLUTTER	During initialization or when restoring to service, all LEDs flash increasingly faster from FLASH to FLUTTER.

## Power/Maintenance Module LEDs

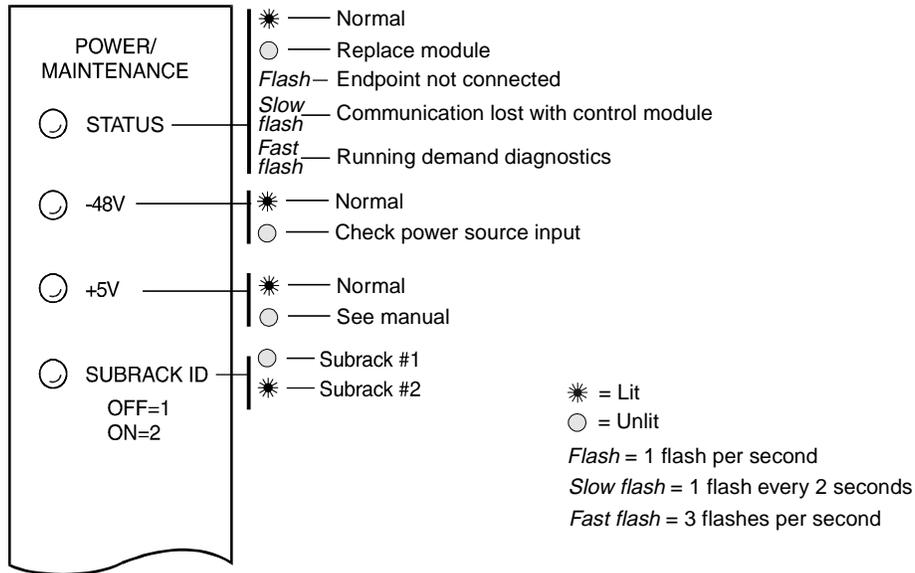


Figure 3-7. Power/Maintenance Module

**NOTE:**

Removing the power/maintenance module when the system is powered may result in damage to the Communicore.

<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>Status</b>	ON	This is the normal operational state. The module has passed diagnostics.
	OFF	<p>The module has failed diagnostics.</p> <p>Replace the module. See</p> <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p><b>⇒ NOTE:</b> Removing the power/maintenance module when the system is powered may result in damage to the Communicore.</p>
	FAST FLASH (three/second)	The module is running demand diagnostics.
	SLOW FLASH (one every two seconds)	Communication has been lost with the control module.
	FLASH increasing to FLUTTER	During initialization or when restored to service, all LEDs flash increasingly faster from FLASH to FLUTTER.

*Continued on next page*

<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>-48 V</b>	ON	-48 V dc is present for conversion to +5 V dc.
	OFF	<p>-48 V dc is not present for conversion to +5 V dc system power and +12 V dc. The +5 V LED should also be off, and the other modules on the subrack should be nonfunctional.</p> <p>Check the power cable. If -48 V dc is present at the cable connector, replace the power/maintenance module. See</p> <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p>This LED state could also indicate that the backplane is shorted, though this is an unlikely possibility.</p>

***Continued on next page***

<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>+5 V</b>	ON	This is the normal operational state. +5 V dc power to the backplane is present.
	OFF	<p>+5 V dc system power to the backplane is not present. This renders the entire subrack nonfunctional.</p> <p>If the -48 V LED is on, then the voltage converter is probably faulty. Replace the module. See</p> <ul style="list-style-type: none"><li>■ "Removing Communicore Modules" on page 8-9,</li><li>■ "Installing Communicore Modules" on page 8-8</li><li>■ The command description for "download" on page -70</li></ul> <p>This condition may also indicate a short caused by a fault in one of the other modules or the backplane.</p> <p>If the -48 V LED is OFF, see the previous instructions for that LED.</p>
<b>Subrack ID</b>	OFF	This subrack is subrack 1.
	ON	<p>This subrack is subrack 2.</p> <p>The orientation of the inter-subrack cable determines the numbering of the subracks. One end of the cable is labeled "Subrack 1." Plugging this end into a subrack causes it to be subrack number 1.</p>

## PRI T1 Module LEDs

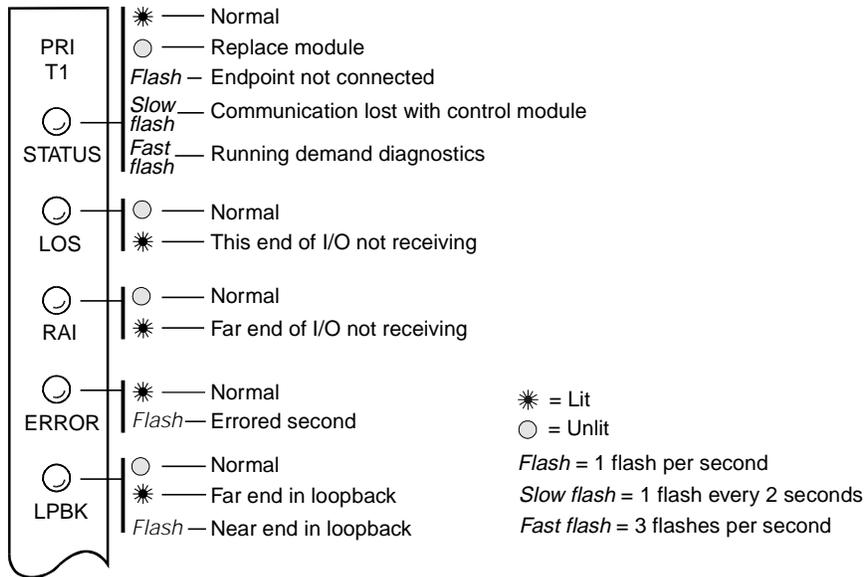


Figure 3-8. PRI T1 Module

LED Label	State	Meaning
Status	ON	This is the normal operational state. The module has passed diagnostics and is framing with the PRI at the 4ESS or the MAP/100C.
	OFF	The module has failed diagnostics. Replace the module. See <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Removing Communicore Modules Hot" on page 8-10</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p><b>⇒ NOTE:</b> The status LED may be dark simply because the module has been administratively removed from the system. Check to see if the module has been administratively removed before replacing the module.</p>
	FLASH (one/second)	The interface is not framing with the 4ESS or the MAP/100C. This is normal when a PRI cable is not connected to the port on this module.  If a PRI cable is plugged in, check the 4ESS or the MAP/100C PRI (T1) facility and connecting wiring.
SLOW FLASH (one every two seconds)	Communication has been lost with the control module.	

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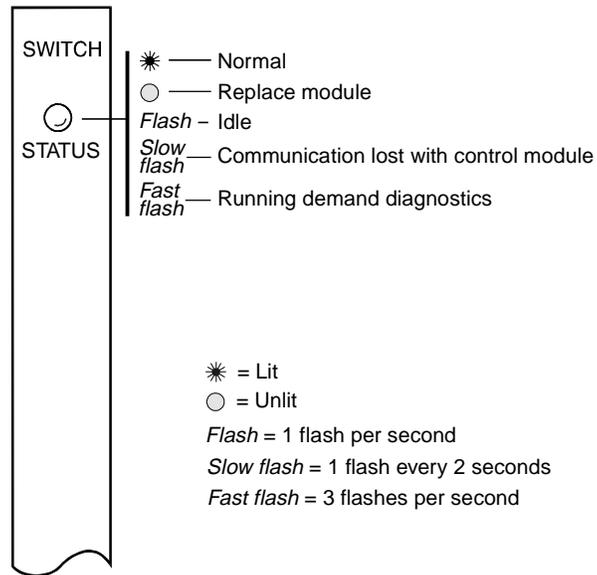
<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>LOS</b> (Loss of signal)	OFF	This is the normal state.  The interface is receiving a signal from the 4ESS or the MAP/100C PRI.
	ON (red)	The interface is not receiving a signal from the 4ESS or the MAP/100C PRI.  Check the connecting wiring, the T1 facility, and the operation of the 4ESS or the MAP/100C PRI. If no external source of trouble is found, replace the module. See <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Removing Communicore Modules Hot" on page 8-10</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul>
<b>RAI</b> (Remote Alarm Indication)	OFF	This is the normal state. No Yellow Remote Alarms are active.
	ON	The interface has received a Yellow Remote Alarm indication. The 4ESS or the MAP/100C PRI is not receiving good framing information from this interface. Check the connecting wiring and T1 facility.
<b>Error</b>	Flashing, various rates possible	This LED flashes every time an errored second occurs. A rapid flash rate indicates the occurrence of many bit errors, out-of-frame errors, CRC-6 errors (cyclic redundancy check), or bipolar violations.

***Continued on next page***

<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>LPBK</b> (loopback)	OFF	This is the normal operational state. No loopbacks are in effect.
	FLASH	A near-end loopback is in effect.  Far-end loopback capability is not available in this release.
<b>All LEDs on module</b>	FAST FLASH (three/second)	The module is running demand diagnostics.
	FLASH increasing to FLUTTER	During initialization or when restored to service, all LEDs flash increasingly faster from FLASH to FLUTTER.

## Switch Module LEDs

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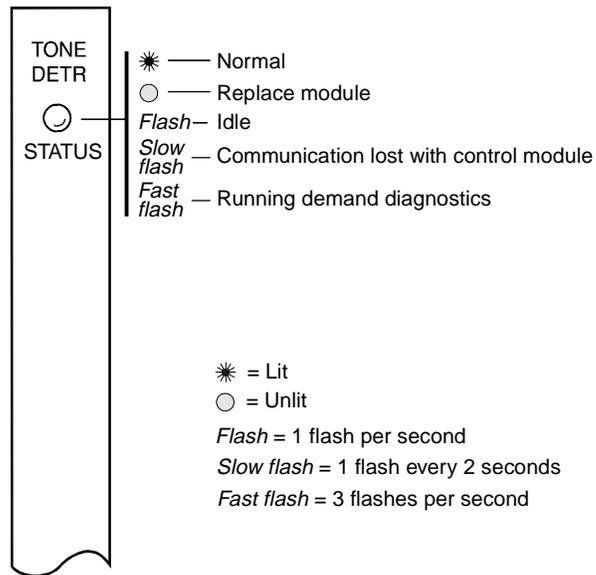
**Figure 3-9. Switch Module**

<b>LED Label</b>	<b>State</b>	<b>Meaning</b>
<b>Status</b>	ON	This is the normal operational state. The module has passed diagnostics, and is being used for at least one circuit or packet connection.
	OFF	The module has failed diagnostics. Replace the module. See <ul style="list-style-type: none"><li>■ "Removing Communicore Modules" on page 8-9</li><li>■ "Removing Communicore Modules Hot" on page 8-10</li><li>■ "Installing Communicore Modules" on page 8-8</li><li>■ The command description for "download" on page -70</li></ul>
	FLASH (one/second)	The module is not in use. All diagnostics have passed.
	SLOW FLASH (one every two seconds)	Communication has been lost with the control module.
	FAST FLASH (three/second)	The module is running demand diagnostics
	FLASH increasing to FLUTTER	The module has just been restored to service

---

### Tone-Detector Module LEDs

---



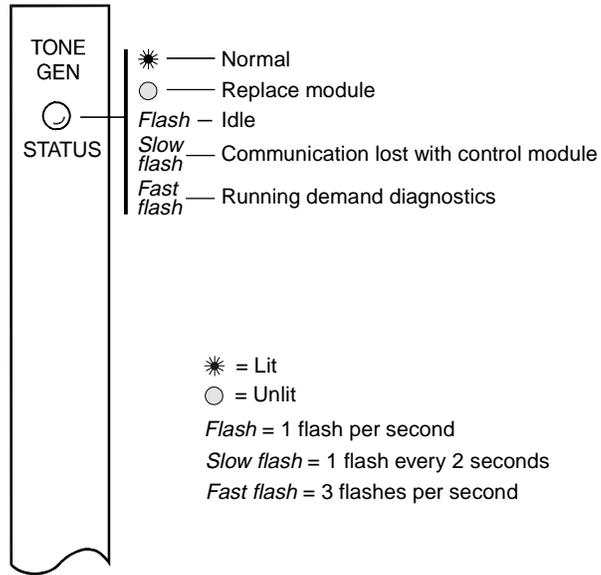
---

**Figure 3-10. Tone-Detector Module**

LED Label	State	Meaning
<b>Status</b>	ON	The module has passed diagnostics, and is currently active (being used to detect tones).
	OFF	<p>The module has failed diagnostics. Replace the module. See</p> <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Removing Communicore Modules Hot" on page 8-10</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p><b>⇒ NOTE:</b> The status LED may be dark simply because the module has been administratively removed from the system.</p> <p>Check to see if the module has been administratively removed before replacing the module.</p>
	FLASH (one/second)	The module is functional and idle. All diagnostics have passed. This is the normal operational state.
	SLOW FLASH (one every two seconds)	Communication has been lost with the control module.
	FAST FLASH (three/second)	The module is running demand diagnostics.
	FLASH increasing to FLUTTER	The module has just been restored to service.

### Tone-Generator Module LEDs

---

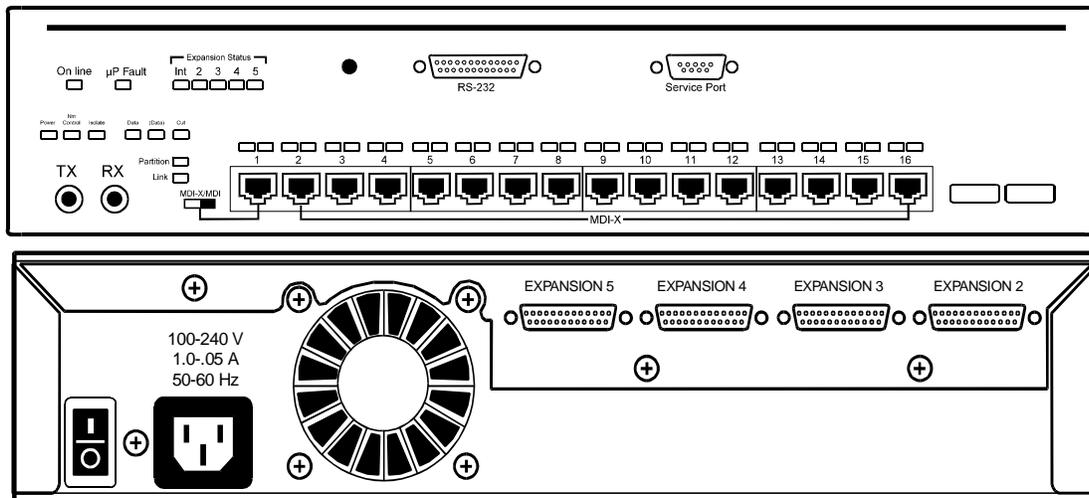


---

**Figure 3-11. Tone-Generator Module**

LED Label	State	Meaning
<b>Status</b>	ON	The module has passed diagnostics, and is currently being used to generate tones.
	OFF	<p>The module has failed diagnostics. Replace the module. See</p> <ul style="list-style-type: none"> <li>■ "Removing Communicore Modules" on page 8-9</li> <li>■ "Removing Communicore Modules Hot" on page 8-10</li> <li>■ "Installing Communicore Modules" on page 8-8</li> <li>■ The command description for "download" on page -70</li> </ul> <p><b>⇒ NOTE:</b> The status LED may be dark simply because the module has been administratively removed from the system.</p> <p>Check to see if the module has been administratively removed before replacing the module.</p>
	FLASH (one/second)	The module is functional but is not currently generating tones. All diagnostics have passed. This is the normal operational state.
	SLOW FLASH (one every two seconds)	Communication has been lost with the control module.
	FAST FLASH (three/second)	The module is running demand diagnostics.
	FLASH increasing to FLUTTER	The module has just been restored to service.

## Network Hub Switches and Indicators



lathub2 C.JL 042696

**Figure 3-12. LattisHub 2814 10BASE-T Workgroup Concentrator (front and rear views)**

LattisHub 2814s are used in all PM machines delivered after January 1, 1996. The two hubs for each PM machine are installed in the upper part of the 5ESS cabinet. Each of the two LANs in a PM machine has only one LattisHUB.

The rear of each LattisHub unit is accessible from the rear of the cabinet.

**Table 3-6. LattisHub 2814 10BASE-T Workgroup Concentrator**

Switch/Indicator	Description
On Line LED (green)	On when the hub is operating. On while self-tests are running or if a download failed after eight attempts. FLASHES while the hub is waiting for a download or a download is in progress.
µP Fault (yellow)	On indicates a fault in the hub's microprocessor. Also on during power-on self-test and reset. OFF while the hub is waiting for a download or a download is in progress, and OFF when the hub is operating normally.
Expansion Status LEDs (green), INT and 2-5	Not used in this application.

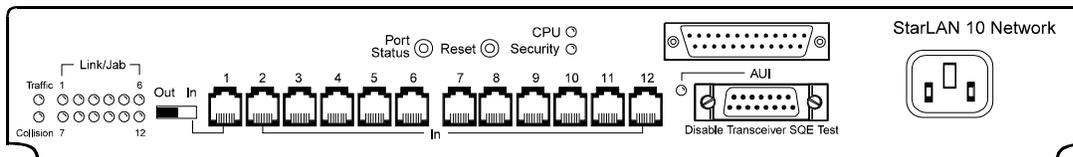
*Continued on next page*

**Table 3-6. LattisHub 2814 10BASE-T Workgroup Concentrator — Continued**

<b>Switch/Indicator</b>	<b>Description</b>
Reset switch	Resets the hub when you press the switch by inserting a small, pointed instrument through the hole in the front panel. The effect is the same as power-cycling the hub except that the Reset switch doesn't affect data integrity.
Power LED (green)	On when dc power is accurately being delivered to the hub.
NM Control LED (yellow)	Network Management Control LED. On indicates that the hub has been isolated (partitioned) from the cluster "backplane" or that one or more ports have been administratively partitioned.
Isolate LED (yellow)	Always OFF. This LED would be on only if the hub were connected to other hubs in a "cluster" but administratively isolated from them.
Data LED (green)	On when the hub is receiving data.
(Data) LED (green)	FLASHES briefly after each data transmission.
Col LED (yellow)	Collision LED. FLASHES each time a collision is detected.
Partition LED (yellow) and Link LED (green)	Not used. These LEDs indicate the status of the TX and RX 10BASE-FL Fiber Ports just to the left of the LEDs.
Link LED (green)	On if a port (MDI-X <sup>1</sup> 1 through 16) is connected to a PC NAU circuit card that is operating within prescribed limits. OFF if the port has been administratively partitioned.
Part LED (yellow)	On if a port (MDI-X 1 through 16) has been autopartitioned (isolated) because of excessively frequent or long-duration collisions or if it has been administratively partitioned.

***Continued on next page***

1. media dependent interface



**Figure 3-13. StarLAN 10 Network SmartHUB Model B**

The StarLAN 10 Network SmartHUB Model B is used in PM machines at some sites. There are no controls, indicators or connectors on the rear of these hubs.

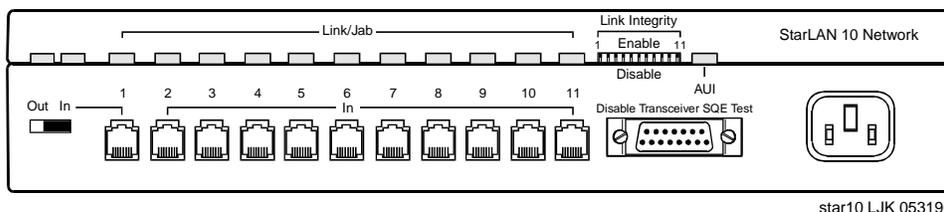
**Table 3-7. StarLAN 10 Network SmartHUB Model B**

Switch/Indicator	Description
Port Status button	Press this button momentarily and watch the Link/Jab LEDs; a GREEN indicates that the port is on. When you release the button, the LEDs return to their link/jab indications. The AUJ (autonomous unit interface) port and its LED are not used in this system so you can ignore them.
Reset button	Press this button to reset the hub manually. The effects are the same as disconnecting and reconnecting power to the hub.
CPU LED	This LED can be RED, GREEN, AMBER, or OFF. RED indicates that the hub has failed diagnostics or that its temperature is too high. GREEN means that all hub functions are running normally. The LED flashes AMBER while diagnostics are running, then remains AMBER for five seconds after the hub passes diagnostics — if it stays on longer, the hub's configuration memory is corrupted. The LED remains OFF only when power is removed from the hub.
Security LED	This LED can be RED, GREEN, AMBER, or OFF. The hub's security functions are not used by this system.
Traffic LED	Steadily on when the hub is powered and operating normally but there is no traffic passing through it. FLASHES mean normal traffic is being received. OFF if power is off, or if power is on and the hub has failed.
Collision LED	FLASHES when collisions are occurring in the hub. This is normal unless the LED is on almost continuously, which would indicate wiring problems or other LAN faults. OFF if there are no collisions on the hub. Also OFF if power is off or the hub has failed.

*Continued on next page*

**Table 3-7. StarLAN 10 Network SmartHUB Model B — Continued**

<b>Switch/Indicator</b>	<b>Description</b>
Link/Jab LEDs, 1-6 and 7-12	These LEDs correspond to the ports located to their right, labeled 1-12. The LEDs can be RED, GREEN, AMBER, or OFF. OFF means the hub has tested the receive function for a port and found a failure, or power to the hub is turned off, or the connected PC NAU circuit card is off. RED means a jab condition exists (excessively frequent or long-duration collisions) and the hub has turned off the port's receive function. GREEN means the port's receive function is being tested and has been found normal. AMBER means the port's receive function is <i>not</i> being tested but is normal.
Traffic LED (green)	Steadily on when the hub is powered and operating normally but there is no traffic passing through it. FLASHES mean normal traffic is being received. OFF if power is off or the hub has failed.
Collision LED (amber)	FLASHES when collisions are occurring on the LAN. This is normal unless the LED is on almost continuously, which would indicate wiring problems or other LAN faults.
Out/In switch for port 1	If any device connected to this port is set to OUT, this switch must be set to IN, and if any device connected to the port is set to IN, this switch must be set to OUT. SmartHUBs are connected in pairs in this system, so refer to the installation instructions for an explanation of how to set the Out/In switches of each pair of connected units. All the other ports, 2 through 16, are internally, permanently set to IN.
AUI LED	This LED indicates the status of the 15-pin (AUI) connector next to it, but the AUI connector is not used in this system.



star10 LJK 053196

**Figure 3-14. StarLAN 10 Network Hub**

The StarLAN 10 Network Hub is used in PM machines at some sites. There are no controls, indicators or connectors on the rear of these hubs. The front-panel controls, indicators, and connectors are somewhat different from those of the SmartHUB Model Bs.

**Table 3-8. StarLAN 10 Network Hub**

Switch/Indicator	Description
Traffic indicator (green, left-hand LED of the unlabeled pair)	Steadily on when the hub is powered and operating normally but there is no traffic passing through it. FLASHES mean normal traffic is being received. OFF if power is off, or if power is on and the hub has failed.
Collision indicator (amber, right-hand LED of the unlabeled pair)	FLASHES when collisions are occurring in the hub. This is normal unless the LED is on almost continuously, which would indicate wiring problems or other LAN faults. OFF if there are no collisions on the hub. Also OFF if power is off or the hub has failed.
Link/Jab LEDs, 1-11	These LEDs correspond to the ports located to their right, labeled 1-12. The LEDs can be RED, GREEN, AMBER, or OFF. OFF means the hub has tested the receive function for a port and found a failure, or power to the hub is turned off, or the connected PC NAU circuit card is off. RED means a jab condition exists (excessively frequent or long-duration collisions) and the hub has turned off the port's receive function. GREEN means the port's receive function is being tested and has been found normal. AMBER means the port's receive function is <i>not</i> being tested but is normal.

*Continued on next page*

**Table 3-8. StarLAN 10 Network Hub — Continued**

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<b>Switch/Indicator</b>	<b>Description</b>
Link Integrity switches, 1-11	These switches should always remain in the up (Enable) position in this system. They can be set in the up position to Enable or down to Disable the link integrity function for each respective port.
Out/In switch for port 1	If any device connected to this port is set to OUT, this switch must be set to IN, and if any device connected to the port is set to IN, this switch must be set to out. StarLAN 10 hubs are connected in pairs in this system, so see the installation instructions for an explanation of how to set the Out/In switches of each pair of connected units.
AUI LED	This LED indicates the status of the 15-pin (AUI) connector below it, but the AUI connector is not used in this system.

---

## **Power-Up Procedures**

---

### **Applying Site Power to the MAP 2000 and PM**

---

This procedure applies power to the MAP 2000 as well as the PM cabinets and components.

#### **Cabinet Power**

1. Switch on the source power for the 5ESS cabinets.
2. Measure -48 V dc  $\pm$  2.4 V dc at the fuse panel for each of the cabinets.
3. Verify that the L (lower) lamp on the alarm panel is on for each cabinet.
4. Press the TST (test) button on the alarm panel and verify that the alarm sounds. Press the ACO (alarm cut-off) button to clear the alarm. Perform this on each cabinet.

#### **MAP/100C Power**

1. Switch on the circuit breaker on the rear of each MAP/100C and verify that the green indicator goes on.
2. Switch on the power switch on the front of each MAP/100C and verify that the green indicator goes on.
3. Verify that the following fan status lamps are illuminated on the front of each MAP/100C:
  - a. Drive bay
  - b. CPU Rear Fans 1, 2, 3, and 4
  - c. Pwr Sup (power supply)
  - d. Check all the fan filters for cleanliness. If they need cleaning, refer to "Cleaning the MAP/100C Fan Filters" on page 8-2.
4. Open each MAP/100C front door and check that the backplane voltage LEDs are illuminated. The LEDs listed below are located on the backplane below slots 12 and 13.
  - a. CR1 +5 V
  - b. CR2 -5 V
  - c. CR3 +12 V
  - d. CR4 -12 V

### Communicore Power

1. Make sure that the power/maintenance module is completely seated in the proper backplane connector.
2. Connect the power cord first to the power/maintenance module in slot 16 of the upper subrack as shown in Figure 3-15.
3. Connect the power cord to the power/maintenance module in slot 16 of the lower subrack.

After applying power, all LEDs on the inserted modules should come on in the first five seconds and should stay on for at least 5 seconds. This allows you to confirm that the LEDs can go on. The LEDs then increase from flash to fast flash during initialization.

If no LEDs go on, the possible reasons are as follows:

- The module is not seated properly. If this is the case, reseat the module. Snap the module in quickly to reseat it. You may have to reseat it a couple of times.
- There is no power to the power/maintenance module. Check to make sure all power equipment is connected and turned on.
- The power/maintenance module is defective. Replace the power/maintenance module. See "Removing Communicore Modules" on page 8-9, "Removing Communicore Modules Hot" on page 8-10, "Installing Communicore Modules" on page 8-8, and The command description for "download" on page -70.
- If the LEDs are all off except for the -48 V LED on the power/maintenance module, suspect a short in the backplane. Replace the backplane/chassis assembly.



**CAUTION:**

*Never connect power to the power/maintenance module when it is not inserted into the chassis. Always disconnect the power cord from the Power/Maintenance module before removing or inserting it.*

4. Replace any module that is not working. See "Removing Communicore Modules" on page 8-9, "Removing Communicore Modules Hot" on page 8-10, "Installing Communicore Modules" on page 8-8, and the command description for "download" on page -70.

### LAN Power

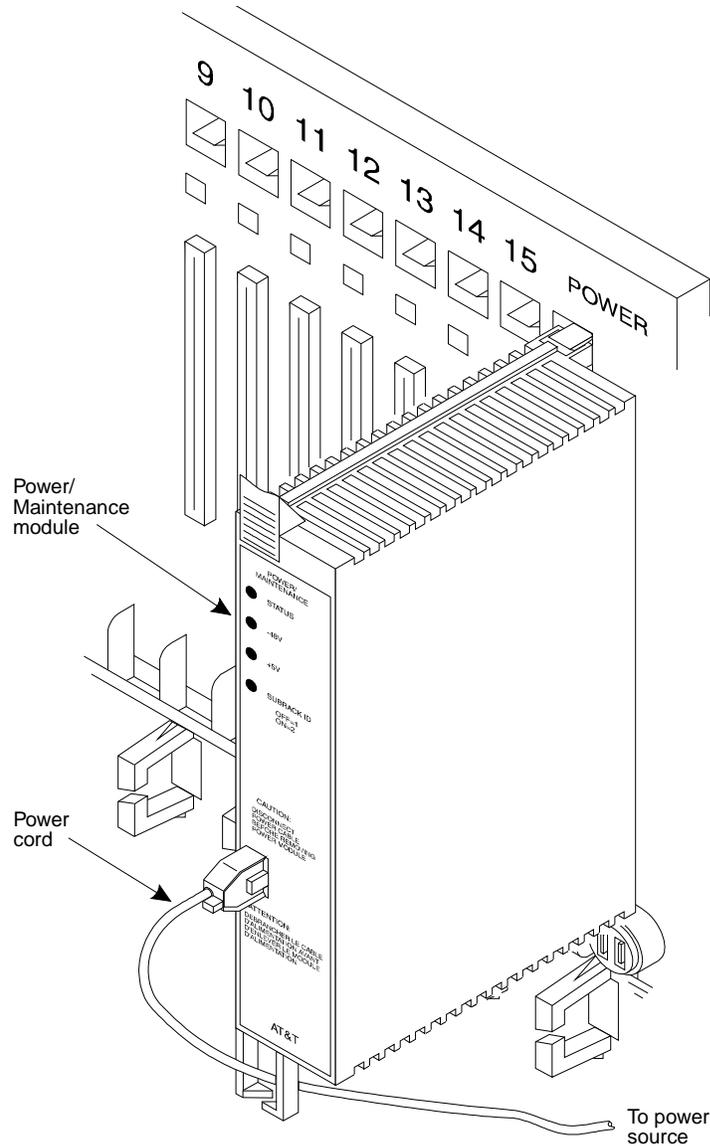
---

Refer to LattisHub 10BASE-T Workgroup Concentrators User's Guide, 893-573-A and perform the power-up procedure.

Refer to *StarLAN 10 Network SmartHUB Installation and Operation Guide (for Model B and Model E)*, 999120771, and perform the SmartHUB Power-Up LED Test.

Refer to *StarLAN 10 Network Hub Installation Guide*, 999120722, and perform the Power-Up LED Test.

---



---

**Figure 3-15. Applying Power to the Communicore**

This completes the MAP 2000 and PM power-up and system power check.

## **Operating Procedures**

---

### **Run Levels on the Machines**

---

To view run levels for the machines, enter:

**who -r**

**⇒ NOTE:**

Run **who** on the machine you are logged into. **who** will not run on a remote machine.

Check the output. You should see the following states:

<b>Machine</b>	<b>Run Level</b>	<b>Machine State</b>
<b>PM</b>	Run level 3	ON state
	Run level 2	OFF state
<b>VP</b>	Run level 4	ON state
	Run level 3	OFF state

### **Power-Cycling the PM**

---

To power-cycle the PM:

1. Follow the steps in "Performing a Graceful Shutdown" on page 3-38.
2. Follow the steps in "Powering Down the MAP/100C" on page 3-38.

### **Power-Cycling the VP**

---

To power-cycle the VP:

1. Follow the steps in "Performing a Graceful Shutdown" on page 3-38.
2. Follow the steps in "Powering Down the Communicore" on page 3-38.
3. Follow the steps in "Powering Down the MAP/100C" on page 3-38.

## **Normal Shutdown Procedures**

---



### **CAUTION:**

*Before powering down a machine, make an image tape, which you may need to bring the machine back up. Refer to "Making an Application Image Tape" on page 4-83.*

### **Performing a Graceful Shutdown**

For any machine:

1. Enter this command:

```
chg_state -m <mach_id> down
```

2. Check for this prompt before continuing:

```
Reboot system now
```

### **Powering Down the Communicore**

To disconnect the Communicore from power:

1. Administratively remove all modules to disable new calls. Refer to "remove" on page 5-123.
2. Allow active calls to finish. After all active calls on a module have finished, the module returns to an idle state. This causes the STATUS LED to go off for the following modules:
  - Tone Generator
  - Tone Detector
  - PRI (except for slot 3 PRI)
3. For all other modules (switch, control, and power/maintenance) the STATUS LED will be on steadily, indicating an idle state.
4. Disconnect the power cord from the power/maintenance module located in slot 16 of the upper subrack.
5. Disconnect the power cord from the power/maintenance module located in slot 16 of the lower subrack.

### **Powering Down the MAP/100C**

1. Switch OFF the power switch on the front of the MAP/100C and verify that the green indicator light is off.
2. Switch OFF the circuit breaker on the rear of the MAP/100C and verify that the green indicator light is off.

## **Power-Cycling and Downloading VP Firmware**

Power-cycling clears the system after a fault is cleared. This procedure resembles rebooting the system. These procedures should be done only under the direction of Tier II or Tier III level support.

1. Enter this command:

```
chg_state -m <mach_id> down
```

where **<mach\_id>** in all of the previous commands is the VP.

Check for this prompt before continuing: `Reboot system now.`

2. Power down the MAP/100C.
3. Power-cycle the Communicore by removing the power connector from the power module in subrack 2 and then subrack 1. Install the power connector in subrack 2 and then subrack 1. The reboot should take between 5 and 10 minutes.
4. Power up the MAP/100C.
5. From PM01 make the VP active by using the **ssa\_admin** command. When `startup voice system` displays on your screen, press **(ENTER)**. When the startup is completed, the login prompt is displayed.
6. Enter **chg\_state -m <mach\_id> off** and wait five minutes.
7. Enter **chg\_state -m <mach\_id> on**.
8. Enter **disp\_status -m <mach\_id>** to verify that the Communicore is active
9. Download the VP firmware.

### **CAUTION:**

*See "download" on page 5-70 for instructions and warnings about downloading firmware.*

In order to download the new firmware to the VP, the VP must first be taken out of service with the **chg\_state** command. After the firmware is downloaded, the VP must be returned to service. Enter these commands:

```
chg_state -m <mach_id> mtce [grace_period]  
download -m <mach_id> card all  
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

Wait 5 minutes. If the VP is not active, power-cycle the Communicore by executing these commands:

```
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

These commands take about an hour to complete.

## **Emergency Operation or Degraded Operation**

### **If You Lose a PM**

A site needs only one functioning PM to provision records. TNM, DCROS, and SMW will still work with the site. It is *not* recommended, however, that you stay in this state for a long time. Troubleshoot the nonfunctional PM to get it functioning again.

### **If You Lose Both PMs**

The VPs will run without any connectivity to the PM, but when you bring the PM up again you may have out-of-date data.

#### **⇒ NOTE:**

You will not see any alarms from the VPs when they are disconnected from the PMs, but you may see a burst of alarms when you bring the PMs up again.

Perform a **comcheck all** and then a **dbaudit all 2** on the affected machine. The SMW should update your records automatically, but you may want to call the AFSC and have them retry the SMW updates.

### **If You Lose T1s on a VP**

If you lose outbound T1s, the system automatically takes the corresponding inbound T1s out of service, but will still take phone traffic. If you lose inbound T1s, no outbound T1s are taken out of service. If you lose the T1 that carries the D-channel, you lose the whole VP.

### **If You Lose Multiple VPs**

Capacity and redundancy are different for each application. This includes the number of sites, the number of VPs at a site, and the call load for a single VP. Losing a single VP or losing an entire site may or may not affect service, depending on the application.

For TCS, losing a single VP, a T1 card or cards, or the entire site will not affect service because there is enough capacity in the network to handle these losses.

## What's in This Chapter?

When every machine is installed and cabled, you are ready to roll the video/keyboard cart to the first VP machine and do the firmware administration, software installation, and initial software administration for that machine.

This chapter includes three major sections:

- Information to review before you begin
  - An overview of the software you will be working with
  - Information about using the commands referenced in the checklists and the procedures
- Checklists

Checklists refer you to the appropriate procedures you must perform for each task. This series of checklists tells you how to install a new site and how to reload and add individual machines at an existing site. Many of these checklists refer you to the procedures later in this chapter.
- Procedures
  - Machine preparation
  - Software installation
  - Site administration

## Before You Begin

---

This section contains an overview of information you should be familiar with before you work through the checklists. This includes:

- An overview of the software you will be working with
- Explanations and examples of machine names (*mach\_name*) and machine ids (*mach\_id*)

## Software Overviews

---

This section is a brief overview of the types of software you'll be working with.

### NOTE:

The bracketed [mm/dd/yy] and number signs (#.#.#) in the screens shown in this chapter indicate packages supplied by Denver CAFS, and that the dated versions may change; the date and version numbers depend on the most current release. If you are unsure whether you have the most current release, call TCC for updated information.

## Platform Software

Platform software is preinstalled at the factory, but you may have to reinstall this software (for example, for disaster recovery) from the NAP 2.3 IMAGE tape. This is the software loaded on your machine after a NAP platform software install.

On the NAP 2.3 PM, before the application is installed:

```
CONVERSANT VIS V4.0 Base ORACLE DBMS 6.0.30
CONVERSANT VIS V4.0 Extended ORACLE DBMS 6.0.30
Core Maintenance Features (CMF) (OAM&P - SVR3.2.3) V2.0 R1.0 [mm/dd/yy]
C Software Development Set 4.1.5
Multiplexed Host Interface to Datakit(R) VCS Software 3.2v3
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

On the NAP 2.3 VP, before the application software is installed:

```
CONVERSANT VIS V4.0 Configuration Package
CONVERSANT VIS V4.0 Application Software
CONVERSANT VIS V4.0 Tl Board Driver
CONVERSANT VIS V4.0 SP Board Driver
CONVERSANT VIS V4.0 Feature Test Script Package
Core Maintenance Features (CMF) (VP - CVIS V4.0) V2.0 R1.0 [mm/dd/yy]
C Software Development Set      4.1.5
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
MAP2000 Downloadable Firmware P#.#.#
MAP2000 V2.0 Base System [mm/dd/yy]
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

For this release, you will receive the following software media:

- Two NAP 2.3 tapes, one for the VP and one for the PM. These are labeled:
  - "Network Adjunct Platform (NAP) 2.3 PM IMAGE Tape"
  - "Network Adjunct Platform (NAP) 2.3 VP IMAGE Tape"
- Two NAP 2.3 recovery-boot diskettes, one for the VP and one for the PM. These are labeled:
  - "NAP 2.3 - VP Recovery-Boot Floppy"
  - "NAP 2.3 - PM Recovery-Boot Floppy"

### **Application Software**

Application software is distributed electronically to each site by the TCC.

### **Miscellaneous Software**

Miscellaneous software you may need to install includes:

- Software patches
- Enhancement software for the platform and applications

## **Machine IDs <mach\_id> and Machine Names <mach\_name>**

---

When using some commands you must enter a machine name — with others a machine ID. The two terms differ as follows:

***mach\_id*** Specifies the machine type and machine instance pair from the machine table. Machine ID syntax is preferred.

***mach\_name*** Specifies the application-defined UNIX name (Uname) from the machine table

For the appropriate term for a specific command, see that command's format section.

For TCS:

***mach\_name*** Means ssap1, ssap2, ssa01 through ssa20

***mach\_id*** Means pm01, pm02, vp01 through vp20

For NAP:

Machine names have no bearing with respect to the NAP platform. NAP-specific commands recognize machine IDs only.

***mach\_id*** Means pm00 through pm99, vp00 through vp99

## **Software Installation Checklists**

---

These checklists are comprised of individual steps and references to the procedures at the end of this chapter. Copy these checklists so you can easily reference the procedures.

The checklists are:

- "Installing a New Site" on page 4-7
- "Installing a New VP at an Existing Site" on page 4-9
- "Reloading an Existing VP at an Existing Site" on page 4-11
- "Reloading an Existing PM at an Existing Site" on page 4-13



**CAUTION:**

*The order in which you perform the steps is determined by the task you are performing **as specified in each checklist**, and not necessarily the order in which the procedures appear in the text.*

Refer to Appendix A, "Upgrading to TCS Release 2.4." for information about upgrading an existing TCS 2.3 site.



## **Installing a New Site**

Use this checklist to prepare the hardware and firmware to receive the platform and application software.

### **Checklist: Installing a New Site**



**CAUTION:**

*Be sure to return to this checklist after completing each procedure until you finish the final installation step.*



1. Install the monitor and keyboard:

In order to perform any of the procedures described in detail later, you must have a video monitor and keyboard. If the monitor and keyboard are not already installed, perform "Installing the Monitor and Keyboard" on page 4-18.



**NOTE:**

If you have more than one monitor and keyboard set, you can perform the software installation on multiple machines at the same time.



2. Check the setup for the CMOS firmware.

The firmware is administered at the factory, but you should check the settings before loading the software; you may have to readminister the settings. If they are incorrect, perform "Checking and Administering CMOS and BIOS Firmware" on page 4-20.



3. Perform "Verifying the Software Release" on page 4-24.

This confirms that all software is current, using the **displaypkg** command.

(checklist continued)

(continued)

- 4. Install the software, if necessary.

Although each machine comes loaded with software, this process may be needed for software upgrades and software reloads in case of disk failure.

- If the preloaded software on the PM machines *is not* the NAP 2.3 PM software, perform "Installing the PM Software" on page 4-42 (on both PMs), using the NAP 2.3 PM IMAGE tape.

This requires one diskette labeled "NAP 2.3 PM Recovery-Boot Floppy" and one tape labeled "Network Adjunct Platform (NAP) 2.3 PM IMAGE tape."

- If the preloaded software on the VP machines *is not* the NAP 2.3 VP software, perform "Installing the VP Software" on page 4-30 for every VP, using the NAP 2.3 VP IMAGE tape.

This requires one diskette labeled "NAP 2.3 VP Recovery-Boot Floppy" and one tape labeled "Network Adjunct Platform (NAP) 2.3 VP IMAGE tape."

- 5. Perform "Administering a New Site" on page 4-52.

- 6. Perform "Checking Hardware Connectivity" on page 4-56.

Once all of the hardware is installed, you must verify LAN and Datakit connectivity using NAP diagnostic tools.

- 7. Perform "Installing the Application Software" on page 4-57.

- 8. Perform for PM01 and PM02, "Checking Application Connectivity" on page 4-79.

Check LAN and Datakit connectivity, and then generate test alarms to verify that they are received by TNM.

- 9. Perform "Checking 4ESS Connectivity" on page 4-81.

- 10. Perform "Making an Application Image Tape" on page 4-83.

- 11. After the software has been functioning successfully for a few days, perform "Committing to TCS Release 2.4" on page A-20.

(end of checklist)

## Installing a New VP at an Existing Site

Use this checklist when a VP is added to the site.

### **Checklist: Installing a New VP at an Existing Site**



**CAUTION:**

*Be sure to return to this checklist after completing each procedure until you finish the final installation step.*

- 1. Perform "Installing the VP Software" on page 4-30, using the application VP image tape made at the site. Refer to "Making an Application Image Tape" on page 4-83 for more information about the image tape.

This requires one diskette labeled "NAP 2.3 VP Recovery-Boot Floppy" and one tape labeled as the application VP IMAGE tape.



**NOTE:**

Although each machine comes loaded with software, this process may be needed for software upgrades and software reloads in case of disk failure.



**NOTE:**

Mach IDs are different from machine names. Refer to "Machine IDs <mach\_id> and Machine Names <mach\_name>" on page 4-4 for more information.

- 2. After all VP software-installation steps are complete, go to PM01 and perform "Making a Machine Active or Inactive" on page 4-77.  
  
The machine table lists machines as active or inactive. Before taking a machine out of service, make it inactive; after returning it to service, make it active.
- 3. On PM01, perform "Core Maintenance Feature Package Administration" on page 4-71. Perform only the procedures related to VPs.  
  
Use the Core Maintenance Feature package to make CMF tables match your site-specific card and module configurations and their connections.
- 4. Enter **db\_sync <mach\_id>**  
  
to copy customer records to the new VP. Refer to the command description for "db\_sync" on page 5-37.d for more information.
- 5. On PM01, use this command to start the application software on the new VP machine:

**chg\_state -m <mach\_id> on**

where **<mach\_id>** is the machine table ID of the new VP. (end of checklist)



## Reloading an Existing VP at an Existing Site

Use this checklist:

- To reload a VP that has had a hard-disk corruption or crash
- When a VP has to be replaced due to some other hardware failure

### **Checklist: Reloading an Existing VP at an Existing Site**



#### **CAUTION:**

*Be sure to return to this checklist after completing each procedure until you finish the final installation step.*

- 1. If the VP machine *is not* already down, enter this command on PM01:  
**chg\_state -m <mach\_id> down**  
  
where **<mach\_id>** is the VP to be reloaded.
- 2. On PM01, perform "Making a Machine Active or Inactive" on page 4-77.  
  
The machine table lists machines as active or inactive. Before taking a machine out of service, make it inactive; after returning it to service, make it active.  
  
Make the VP inactive and repair the problem.
- 3. Perform "Installing the VP Software" on page 4-30, using the application VP image tape made at the site. Refer to "Making an Application Image Tape" on page 4-83 for more information about the image tape.  
  
This requires one diskette labeled "NAP 2.3 VP Recovery-Boot Floppy" and one tape labeled as the application VP IMAGE tape.

#### **⇒ NOTE:**

Although each machine comes loaded with software, this process may be needed for software upgrades and software reloads in case of disk failure.

- 4. On PM01, use this command to restore the administration for the VP that was loaded:

**restadm [-r <mach\_id>]**

where **[-r <mach\_id>]** is the VP that will be restored.

#### **⇒ NOTE:**

Machine IDs are different from machine names. Refer to "Machine IDs <mach\_id> and Machine Names <mach\_name>" on page 4-4

(checklist continued)

(continued)

- ❑ 5. If the VP has been out of service for an extended time, from the primary PM enter:

**db\_sync <mach\_id>**

Refer to the command description for "db\_sync" on page 5-37.d for more information.

- ❑ 6. After every VP software installation step is completed, on PM01, perform "Making a Machine Active or Inactive" on page 4-77.

The machine table lists machines as active or inactive. Before taking a machine out of service, make it inactive; after returning it to service, make it active.

Make that machine active.

- ❑ 7. Use this command to start the application software on the reloaded machine:

**chg\_state -m <mach\_id> on**

where **<mach\_id>** is the reloaded VP.

(end of checklist)

### Reloading an Existing PM at an Existing Site

In this checklist, the PM to be reloaded is referred to as the *problem PM*, and the other PM is referred to as the *working PM*.

If you need to reload both PMs, follow the instructions in "Installing a New Site" on page 4-7, but skip the step to install software on the VPs.



**CAUTION:**

*Be sure to return to this checklist after completing each procedure until you finish the final checklist step.*

#### **Checklist:**

#### **Reloading an Existing PM at an Existing Site**



**CAUTION:**

*Be sure to return to this checklist after completing each procedure until you finish the final installation step.*

- 1. On the working PM, perform "Changing the Preferred PM" on page 4-70.  
Before taking a PM out of service, you must make the other PM the preferred PM.  
Make the working PM the *preferred PM*.
- 2. On PM01, perform "Making a Machine Active or Inactive" on page 4-77.  
The machine table lists machines as active or inactive. Before taking a machine out of service, make it inactive; after returning it to service, make it active.  
Make the PM inactive.
- 3. If the problem PM is not already down, enter:  
**chg\_state -m <mach\_id> down**  
where **<mach\_id>** is the problem PM.
- 4. Perform "Installing the PM Software" on page 4-42. Use the application PM image tape.  
This requires one diskette labeled "NAP 2.3 PM Recovery-Boot Floppy" and one tape labeled as the application PM IMAGE tape.



**NOTE:**

Although each machine comes loaded with software, this process may be needed for software upgrades and software reloads in case of disk failure.

(checklist continued)

- 5. After the software is reloaded and the machine has rebooted, from the primary PM enter:

**chg\_state -m <mach\_id> off**

- 6. Next, resynchronize the customer record database with the **db\_sync** command.

From the primary PM enter:

**db\_sync <mach\_id>**

where mach\_ID is the machine ID of the PM you have just reloaded. Refer to the command description for "db\_sync" on page 5-37.d for more information. This ensures that the audit proceeds quickly.

- 7. Next enter:

**chg\_state -m <mach\_id> on**

where **<mach\_id>** is the problem PM. The database is audited automatically at this point

- 8. Ensure both PMs are ON using these commands:

**disp\_status -m pm01**

**disp\_status -m pm02**

You should see this message after each command:

The SSA System is on.

- 9. On the working PM, perform "Changing the Preferred PM" on page 4-70.

Be sure the primary PM is set correctly.

- 10. After every PM software installation step is completed, on PM01, perform "Making a Machine Active or Inactive" on page 4-77.

The machine table lists machines as active or inactive. Before taking a machine out of service, make it inactive; after returning it to service, make it active.

Make that machine active.

- 11. On the working PM, perform "Restoring the Other PM's Administrative Data" on page 4-80.

This procedure is done only when one PM's database is corrupted or lost reloading the software, and you need to restore it from the other PM (if the database on that PM is correct).

This puts the machine table and previously backed-up administration data into the problem PM.

(checklist continued)

- 12. On the working PM, enter this command to audit the problem PM:  
**dbaudit all 2**
- 13. On the working PM, log in as **root** and enter this command to preserve Datakit authorization:  
**rcp <working\_PM\_mach\_name>:/etc/dkuidtab <problem\_PM\_mach\_name>:/etc**
- 14. After allowing time for the audit to finish (up to 30 minutes), check the audit results to verify that the two PMs are in sync. Enter:

**audresult**

If the audit *is not* finished, a screen similar to this appears:

The current audit results are as follows.

Mach	Inst Type	Aud lev	Cntrl status	DB's status	Ack status	Start Time	Completion Time
ssa01	VP01	1				May 21 10:47:34	
ssa10	VP10	1				May 21 10:47:34	
ssap1	PM01	1	control			May 21 10:47:31	
ssap2	PM02	1	slave		ack_rec	May 21 10:47:31	

If the audit *is* finished, a screen similar to this appears:

The current audit results are as follows.

Mach	Inst Type	Aud lev	Cntrl status	DB's status	Ack status	Start Time	Completion Time
ssa01	VP01	1		in-synch	ack_rec	May 21 10:47:34	May 21 10:47:34
ssa10	VP10	1		out-synch	timeout	May 21 10:47:34	May 21 10:49:34
ssap1	PM01	1	control	in-synch		May 21 10:47:31	May 21 10:47:35
ssap2	PM02	1	slave	in-synch	ack_rec	May 21 10:47:31	May 21 10:47:35

- 15. Make PM01 the *preferred PM* using "Changing the Preferred PM" on page 4-70.

Before taking a PM out of service, you must make the other PM the preferred PM.

(end of checklist)



## **Site Preparation Procedures**

---

To install the software on a machine and to perform site-administration tasks, you must attach a keyboard and monitor to the machine.

The CMOS firmware is set at the factory. However, if you find a problem when testing a system, you may need to check and readminister the CMOS firmware.

The procedures in this section are:

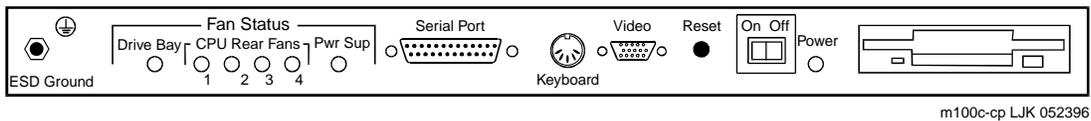
- "Installing the Monitor and Keyboard" on page 4-18
- "Checking and Administering CMOS and BIOS Firmware" on page 4-20
- "Verifying the Software Release" on page 4-24
- "Setting the Date and Time" on page 4-28

## **Installing the Monitor and Keyboard**

---

Put one of the video monitors and one of the keyboards on a cart. When you are ready to install the software on a MAP/100C, push the cart to that machine and plug in the monitor and keyboard as described below. If several people are installing, you may want to set up another cart with a second monitor and keyboard.

The front panel is to the left of the diskette drive on the MAP/100C as shown in Figure 4-1.



---

**Figure 4-1. Video and Keyboard Connectors on Front User-Interface Panel**

The rear user-interface panel is the same as the front panel but without the ON/OFF switch and fan status indicators. The rear panel is directly beneath the power-supply access door.

**NOTE:**

You can use either of the MAP/100C video connectors and either of the keyboard connectors, but not both video connectors at the same time and not both keyboard connectors at the same time.

The video monitor and keyboard can be plugged in and unplugged while the system is running, without shutting it down.

### **Install the Monitor**

The video monitor has a signal cable and a power cable. The signal cable is permanently attached to the monitor, and its connector plugs into the MAP/100C.

The power cable is permanently attached to the monitor. The standard plug connects to the site power source at a standard 115 V ac outlet.

1. Plug the signal cable into the connector labeled Video on the unit's front or rear user-interface panels.
2. Plug the video monitor's power cable into the 115 V ac 15A site outlet.
3. Turn the monitor's power switch to ON and observe the screen light up.

### **Install the Keyboard**

The keyboard has one cable that is permanently attached to the keyboard. The cable has a 5-pin male connector that connects to the MAP/100C. Insert the keyboard cable's 5-pin male connector into the 5-pin female connector labeled Keyboard on the MAP/100C unit's front or rear user-interface panel as shown in Figure 4-1.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## Checking and Administering CMOS and BIOS Firmware

---

CMOS is the program that administers firmware and nonvolatile memory. BIOS is the basic input /output system used by the computing machinery.

### **NOTE:**

Machine firmware is administered at the factory. However, if you find a problem when testing the system, you may need to follow the steps outlined below.

1. Connect the video monitor and keyboard to the machine you are administering.
2. Turn the monitor ON.
3. Power ON in one of the following ways:
  - If the machine is OFF, power ON.
  - If the machine is already ON:
    - a. Log in as **root**
    - b. Enter: **shutdown -i0 -g0 -y**
    - c. Power OFF
    - d. Power ON

Copyright notices appear, and then the memory test immediately starts. This message displays at the bottom of your screen:

```
Press <ESC> To Enter Setup After Memory Test
```

4. Press **[ESC]** now. When the memory testing finishes, the CMOS setup screen displays. The screen shows the BIOS version in the lower left corner:

```
BIOS Version .....2.1c(203/4)
BIOS Date.....11/08/94
```

If you do not see this version and date, perform the following procedure to upgrade the BIOS:

- a. Make sure that the CMOS setup disk is writable.
- b. Verify that the disk is labeled "486CPU Version 2.1c BIOS" Comcode 107406811
- c. Enter:  
**chg\_state -m <mach\_id> off**
- d. Insert the diskette into the machine.

- e. Reboot the machine (ideally, with the reset button).

The following message (or a similar one) appears:

Starting MS-DOS

The following prompt appears:

Press Any Key.

- f. Press a key.

Another prompt appears, saying something like:

Press Enter to continue (and do the upgrade)  
or ESC to quit.

- g. Press **ENTER**.

The firmware is upgraded.

- h. Remove the diskette.

- i. Reboot the machine.

- j. Bring the machine back into service following typical procedures.

5. If you performed the procedure in step 4 to upgrade the BIOS, you must reset the date and the time on the firmware screen. Refer to "Setting the Date and Time" on page 4-28.
6. Make sure the values on the screen match those provided in Table 4-1 and Table 4-2.

**⇒ NOTE:**

When working with the CMOS setup screen, use the arrow keys as follows:

- Use the up and down arrow keys ( **▲**, **▼** ) to select entries.
- Use the left and right arrow keys ( **◀**, **▶** ) to change entries.

**Table 4-1. CMOS Settings — Main Setup Screen**

Screen	Option	Should be Set At
Main Setup Screen	Diskette A	3½, 1.44Mbyte
	Diskette B	Not Installed
	Hard Drive 1	SCSI Installed
	Hard Drive 2	Not Installed
	Video Adapter	VGA/EGA
	Keyboard	Installed
	Diskette Verify	Enabled
	Bus Speed	8.33
	DMA Speed	4.16
	Cache	Enabled

7. Press **F3** to get to the Advanced CPU setup screens described in Table 4-2.

**⇒ NOTE:**

If you upgrade the BIOS, you must reset the local machine's time and date after finishing the upgrade.

**Table 4-2. CMOS Settings — Advanced Setup Screens**

Screen	Option	Should be Set At
Shadow Option ROMS (F2)	All Addresses	Disabled (not highlighted)
<p><b>⇒ NOTE:</b> Enabled is highlighted Disabled is not highlighted</p>		
Serial/Parallel Port Assignments (F3)	UART Number 1	03F8 IRQ4
	UART Number 2	02F8 IRQ3
	Parallel Port	Disabled
Wait State Selection (F4)	82C206 Read/Write Cycle	2 Wait States
	I/O Command Recovery Time	4 Bus Clocks
	16-Bit DMA	2 Wait States
	8-Bit DMA	2 Wait States
	DMA Address Hold	1-2 CPU Clocks
	DMA CAS Timing Delay	1 CPU Clock
	Memory Wait States	2 Wait States
Shadow RAM Cache Definitions (F5)	All Addresses	Non-Cacheable
Floppy Controller Interface (F6)	Floppy Controller	External
	IDE Interface	External
Customized Hard Drive Table Entry (F7)	Type 48	0 0 0 0 0
	Type 49	0 0 0 0 0
Memory Relocation (F8)	Memory Remapping	Disabled
Non-Cacheable Address Definitions (F9)	Address block 1.	Disabled
	Address block 2.	Disabled
Floppy Controller Port Assignments (F10)	Port Address	3F0H

8. Press (ESC) to save your entries and reboot the system.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## Verifying the Software Release

Use the **displaypkg** command to check the software release numbers on each machine. For each machine enter:

```
displaypkg -m <mach_id>
```

### Verify the NAP 2.3 Software on the PM

The NAP 2.3 PM has the software installed that is described in the following screen illustration. If your software does not match the screen shown below, reload the machine with the NAP 2.3 PM IMAGE tape. Refer to "Installing the PM Software" on page 4-42.

```
CONVERSANT VIS V4.0 Base ORACLE DBMS 6.0.30
CONVERSANT VIS V4.0 Extended ORACLE DBMS 6.0.30
Core Maintenance Features (CMF) (OAM&P - SVR3.2.3) V2.0 R1.0 [mm/dd/yy]
C Software Development Set 4.1.5
Multiplexed Host Interface to Datakit(R) VCS Software 3.2v3
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

#### NOTE:

The bracketed [mm/dd/yy] and number signs (#.#.#) in the screen shown above indicate packages supplied by Denver CAFS, and that the dated versions may change; the dates and version numbers depend on the most current release. If you are unsure whether you have the most current release, call the appropriate support organization for updated information.

## Verifying the NAP 2.3 Software on the VP

The NAP 2.3 VP has the software installed as shown in the following screen example. If your software does not match the screen shown below, reload your machine with the NAP 2.3 VP IMAGE tape. Refer to "Installing the VP Software" on page 4-30.

```
CONVERSANT VIS V4.0 Configuration Package
CONVERSANT VIS V4.0 Application Software
CONVERSANT VIS V4.0 T1 Board Driver
CONVERSANT VIS V4.0 SP Board Driver
CONVERSANT VIS V4.0 Feature Test Script Package
Core Maintenance Features (CMF) (VP - CVIS V4.0) V2.0 R1.0 [mm/dd/yy]
C Software Development Set      4.1.5
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
MAP2000 Downloadable Firmware P#.#.#
MAP2000 V2.0 Base System mm/dd/yy
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

### ⇒ NOTE:

The bracketed [mm/dd/yy] and number signs (#.#.#) in the screen shown above indicate packages supplied by Denver CAFS, and that the dated versions may change; the dates and version numbers depend on the most current release. If you are unsure whether you have the most current release, call the appropriate support organization for current information.

## Verifying the TCS 2.4 Software on the PM

The TCS 2.4 PM has the software installed that is shown in the following example screen. If your software does not match the screen shown below, reload your machine with the TCS 2.4 PM IMAGE tape. Refer to "Installing the PM Software" on page 4-42.

```
CONVERSANT VIS V4.0 Base ORACLE DBMS 6.0.30
CONVERSANT VIS V4.0 Extended ORACLE DBMS 6.0.30
Core Maintenance Features (CMF) (OAM&P - SVR3.2.3) V2.0 R1.0 [mm/dd/yy]
C Software Development Set 4.1.5
Multiplexed Host Interface to Datakit(R) VCS Software 3.2v3
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
Transfer Connect Service (TCS) (PM - SVR3.2.3) - V2.4 R 1.0 [mm/dd/yy]
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

### NOTE:

The bracketed [mm/dd/yy] and number signs (#.#.#) in the screen shown above indicate packages supplied by Denver CAFS, and that the dated versions may change; the dates and version numbers depend on the most current release. If you are unsure whether you have the most current release, call the appropriate support organization for current information.

## Verifying the TCS 2.4 Software on the VP

The TCS 2.4 VP has the following software installed. If your software does not match the screen shown below, reload your machine with the TCS 2.4 VP IMAGE tape. Refer to "Installing the VP Software" on page 4-30.

```
CONVERSANT VIS V4.0 Configuration Package
CONVERSANT VIS V4.0 Application Software
CONVERSANT VIS V4.0 T1 Board Driver
CONVERSANT VIS V4.0 SP Board Driver
CONVERSANT VIS V4.0 Script Builder
CONVERSANT VIS V4.0 Feature Test Script Package
Core Maintenance Features (CMF) (VP - CVIS V4.0) V2.0 R1.0 [mm/dd/yy]
C Software Development Set      4.1.5
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
MAP2000 Downloadable Firmware P#.#.#
MAP2000 V2.0 Base System mm/dd/yy
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V1.0 R1.0 [mm/dd/yy]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
Transfer Connect Service (TCS) (VP - CVIS V4.0) - V2.4 R 1.0 [mm/dd/yy]
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

### NOTE:

The bracketed [mm/dd/yy] and number signs (#.#.#) in the screen shown above indicate packages supplied by Denver CAFS, and that the dated versions may change; the dates and version numbers depend on the most current release. If you are unsure whether you have the most current release, call the appropriate support organization for updated information.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Setting the Date and Time**

---

Perform this procedure in the event you upgrade your BIOS. Set the CPU date and time using the following steps.

1. Log in as **root** or as restricted user.
2. Obtain a date and time stamp [Coordinated Universal Time (UTC) ] by calling the National Institute of Standards and Technology, Time of Day, Boulder, Colorado at (303) 499-7111 (voice) or (303) 494-4774 (data). This service gives central standard time, which is 6 hours less than Greenwich mean time.
3. Enter the new date and time at the prompt. Use this format:

**date <mmddhhmmYYYY>**

The date code is defined as follows:

<b>mm</b>	Month: 01 to 12
<b>dd</b>	Day: 01 to 31
<b>hh</b>	Hour: 00 to 23
<b>mm</b>	Minute: 00 to 59
<b>YYYY</b>	Year: 1996, 1997, 1998, etc.

**⇒ NOTE:**

Make sure you are using your appropriate network time.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Software Installation Procedures**

---

The procedures listed in this section are used in conjunction with the checklists earlier in this chapter. These procedures can also be used independently of those checklists if you need to perform specific installation tasks.

The procedures in this section are:

- "Installing the VP Software" on page 4-30
- "Running napsetup on the VP" on page 4-37
- "Installing the PM Software" on page 4-42
- "Running napsetup on the PM" on page 4-48
- "Administering a New Site" on page 4-52
- "Checking Hardware Connectivity" on page 4-56
- "Installing the Application Software" on page 4-57

## **Installing the VP Software**

---

Perform this procedure if:

- The preloaded software on your VPs is *not* the NAP 2.3 VP software, and you want it to be
- You are reloading a machine with the application's VP image tape

This procedure includes two processes summarized in the items below (detailed steps follow):

- Reading the boot recovery diskette, which reformats the hard disk, sets up the file system, reboots the system, and prompts for the appropriate VP image tape.
- Reading the NAP 2.3 VP IMAGE tape or the application VP image tape, which loads the VP software, runs the **napsetup** program, and reboots the machine (returns the machine to the ON state).

For this procedure, you need to have:

- One diskette labeled "NAP 2.3 - VP Recovery-Boot Floppy"
- One tape labeled "Network Adjunct Platform (NAP) 2.3 VP IMAGE Tape" or the application VP IMAGE tape
- The root and install passwords for the site
- The uname and matching machine index for this VP as defined in the Machine Table for your architecture
- The Communicore subrack 1 and subrack 2 powered up if this is a MAP 2000 machine

Follow these steps to install the VP software.

### **NOTE:**

If this is an existing site with the application already installed, perform steps 1 and 2. Otherwise, begin with step 3.

1. Call the trunk administration group and ask them to put the B-channels in a **cad.dsa** state and the D-channel in the **manoos** state.
2. Install loopback plugs on all T1s to protect the the machine and the 4ESS switch.

This technique prevents an upgraded VP from taking calls when it comes back up. It is an optional technique that allows you to place test calls before bringing the VPs back into service.

3. Enter this command on the PM if this VP is in service:

**chg\_state -m <mach\_id> down**

where **<mach\_id>** is the VP on which you install software. Wait for the machine to go down to the `reboot` prompt.

4. Turn the power to the machine OFF at the ON/OFF switch on the front user-interface panel.
5. Insert the diskette labeled "NAP 2.3 - VP Recovery-Boot Floppy" in the diskette drive. Make sure the diskette is read/write (only one square at the top of the diskette is open).
6. Turn the power to the machine ON.

You see a screen (similar to the following one) describing the installation process.

Network Adjunct Platform (NAP) VP or Application VP Software Installation

To complete this installation, you will also need the NAP VP Image Tape or the appropriate Application VP Image Tape that was made at the site. Follow all on-line instructions carefully! Here are the steps so that you can plan your installation time.

- 1) The disk is partitioned, cylinders are checked and file systems created. This completes in 30 minutes and you are instructed to remove the floppy and to reboot the system.
- 2) After the system boots in 40 seconds, you are prompted to insert the tape.
- 3) All necessary software and data is copied from tape to hard disk in about 20 minutes.
- 4) The last step is to name the VP machine this installation is for. Follow the on-line instructions. The machine reboots and the installation is complete.

If a failure occurs, follow instructions given, or start over.

Enter return to begin the VP Software Installation.

7. Press **(ENTER)** to begin the installation.



**CAUTION:**

*To prevent system errors, do not respond to messages displayed during the installation.*

*Messages are displayed on your console throughout the installation. Some of these messages appear to be questions for the user, but those questions are answered automatically by the installation software. Do not respond to installation questions until you see this message:*

`Reboot the system now.`

8. When you see the reboot message, **wait for the disk drive light to remain off for at least 30 seconds** and then remove the diskette from the drive. If you do not wait, you will corrupt the diskette and you will not be able to use it again.
9. Reboot the machine by simultaneously pressing **(CTRL) (ALT) (DEL)**.



**NOTE:**

If the reboot doesn't work, try pressing **(CTRL) (ALT) (DEL)** using the **(DEL)** on your keyboard's number pad. **(NUM LOCK)** must be turned off.

Your screen goes blank, and after a few minutes, this message appears on the screen:

`Insert the appropriate VP Image Tape in drive and press <ENTER>`

10. Insert the NAP 2.3 VP IMAGE tape or application VP image tape into the tape drive and press **(ENTER)**.

There is no immediate response while the tape retensions. Then the tape is read and file names are displayed on the screen. Reading in the tape takes about 40 minutes.



**NOTE:**

If an I/O error occurs at this point, start over at step 3.



**CAUTION:**

*Do not enter anything until you are prompted to do so.*

11. At the end of the tape installation you are prompted for the passwords for the root and install login IDs. These are provided by the TCC<sup>1</sup>/NESAC<sup>2</sup>/PMO<sup>3</sup> organization.

---

1. Technology Control Center  
2. National Electronic Systems Assistance Center  
3. Production Management Organization

12. If you are installing NAP 2.3, the **napsetup** command is automatically invoked. This screen appears:

```

=====
|                                     Machine Table                                     |
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      Suffix/None  -
---
001      pm00     PM      00        N      S            N
002      pm01     PM      01        N      S            N
003      vp00     VP      00        N      S            N
This machine is a VP machine.
Enter the Machine Index value of the VP that this machine is to be.
-->

```

Enter the appropriate VP Machine Index value (for example, enter 3 for vp00, as shown below). The following Machine Table Record screen displays. Follow the online instructions:

```

--> 3
You have selected this machine to be the following.
=====
|                                     Machine Table Record                                     |
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      Suffix/None  -
---
003      vp00     VP      00        N      S            N
Is this what you want this machine to be?
Confirm (y/n) [y] --> y
This is a VP type machine, and will have the system name of vp00.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and matching alias in the networking files for Datakit compatibility.
Do you want to use the system uname of vp00? (y/n) [n] --> y
/usr/add-on/nap/bin/napsetup: sysname=vp00 nodename=vp00 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
This machine successfully set up as vp00, with system name vp00.

```

13. If the TCS application has been installed on this machine, the **napsetup** command is automatically invoked. This screen appears:

```

=====
                          Machine Table
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      -      Suffix/None  -
---      -
001      ssa01    VP      01        N      S      N             N
002      ssa02    VP      02        N      S      N             N
003      ssa03    VP      03        N      S      N             N
004      ssa04    VP      04        N      S      N             N
005      ssa05    VP      05        N      S      N             N
006      ssa06    VP      06        N      S      N             N
007      ssa07    VP      07        N      S      N             N
008      ssa08    VP      08        N      S      N             N
009      ssa09    VP      09        N      S      N             N
010      ssa10    VP      10        N      S      N             N
011      ssa11    VP      11        N      S      N             N
012      ssa12    VP      12        N      S      N             N
013      ssa13    VP      13        N      S      N             N
014      ssa14    VP      14        N      S      N             N
015      ssa15    VP      15        N      S      N             N
016      ssa16    VP      16        N      S      N             N
017      ssa17    VP      17        N      S      N             N
018      ssa18    VP      18        N      S      N             N
019      ssa19    VP      19        N      S      N             N
020      ssa20    VP      20        N      S      N             N
021      ssap1    PM      01        N      S      N             N
022      ssap2    PM      02        N      S      N             N
This machine is a VP machine.
Enter the Machine Index value of the VP that this machine is to be.
-->

```

Enter the appropriate VP Machine Index value (for example, enter 1 for ssa01, as shown below). The following Machine Table Record screen displays. Follow the online instructions:

```
--> 1
You have selected this machine to be the following.
=====
Machine Table Record
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      Suffix/None  -
---
001      ssa01    VP      01        N      S            N

Is this what you want this machine to be?
Confirm (y/n) [y] --> y
This is a VP type machine, and will have the system name of ssa01.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and matching alias in the networking files for Datakit compatibility.
Do you want to use the system uname of ssa01? (y/n) [n] --> y
/usr/add-on/nap/bin/napsetup: sysname=ssa01 nodename=ssa01 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
This machine successfully set up as ssa01, with system name ssa01.
```

14. Make sure the auto reboot prompt displays. Remove the tape.
15. Power down the MAP/100C.
16. Power-cycle the Communicore by removing the power connector from the power module in subrack 2 and then subrack 1. Install the power connector in subrack 2 and then subrack 1.
17. Power up the MAP/100C. The reboot takes between 5 and 10 minutes.

#### ⇒ NOTE:

If you are installing NAP, the installation is complete. Return to the checklist.

18. When
  - startup of the voice system is complete
  - displays on your VP screen, press **ENTER**. The login prompt displays.
19. From PM01, make the VP active by using the **ssa\_admin** command. At a prompt enter:
  - ssa\_admin**
  - to display the menu.

**⇒ NOTE:**

If this is an existing site with the application installed, proceed. Otherwise, the software installation is complete.

20. Enter **chg\_state -m <mach\_id> off**  
and wait five minutes.
21. Enter **chg\_state -m <mach\_id> on**
22. Use **disp\_status** to verify that the Communicore is active before doing the **chg\_state** command. Download the VP firmware. In order to download the new firmware to the VP, the VP must first be taken out of service with the **chg\_state** command. After the firmware is downloaded, the VP must be returned to the ON state. Enter these commands:

```
disp_status -m <mach_id>  
chg_state -m <mach_id> mtce [grace_period]  
download -m <mach_id> card all  
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

where **<mach\_id>** in all of the above commands is the VP. See "download" on page 5-70 for instructions and warnings about downloading firmware.

Wait 5 minutes. If the VP is not active at that time, you may have to troubleshoot the download. These commands may take two minutes in the best case, or an hour to complete the download portion.

**⇒ NOTE:**

If you have problems downloading the VP firmware, refer to the troubleshooting procedures in Chapter 6, "Troubleshooting" under the heading "Troubleshooting the Firmware Downloads" on page 6-29.

23. Remove the loopback plugs from the appropriate DSX.
24. If the TCS application is installed on the machine, put the D-channel in service and do the 105 and 108 tests in TOPAS (Testing Operations Provisioning Administrative System). You must have all pertinent applications loaded to do this step.
25. Wait for the audit to finish.
26. Set the outgoing trunks to active on the 4ESS side.

This completes the VP software installation. Return to the procedure or checklist that sent you to this procedure.

## **Running napsetup on the VP**

---

Perform this procedure if the preloaded software on your VPs is the NAP 2.3 VP software or if the application software is installed and you want to regenerate all of the networking files and/or rename the machine.

**⇒ NOTE:**

If you loaded a VP IMAGE tape, this procedure was automatically invoked at the end of the software load procedure.

You must know the machine name, as identified by your site plan.

This procedure sets up the machine name and networking files.

1. Log in as **root**.
2. Enter **/usr/add-on/nap/bin/napsetup**.

This screen appears:

```
This is a utility to perform basic networking administration for the
machine.
It is normally run only when a machine is first installed or
has had the disk reloaded with the standard base tape. It might also
be run if/etc/hostsnidicated damage to one of the following files:
    /etc/hosts.equiv
    /etc/networks
    /etc/services
    /.rhosts
/usr/etc/inetinit.cf
If you continue, you will be asked to identify which machine this is
supposed to be. It must be unique within this site and must
match the software that is installed on this machine.
Do you wish to proceed? (y/n) [n] --> y
```

3. Perform the appropriate steps below:
  - If NAP 2.3, without an application, has been installed on this machine, perform these steps:

a. Enter **y** to proceed. The Machine Table screen displays:

```

=====
|                               Machine Table                               |
=====
Machine Uname  Machine Machine  Admin  B-LAN Prefix/ Remote
Index   Type    Instance
-----
001     pm00    PM      00     N      S      N
002     pm01    PM      01     N      S      N
003     vp00    VP      00     N      S      N
This machine is a VP machine.
Enter the Machine Index value of the VP that this machine is to be.
-->
    
```

b. Enter the appropriate VP Machine Index value (for example, enter 3 for vp00, as shown below). The following Machine Table Record screen displays. Follow the online instructions:

```

--> 3
You have selected this machine to be the following.
=====
|                               Machine Table Record                       |
=====
Machine Uname  Machine Machine  Admin  B-LAN Prefix/ Remote
Index   Type    Instance
-----
003     vp00    VP      00     N      S      N
Is this what you want this machine to be?
Confirm (y/n) [y] --> y
This is a VP type machine, and will have the system name of vp00.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and matching alias in the networking files for Datakit compatibility.
Do you want to use the system uname of vp00? (y/n) [n] --> y
/usr/add-on/nap/bin/napsetup: sysname=vp00 nodename=vp00 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
This machine successfully set up as vp00, with system name vp00
    
```

- If the TCS application has been installed on this machine, perform these steps:
  - a. Enter **y** to proceed. The Machine Table screen displays:

```

=====
                                Machine Table
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -----  Suffix/None  -----
---      -
001      ssa01    VP      01        N      S          N
002      ssa02    VP      02        N      S          N
003      ssa03    VP      03        N      S          N
004      ssa04    VP      04        N      S          N
005      ssa05    VP      05        N      S          N
006      ssa06    VP      06        N      S          N
007      ssa07    VP      07        N      S          N
008      ssa08    VP      08        N      S          N
009      ssa09    VP      09        N      S          N
010      ssa10    VP      10        N      S          N
011      ssa11    VP      11        N      S          N
012      ssa12    VP      12        N      S          N
013      ssa13    VP      13        N      S          N
014      ssa14    VP      14        N      S          N
015      ssa15    VP      15        N      S          N
016      ssa16    VP      16        N      S          N
017      ssa17    VP      17        N      S          N
018      ssa18    VP      18        N      S          N
019      ssa19    VP      19        N      S          N
020      ssa20    VP      20        N      S          N
021      ssap1    PM      01        N      S          N
022      ssap2    PM      02        N      S          N
This machine is a VP machine.
Enter the Machine Index value of the VP that this machine is to be.
-->
    
```

- b. Enter the appropriate VP Machine Index value (for example, enter 1 for ssa01, as shown below). The following Machine Table Record screen displays. Follow the online instructions:

```
--> 1
You have selected this machine to be the following.
=====
                        Machine Table Record
=====
Machine  Uname    Machine Machine  Admin  B-LAN Prefix/ Remote
Index    Type     Instance
-----  -
001      ssa01    VP      01      N      S      N

Is this what you want this machine to be?
Confirm (y/n) [y] --> y
This is a VP type machine, and will have the system of ssa01.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and matching alias in the networking files for Datakit compatibility.
Do you want to use the system uname of ssa01? (y/n) [n] --> y
/usr/add-on/nap/bin/napsetup: sysname=ssa01 nodename=ssa01 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
This machine successfully set up as ssa01, with system name ssa01.
```

4. Enter **cd /** when you see the system prompt (indicating **napsetup** is finished).

**⇒ NOTE:**

If this is an existing site, with the application software installed, proceed. Otherwise you need to wait until the application is loaded to download the firmware and you are currently finished with this procedure.

5. Enter **chg\_state -m <mach\_id> reboot**  
to reboot the machine, where **<mach\_id>** is the VP.

6. Download the VP firmware. In order to download the new firmware to the VP, you must first take the VP out of service with the **chg\_state** command. After the firmware is downloaded, the VP must be returned to the ON state. Enter these commands:

```
chg_state -m <mach_id> mtce [grace_period]  
download -m <mach_id> card all  
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

where **<mach\_id>** in all of the above commands is the VP. See "download" on page 5-70 for instructions and warnings about downloading firmware.

Wait 5 minutes. If the VP is not active at that time, you may have to troubleshoot the download. These commands may take two minutes in the best case, or an hour to complete the download portion.

**⇒ NOTE:**

If you have problems downloading the VP firmware, refer to the troubleshooting procedures in Chapter 6, "Troubleshooting" under the heading "Troubleshooting the Firmware Downloads" on page 6-29.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Installing the PM Software**

---

Installing the PM software is similar to installing the VP software.

You need to have:

- 1 diskette labeled "NAP 2.3 - PM Recovery-Boot Floppy"
- 1 tape labeled "Network Adjunct Platform (NAP) 2.3 PM IMAGE Tape" or an application PM IMAGE tape
- The root and install passwords for the site
- The uname and matching machine index for this VP as defined in the Machine Table for your architecture
- The Datakit system name for this PM

**⇒ NOTE:**

The Datakit system name is a 7-character name; the first two characters are a location code and the last five are ssap1 or ssap2 (for example, dvssap1). If you do not have your 2-character location code, get it from the Datakit administration group.

Perform these steps to install the PM software:

**⇒ NOTE:**

If this is an existing site, perform steps 1 and 2. Otherwise, go to step 3.

1. If you have not already done so, make the other PM the preferred PM using "Changing the Preferred PM" on page 4-70.
2. If this PM is currently in service, enter:  
**chg\_state -m <mach\_id> down**
3. Turn the power to the machine OFF at the ON/OFF switch on the front user-interface panel.
4. Insert the the diskette labeled "NAP 2.3 - PM Recovery-Boot Floppy" in the diskette drive. Make sure the disk is read/write (only one square at the top of the disk is open).
5. Turn the power to the machine ON.

You see a screen like this one describing the installation process:

Network Adjunct Platform (NAP) PM or Application PM Software Installation

To complete this installation, you will also need the NAP PM Image Tape or the appropriate Application PM Image Tape that was made at the site. Follow all on-line instructions carefully!! Here are the steps so that you can plan your installation time.

- 1) The disk is partitioned, cylinders are checked and file systems created. This completes in 30 minutes and you are instructed to remove the floppy and to reboot the system.
- 2) After the system boots in 40 seconds, you are prompted to insert the tape.
- 3) All necessary software and data is copied from tape to hard disk in about 20 minutes.
- 4) The last step is to name the VP machine this installation is for. Follow the on-line instructions. The machine reboots and the software installation is complete.

Enter return to continue

If a failure occurs, follow instructions given, or start over.

Enter return to begin the VP Software Installation.

After the software installation is completed on all machines at the site, you will have to perform site specific machine administration on the PM machines as described in the installation section of your documentation.

Enter return to begin the PM Software Installation

6. Press **(ENTER)** to begin the installation.

 **CAUTION:**

*To prevent system errors, do not respond to messages displayed during the installation.*

*Messages are displayed on your console throughout the installation. Some of these messages appear to be questions for the user, but those questions are answered automatically by the installation software. Do not respond to installation questions until you see this message:*

*Reboot the system now.*

7. When you see the reboot message, **wait for the disk drive light to remain off for at least 30 seconds** and then remove the diskette from the drive. If you do not wait, you will corrupt the diskette and you will not be able to use it again.





- If the TCS application has been installed on this machine, the **napsetup** command is automatically invoked. This screen appears:

```

=====
|                                     Machine Table                                     |
=====
Machine  Uname    Machine  Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type     Instance  -----  Suffix/None  -----
---
001      ssa01    VP       01        N       S             N
002      ssa02    VP       02        N       S             N
003      ssa03    VP       03        N       S             N
004      ssa04    VP       04        N       S             N
005      ssa05    VP       05        N       S             N
006      ssa06    VP       06        N       S             N
007      ssa07    VP       07        N       S             N
008      ssa08    VP       08        N       S             N
009      ssa09    VP       09        N       S             N
010      ssa10    VP       10        N       S             N
011      ssa11    VP       11        N       S             N
012      ssa12    VP       12        N       S             N
013      ssa13    VP       13        N       S             N
014      ssa14    VP       14        N       S             N
015      ssa15    VP       15        N       S             N
016      ssa16    VP       16        N       S             N
017      ssa17    VP       17        N       S             N
018      ssa18    VP       18        N       S             N
019      ssa19    VP       19        N       S             N
020      ssa20    VP       20        N       S             N
021      ssap1    PM       01        N       S             N
022      ssap2    PM       02        N       S             N
This machine is a PM machine.
Enter the Machine Index value of the PM that this machine is to be.
-->

```

- Enter the appropriate PM Machine Index value (for example, enter **21** for ssap1).

The following Machine Table Record screen displays.

**⇒ NOTE:**

Note the use of a different uname for Datakit compatibility. The TCC must provide you with this unique uname.

```
--> 21
You have selected this machine to be the following.
=====
|                               Machine Table Record                               |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Machine  Uname   Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      -      Suffix/None  -
-----  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -
021      ssap1   PM       01        N       S       S              N

Is this what you want this machine to be?
Confirm (y/n) [y] --> y

This is a PM type machine, and will have the system of ssap1.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and matching alias in the networking files for Datakit compatibility.

Do you want to use the system uname of ssap1? (y/n) [n] --> n

Enter the system uname (max 8 chars). --> drssap1

/usr/add-on/nap/bin/napsetup: sysname=drssap1 nodename=drssap1 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup

This machine successfully set up as ssap1, with system name drssap1
```

12. Follow the online instructions.

The system returns to the firmware/reboot prompt.

13. Remove the tape.

14. Reboot the system when prompted.

15. Log in as **root**.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Running napsetup on the PM**

---

Perform this procedure if the preloaded software on your PMs is the NAP 2.3 PM software or if the application software is installed and you want to regenerate all of the networking files or rename the machine.

This procedure sets the machine name and Datakit system name.

**⇒ NOTE:**

If you loaded a PM image tape, this procedure was automatically invoked at the end of the PM software installation procedure.

To perform this procedure, you must know the Datakit system name and machine name for this machine as identified by your site plan.

**⇒ NOTE:**

The Datakit system name is a 7-character name; the first two characters are a location code and the last five are ssap1 or ssap2 (for example, dvssap1). If you do not have your 2-character location code, get it from the Datakit administration group.

Follow these steps:

1. Log in as **root**.
2. Enter **/usr/add-on/nap/bin/napsetup**

This screen appears:

```
This is a utility to perform basic networking administration for the
machine.
It is normally run only when a machine is first installed or
has had the disk reloaded with the standard base tape. It might also
be run if errors indicated damage to one of the following files:
    /etc/hosts
    /etc/hosts.equiv
    /etc/networks
    /etc/services
    /.rhosts
/usr/etc/inetinit.cf
If you continue, you will be asked to identify which machine this is
suppose to be. It must be unique within this site and must
match the software that is installed on this machine.
Do you wish to proceed? (y/n) [n] --> y
```

3. If NAP 2.3, without an application, has been installed on this machine, perform these steps:

**⇒ NOTE:**

If an application is installed on this machine, proceed to the appropriate steps for that application.

- a. Enter **y** to proceed. The Machine Table displays.

```

=====
|                               Machine Table                               |
=====
Machine  Uname   Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      Suffix/None  -
---
001      pm00     PM      00        N      S             N
002      pm01     PM      01        N      S             N
003      vp00     VP      00        N      S             N
This machine is a PM machine.
Enter the Machine Index value of the PM that this machine is to be.
-->

```

- b. Enter the appropriate PM Machine Index value (for example, enter 1 for pm00, as shown below). The following Machine Table Record screen displays. Follow the online instructions:

```

--> 1
You have selected this machine to be the following.
=====
|                               Machine Table Record                       |
=====
Machine  Uname   Machine Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type    Instance  -      Suffix/None  -
---
001      pm00     PM      00        N      S             N
Is this what you want this machine to be?
Confirm (y/n) [y] --> y
This is a PM type machine, and will have the system of pm00.
This name will be used in all the networking files.
However, there may be a need to give this machine a different system uname
and
matching alias in the networking files for Datakit compatibility.
Do you want to use the system uname of pm00? (y/n) [n] --> n
Enter the system uname (max 8 chars). --> nappm00
/usr/add-on/nap/bin/napsetup: sysname=nappm00 nodename=nappm00 setup
/usr/add-on/nap/bin/napsetup: /etc/hosts setup
/usr/add-on/nap/bin/napsetup: /.rhosts setup
/usr/add-on/nap/bin/napsetup: /etc/hosts.equiv setup
/usr/add-on/nap/bin/napsetup: /etc/networks setup
/usr/add-on/nap/bin/napsetup: /etc/services setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
/usr/add-on/nap/bin/napsetup: /usr/etc/inetinit.cf setup
This machine successfully set up as nappm00, with system name nappm00

```

4. If the TCS application has been installed on this machine, perform these steps:

- a. Enter **y** to proceed. The Machine Table displays.

```

=====
|                                     Machine Table                                     |
=====
Machine  Uname    Machine  Machine  Admin  B-LAN Prefix/ Remote
Index    -----  Type     Instance  -      Suffix/None  -
---      -
001      ssa01     VP       01        N      S             N
002      ssa02     VP       02        N      S             N
003      ssa03     VP       03        N      S             N
004      ssa04     VP       04        N      S             N
005      ssa05     VP       05        N      S             N
006      ssa06     VP       06        N      S             N
007      ssa07     VP       07        N      S             N
008      ssa08     VP       08        N      S             N
009      ssa09     VP       09        N      S             N
010      ssa10     VP       10        N      S             N
011      ssa11     VP       11        N      S             N
012      ssa12     VP       12        N      S             N
013      ssa13     VP       13        N      S             N
014      ssa14     VP       14        N      S             N
015      ssa15     VP       15        N      S             N
016      ssa16     VP       16        N      S             N
017      ssa17     VP       17        N      S             N
018      ssa18     VP       18        N      S             N
019      ssa19     VP       19        N      S             N
020      ssa20     VP       20        N      S             N
021      ssap1     PM       01        N      S             N
022      ssap2     PM       02        N      S             N
This machine is a PM machine.
Enter the Machine Index value of the PM that this machine is to be.
-->

```

- b. Enter the appropriate PM Machine Index value (for example, enter 21 for ssap1, as shown in the following screen ). The following Machine Table screen displays. Follow the online instructions:

**⇒ NOTE:**

Note the use of a different uname for Datakit compatibility. The TCC must provide you with this unique uname.



## **Administering a New Site**

---

There are two sets of steps involved in administering a new site:

- Basic administration: steps that you perform
- Site- and machine-specific CMF administration: steps that the TCC performs.

These steps are included in this section for your information, but you do not perform them.

### **Basic Administration**

#### **NOTE:**

This procedure applies to bringing up a new site on only NAP 2.3 software. There is *no application software* loaded on the machines at this time.

1. Verify that all the machines (PMs, VPs, etc.) have the NAP 2.3 software installed (refer to "Verifying the Software Release" on page 4-24).

2. Enter **machadm**

on the Primary OAM&P machine (the lowest numbered PM machine), and administer the table *to exactly match* the one specified by the application that will be uploaded to the site. Perform this upload after the site is initialized and tested with the software provided in the NAP 2.3 software load.

This Machine Table administration is defined by the *application* and *must match exactly* in order for the application to be uploaded onto the system and then be installed by the TCC.

For TCS, refer to the Machine Table on page 4-50.

3. Put a blank diskette in the drive of the Primary OAM&P machine, making sure it is not write-protected.
4. Enter this command on the Primary OAM&P machine:

```
find /usr/add-on/maint/admin/mach_tbl -print | cpio -ov >/dev/dsk/f0
```

5. Next, put the diskette into each of the other machines and enter this command (do this one machine at a time):

```
cpio -idvu </dev/dsk/f0
```

All the machines now have the *same view* of the LAN.



#### **CAUTION:**

*Remove the blank diskette from the last machine before continuing.*

6. Enter this command on each of the machines:

**/usr/add-on/nap/bin/napsetup**

Enter the Machine Index that matches the machine you are running the command on. Answer the prompts appropriately. On machines that have Datakit Interfaces, override the default system name and provide the *Unique Datakit System Name* provided by the TCC.

7. Run the following command on each machine:

**cd /; shutdown -i6 -g0 -y**

Each machine reboots and comes back up with the proper system name, which matches the networking files that were set up by the **napsetup** command. At this point all machines can communicate via TCP/IP over the LAN. Machines with a Datakit interface can communicate over the Datakit network.

8. Log in as **root**.
9. To allow the TCC to gain access, administer a normal login ID for one TCC user on all OAM&P machines. This will allow the TCC to get onto the site over the Datakit Network. Enter the following command.

**adduser <login id> <name> <user id> <home directory>**

where:

**<login id>** is 8 characters or less.

**<name>** is user's name, in quotation marks ( " " ), 25 characters or less.

**<user id>** is a number between 100 and 60,000 and is unique to the user.

**<home directory>** should be **/usr/<login\_id>**

Enter the information and password provided by TCC/NESAC/PMO.

10. Administer the number of *restricted shell login IDs* as necessary with the **addruser** command on all machines:

**addruser <login\_id> <login\_name>**

This administration provides everyone (OSWF, TCC, NESAC, PMO) with restricted-user access. Restricted-user access lets the user perform most of the administration and maintenance operations that do not need full root access. Input the standard restricted-user password provided by the TCC/NESAC/PMO.

11. As **root**, enter this command on each machine:

**passwd -x -1 <restricted\_login\_ID>**

This turns off password aging on the Restricted User ID just added to the system.

12. As **root**, enter this command on each machine:

**passwd**

Enter the standard root password provided by TCC/NESAC/PMO.

13. As **root**, enter this command on each machine:

**passwd -x -1 root**

This turns off password aging on the root password just entered.

14. Test the Datakit interface on each machine PM. Use the Datakit interface test procedures in "Checking Hardware Connectivity" on page 4-56.



**CAUTION:**

*Be sure to call the TCC after completing the steps in "Checking Hardware Connectivity" on page 4-56, because they must complete the rest of the steps in this procedure before you can continue with the next procedure.*

### Site- and Machine-Specific CMF Administration

A TCC personnel will log in as **root** or as a restricted user on the Primary OAM&P machine and perform the following site- and machine-specific CMF administration steps:

1. Enter this command on the Primary OAM&P machine and administer the Site CLLI (common language location identifier) Code:

**cliadm -l**

2. Enter this command on the Primary OAM&P machine and administer the appropriate Machine Instance value, which matches the Primary OAM&P machine:

**primadm -l**

3. Administer the Machine Table Admin field using the **machadm** command on the Primary OAM&P machine, as follows:

Administer the Admin field to **Y** for all the physical machines. Do them from the lowest to highest number based on the Machine Index field. Ignore any LAN failures at this time (there shouldn't be any).

4. Enter **lancheck**

once all the machines have been administered to Admin=Y in the Machine Table to check TCP/IP connectivity between all machines. Find and fix all LAN problems at this time.

5. Enter **machadm -m <mach\_id>**

on the Primary OAM&P machine and select the Synchronize Machine Table option. This option forces all Machine Table administration to be regenerated on all machines, fixing any omissions due to LAN problems.

6. Enter **clliadm -r**

on the Primary OAM&P machine. The **-r** option forces all site CLLI code administration to be regenerated on all machines, fixing any omissions due to LAN problems.

7. Enter **primadm -r**

on the Primary OAM&P machine. The **-r** option forces all Primary OAM&P value administration to be regenerated on all machines, fixing any omissions due to LAN problems.

8. Enter **s24adm**

and administer its value to the one specified by the TCC. It is usually left at the default value of 0 for midnight.

9. Enter this command on each machine to perform machine-specific administration for each machine:

**ficadm -m <mach\_id>**

and administer the value provided by the TCC.



**CAUTION:**

*Do not run **cleiadm**, **cardadm**, **rcardadm**, **ds1adm**, and **rds1adm** Administration at this time. The applications will install these translations when they install their software. If you change the administration, the applications WILL NOT install their custom translations. They only install over the default administration provided on the NAP 2.3 IMAGE tape.*

10. Administer a normal shell login ID for each TCC user on all OAM&P machines.
11. Administer normal shell login ID for each NESAC user on all OAM&P Machines.
12. Administer normal shell login ID for each PMO user on all OAM&P Machines.
13. Modify the **/etc/passwd** files on all the OAM&P machines and add **/bin/ksh** to each normal user's entry (but not to any of the restricted users).
14. Copy the **/usr/maint/.profile** file to each user's home directory so they can use the ksh environment independently of what the applications do to the **/etc/profile** file. For example, for the TCC user ID you would enter:

**cp /usr/maint/.profile /usr/tcc**

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Checking Hardware Connectivity**

---

Perform these steps after the NAP 2.3 or application site setup and administration has been completed.

Test the Datakit and LAN interfaces on each PM as follows:

1. Login to the system console as **root**.
2. From the PM system console, enter:

**dkcu <Datakit dialstring>**

If you get a login prompt, then the Datakit interface to the PM is working. To terminate the dkcu connection enter:

**~. (tilde dot)**

**⇒ NOTE:**

If you do not get a connection, refer to “Troubleshooting PM-to-Datakit Connectivity Problems” on page 6-21 of Chapter 6, “Troubleshooting”.

3. Enter this command to check TCP/IP connectivity to all machines:

**lancheck**

For an example of the lancheck output, refer to Chapter 5, “Command Reference.”

If you do not get up status on all machines, find and fix all LAN problems. Refer to the appropriate steps in the “PM-to-VP LAN Connectivity Symptoms and Solutions” section of Chapter 6, “Troubleshooting”.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

**⚠ CAUTION:**

*Be sure to call the TCC after completing this procedure, because they must complete the site- and machine-specific CMF administration steps before you can continue with the next procedure.*

### **Installing the Application Software**

Refer to Appendix A, "Upgrading to TCS Release 2.4." for information about how to upgrade TCS 2.3 to TCS 2.4. After you have completed the procedures in Appendix A, "Upgrading to TCS Release 2.4.", return to the checklist.

If you are upgrading from TCS Release 2.3 to TCS Release 2.4, disregard the 2.3 application software installation instructions.

This page is included to preserve page numbering.

## **Site Administration Procedures**

---

The procedures listed in this section are used with the checklists at the beginning of this chapter. These procedures can also be used independently of those checklists if you need to perform specific administration tasks.

The procedures in this section are:

- "Changing the Preferred PM" on page 4-70
- "Core Maintenance Feature Package Administration" on page 4-71
- "Making a Machine Active or Inactive" on page 4-77
- "Checking Application Connectivity" on page 4-79
- "Restoring the Other PM's Administrative Data" on page 4-80
- "Checking 4ESS Connectivity" on page 4-81
- "Making an Application Image Tape" on page 4-83
- "Adding and Deleting Logins" on page 4-86

## Before You Begin

---

In order to get a TCS site up and running, you must perform some administration. This may involve several steps, which you might perform before, during, or after software installation. With the exception of creating the customer records, these procedures are all performed with the **ssa\_admin** command.

**⇒ NOTE:**

Enter **ssa\_admin** to display the administration menu. To exit the menu, enter **0** (zero); the system prompt displays.

```
End SSA Administration Session =>0
Communications Check           =>1
Adjunct Database Administration =>2
Machine Administration         =>3
Start Database Audit           =>4
View Database Audit Results    =>5
```

**⇒ NOTE:**

All administration done on one PM is duplicated on the other PM's database. You see a message after each administration command that the command has been successfully completed on both PMs. If this automatic duplication fails, a message tells you to repeat that command on the other PM.

Site administration involves 3 databases:

- **Customer-record database** — Provisioned to the PMs from the AFSC using the SMW. The PMs then automatically send the customer records to the VPs.
- **Adjunct database** — Accessed/changed through the **ssa\_admin** command by entering **2** to select **Adjunct Database Administration**. This choice is needed to change the preferred PM.

The screen below shows the Adjunct Database Administration menu for TCS:

```
Adjunct Database Administration.

Record Type      Record Value      Time Modified
PM_pref          ssapl            Thu May 19 08:19:57 1994
master_time      Thu May 19 08:19:57 1994
max_db           100000          Thu Oct 3 16:13:20 1994
oobdt_wt_timer   3                Wed Jul 26 15:30:29 1995
time_aud         23              Thu Oct 3 16:13:20 1994
time_daud        6000            Thu Oct 3 16:13:20 1994
time_faud        6000            Thu Oct 3 16:13:20 1994

Enter the type of action you wish to perform.

Return to main menu.          => 0
Update a table entry          => 1
```

- **Machine-administration database** — Accessed and changed through the **ssa\_admin** command by entering **3** to select **Machine Administration**. This choice is needed to make a machine active or inactive and restore the other PM's database.

This is the Machine Administration menu:

```
Machine Administration.
Enter the type of action you wish to perform.
Return to main menu.          => 0
Display current AMACH Table   => 1
Update a table entry          => 2
Restore other PM's AMACH Table => 3
```



### **Initializing the Database at a New Site**

In TCS Release 2.4, initializing the database is part of the installation process described in Appendix A. In the procedure described there, the **\_Install** command initializes the database automatically.



### **Creating the Customer-Record Database**

In TCS Release 2.4, creating the customer record database is part of the installation process described in Appendix A.

## **Changing the Preferred PM**

Before you take one PM out of service, make the other PM the *preferred PM*.

1. Log into a working PM as a restricted user.
2. Enter **ssa\_admin**.
3. Enter **2** to choose `Adjunct Database Administration`.
4. Enter **1** to choose `Update a Table Entry`.
5. When prompted for record type of the entry you wish to update, enter **PM\_pref**.
6. When prompted for the new value, enter **pm01** or **pm02** to specify the machine staying online.
7. Enter **y** to confirm.
8. Enter **0** (zero) to return to the previous menu, and back out through the menus using **0** until the system prompt displays.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Core Maintenance Feature Package Administration**

---

After the site has had the CMF and TCS application packages installed, the following must be done to administer site-specific data.

**⇒ NOTE:**

Steps 1 through 4 must be completed before the site is returned to service. They are only done on a new site that has not been administered before.

Steps 5 through 8 can be performed after the site is in service, or after a new site has had the application installed.

1. From the ssap1, set up the MACH\_ID for PM01 using this command:

**`machidadm -v pm01`**

The following error message may display the first time the command is run on the machine. This error message is normal, so continue with the administration process.

```
Format problem with file /usr/add-on/maint/admin/  
site_clli for machidadm
```

2. From ssap1, run the following command to set up the Site CLLI on PM01. The CCCSSBB part of the Site CLLI is site-specific (The AAI part is the Application Identifier and is CA1):

**`cliadm -l -v CCCSSBBAAI`**

3. Administer the Primary OAM&P Machine Instance value using this command:

**`primadm -l`**

Use a lowercase "l" (ell). Make it match the Pref\_pm value in the application. It is 1 for ssap1 or 2 for ssap2.

The following error message may display the first time the command is run on the machine. This error message is normal, so continue with the administration process.

```
Format problem with file /usr/add-on/maint/admin/  
prim_oamp for primadm
```

- From ssap1, set up the Frame Identification Code (FIC) for each machine at the site using each machine's MACH\_ID with this command:

**ficadm -m <mach\_id>**

The following error message may display the first time the command is run on the machine. This error message is normal, so continue with the administration process.

```
Format problem with file /usr/add-on/maint/admin/
mach_fic for ficadm
```

- From ssap1, check each VP's Resource Card Table using this command:

**rcardadm -m <mach\_id>**

Determine the physical hardware in the machine. If it differs from what the **rcardadm** command displays, then change the administration in **rcardadm** to match the actual hardware. The TCS VP Resource Card Table looks like this:

Resource Card Table			
Slot Number	Card Type	CLEI Number	Hardware Version
01	SP-2	01	ASPQACMAAB AYC2C SP Ser:6
03	SP-2	02	ASPQACMAAB AYC2C SP Ser:6
05	T1	00	GCUQACJXAB AYC11 T1 Vin:6
16	CPU		GCPI10EGAA D486DXC-50-0ATTR2 Ser:2
17	VIDEO		GCPIJ0GGAA WDXLR833124 Ser:1
18	ALARM		GCUQACLXAA CO Alarm
19	LAN		GCUQACKXAA StarLAN 10 PC-NAU
21	LAN		GCUQACKXAA StarLAN 10 PC-NAU
25	SCSI CNTRL		QCPQAKCJA BusLogic BT542B Ver:H

The machine may have older or newer versions of some circuit cards.

- From ssap1, check each PM's Card Table using this command:

**cardadm -m <mach\_id>**

Determine the physical hardware in each machine. If it differs from what the **cardadm** command displays, then change the administration in **cardadm** to match the actual hardware. The TCS PM Card Table looks like this:

```

=====
|                               Card Table                               |
=====
Slot  Card      Card  CLEI      Hardware
Number Type      Number  -----  Version
--
09    DATAKIT          0000000000 HS386 Datakit Interface
16    CPU                GCPI10EGAA D486DXC-50-0ATTR2 Ser:2
17    VIDEO              GCPIJ0GGAA WDXLR833124 Ser:1
18    ALARM              GCUQACLXAA CO Alarm
19    LAN                GCUQACKXAA StarLAN 10 PC-NAU
21    LAN                GCUQACKXAA StarLAN 10 PC-NAU
25    SCSI CNTRL        QCPQAKCJAA BusLogic BT542B Ver:H

```

The machine may have older or newer versions of some circuit cards.

- From ssap1, check each VP's Card Table using this command:

**cardadm -m <mach\_id>**

Determine the physical hardware in the Communicore. If it differs from what the **cardadm** command displays, then change the administration in **cardadm** to match the actual hardware. The machine may have some older or newer versions of modules and/or more or fewer modules. The table was prepopulated with the maximum number of modules.

The TCS VP Card Table looks like this:

```

=====
|           Card Table           |
=====
Slot  Card      CLEI      Software
Number Type      Identification
-----
01    CONTROL    GCPQARJAA Slot=1,Subrack=1
02    SWITCH     GCPQARKJAA Slot=2,Subrack=1
03    PRI        GCPQARMJAA Slot=3,Subrack=1
04    PRI        GCPQARMJAA Slot=4,Subrack=1
05    TGEN       GCPQARPJAA Slot=5,Subrack=1
06    PRI        GCPQARMJAA Slot=6,Subrack=1
07    PRI        GCPQARMJAA Slot=7,Subrack=1
08    TDET       GCPQARNJAA Slot=8,Subrack=1
09    PRI        GCPQARMJAA Slot=9,Subrack=1
10    PRI        GCPQARMJAA Slot=10,Subrack=1
11    TDET       GCPQARNJAA Slot=11,Subrack=1
12    PRI        GCPQARMJAA Slot=12,Subrack=1
13    PRI        GCPQARMJAA Slot=13,Subrack=1
14    TDET       GCPQARNJAA Slot=14,Subrack=1
15    PRI        GCPQARMJAA Slot=15,Subrack=1
16    POWER     GCPQARLJAA Slot=16,Subrack=1
17    TGEN       GCPQARPJAA Slot=17,Subrack=2
18    PRI        GCPQARMJAA Slot=18,Subrack=2
19    PRI        GCPQARMJAA Slot=19,Subrack=2
20    TDET       GCPQARNJAA Slot=20,Subrack=2
21    PRI        GCPQARMJAA Slot=21,Subrack=2
22    PRI        GCPQARMJAA Slot=22,Subrack=2
23    TDET       GCPQARNJAA Slot=23,Subrack=2
24    PRI        GCPQARMJAA Slot=24,Subrack=2
25    PRI        GCPQARMJAA Slot=25,Subrack=2
26    TDET       GCPQARNJAA Slot=26,Subrack=2
27    PRI        GCPQARMJAA Slot=27,Subrack=2
28    PRI        GCPQARMJAA Slot=28,Subrack=2
29    TDET       GCPQARNJAA Slot=29,Subrack=2
30    PRI        GCPQARMJAA Slot=30,Subrack=2
31    PRI        GCPQARMJAA Slot=31,Subrack=2
32    POWER     GCPQARLJAA Slot=32,Subrack=2

```

8. From ssap1, check and administer each VP's DS1 (Digital Service 1) Table using this command:

**ds1adm -m <mach\_id>**

The TCS VP DS1/E1 Card Table looks like this:

```

=====
|          DS1/E1 Table          |
=====
Slot  DS1/E1      ADJUNCT  ADJUNCT  SWITCH  SWITCH
Number Type      BTFN    DSX_BAY  DSX_PJ   DSX_BAY  DSX_PJ
---  ---      -
03    PRID      0000  00000000  0000    00000000  0000
04    PRID      0000  00000000  0000    00000000  0000
06    PRI       0000  00000000  0000    00000000  0000
07    PRI       0000  00000000  0000    00000000  0000
09    PRI       0000  00000000  0000    00000000  0000
10    PRI       0000  00000000  0000    00000000  0000
12    PRI       0000  00000000  0000    00000000  0000
13    PRI       0000  00000000  0000    00000000  0000
15    PRI       0000  00000000  0000    00000000  0000
18    PRI       0000  00000000  0000    00000000  0000
19    PRI       0000  00000000  0000    00000000  0000
21    PRI       0000  00000000  0000    00000000  0000
22    PRI       0000  00000000  0000    00000000  0000
24    PRI       0000  00000000  0000    00000000  0000
25    PRI       0000  00000000  0000    00000000  0000
27    PRI       0000  00000000  0000    00000000  0000
28    PRI       0000  00000000  0000    00000000  0000
30    PRI       0000  00000000  0000    00000000  0000
31    PRI       0000  00000000  0000    00000000  0000
    
```

Determine the physical hardware connections from the machine to the adjunct DSX (digital signal cross-connect), switch DSX, and the 4ESS. The administration for the BTFN (base traffic number), Adjunct (DSX\_BAY and DSX\_PJ) and Switch (DSX\_BAY and DSX\_PJ) pairs should be filled in with the proper values for each T1/DS1/PRI module. If there are fewer modules in the machine than are in the table, then change the administration to match the actual hardware. Change the administration for modules in slots 4 through 31. On these modules, input the correct values. The PRI module in slot 3 connects to the MAP/100C and has all zeros for these values.

**⇒ NOTE:**

For current TCS sites, leave the data untranslated, with default values. The information is in another database system.

9. Using "Making a Machine Active or Inactive" on page 4-77, make each machine at the site active. Make the machines active in the following order: ssap1, ssap2, and ssa01 through ssa10.

The following error message displays when **ssa\_admin** activates the machines for the first time:

```
Format problem with file /usr/add-on/maint/admin/  
site_clli for machidadm
```

This error message is normal, so continue with the administration process.

10. If the start time for the Periodic 24-Hour Report needs to be other than midnight, use this command from ssap1:

**s24adm**

11. After the CMF administration is completed or is changed, save the CMF administration data to tape using this command from ssap1:

**backtape**

12. This tape recovers the administration data in a disaster recovery procedure.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Making a Machine Active or Inactive**

The machine table identifies which machines are active. An example of the machine table is shown on the next page.

This procedure changes a machine from active to inactive, or vice-versa.

Follow these steps for this procedure:

1. Log in as a restricted user.
2. Enter **ssa\_admin**
3. Enter **3** to select `Machine Administration`.
4. Enter **2** to select `Update a table entry`.
5. At the prompt, enter the name of the machine you are administering, using the machine name assigned during software installation. The names are ssap1 and ssap2 for the PMs, and ssa01 through ssa10 for the VPs.
6. At the prompt, enter **1** for active or **0** (zero) for inactive, as appropriate.
7. Enter **y** to confirm.
8. When you see the confirmation message, enter **0** to return to the previous menu and back out through the menus using **0** until the system prompt displays.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

The machine table from **ssa\_admin** is shown below.

Machine Index	Uname	Machine Type	Machine Instance	Admin Status	Audit Pending
001	ssa01	VP	01	inact	0
002	ssa02	VP	02	inact	0
003	ssa03	VP	03	inact	0
004	ssa04	VP	04	inact	0
005	ssa05	VP	05	inact	0
006	ssa06	VP	06	inact	0
007	ssa07	VP	07	inact	0
008	ssa08	VP	08	inact	0
009	ssa09	VP	09	inact	0
010	ssa10	VP	10	inact	0
011	ssa11	VP	11	inact	0
012	ssa12	VP	12	inact	0
013	ssa13	VP	13	inact	0
014	ssa14	VP	14	inact	0
015	ssa15	VP	15	inact	0
016	ssa16	VP	16	inact	0
017	ssa17	VP	17	inact	0
018	ssa18	VP	18	inact	0
019	ssa19	VP	19	inact	0
020	ssa20	VP	20	inact	0
021	ssap1	PM	01	inact	0
022	ssap2	PM	02	inact	0

## **Checking Application Connectivity**

### **Check Datakit Connectivity**

Have the TCC establish TNM links.

### **Generate a Test Alarm**

1. Use the **logmsg** command on each machine to generate an informational message (CMF\_INFORM), which is then sent to the TNM. Enter:

**logmsg -m <mach\_id>**

where **<mach\_id>** is the machine where the command is to run.

Call the TCC to verify that they receive each message on the TNM system.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Restoring the Other PM's Administrative Data**

1. Log in as a restricted user on the machine that contains the correct database information.



### **CAUTION:**

*If you perform this operation from a machine with incorrect information in its database, you will lose any correct information in the other PM's database. If this happens, you must complete "Making a Machine Active or Inactive" on page 4-77 to make all machines active.*

2. Make sure both PMs are ON. Use these commands:

```
chg_state -m pm01 on  
chg_state -m pm02 on
```

3. On the working PM, restore the administration for the PM that was reloaded using this command:

```
restadm [-r <mach_id>]
```

where **[-r <mach\_id>]** is the PM to be restored.



### **NOTE:**

Mach IDs are different from machine names.

Example: Mach ID PM01 is ssap1 and Mach ID PM02 is ssap2.

4. On the working PM, enter **ssa\_admin**.  
The SSA Administration Menu appears.
5. Enter **3** to select **Machine Administration**.  
The Machine Administration Menu appears.
6. Enter **3** to select **Restore Other PM AMACH Table**.
7. Enter **y** to confirm the operation.



### **CAUTION:**

*Make sure a confirmation message displays when the update has been completed on both PMs as each machine update is done. If these messages are not displayed, you have to run the procedure again when both PMs are communicating properly.*

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

### **Checking 4ESS Connectivity**

---

1. Call the NOC (Network Operations Center) and verify that the skip control is still in place.
2. Restore the D-channel.
3. Call the PMO to start the database recreate.
4. Have the OSWF (onsite work force) remove the loopback plugs from the T1s at the appropriate DSX.
5. For each VP, enter
 

```
disp_status -m vpxx card all | pg
```

 where **xx** is the machine number and verify that all cards are in service.
6. Call the NOC and have the skip control changed to hard-to-reach so as to allow only test calls.
7. Perform test calls through each VP.
8. Call the NOC and have the skip removed one code at a time and check traffic flow.
9. Monitor the site traffic flow for one hour.

**Table 4-3. Service States**

<b>Status</b>	<b>Meaning</b>	<b>Action</b>
foos	The card or module the channel is on is not physically connected to the 4ESS.	Connect it, then run the <b>chg_state</b> command again.
manoos	The channel has been manually removed from service.	Run the <b>chg_state</b> command again.
appoos	The application has removed the channel from service and is waiting.	Run the <b>chg_state</b> command again.
netoos	The channel is busied-out at the 4ESS.	
inserv	The channel is in service to the 4ESS.	
hwoos	The channel is waiting for another channel, card, or module to come into service.	

---

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## Making an Application Image Tape

### For a PM

Create a PM application IMAGE tape for PM02 using this procedure.

#### ⇒ NOTE:

ssapx and pmxx both refer to PM machines. For example, ssap1 refers to the same machine as pm01.

TCC performs these steps:

1. Log in to the PM02 machine as a restricted user.
2. Enter **disp\_status -m pm01**  
to verify that the system is ON.
3. Use the **ssa\_admin** utility to make ssap2 inactive:
  - a. Enter **ssa\_admin**
  - b. Select: **Adjunct Database Administration => 2**
  - c. Verify that the **Record Value** for **PM\_pref** is: **ssap1**
  - d. If ssap1 is *not* the preferred PM, make it the preferred PM using the procedure "Changing the Preferred PM" on page 4-70).
  - e. Return to the main menu (enter 0).
  - f. Select: **Machine Administration => 3**
  - g. Select: **Update a table entry => 2**
  - h. Enter the machine name: **ssap2**
  - i. Enter **0** (for inactive)
  - j. Enter **Y** (fo confirm)
  - k. Return to the main menu and select:  
**End SSA Administration session => 0**
4. Enter **chg\_state -m pm02 off**

Then the OSWF performs these steps:

5. Connect the terminal and keyboard to PM02.
6. Log in to PM02 as root.
7. Insert the first 525 Mbyte tape (stamped 6525 on tape) into the ssap2 tape drive. You will need two 6525 tapes. Refer to "Indicators on SCSI Cartridge Tape Drives" on page 3-6.

8. Enter **snapshot**

The snapshot process takes approximately 2 hours. When the first tape is full, you will see this message on the console:

```
reached end of medium on output
  (more information on verifying tape, cable, etc.)
Press return to continue (Don't press return yet.)
```

9. Insert the second 525-Mbyte tape and press **(ENTER)**.
10. Remove the tape from ssap2 and write-protect both tapes.
11. Put labels on the tapes with application name, release, date, and machine name, for example:

```
TCS, RELEASE 2.4 PM IMAGE TAPE, 6/01/96, PM02. 1 of 2.
```

12. Enter: **chg\_state -m pm02 on**

TCC performs these steps:

13. Use the **ssa\_admin** utility to make ssap2 active.

14. Enter **audresult**

to verify that pm02 DB status is `in-synch`.

## For a VP

Create a VP application IMAGE tape for a VP (vp $xx$ ) using this procedure.

### **NOTE:**

ss $xx$  and vp $xx$  both refer to VP machines. For example, ssa10 refers to the same machine as vp10.

TCC performs these steps:

1. Put the B-channels for vp $xx$  into a **cad.lko** state (via topas).
2. Log into PM02 and enter:

```
chg_state -m vp $xx$  off
```

3. Use the **ssa\_admin** utility to make ss $xx$  inactive.
  - a. Enter **ssa\_admin**
  - b. Select: Machine Administration => 3
  - c. Select: Update a table entry => 2
  - d. Enter the machine name: **ss $xx$**
  - e. Enter **0** (for inactive)
  - f. Enter **Y** (fo confirm)
  - g. Return to the main menu and select:

```
End SSA Administration session => 0
```

Then the OSWF performs these steps:

4. Connect the terminal and keyboard to vpxx.
5. Log into vpxx as root.
6. Insert a 525-Mbyte tape (stamped 6525 on tape) into the vpxx tape drive. Refer to "Indicators on SCSI Cartridge Tape Drives" on page 3-6.
7. Enter **snapshot**

The **snapshot** process takes approximately 30 minutes. A message displays when the snapshot is complete.

8. Once snapshot is complete, write-protect the tape and label the tape with application name, release, date, and machine name, for example:  
TCS, RELEASE 2.4 VP IMAGE TAPE, 6/01/96, vpxx.
9. From PM02 enter this command:

**chg\_state -m vpxx on**

Then TCC performs these steps:

10. From PM02 use the **ssa\_admin** utility to make vpxx active.
11. Enter **audresult**  
to verify that vpxx DB status is `in-synch`.
12. Put the B-channels for vpxx back into service.

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

## **Adding and Deleting Logins**

---

For reasons of security, users responsible for the operation and management of NAP are only able to use the commands available through the restricted shell environment. The restricted shell commands can be found in **/usr/add-on/rbin**. Restricted users can be added by tier 3 and above as well as by other restricted users. The restricted user:

- Can only access system maintenance commands and tools
- Cannot access debugging tools, compilers, editors, or mail software
- Must log onto the system using a unique login and password, which will allow normal user access. The user must then **su** to the restricted user ID to perform most operations.
- Can only log onto the system as **root** from the console connected to the machine, not remotely

Use the **addusr** command to add a restricted user. Use the **delusr** command to remove a restricted user. For more information on these commands, see Chapter 5, "Command Reference".



### **NOTE:**

The PMO should add regular users using the standard UNIX **adduser** command:

**adduser <login id> <name> <user id> <home directory>**

where:

- **<login id>** is 8 characters or less.
- **<name>** is the user's name, in quotation marks (" "), 25 characters or less.
- **<user id>** is a number between 100 and 60,000 and is unique to the user.
- **<home directory>** should be **/usr/<login\_id>**

This completes this procedure. Return to the procedure or checklist that sent you to this procedure.

**What's in This Chapter?**

---

This chapter includes:

- Information about how to use the two interface options for administering TCS:
  - The administration interface
  - The command-line interface
- All of the commands you need for this platform and applications with explanations of how to use them

## **Administration-Interface Options**

---

You have two interface options for administering software. You can enter commands from the command line, or you can access the administration interface. All the administration commands can be run from the command line. Some commands can also be run from the administration interface. Each command section in this chapter explains the options for running that command. The following sections explain how to run commands from both interfaces.

**⇒ NOTE:**

You will usually run commands from the PM. However, if a command applies to a VP, you can also run that command from a VP if you are directly logged into it. There are some commands that can only be run from a PM: **audresult, comcheck, dbaudit, ssa\_admin**.

**⇒ NOTE:**

Use the commands in this chapter exactly as they are displayed; abbreviations you have used successfully in the past may not work now.

## Using the Administration Interface

The administration interface contains a menu from which you choose and run commands that administer and diagnose machines for a NAP site. To use the administration interface:

1. Log in as restricted user using an appropriate password.
2. Enter **ssa\_admin**

The administration menu appears, as shown below. The three menu choices shown here in bold are administration commands.

```
End SSA Administration Session => 0
Communications Check => 1
Adjunct Database Administration => 2
Machine Administration => 3
Start Database Audit => 4
View Database Audit Results => 5
```

### **NOTE:**

The **Adjunct Database Administration** choice on the Administration Menu brings up the Adjunct Database Administration menu. The options on that menu are explained in the **ssa\_admin** section of this chapter.

## Using the Command-Line Interface

To use TCS administration commands from the command line, do the following:

1. Log in as restricted user with an appropriate password.
2. Enter the command at the system prompt.

The rest of the sections in this chapter explain the TCS administration commands. They are listed alphabetically as command-line options (for example, **comcheck**, not **Communications Check**), but if a menu choice calls a command, that menu choice is also listed.

### **NOTE:**

Machine names for the PMs are ssap1 and ssap2. Machine names for VPs are ssa01 through ssa10. If LAN A is disabled for any reason, you may not be able to run some of these commands. If this happens, try specifying LAN B from the command line. To run commands over LAN B, append a **b** to the end of the machine name. For example, **ssa01b** or **ssap1b** would specify LAN B on a VP or a PM, respectively.

### **NOTE:**

Many of the administration commands include the options **card** and **rcard**. In every command that uses these options, they are defined the same way:

- **card** in a command line or screen example refers to a Communicore module, a circuit pack covered by a plastic shell.  
For more information about Communicore modules, refer to the section "Communicore Modules" on page 1-26 of "Understanding NAP" on page 1-1.
- **rcard** in a command line or screen example refers to a card in a MAP/100C (a *resource* card).

## **Command Types and Syntax**

---

All administration maintenance commands must be run as **root** or restricted user to work properly. Normally a command is run without any options and it runs on the machine where you enter the command.

Some commands are site-based operations and have a **-l** option to run in local mode.

Some commands have a **-m** option to invoke the command on the specified machine in a networked environment. If you do not specify the **-m** option, the command executes only on the machine from which it is run.

**⇒ NOTE:**

Some commands may scroll off your screen when you enter them, especially if you are requesting data for multiple machines. If this happens, run the command again, piping it through the UNIX **pg** command to page through screens of data. For example:

**dispdep | pg**

In some cases, you may want to capture the output of the command on the printer. If you are onsite, no printers are available. The TCC staff, however, can place the screen output of a command in a different window and print that window.

Type all commands as shown. Previous spellings or abbreviations may not work with this version. Be sure to use the proper upper or lower case level as shown in the command.

## Machine ID Differs from Machine Name

When using some commands you must enter a machine name — with others a machine ID. The two terms differ as follows:

<b><i>mach_id</i></b>	Specifies the machine type and machine instance pair from the machine table. Machine ID syntax is preferred.
<b><i>mach_name</i></b>	Specifies the application-defined UNIX name (Uname) from the machine table

For the appropriate term for a command, see that command's format section.

For TCS:

<b><i>mach_name</i></b>	Means ssap1, ssap2, ssa01 through ssa20
<b><i>mach_id</i></b>	Means pm01, pm02, vp01 through vp20

For NAP:

Machine names have no bearing on the NAP platform. Only machine IDs are recognized by NAP commands.

<b><i>mach_id</i></b>	Means pm00 through pm99, vp00 through vp99
-----------------------	--

## TCS Software-Installation Tools

---

Four installation tools are provided to install TCS Release 2.4 software. The four commands are **\_Commit**, **\_Distribute**, **\_Install**, and **\_Remove**. You must be **root** to run these commands.

## Command Cross-Reference Table

---

The following table lists commands in alphabetical order. For each command, the platform or application is given.

### **NOTE:**

When using the commands in this chapter, do not use the same option twice in one command line to perform the same task for two different machines. If you duplicate options, only the last option is used. In the following example, **chkconfig** runs only on VP02.

**chkconfig -m vp01 -m vp02**

Unless otherwise noted, run commands as a restricted user. The commands with a ★ designation *must* be run as **root**.

Commands designated with ◆ can take multiple machine names (or machine IDs) on the command line.

<b>Command</b>		<b>Used By</b>	<b>Page</b>
addlrpa		NAP	5-11
addruser		NAP	5-13
audresult		TCS	5-14
backadm		NAP	5-17
backtape		NAP	5-17
cardadm		NAP	5-18
chglrpa		NAP	5-20
chg_state		TCS	5-22
chkconfig		NAP	5-25
cleiadm		NAP	5-27
cliadm		NAP	5-28
clr_lights		TCS	5-30
comcheck		TCS	5-31
_Commit	★ ◆	TCS .	5-34
dbaudit		TCS	5-36
db_reload	★ ◆	TCS	5-37.a
db_sync	◆	TCS	5-37.d
delruser		NAP	5-38
diagnose		TCS	5-39
disp_alarms		TCS	5-43
dispclk		NAP	5-45.a
dispconn		NAP	5-46
dispdep		NAP	5-49
dispdigit		NAP	5-51
display connect		NAP Replaced by dispconn	5-52
displaypkg		NAP	5-53
displed		NAP	5-54
disp_log		NAP Replaced by displog	5-57

*continued on next page*

<b>Command</b>	<b>Used By</b>	<b>Page</b>
displog	NAP	5-58
displrpa	NAP	5-60
disp_status	TCS	5-62
_Distribute	★ ◆ TCS .	5-65
dk_diag	NAP Replaced by dkdiagnose	5-67
dkdiagnose	NAP	5-68
dload	NAP Replaced by download	5-69
download	NAP	5-70
ds1adm	NAP	5-72
ds1rep	NAP	5-74
dsrrep	NAP	5-76
eqirep	NAP	5-80
eqisrep	NAP	5-86
ficadm	NAP	5-89
_Install	★ ◆ TCS	5-91
lancheck	NAP	5-93
listlrpa	NAP	5-94
logcapture	TCS	5-96
logcat	NAP	5-99
logmsg	NAP	5-101
logpeg	TCS	5-102
machadm	NAP	5-103
machidadm	NAP	5-105
megpeg	NAP	5-106
napsetup	★ NAP	5-109
p24_rep	NAP (example only)	5-110
ping	NAP Replaced by lancheck	5-113

*continued on next page*

<b>Command</b>	<b>Used By</b>	<b>Page</b>
primadm	NAP	5-114
rcardadm	NAP	5-115
rds1adm	NAP	5-119
remlrpa	NAP	5-120
_Remove	★ TCS	5-121
remove	NAP	5-123
resetclk	NAP	5-125
restadm	NAP	5-126
restore	NAP	5-129
resttape	NAP	5-131
s24adm	NAP	5-132
setclk	NAP	5-132.a
snapshot	Replaced by new snapshot	5-135
ssa_admin	TCS	5-137
ssa_commit	Replaced by _Commit	5-139
ssa_display	Replaced by disp_status	5-140
ssa_distribute	Replaced by _Distribute	5-141
ssa_install	Replaced by _Install	5-142
ssa_remove	Replaced by _Remove	5-143
ssa_setup	Replaced by napsetup	5-144
start_vs	Replaced by chg_state functionality	5-22
stop_vs	Replaced by chg_state functionality	5-22
t1lb	NAP	5-145
tracecp	NAP	5-147
trace dip0	Replaced by tracecp	5-147

## **Commands**

---

This section provides a detailed description of commands. Commands are described and listed in alphabetical order.

## **addlrpa**

---

### **Synopsis**

This command adds a process time limit to the long-running process (LRPA) configuration file. This is to stop processes that are running too long and should have stopped or shut down sooner.

**⇒ NOTE:**

Running this command *does not kill* the process.

### **Command Format**

**addlrpa [-m <mach\_id>] -t <HH:MM> <process\_name>]**

The arguments for the **addlrpa** command are:

- |                             |  |
|-----------------------------|--|
| <b>-m &lt;mach_id&gt;</b>   | Machine ID where command is to run.  |
| <b>-t &lt;HH:MM&gt;</b>     | Time limit in hours (0–23) and minutes (0–59)                                    |
| <b>&lt;process_name&gt;</b> | Name of process for which you would like to add a time limit in the LRPA system. |

### **Description**

This command adds entries to the long-running process alarm (LRPA) configuration file. This file is used by the **procchk** cron job that checks and raises alarms for entries exceeding their administered time limits. Processes are checked at every 15 minutes, beginning on the hour. Processes are alarmed or not, depending on the time limit specified in the **-t** argument.

Because alarm situations are evaluated every 15 minutes, short alarm limits of less than 15 minutes present a special case. Short alarm processes will be alarmed if they are running at the time the cron job checks the `lrpa.cfg` file. If the process is no longer executing at the time of the cron job executes, then no alarm displays.

If the process has been alarmed for less than 15 minutes, but is still running when the cron job executes, an alarm is generated to reflect the time the process exceeded the time specified in the **-t** argument.

## Example

**addlrpa -t 0:15 init**

```
running command "/usr/add-on/rbin/addlrpa -t 0:15 init" on ssapl  
Successfully added (init) with a time limit of (0:15).
```

## See Also

**displrpa**

**chglrpa**

**listlrpa**

**remlrpa**

## **addruser**

---

### **Synopsis**

This command adds a restricted user to a machine.

### **Command Format**

**addruser** <login\_id> <login\_name>

The arguments for the **addruser** command are:

<b>&lt;login_id&gt;</b>	Login ID of the user
<b>&lt;login_name&gt;</b>	User's name (enclose in quotation marks if one or more spaces occur within the name)

### **Description**

This command adds a *restricted* user to the machine you are running on. Regular users are added by PMO using the UNIX **addusr** command as described in "Adding and Deleting Logins" on page 4-86.

### **Example**

Following is an example screen display from the **addruser** command:

```
megapm01 (mega) # addruser ruser1 "john smith"
Enter a password for ruser1:
New password:
Re-enter new password:

ruser1 created
```

### **See Also**

**delruser**

## audresult

---

### Synopsis

This command shows the results of a **dbaudit** command.

### Command Format

**audresult**

or use the **ssa\_admin** command and select from the SSA Administration Menu:

**View Database Audit Results =>5**

### Description

**audresult** allows you to view the **dbaudit** results. You must run this command from a PM.

If you run this command and there is a previous **audresult** command in progress, you will see no data in the screen output. Log in to the other PM by either opening another window or logging out and logging back in. Run **audresult** again. You will view the data of the first **audresult** command.

### Example

**audresult** produces output similar to that shown below. The output depends on how many machines are on the network and whether the last audit request was for one machine or for all machines.

The current audit results are as follows.

Mach	Inst Type	Aud lev	Cntrl status	DB's status	Ack status	Start Time	Completion Time
ssa01	VP01	1		in-synch	ack_rec	May 21 10:47:34	May 21 10:47:34
ssa10	VP10	1		out-synch	timeout	May 21 10:47:34	May 21 10:49:34
ssap1	PM01	1	control	in-synch		May 21 10:47:31	May 21 10:47:35
ssap2	PM02	1	slave	in-synch	ack_rec	May 21 10:47:31	May 21 10:47:35

### Fields

- The **Mach** field and **Inst Type** field show the machine name and machine ID of machines included in the audit.
- The **Aud lev** field tells you whether the audit request was an *information only*, level 1, or a *fix-it* type of audit, level 2.

- The `Cntrl status` field indicates from which machine the audit request was given.
- The `DB's status` field shows the state in which the `dbaudit` command left the data tables: `in-synch`, `out-synch`, or `out->in synch`.
  - `in-synch` means that a `dbaudit` of either a level 1 or level 2 found the datatables to match.
  - `out-synch` means that a `dbaudit` of either a level 1 or level 2 found the data tables unmatched. If the audit was a level 2, the **`dbaudit`** command was unable to synchronize the records. Examine the `ALARM.LOG` file or the `audit.log` file for more information.
  - `out->in synch` means that a `dbaudit` of level 2 found the data tables mismatched, but was able to synchronize them.
- The `Ack status field` will first be `req_sent`, then either `ack_rcv` (with audit results) or `timeout` (if the remote machine is not responding).

**See Also**

**`dbaudit`**

**`ssa_admin`**

## **backadm**

---

### **Synopsis**

This command provides the ability to back up the CMF administration data from the production directory to the backup directory on the machine from which it is run.

### **Command Format**

**backadm [-m <mach\_id>]**

The argument for the **backadm** command is:

**-m <mach\_id>** Machine ID where the command is to run. If you don't enter a machine ID, the command backs up all machines.

### **Description**

This command provides the ability to back up CMF administration data from the production directory (**/usr/add-on/maint/admin**) to the backup directory (**/usr/maint/backup**) on the machine from which it is run. If the machine is a PM machine, it backs up the administration data from all local and active machines in the machine table. If you run the command from a VP, it backs up the data for the VP on which it is run. This command is run every day on PM machines at 1:00 AM by cron.

### **Example**

This command forces a backup of administration data on PM01. The backup occurs at the time you issue the command, and will be run again at 1:00 AM by cron.

```
backadm -m pm01
```

When the command is finished the prompt displays.

### **See Also**

**restadm**

**backtape**

**resttape**

## **backtape**

---

### **Synopsis**

This command backs up the CMF administration data to the backup directory on the machine for which it is run and then writes the data out to the streaming tape drive.

### **Command Format**

**backtape [-m <mach\_id>]**

The argument for the **backtape** command is:

**-m <mach\_id>**      Machine ID where command is to run

### **Description**

This command provides the ability to back up CMF administration data to the backup directory (**/usr/maint/backup**) on the machine for which it is run and then write the data out to streaming tape. If the machine is a PM, it backs up the administration data from all local and active machines in the machine table. Otherwise it backs up the data for the machine for which it is run.

#### **⇒ NOTE:**

If you receive an error message when using this command, make sure the tape is properly inserted, and is not write-protected.

### **Example**

This command backs up administration data on all machines at the site to the backup directory and then to streaming tape. You need to be at the primary PM.

**backtape**

This command backs up administration data on PM01 to the backup directory and then to streaming tape.

**backtape -m pm01**

When command processing is finished the prompt displays.

### **See Also**

**resttape**  
**backadm**  
**restadm**

## **cardadm**

---

### **Synopsis**

This command administers the card table on the Communicore for the specified VP or PM machine.

### **Command Format**

**cardadm [-m <mach\_id>] [-d]**

The arguments for the **cardadm** command are:

**-m <mach\_id>**      Machine ID where command is to run  
**-d**                    Display only

### **Description**

This command administers the card table on the Communicore for the specified machine. It displays an interactive menu interface to add, change, or delete information for all the modules in the Communicore or cards in the PM machine. Refer to "Equipment Configurations" on page 8-13 of Chapter 8, "Maintenance" for Communicore module and MAP/100C card configuration information.

Use the following table to fill in the values when you run the **cardadm** command.

<b>Module Type</b>	<b>CLEI</b>
CONTROL	GCPQAVBJAA
SWITCH	GCPQARKJAA
POWER	GCPQARLJAA
PRI	GCPQARMJAA
TDET	GCPQARNJAA
TGEN	GCPQARPJAA
CCA	GCPQAVAJAA

You may or may not have all the module types listed above.

**Example**

This command displays the card table you have administered.

**cardadm -m vp01 -d**

```

running command "/usr/add-on/maint/bin/cardadm -d" on vp01
=====
|           Card Table           |
=====
Slot   Card      CLEI      Software
Number Type
--
01     CONTROL    GCPQARJAA Slot=1,Subrack=1
02     SWITCH      GCPQARKJAA Slot=2,Subrack=1
03     PRI         GCPQARMJAA Slot=3,Subrack=1
04     PRI         GCPQARMJAA Slot=4,Subrack=1
05     TGEN        GCPQARPJAA Slot=5,Subrack=1
08     TDET        GCPQARNJAA Slot=8,Subrack=1
16     POWER       GCPQARLJAA Slot=16,Subrack=1
32     POWER       GCPQARLJAA Slot=32,Subrack=2

```

**See Also**

**rcardadm**

## **chglrpa**

---

### **Synopsis**

This command changes the time value for a long-running process in the LRPA configuration file.

### **Command Format**

**chglrpa** [-m *<mach\_id>*] -t *<HH:MM>* *<process\_name>*

The arguments for the **chglrpa** command are:

<b>-m</b> <i>&lt;mach_id&gt;</i>	Machine ID of the machine to which the entry will be added
<b>-t</b> <i>&lt;HH:MM&gt;</i>	Time limit in hours (0–23) and minutes (0–59)
<b>&lt;process_name&gt;</b>	Name of process for which you would like to add a time limit in the LRPA system

### **Description**

This command changes an entry in the long-running process alarm (LRPA) configuration file. This file is used by the **procchk** cron job that checks and raises alarms for entries that have exceeded their administered time limit. Processes are checked at every 15 minutes, beginning on the hour. Processes are alarmed or not, depending on the time limit specified in the **-t** argument.

Because alarm situations are evaluated every 15 minutes, short alarm limits of less than 15 minutes present a special case. Short-alarm processes will be alarmed if they are running at the time the cron job checks the `lrpa.cfg` file. If the process is no longer executing at the time of the cron job executes, then no alarm displays.

If the process has been alarmed for less than 15 minutes, but is still running when the cron job executes, an alarm is generated to reflect the time the process exceeded the time specified in the **-t** argument.

**Example**

**chglrpa -m pm01 -t 1:15 init**

running command "/usr/add-on/rbin/chglrpa -t 1:15 init" on ssapl  
Successfully changed (init) to a time limit of (1:15).

**See Also**

**addlrpa**

**displrpa**

**listlrpa**

**remlrpa**

## **chg\_state**

---

### **Synopsis**

This command changes the state of the specified PM or VP machine.

### **Command Format**

**chg\_state -m <mach\_id> down | mtce | off | on | reboot [grace\_period]**

OR

**chg\_state <mach\_name> down | mtce | off | on | reboot [grace\_period]**

The arguments for the **chg\_state** command are:

**<mach\_name>** Machine name where command is to run

**-m <mach\_id>** Machine ID where command is to run

**down** Stops *all* software — shuts down software gracefully and leaves it down.

Use this option when replacing hardware components (for example, modules 1 through 4, 16, or 32 on the Communicore). Run the command *before* you power down the system.

When you want to bring the machine back up after the **down** option has been used, either push the reset button, or power down the machine and bring it back up.



#### **WARNING:**

*The machine is in the 4ESS central office location. You must have on-site action to recover after using the **down** option.*

**mtce** On a VP, removes all modules, cards and channels from service (they are in service state **manoos**) but leaves VP software running.

On a PM, stops application software.

Use the **diagnose** command to remove individual modules or cards from service.

**off** Stops application software (and VIS software on the VP) but leaves base UNIX system and networking software running.

**on** Turns on application software (and VIS software on the VP)  
 — If software is already running, restores modules, cards, and channels to service.



**CAUTION:**

*If you restore a VP that has been down for an extended period, do a **db\_sync**. Refer to "db\_sync" on page 5-37.d*

Under some conditions, the 4ESS will take channels out of service. If this happens, you must call the TCC to have the 4ESS restore them.

**reboot** Stops and restarts all software — The reboot shuts down software gracefully, then brings it back. Rebooting takes five minutes, during which the affected machine cannot communicate.

**grace\_period** Time in seconds (default 180) the command will wait for existing calls to finish before asking the user how to proceed.

**grace\_period** is accurate to within 30 seconds

**Description**

Restarts, stops, reboots, or takes offline the specified machine.

This command does not drop calls until the specified grace period has expired (with the **down**, **mtce**, **off**, or **reboot** option). However, it prevents new calls from entering the affected machine.



**WARNING:**

*If you perform **chg\_state mtce** on a VP, the Communicore and the MAP/100C will be unable to communicate when the modules and cards are restored to service. To re-establish communications after the modules and cards are restored, cycle the VP using the following steps:*

```
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## Example

To bring down all software on ssa01, enter:

```
chg_state ssa01 down
```

This command gracefully shuts down the software on ssa01 and leaves it down. Several screens of messages scroll past.

### **NOTE:**

Check for the MEGA023 alarm to ensure that the machine is up for call processing.

To bring down all software using a machine ID, enter:

```
chg_state -m vp01 down
```

## See Also

**diagnose**

**disp\_status**

**PM\_pref** (from the Adjunct Database Administration menu item in the SSA Administration Menu)

### **CAUTION:**

*Before changing state on ssap1, switch **PM\_pref** to ssap2. **PM\_pref** identifies which PM collects alarms and measurements, and the default is ssap1. Switch **PM\_pref** only when changing the state of ssap1, and switch it back when ssap1 is again operational. Once **PM\_pref** is switched, it remains switched until you readminister it or until a new software load is installed.*

**restore**

**remove**

## **chkconfig**

---

### **Synopsis**

This command compares the Communicore board configuration to a predefined configuration.

### **Command Format**

```
chkconfig [-m <mach_id>] [-v]
```

The arguments for the **chkconfig** command are:

**-m <mach\_id>**      Machine ID where command is to run

**-v**                    Verbose output

### **Description**

This command compares the actual Communicore board configuration to the user-specified configuration defined in the **/usr/add-on/mega/data/bd\_config**. Once compared, the command reports application-specific success status and/or discrepancies. If **chkconfig** finds a discrepancy, edit the board, not the **bd\_config** file.

### **Configuration Error Messages**

This error message:

```
ERROR: Card 26 is CCA and should be TDET.
```

should be interpreted as:

```
Card 26 is a CCA and bd_config says it should be a TDET.
```

## Examples

**chkconfig -m vp07 -v**

```

running command "/usr/add-on/nap/bin/chkconfig -v" on ssa07
CARD  CHAN  STATE  CHTYPE  CDTYPE  CDOPTIONS
1     -     INSERV -        CONTROL 3/21/96:5520:5512:28f016x2
2     -     INSERV -        SWITCH  3/12/96:5520:5520:29f040x1
3     -     INSERV -        PRI     3/12/96:5520:5520:29f040x1
4     -     INSERV -        PRI     3/12/96:5520:5520:29f040x1
5     -     INSERV -        TGEN   3/13/96:5520:5520:28f200x1
6     -     INSERV -        PRI     3/12/96:5520:5520:29f040x1
7     -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
8     -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
9     -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
10    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
11    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
12    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
13    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
14    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
15    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
16    -     INSERV -        POWER  3/12/96:5520:5520:28f001x1
17    -     INSERV -        TGEN   3/13/96:5520:5520:28f200x1
18    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
19    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
20    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
21    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
22    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
23    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
24    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
25    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
26    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
27    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
28    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
29    -     INSERV -        TDET   3/13/96:5520:5520:28f200x1
30    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
31    -     FOOS   -        PRI     3/12/96:5520:5520:29f040x1
32    -     INSERV -        POWER  3/12/96:5520:5520:28f001x1
No configuration errors.

```

In the above example, the CD options column shows the date, time, and version number of the firmware.

## **cleiadm**

---

### **Synopsis**

This command administers the CMF machine Common-Language Equipment Identifier (CLEI) value on the machine for which the command is run.

### **Command Format**

**cleiadm [-d] [-m <mach\_id>] [-v <clei>]**

The arguments for the **cleiadm** command are:

- d** Display the current value
- m <mach\_id>** Machine ID where command is to run
- v <clei>** New value for MACH\_CLEI (10 characters)

### **Description**

This command administers the machine CLEI value on the machine for which the command is run. This value must be 10 characters. CLEI is customized for an application and may not show the numbers given in the following example.

### **Example**

For example, the following screen shows the current cliadm value for a PM machine if you enter:

**cleiadm -d**

```
Current MACH_CLEI value = VSMASC0C0MA
```

The next screen shows the current cliadm value for a VP machine:

```
Current MACH_CLEI value = VSMASD0C0MA
```

## **cliadm**

---

### **Synopsis**

This command administers the site's CMF Common-Language Location Identifier (CLLI) value.

### **Command Format**

**cliadm [-d] [-r] [-l] [-v <cli>]**

The arguments for the **cliadm** command are:

<b>-d</b>	Display current value
<b>-l</b>	Run the command on this machine (local mode); normally the command runs on all machines at the site
<b>-r</b>	Resync the current value
<b>-v &lt;cli&gt;</b>	New value for SITE_CLLI ( <b>CCCCSSBBAI</b> )

**CCCC** — city  
**SS** — state/province/country  
**BB** — building  
**AA** — application (CA for TCS)  
**I** — instance (1 to 9)

### **Description**

This command administers the site CLLI value. This value identifies the building and adjunct complex within the country where the machine is located. This value, combined with the machine ID, goes out as the alarm header for all alarms from a machine.

The city, state, and building parts match existing 4ESS administration.

The application (**AA**) and instance (**I**) parts uniquely identify an application adjunct complex within the building. The application (**AA**) value is unique for an application in the 4ESS network.

The instance (**I**) value is usually 1. If the application has more than one complex in the building, then the Instance field is incremented for each complex.

**Example**

This example displays the current cliadm value for the machine on which it was executed.

**cliadm -d**

The -d option on a site based operation displays local value.  
Current CLLI Value = CCCCSSBBAAI

## **clr\_lights**

---

### **Synopsis**

This command clears alarm lights.

### **Command Format**

**clr\_lights -m <mach\_id>**

OR

**clr\_lights <mach\_name>**

The arguments for the **clr\_lights** command are:

**mach\_name**      Machine name where command is to run

**-m <mach\_id>**      Machine ID where command is to run

### **Description**

Clears alarm lights from the specified machine — works for both VP and PM machines

### **Example**

To clear the alarm lights and reset the alarms for ssa01, enter:

```
clr_lights ssa01
```

To clear the alarm lights and reset alarms for the same using its machine ID enter:

```
clr_lights -m vp01
```

The output from this command is:

```
Alarms cleared and lights turned off.
```

## **comcheck**

---

### **Synopsis**

This command checks LAN and software connectivity to the PM.

### **Command Format**

Enter:

```
comcheck all
```

or, on the SSA Administration Menu, select:

```
Communications Check => 1
```

The argument for the **comcheck** command is:

**all**                    Include all the machines at a site.

#### **NOTE:**

Always run this command from the SSA Administration Menu so that all machines at the site are included in the check. If you have a special case where you want to check the LAN and software connectivity of one machine only, use the command at the prompt as shown above, specifying the machine name.

### **Description**

The **comcheck** command checks the LAN connectivity and the software connectivity between the PM and either a single machine or all machines. You must run this command from a PM.

An `up` on the `comcheck` output screen means that the machine is connected to the LAN, administered as Y in the machine table, and has its applications running.

**comcheck** differs from **lanccheck** in that **comcheck** is an application-level, message-based communications check. **lanccheck** is a TCP/IP-based communications/connectivity check.

**Example**

The output from the **comcheck** command is similar to the TCS-specific table that follows:

```

$ comcheck all

Communications Check.

You have selected all ACTIVE machines to be communications checked.

The request to start the communications check is being issued.
Please wait for the reply to the communications check request.
Communications Check Results

Mach  Lan A  Lan B  Mach  Lan A  Lan B  Mach  Lan A  Lan B  Mach  Lan A  Lan B
-----
ssa01 up    up    ssa02 up    up    ssa03 up    up    ssa04 up    up
ssa05 up    up    ssa06 up    up    ssa07 up    up    ssa08 up    up
ssa09 up    up    ssa10 up    up    ssa11 inact inact ssa12 inact inact
ssa13 inact inact ssa14 inact inact ssa15 inact inact ssa16 inact inact
ssa17 inact inact ssa18 inact inact ssa19 inact inact ssa20 inact inact
ssap2 up    up

```

The `inact` notation in the above screen means that the machine is not administered and so was not recognized as being on the LAN.

The command **comcheck <mach\_name>** produces output similar to the examples that follow. Interpretations of the output follow each example.

**Example 1**

```

Mach  Lan A  Lan B
-----
ssa10 up    up

```

This machine is administered as active; both LANs are working, and the application software is running.

**Example 2**

```
Mach  Lan A Lan B
-----
ssa10  inact inact
```

This machine is administered as inactive. Refer to “Making a Machine Active or Inactive” on page 4-77 in Chapter 4, “Software Installation and Administration”. No interpretation can be made about whether a LAN connection exists.

**Example 3**

```
Mach  Lan A Lan B
-----
ssa10  down  down
```

This machine is administered as *active*, but either the LANs are not working or the TCS software is not running. No interpretation can be made about whether the problem is with the LAN or with the application software. Use the **lancheck** command to determine if the LAN is working.

**Example 4**

```
Mach  Lan A Lan B
-----
ssa10  up    down
```

This machine is administered as *active*. Because one LAN is up, the application software is running. There is a problem, however, with the other LAN.

**See Also****lancheck**

## \_Commit

### Synopsis

The **\_Commit** command executes the script that makes the TCS Release 2.4 software permanent on that machine.



#### **WARNING:**

*The **\_Commit** command removes all TCS Release 2.3 software and the **\_Commit** command itself. This means that on the local PM, you can only run **\_Commit** once.*

### Command Format

**./\_Commit** [*<mach\_name>* *<mach\_name>* ...]

or

**./\_Commit** [*<mach\_id>* *<mach\_id>*...]

The arguments for the **\_Commit** command are:

**mach\_name**      Machine name that will be committed

**mach\_id**        Machine ID that will be committed

Note that in this command, **-m** is not part of the argument.

### Description

The **\_Commit** command executes the script that makes the TCS Release 2.4 software permanent on that machine.

You must run the **\_Commit** command in directory **/usr/install/tcs\_2.4**. You must run this command from the primary PM where the **tcs\_2.4\_cpio** was placed.

Most often you will run **\_Commit** with no arguments. **\_Commit** with no arguments commits all machines at the site, including the machine from which the command is run. Occasionally, when replacing or adding a machine to a site, you would use a machine name or machine ID as an argument.

You must be **root** to run this command.

### Example

When executing **\_Commit** with no arguments, the command commits the software on all machines defined in the **VP\_name\_list** and the **PM\_name\_list** files (ssap1, ssap2, and ssa01 through ssa*nn*).

```
cd /usr/install/tcs_2.4  
./_Commit
```

When specific machines are named on the command line, **\_Commit** makes software permanent on only those machines.

```
cd /usr/install/tcs_2.4  
./_Commit vp02 vp08
```

### **Command Status Display States**

Four states may be displayed during the commit process.

- **Submitted:** A batch job was submitted by the master PM to commit to permanent installation of the software.
- **Running:** A batch job was submitted to a machine and is executing.
- **Finished:** The software commit process is complete on the machine.

When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.

- **ABORTED:** An error occurred during the commit process.

Escalate the problem to the appropriate support organization. Do not attempt to commit again.

### **See Also**

**\_Remove**

## **dbaudit**

---

### **Synopsis**

This command performs a database audit.

### **Command Format**

**dbaudit all <1 | 2>**

or, on the SSA Administration Menu, select:

**Start Database Audit => 4**

The arguments for the **dbaudit** command are:

<b><i>mach_name</i></b>	Machine name where command is to run
<b>all</b>	Include all machines at a TCS site.
<b>1 or 2</b>	Option <b>1</b> runs an information audit and option <b>2</b> attempts to fix any database problems.

### **Description**

This command audits both PM databases and the specified machine name. Option 1 runs an information audit. Option 2 attempts to fix any database problem. The **dbaudit** command does not provide output. To see the results of this command, use **audresult**.

You must run this command from a PM.

#### **NOTE:**

Do not run a database audit on all machines (or on consecutive machines) during peak hours. This command taxes the system and will degrade overall system performance.

In addition, if you suspect a machine may be missing a database, do not run **dbaudit**. Running **dbaudit** on a machine missing a database may generate a disabling number of alarms. Instead, first use **db\_sync** to give the machine a database and then **db\_audit 1** to check the database.

### **Example**

To run an information audit on all machines, enter:

**dbaudit all 1**

When command processing is finished the prompt displays. This command does not show you the results of the audit. To see audit results, use the **audresult** command.

### **See Also**

**audresult**

**db\_reload**

**db\_sync**

## **db\_reload**

---

### **Synopsis**

This command takes an SMW-downloaded file of TCS customer records and propagates it to all machines at the site.

### **Command Format**

**db\_reload** [*<mach\_name1>* *<mach\_name2>*...]

or

**db\_reload** [*<mach\_id1>* *<mach\_id2>*...]

The arguments for the **db\_reload** command are:

**mach\_name1** Machine name receiving data

**mach\_name2** Machine name receiving data

**mach\_id1** Machine ID receiving data

**mach\_id2** Machine ID receiving data

Note that in this command, **-m** is not part of the argument.

### **WARNING:**

*The primary PM must be one of the machine arguments. Doing so ensures that a machine having received a new customer records table is not inadvertently overwritten with an old table from the primary PM at alter time.*

### **Description**

If invoked with no arguments, the command defaults to all machine names found in the **.rhosts** file and downloads the table to all machines listed in that file.

Invoking the command with arguments override the default list of machine names.

You must be **root** to run this command.

Use this command:

- After installing a TCS release in which the format of the customer record has been changed, for example, when new fields were added.
- After a site has been out of service for a lengthy period, for example, due to upgrading site hardware.

The **db\_reload** command is often part of creating a customer database when installing software. Because of its importance as part of a sequence, be sure to

execute the prerequisite steps prior to issuing the **db\_reload** command. For the prerequisite steps needed prior to issuing this command, see "Manually Shutting Down the Site" on page A-7 before executing this command.

Before executing this command, make sure the entire site is out of service. Then execute the following steps.

1. Log in to pm01
2. Enter **chg\_state -m pm02 reboot**  
after the site is down.
3. Enter **chg\_state -m pm01 reboot**  
This command disconnects the Datakit login to the site.
4. Wait 5 minutes to allow the reboot of ssap1 to occur.
5. Enter **dkcu <Datakit dialstring>**  
from a console at the TCC to log into the Datakit and pm01.
6. Enter **chg\_state -m pm02 off**
7. Enter **chg\_state -m pm01 off**
8. Request a customer record database download from SMW.  
Contact the AFSC and ask that the SMW be used to download a customer record database to the site. Specifically state that you have a TCS 2.4 site.
9. Confirm a successful download from SMW.  
SMW should notify your AFSC representative and ask that the customer record database has been downloaded to the site. Your AFSC representative should pass this information on to you.
10. Log in a PM.
11. Enter **su - root**
12. Enter root password.
13. Enter **db\_reload**  
to reload the customer record database to all machines at the site.

During execution of this command DCROS and SMW will not be able to log into the site.

Before downloading, **db\_reload** checks the status of each machine to make sure it is ready to accept data. A list of machines affected displays on the screen and you are asked to confirm the machines before the database reload begins.

You can anticipate the following times for executing this command:

- To download 20,000 customer records takes approximately 10 minutes.
- To download 100,000 customer records takes approximately 40 minutes.

## Example

This example command downloads new customer record tables to machines PM01, PM02, VP02, and VP01 if they are ready to accept the data.

```
db_reload pm01 pm02 vp02 vp01
```

This example command downloads new customer record tables to all machines at the site that are ready to accept data, even the machine you are using.

```
db_reload
```

### **NOTE:**

When the **db\_reload** command finishes successfully, perform "Performing Postinstallation Site Administration and Acceptance Testing" on page A-16.

## **db\_sync**

---

### **Synopsis**

This command synchronizes the customer records table on a VP or the other PM with the customer record table of the local PM.

### **Command Format**

**db\_sync** [*<mach\_name1>* *<mach\_name2>...*]

or

**db\_sync** [*<mach\_id1>* *<mach\_id2>...*]

The arguments for the **db\_sync** command are:

**mach\_name1** Machine name receiving data

**mach\_name2** Machine name receiving data

**mach\_id1** Machine ID receiving data

**mach\_id2** Machine ID receiving data

Note that in this command, **-m** is not part of the argument.

### **Description**

Use this command in situations when a machine has been out of service for an extended period and you suspect the customer records table is old and incorrect. This command copies the data to the target machine with data from the local PM rather than downloading from SMW.

Run this command from the PM with the customer record table you want to copy. The machines affected will be reloaded with the same customer records found on the PM from which the command is executed.

Before executing this command, make sure the target machines are out of service. Administer the target machine to be inactive and state is off.

When the target machine is brought back into service, change state to ON and administer the machine as active. An audit occurs bringing the target machine and the PM fully into synch.

Only those machines specified on the command line need to be out of service.

The PM from which the command is executed is NEVER reloaded. If named on the command line, it is ignored and a message indicating such will be displayed.

### **Example**

This example command takes the customer records data table from the PM you are running it on and places it on VP02 and VP01.

**db\_sync vp02 vp01**

This example command copies the TCS customer record database from the PM you are running it on to all machines at the site that are able to accept data. The machine you are running the command on does not participate in the synch operation because it is donating data.

**db\_sync**



## **delruser**

---

### **Synopsis**

This command deletes a restricted user from the current machine.

### **Command Format**

**delruser** <*login\_id*>

The argument for the **delruser** command is:

*login\_id*            Restricted login ID of the user you want to delete

### **Example**

This example deletes the restricted user ruser1 from the machine you are running on.

**delruser ruser1**

```
Delete the login for ruser1 (Restricted User1) (y/n)? Y
ruser1 deleted
```

### **See Also**

**addruser**

## **diagnose**

---

### **Synopsis**

This command diagnoses Communicore modules, the Communicore bus, MAP/100C circuit cards, and MAP/100C bus.

### **Command Format**

**diagnose** <-m *mach\_id*> all [*grace\_period*]

**diagnose** <-m *mach\_id*> card <*card\_no* | all> [*grace\_period*]

**diagnose** <-m *mach\_id*> rcard <*rcard\_no* | all> [*grace\_period*]

**diagnose** <-m *mach\_id*> bus [*grace\_period*]

**diagnose** <-m *mach\_id*> rbus [*grace\_period*]

OR

**diagnose** <*mach\_name*> all [*grace\_period*]

**diagnose** <*mach\_name*> card <*card\_no* | all> [*grace\_period*]

**diagnose** <*mach\_name*> rcard <*rcard\_no* | all> [*grace\_period*]

**diagnose** <*mach\_name*> bus [*grace\_period*]

**diagnose** <*mach\_name*> rbus [*grace\_period*]

The arguments for the **diagnose** command are:

<b><i>mach_name</i></b>	Machine name where command is to run
<b>-m <i>mach_id</i></b>	Machine ID where command is to run
<b><i>mach_name</i> all</b> or <b>-m <i>mach_id</i> all</b>	Runs every diagnostic for the specified machine. These include all card, rcard, rbus, and bus diagnostics.
<b>card</b>	Diagnose modules on the Communicore for the specified VP machine
<b><i>card_no</i>   all</b>	Module number to diagnose or all modules
<b>rcard</b>	Diagnose resource cards on the MAP/100C for the specified MAP 2000 machine
<b><i>rcard_no</i>   all</b>	Resource card number on the MAP/100C to diagnose or all of the resource cards. When you <b>diagnose</b> a resource card, the entire system is removed from service, and the resource bus is also diagnosed.

## Description

<b>bus</b>	Diagnose Communicore bus
<b>rbus</b>	Diagnose rbus on the MAP/100C
<b>grace_period</b>	Time in seconds (default 180) that the command will wait for existing calls to drop before asking how to proceed <b>grace_period</b> is accurate to within 30 seconds.

Diagnoses modules on the Communicore or resource cards on the MAP/100C, or runs diagnostics on the Communicore bus or MAP/100C resource bus for the specified VP machine. Runs internal module, card or bus diagnostics and reports diagnostic results on the screen. This command removes the affected MAP/100C cards and dependent cards from service before diagnostics are performed.

With **diagnose bus** on a MAP 2000 VP, there is no removal of resources because it is a nondestructive test. See the following caution about bus diagnostic failures.

You can pipe the output of this command through the UNIX **pg** command.

### **NOTE:**

If another **diagnose** command is running, any subsequent **diagnose** command is blocked and a message is printed to the screen. Wait and try again.

### **WARNING:**

*If you diagnose the PRI module in slot 4 that carries D-channel to the 4ESS, all other modules are removed from service. You should call the TCC and have them take the D-channel out of service before using the command.*

### **WARNING:**

*If you perform **diagnose** on a VP for any value or range that includes any of the modules 1 through 3 (including **all**), the Communicore and the MAP/100C will be unable to communicate when the modules and cards are restored to service. To re-establish communications after the modules and cards are restored, cycle the VP using the following steps:*

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

### **CAUTION:**

*This command runs only nondestructive tests on Communicore modules 1 through 3, so even if the Communicore passes the tests, problems may remain with Communicore modules 1 through 3.*



**CAUTION:**

If a **diagnose bus** command finds a failed module, the module goes to the broken state and is out of service. Be aware that calls may be immediately blocked.



**NOTE:**

When you run the **diagnose bus** command, diagnose may report some tests as aborted. If this happens, this does not mean that any modules have failed these tests. It means that the resources required to perform the tests are not available. For example, for the TCS configuration, some tests will always abort when testing modules in the Communicore's upper subrack because the switch module is not there.

## Examples

To diagnose all of the Communicore modules associated with machine VP07, enter:

**diagnose -m vp07 all**

```
Graceful idle of channels started.
Waiting up to 180 seconds for calls to clear.
Graceful idle of channels successful.

Diagnosing card(s) please wait about 2 minutes per card.
Communicore Board 1: LED TEST PASSED (passed)
Communicore Board 3: SCOTCH fifo TEST ABORTED (board is in use)
Communicore Board 1: Board Address Parity TEST PASSED (passed)
Communicore Board 3: LED TEST PASSED (passed)
Communicore Board 3: SCOTCH conc hwy looparound TEST ABORTED (board is in use)
Communicore Board 2: PPE Functional TEST ABORTED (board is in use)
Communicore Board 2: LED TEST PASSED (passed)
Communicore Board 3: SCOTCH TDM Looparound ABORTED (board is in use)
Communicore Board 2: PPE Memory TEST ABORTED (board is in use)
Communicore Board 2: Board Address Parity TEST PASSED (passed)
Communicore Board 3: SCOTCH Reset and Register TEST ABORTED (board is in use)
Communicore Board 5: LED TEST PASSED (passed)
Communicore Board 4: LED TEST PASSED (passed)
Communicore Board 6: LED TEST PASSED (passed)
Communicore Board 7: LED TEST PASSED (passed)
Communicore Board 8: LED TEST PASSED (passed)
Communicore Board 9: LED TEST PASSED (passed)
Communicore Board 3: SCOTCH self-TEST ABORTED (board is in use)
Communicore Board 10: LED TEST PASSED (passed)
Communicore Board 11: LED TEST PASSED (passed)
Communicore Board 12: LED TEST PASSED (passed)
.
.
Communicore Board 25: Done
Communicore Board 27: Done
Communicore Board 28: Done
Communicore Board 30: Done
Communicore Board 31: Done
Communicore Board 1: Static RAM TEST PASSED (passed)
Communicore Board 1: Done
All diagnostics complete
card diagnostics complete.
Diagnostics complete, restore equipment to service when ready.

Execute chg_state <mach_name> on, off, on sequence to restore
call chans to INSERTV
```

To use the same command using the machine name enter:

**diagnose ssa07 all**

## See Also

**chg\_state**  
**restore**

## **disp\_alarms**

---

### **Synopsis**

This command displays logged alarms.

### **Command Format**

**disp\_alarms -m <mach\_id> local | global <n> | all**

OR

**disp\_alarms <mach\_name> local | global <n> | all**

The arguments for the **disp\_alarms** command are:

<b>&lt;mach_name&gt;</b>	Machine name where command is to run
<b>-m &lt;mach_id&gt;</b>	Machine ID where command is to run
<b>local</b>	List alarms for the specified machine
<b>global</b>	List all alarms for the site. Works for PM machines only.
<b>n or all</b>	The last n number of lines to be listed or all lines

### **Description**

Displays logged alarms for the specified machine name — the most recent alarms display in chronological order.

You can pipe the output of this command through the UNIX **pg** command.

### **Example**

To display all of the logged alarms for VP07 enter:

```
disp_alarms -m vp07 local all
```

To use the same command using the machine ID, enter:

```
disp_alarms ssa07 local all
```

The following screen provides an example of the output from the **disp\_alarms** command.

**disp\_alarms ssa07 local all**

```

DNVRCOPECA1VP07 96-04-23 13:56:35
MEGA017 -- -- --- Communicore card 14 (slot=3D14,subrack=3D1) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:35
MEGA017 -- -- --- Communicore card 17 (slot=3D 1,subrack=3D2) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:35
MEGA017 -- -- --- Communicore card 20 (slot=3D 4,subrack=3D2) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:35
MEGA017 -- -- --- Communicore card 23 (slot=3D 7,subrack=3D2) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:35
MEGA017 -- -- --- Communicore card 26 (slot=3D10,subrack=3D2) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:36
MEGA017 -- -- --- Communicore card 29 (slot=3D13,subrack=3D2) = transitioned to
MANOOS.

DNVRCOPECA1VP07 96-04-23 13:56:41
** MEGA016 -- -- --- Communicore card 4 is not framing (slot=3D 4, = subrack=3D1)

DNVRCOPECA1VP07 96-04-23 13:56:41
** MEGA016 -- -- --- Communicore card 4 is not framing (slot=3D 4, = subrack=3D1)

DNVRCOPECA1VP07 96-04-23 13:56:49
** MEGA004 -- -- --- TDM primary clock source (card 4) on Communicore was = lost.
Location of this card is slot 4 in subrack 1.

DNVRCOPECA1VP07 96-04-23 13:57:37
*C MEGA009 -- -- --- PRI D-channel 1 removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 1 (slot=3D 1,subrack=3D1) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 2 (slot=3D 2,subrack=3D1) was = manually
.
.
.

```

```
DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 1 (slot=3D 1,subrack=3D1) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 2 (slot=3D 2,subrack=3D1) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 3 (slot=3D 3,subrack=3D1) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 16 (slot=3D16,subrack=3D1) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
** MEGA020 -- -- --- Communicore card 32 (slot=3D16,subrack=3D2) was = manually
removed from service.

DNVRCOPECA1VP07 96-04-23 13:57:40
*C MEGA009 -- -- --- PRI D-channel 1 removed from service.
```

### See Also

#### **displog**

Used together, **disp\_alarms** and **displog** provide a more complete look at alarm and message history.

## **dispclk**

---

### **Synopsis**

This command displays the Communicore TDM primary and secondary clock sources.

### **Command Format**

**dispclk** [-m *mach\_id*]

The argument for the **dispclk** command is:

**-m *mach\_id***      Machine ID of the MAP 2000 machine where the command is to run

If *mach\_id* is not specified, **dispclk** reports on the machine it is run from.

### **Description**

This command displays the Communicore TDM primary and secondary clock sources and tells whether these clock sources are online or offline. A clock source is said to be online if it is able to supply digital synchronization from the far end.

 **NOTE:**

A PRI card can be OOS and still provide a good clock source.

### **Example**

**dispclk**

```
Getting Communicore TDM clock source information.....
Primary: card 4 is OFF-LINE.
Backup: card 6 is OFF-LINE.

WARNING: The Primary and Backup clock sources are both OFF-LINE.
         Therefore the internal clock is the current reference.
```

### **See Also**

**setclk**

**resetclk**

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## **dispcnn**

---

### **Synopsis**

This command displays the connection status of the 4ESS B-channels on a MAP 2000.

### **Command Format**

**dispcnn** [-m <*mach\_id*>]

The argument for the **dispcnn** command is:

**-m <*mach\_id*>**      Machine ID where command is to run

### **Description**

**dispcnn** displays the connection status of the B-channels and tells you which channels connect to each other. **dispcnn** lists each channel and, for each connection it makes to another channel, shows the number and the type of the connecting channel.

You can pipe the output of this command through the UNIX **pg** command.

**Example**

**dispcnn** creates output similar to this screen:

```

CHAN  CON1  TYP1  CON2  TYP2  CON3  TYP3  CON4  TYP4  CON5  TYP5  CON6  TYP6
4      <>22  PRIB
22     26/0  TDET  <>4   PRIB
44     <>3   RES
56     <0    RES   26/1  TDET
    
```

In the above example the CHAN column indicates the channel being used.

Together, columns CON1 and TYPE1 indicate the channel resource and channel type CHANNEL is connected to, up to 6. Looking across the screen, each channel resource is paired with a channel type.

TYP columns use these notations:

PRIB      call channel on the Communicore

TDET      tone detector

RES        resource channel on the CONVERSANT

CON columns always show the channel number. In addition CON columns use the following notations:

<b>If TYP is</b>	<b>CON column shows</b>	<b>For Example:</b>
TDET	<i>module number/ channel number</i>  (Actual tone detector that is connected)	26 / 0
PRIB or RES	angle brackets (<>):  <ul style="list-style-type: none"> <li>■ &lt;&gt; indicates that both channels are fully bridged and both parties can talk</li> <li>or</li> <li>■ either a &lt; or &gt; indicates that one channel is listening to another</li> </ul>	44      <>3  56      <0 (Channel 56 is listening to channel 0)

Consider the possibility that you may have B-channels on the call with no connection and so will not show up with **dispcnnc** even though the B-channel is in use. For example, in the TCS application, when a calling party is on hold there is no connection shown by **dispcnnc** unless the calling party is listening to an announcement.

**See Also**

**tracecp**

## **dispdep**

---

### **Synopsis**

This command displays channel and module dependencies.

### **Command Format**

**dispdep** [-m <*mach\_id*>]

The argument for the **dispdep** command is:

**-m** <*mach\_id*>     Machine ID where command is to run

### **Description**

**dispdep** displays Communicore module and call-channel dependencies as defined by the application. Be aware that digital-signal processing modules, including tone detector, tone generator, and call classifier, cannot depend on other modules.

You can pipe the output of this command through the UNIX **pg** command.

**Example**

**dispdep -m vp07**

```
running command "/usr/add-on/nap/bin/dispdep" on ssa07
```

CARD	CHAN	DEP1	TYP1	DEP2	TYP2	DEP3	TYP3	DEP4	TYP4	DEP5	TYP5
1	-										
2	-										
3	-										
4	-	3	PRI	2	SW	1	CTRL				
4	0	24	PRIB	23	PRID	8	TDET				
4	1	25	PRIB	23	PRID	8	TDET				
4	2	26	PRIB	23	PRID	8	TDET				
4	3	27	PRIB	23	PRID	8	TDET				
4	4	28	PRIB	23	PRID	8	TDET				
4	5	29	PRIB	23	PRID	8	TDET				
4	6	30	PRIB	23	PRID	8	TDET				
4	7	31	PRIB	23	PRID	8	TDET				
4	8	32	PRIB	23	PRID	8	TDET				
4	9	33	PRIB	23	PRID	8	TDET				
4	10	34	PRIB	23	PRID	8	TDET				
4	11	35	PRIB	23	PRID	8	TDET				
4	12	36	PRIB	23	PRID	8	TDET				
4	13	37	PRIB	23	PRID	8	TDET				
4	14	38	PRIB	23	PRID	8	TDET				
4	15	39	PRIB	23	PRID	8	TDET				
4	16	40	PRIB	23	PRID	8	TDET				
4	17	41	PRIB	23	PRID	8	TDET				
4	18	42	PRIB	23	PRID	8	TDET				
4	19	43	PRIB	23	PRID	8	TDET				
4	20	44	PRIB	23	PRID	8	TDET				
4	21	45	PRIB	23	PRID	8	TDET				
4	22	46	PRIB	23	PRID	8	TDET				
4	23										
5	-										
6	-	3	PRI	2	SW	1	CTRL				
6	24	23	PRID								
6	25	23	PRID								
6	26	23	PRID								
6	27	23	PRID								
6	28	23	PRID								
6	29	23	PRID								

## **dispdigit**

---

### **Synopsis**

This command displays the digits pressed during a call.

### **Command Format**

**dispdigit** [-m <mach\_id>] <range>

The arguments for the **dispdigit** command are:

**-m <mach\_id>** Machine ID where command is to run

**range** A single tone detector module number (**8**), a comma-separated list of numbers (**8,11,14**), a range of numbers (**8-14**), or all (**all**)

### **Description**

This command displays the digits pressed during a call. You may use this information for troubleshooting.

### **Example**

**dispdigit -m vp05 2-4**

### **Example**

**dispdigit** creates output similar to this:

TDET CARD	TDET CHAN	PRI CARD	PRI CHAN	DIGITS
8	1	4	12	# 3 5 8 9 0 3 5 1 5 up to 100 digits
8	2	7	20	# 3 4 5 6 # 3 2 1 0 up to 100 digits

**display connect**

---

See the **dispcnn** command.

## **displaypkg**

---

### **Synopsis**

This command displays software packages installed on the machine.

### **Command Format**

**displaypkg** [-m <*mach\_id*>]

The argument for the **displaypkg** command is:

**-m** <*mach\_id*>      Machine ID where the command is to run

### **Description**

The **displaypkg** command shows you what software and what versions are installed on the machine you run it on.

### **Example**

The following software packages have been installed:

```
CONVERSANT VIS V4.0 Base ORACLE DBMS 6.0.30
CONVERSANT VIS V4.0 Extended ORACLE DBMS 6.0.30
Core Maintenance Features (CMF) (OAM&P - SVR#.#.#) V2.0 R#.0[##/##/##]
C Software Development Set            4.1.5
Multiplexed Host Interface to Datakit(R) VCS Software 3.2v3
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V#.0 R#.0[##/##/##]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
```

## **displed**

---

### **Synopsis**

This command displays the Communicore module status LEDs.

### **Command Format**

**displed** [-m <*mach\_id*>] <*resource\_type*> <*range*>

The arguments for the **displed** command are:

**-m** <*mach\_id*> Machine ID where command is to run

***resource\_type*** Is **card** or **type**

***range*** (for **card**) One of the following:

- A single number (**2**)
- A comma-separated list (**2,3,4**)
- A number range ( **2-4**)
- **all** (lower case)

***range*** (for **type**) One of the following :

- **CONTROL** (upper case)
- **SWITCH** (upper case)
- **POWER** (upper case)
- **TGEN** (upper case)
- **TDET** (upper case)
- **PRI** (upper case)
- **all** (lower case)

Without any options, status LEDs for all modules display.

### **Description**

This command displays the LED status of the user-specified Communicore modules. The normal states are on, off, flash, and f-flash (fast flash). Ab-flash (abnormal flash or slow flash) indicates an LED status other than one of the normal states. This command is issued to all Communicore modules, a subset of

Communicore modules, or a particular Communicore module type.  
 "Communicore Module Indicators" from page 35-8 through 35-11 contains a full discussion of the LED states.

**⇒ NOTE:**

If another **displed** command is running, any subsequent **displed** command is blocked and a message is printed to the screen. Wait and try again.

You can pipe the output of this command through the UNIX **pg** command.

**Example**

**displed -m vp02 card 1-3,6-10**

uses channel ranges and puts the information in module order, as shown in the following output:

```

Card Type          Slot Status Node Proc Link
-----
CONTROL           1  on      on

Card Type          Slot Status
-----
SWITCH            2  on

Card Type          Slot Status  LOS  RAI  ERROR  Loopback
-----
PRI                3  on      off  off  off    off
PRI                6  flash  on   off  off    off
PRI                7  flash  on   off  off    off

Card Type          Slot Status
-----
TDET               8  flash

Card Type          Slot Status  LOS  RAI  ERROR  Loopback
-----
PRI                9  flash  on   off  off    off
PRI               10  flash  on   off  off    off
    
```

**displd -m vp02 type all**

creates the following output, which is grouped by type:

```

Card Type          Slot Status Node Proc Link
-----
CONTROL           1    on      on

Card Type          Slot Status
-----
SWITCH            2    on

Card Type          Slot Status LOS  RAI  ERROR  Loopback
-----
PRI               3    on      off  off  off    off
PRI               4    on      off  off  off    off
PRI               6    flash  on   off  off    off
PRI               7    flash  on   off  off    off
PRI               9    flash  on   off  off    off
PRI              10    flash  on   off  off    off
PRI              12    flash  on   off  off    off
PRI              13    flash  on   off  off    off
PRI              15    flash  on   off  off    off
PRI              18    flash  on   off  off    off
PRI              19    flash  on   off  off    off
PRI              21    flash  on   off  off    off
PRI              22    flash  on   off  off    off
PRI              24    flash  on   off  off    off
PRI              25    flash  on   off  off    off
PRI              27    flash  on   off  off    off
PRI              28    flash  on   off  off    off
PRI              30    flash  on   off  off    off
PRI              31    flash  on   off  off    off

Card Type          Slot Status -48v +5v  Subrack ID
-----
POWER             16    on      on   on   off
POWER             32    on      on   on   on

Card Type          Slot Status
-----
TGEN              5    flash
TGEN              17    flash

Card Type          Slot Status
-----
TDET              8    flash
TDET              11    flash
TDET              14    flash
TDET              20    flash
TDET              23    flash
TDET              26    flash
TDET              29    flash
    
```

**disp\_log**

---

See the **displog** command.

## **displog**

---

### **Synopsis**

This command displays the event log messages for the specified machine.

### **Command Format**

**displog [-m <mach\_id>] [-n <# of entries>]**

The arguments for the **displog** command are:

<b>mach_id</b>	Machine ID where command is to run
<b>-n &lt;# of entries&gt;</b>	Number of log entries to be listed (if the <b>-n</b> option is not used, all entries display). <b>n</b> shows the last n messages.

### **Description**

Displays the most recent messages in the event log, for example, the MAP/100C subsystem error files, for the specified machine. You can display as many messages as you want. Use this command for troubleshooting only.

## Example

This example shows the event log messages on the machine from which it was run. The most recent messages are presented first.

### displog

```

                                MESSAGE LOG REPORT

Pr Time                               Source
-- ----                               -
Fri Apr 19 10:27:49 1996             LOGDAEMON
LOG001  -- -- --- ** START OF LOGFILE
                                '/usr/spool/log/data/log110.10.27' ** openLog

Fri Apr 19 10:27:49 1996             LOGDAEMON
LOG007  -- -- --- logDaemon: PID 167 starting .

Fri Apr 19 10:27:50 1996             alerter
ALERT005 -- -- --- 7 thresholds created from the
threshold rules contained in/usr/spool/log/thresh.rules.

Sat Apr 20 00:15:02 1996             24HMR_REP
CMF001  -- -- --- CMF: INFO ONLY:
p24_rep: There are no machines administered at this time.

Sun Apr 21 00:15:02 1996             24HMR_REP
CMF001  -- -- --- CMF: INFO ONLY:
p24_rep: There are no machines administered at this time.

Mon Apr 22 00:15:02 1996             24HMR_REP
CMF001  -- -- --- CMF: INFO ONLY:
p24_rep: There are no machines administered at this time.

```

## See Also

**disp\_alarms**

## **displrpa**

---

### **Synopsis**

This command displays long-running process alarms from the LRPA log file.

### **Command Format**

**displrpa** [-m <mach\_id>] [-d <process\_name> | -a | -t]

The arguments for the **displrpa** command are:

<b>-m</b> <mach_id>	Machine ID to which the entry is to be displayed
<b>-d</b> <process name>	Display all processes of name
<b>-a</b>	Display all alarms raised
<b>-t</b>	Display the tail end of the alarms

### **Description**

This command displays entries from the long-running process alarm (LRPA) log file. These are the alarms raised by the **procchk** cron job that checks and raises alarms for processes exceeding their administered time limit. Processes are checked at every 15 minutes, beginning on the hour. Processes are alarmed or not, depending on the time limit specified in the **-t** argument.

You can pipe the output of this command through the UNIX **pg** command.

Because alarm situations are evaluated every 15 minutes, short alarm limits of less than 15 minutes present a special case. Short alarm processes will be alarmed if they are running at the time the cron job checks the `lrpa.cfg` file. If the process is no longer running when the cron job executes, then no alarm displays.

If the process has been alarmed for less than 15 minutes, but is still running when the cron job executes, an alarm is generated to reflect the time the process exceeded the time specified in the **-t** argument.

### Example

This example displays all alarms in the LRPA log for PM01.

**displrpa -m pm01 -a**

```
(Mon Apr 22 08:15:06.88):Process (init) PID (1) has exceeded its time limit of: (0) hours (15) minutes.  
(Mon Apr 22 08:30:02.59):Process (init) PID (1) has exceeded its time limit of: (0) hours (15) minutes.  
(Mon Apr 22 08:45:02.18):Process (init) PID (1) has exceeded its time limit of: (0) hours (15) minutes.
```

### See Also

**addlrpa**

**chglrpa**

**listlrpa**

**remlrpa**

## **disp\_status**

---

### **Synopsis**

This command displays the status of all Communicore modules, MAP/100C cards, and channels.

### **Command Format**

**disp\_status** <*mach\_name*> card <*card\_no* | all >

**disp\_status** <*mach\_name*> rcard <*rcard\_no* | all>

**disp\_status** <*mach\_name*>

OR

**disp\_status** <-m *mach\_id*> card <*card\_no* | all >

**disp\_status** <-m *mach\_id*> rcard <*rcard\_no* | all>

**disp\_status** <-m *mach\_id*>

The arguments for the **disp\_status** command are:

<b><i>mach_name</i></b>	Machine name where command is to run
<b>-m <i>mach_id</i></b>	Machine ID where command is to run
<b>card</b>	Display modules on the Communicore for the specified MAP 2000 machine
<b><i>card_no</i>   all</b>	Module number to display or all of the modules on the Communicore. If no <b><i>card_no</i></b> is specified, the command reports on all modules.
<b>rcard</b>	Display cards on the MAP/100C for the specified MAP 2000 machine
<b><i>rcard_no</i>   all</b>	Card number to display or all of the cards on the MAP/100C. If no <b><i>rcard_no</i></b> is specified, the command reports on all cards.

### **Description**

**disp\_status** displays the status of all modules, cards, and channels on the specified VP machine. (If you specify a PM machine, this command does not give service states; instead, it reports whether the system is on or off.)

#### **⇒ NOTE:**

**disp\_status** <*mach\_name*> displays the status of all modules and all cards.

You can pipe the output of this command through the UNIX **pg** command.

**Example**

To display the status of all of the Communicore modules for VP07, enter:

```
disp_status -m vp07 card all
```

To execute the same command using the machine name, enter:

```
disp_status ssa07 card all
```

This following screen shows an example display from:

**disp\_status -m vp07 card all**

```

---- Card 1: Function: CONTROL State: MANOOS Options:
3/21/96:5520:5512:28f016x2 ----
---- Card 2: Function: SWITCH State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
---- Card 3: Function: PRI State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
---- Card 4: Function: PRI State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
| 0 MANOOS | 1 MANOOS | 2 MANOOS | 3 MANOOS | 4 MANOOS | 5 MANOOS |
| 6 MANOOS | 7 MANOOS | 8 MANOOS | 9 MANOOS | 10 MANOOS | 11 MANOOS |
| 12 MANOOS | 13 MANOOS | 14 MANOOS | 15 MANOOS | 16 MANOOS | 17 MANOOS |
| 18 MANOOS | 19 MANOOS | 20 MANOOS | 21 MANOOS | 22 MANOOS | 23 MANOOS |
---- Card 5: Function: TGEN State: MANOOS Options: 3/13/96:5520:5520:28f200x1 ----
---- Card 6: Function: PRI State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
| 24 MANOOS | 25 MANOOS | 26 MANOOS | 27 MANOOS | 28 MANOOS | 29 MANOOS |
| 30 MANOOS | 31 MANOOS | 32 MANOOS | 33 MANOOS | 34 MANOOS | 35 MANOOS |
| 36 MANOOS | 37 MANOOS | 38 MANOOS | 39 MANOOS | 40 MANOOS | 41 MANOOS |
| 42 MANOOS | 43 MANOOS | 44 MANOOS | 45 MANOOS | 46 MANOOS | 47 MANOOS |
---- Card 7: Function: PRI State: MANOOS Options: .
.
3/13/96:5520:5520:28f200x1 ----
---- Card 30: Function: PRI State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
| 384 MANOOS | 385 MANOOS | 386 MANOOS | 387 MANOOS | 388 MANOOS | 389 MANOOS |
| 390 MANOOS | 391 MANOOS | 392 MANOOS | 393 MANOOS | 394 MANOOS | 395 MANOOS |
| 396 MANOOS | 397 MANOOS | 398 MANOOS | 399 MANOOS | 400 MANOOS | 401 MANOOS |
| 402 MANOOS | 403 MANOOS | 404 MANOOS | 405 MANOOS | 406 MANOOS | 407 MANOOS |
---- Card 31: Function: PRI State: MANOOS Options: 3/12/96:5520:5520:29f040x1 ----
| 408 MANOOS | 409 MANOOS | 410 MANOOS | 411 MANOOS | 412 MANOOS | 413 MANOOS |
| 414 MANOOS | 415 MANOOS | 416 MANOOS | 417 MANOOS | 418 MANOOS | 419 MANOOS |
| 420 MANOOS | 421 MANOOS | 422 MANOOS | 423 MANOOS | 424 MANOOS | 425 MANOOS |
| 426 MANOOS | 427 MANOOS | 428 MANOOS | 429 MANOOS | 430 MANOOS | 431 MANOOS |
---- Card 32: Function: POWER State: MANOOS Options: 3/12/96:5520:5520:28f001x1

```

**See Also**

**chg\_state**

See "Service States for Modules, Cards and Channels" on page 6-2 of Chapter 6 for module, card and channel-state descriptions.

## \_Distribute

---

### Synopsis

The **\_Distribute** command distributes copies of the TCS Release 2.4 installation files to ssap1, ssap2, and ssa01 through ssa10.

### Command Format

**./\_Distribute [<mach\_name> <mach\_name> ...]**

or

**./\_Distribute [<mach\_id> <mach\_id>...]**

The arguments for the **\_Distribute** command are:

**mach\_name**      Machine name distributed to

**mach\_id**        Machine ID distributed to

Note that in this command, **-m** is not part of the argument.

### Description

The **\_Distribute** command distributes copies of the TCS Release 2.4 installation files.

When used without machine arguments, **\_Distribute**'s default behavior is to distribute to all machines defined in the **VP\_name\_list** and **PM\_name\_list files**, including the machine from which it is run. Most often you will run **\_Distribute** with no arguments. Occasionally, when replacing or adding a machine to a site, you would use a machine name or machine ID as an argument.

You must be **root** to run this command.

The **\_Distribute** command assumes that the master bundle (**tcs\_2.4\_cpio**) cpio file has already been downloaded to the master PM machine (ssap1) and that this command script is being executed on that machine. The master bundle cpio file is downloaded from the TCC in Denver, CO through DWAN.

## Example

When **\_Distribute** is used with no arguments, it defaults to distributing to all machines defined in the `VP_name_list` and `PM_name_list` files.

```
cd /usr/install/tcs_2.4  
./_Distribute
```

When specific machines are named in the command line, software distribution is made to those machines only.

```
cd /usr/install/tcs_2.4  
./_Distribute pm02 vp08
```

## Command Status Display States

Four states may be displayed during the distribution process:

- **Submitted**: A batch job was submitted by the master PM to distribute the cpio file to a machine.
- **Running**: A batch job was submitted to a machine and is executing.
- **Finished**: The software distribution process is complete on the machine. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- **ABORTED**: An error occurred during the distribute process. Analyze the log file and retry the **\_Distribute** command.

## See Also

**\_Install**

**dk\_diag**

---

See the **dkdiagnose** command.

## **dkdiagnose**

---

### **Synopsis**

This command troubleshoots Datakit problems on PM machines.

### **Command Format**

**dkdiagnose [-m <mach\_id>]**

The argument for the **dkdiagnose** command is:

**-m <mach\_id>** Machine ID for the PM where command is to run

### **Description**

This command diagnoses the Datakit interface on the PM specified by the machine ID. The **dkdiagnose** command takes the Datakit interface out of service, diagnoses it, and then places it back in service. Because VPs do not contain a Datakit card, this command is not valid on VPs.



#### **CAUTION:**

*Do not run this command if you are logged in over the Datakit interface. This command resets the interface and drops any connections.*

*Use this command only as a last resort. If you are logged in over the Datakit interface, log in on another machine that has Datakit and run the command (using the **-m** option) back to the disabled machine.*

**dload**

---

See the **download** command.

## **download**

---

### **Synopsis**

This command downloads firmware to Communicore modules.

### **Command Format**

**download** [-m <*mach\_id*>] -l

**download** [-m <*mach\_id*>] [-l] [-r <# *tries*>] <*resource\_type*> <*range*>

The arguments for the download command are:

- |                                  |   |
|----------------------------------|---|
| <b>-m &lt;<i>mach_id</i>&gt;</b> | Machine ID where command is to run  |
| <b>-l</b>                        | Lists the firmware version number and indicates if that version is out of date. This command does not require that the module be taken out of service.  |
| <b>-r &lt;# <i>tries</i>&gt;</b> | Number of times to attempt to download to a module if it should fail to download correctly. The default is 3 times.   |
| <b><i>resource_type</i></b>      | Is <b>card</b> or <b>type</b>   |
| <b><i>range</i></b>              | <ul style="list-style-type: none"><li>■ For <b>card</b> — a single number or <b>all</b></li><li>■ For <b>type</b> — one of the following:<ul style="list-style-type: none"><li><b>CONTROL</b> (upper case)</li><li><b>SWITCH</b> (upper case)</li><li><b>POWER</b> (upper case)</li><li><b>TGEN</b> (upper case)</li><li><b>TDET</b> (upper case)</li><li><b>PRI</b> (uppercase)</li><li><b>all</b> (lowercase)</li></ul></li></ul> |

## Description

The **download** command downloads firmware through the MAP/100C in a MAP 2000 machine to Communicore modules. **download** is a service-affecting command, and should be used only when:

- A new MAP 2000 VP is installed
- A specific Communicore module is replaced
- New firmware is to be installed (new release or a patch only)



### CAUTION:

*Before using this command, you must turn down customer traffic and take the specified machine out of service. Wait for traffic to fall off before issuing the first **chg\_state** command.*



### NOTE:

If another **download** command is running, any subsequent **download** command is blocked and a message displays on the screen. Wait and try again.

## Example

A complete usage of the download command is given below.

```
chg_state -m <mach_id> mtce [grace_period]
download -m <mach_id> > <card_no> <range>
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## See Also

**chg\_state**

**remove**

**restore**

## **ds1adm**

---

### **Synopsis**

This command, although not used in TCS, administers the DS1/E1 table on the call-processing machine with DS1 or E1 modules for which the command is run.

### **Command Format**

**ds1adm [-m <mach\_id>] [-d]**

The arguments for the **ds1adm** command are:

<b>-m &lt;mach_id&gt;</b>	Machine ID where the command is to be run
<b>-d</b>	Display current values

### **Description**

This command administers the DS1/E1 table on the call-processing (a VP or CS) machine for which the command is run. It displays an interactive menu to administer information for all the DS1/T1/E1 modules in the machine. This command does not administer the table, it just displays it.

#### **⇒ NOTE:**

Do not use this command for TCS because the command does not change the table's defaults.

**Example**

This example displays the current DS1/E1 table for VP00.

**ds1adm -m vp00 -d**

```

running command "/usr/add-on/maint/bin/dsladm -d" on vp00
=====
|          DS1/E1 Table          |
=====
Slot  DS1/E1      ADJUNCT  ADJUNCT  SWITCH  SWITCH
Number Type      BTFN  DSX_BAY  DSX_PJ  DSX_BAY  DSX_PJ
--  ---  -----  -----  -----  -----
03   PRID    0000 00000000 0000    00000000 0000
04   PRID    0000 00000000 0000    00000000 0000

```

## **ds1rep**

---

### **Synopsis**

This command generates the DS1/E1 Report for the site or a single machine.

### **Command Format**

**ds1rep**

### **Description**

This command generates the DS1/E1 Report for the site or a single machine. This report can come to the screen or be transferred to a file over the Datakit network to a predefined and preauthorized host machine if the user has been preauthorized to do file transfers between the PM machine and the user's destination host machine on the Datakit network. The example that follows is a TCS-specific report:

**Example**

This example shows a DS1/E1 report for the machine from which it was executed.

```

Do you wish to transfer the report to a remote host? (y/n) [n] -->
You may choose ALL machines in the Site or ONE machine.
Enter ALL (a) or ONE (o). [o] -->

Please wait while report data is collected.

=====
|                               DS1/E1 - INTERCONNECTION REPORT |
=====

Current Date/Time:  Mon Apr 22 08:08:46 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:57:55 CST

MACHINE INFORMATION:  CLLI           CLEI           MACHINE ID       FIC
                      CCCCSSBBAI    0000000000      VP00             000000.00.00

                      =====
                      |                               DS1/E1 Table                               |
                      =====
Slot  DS1/E1      ADJUNCT  ADJUNCT SWITCH  SWITCH
Number Type      BTFN DSX_BAY  DSX_PJ  DSX_BAY  DSX_PJ
--    --
03    PRID      0000 00000000 0000    00000000 0000
04    PRID      0000 00000000 0000    00000000 0000

                      =====
                      |                               Resource DS1/E1 Table                               |
                      =====
Slot  DS1/E1 Card      ADJUNCT  ADJUNCT SWITCH  SWITCH
Number Type  Number BTFN DSX_BAY  DSX_PJ  DSX_BAY  DSX_PJ
--    --    --
05    PRID    00      0000 00000000 0000    00000000 0000

Please wait while temporary files are removed.

```

## **dsrrep**

---

### **Synopsis**

This command generates the Demand Status Report for the site or a single machine.

### **Command Format**

**dsrrep**

### **Description**

This command generates the Demand Status Report for the site or a single machine. This report can come to the screen or be transferred to a file over the Datakit network to a predefined and preauthorized host machine, if the user has been preauthorized to do file transfers between the PM machine and the user's destination host machine on the Datakit network. A line at the end of a data section stating that "<<< FILES ARE MISSING" indicates that some of the data files for the requested interval are missing for some reason.

### **Example**

**dsrrep**

```
=====
|           Demand Status Report Start and End Times           |
=====
The default start time for the DSR is:  Mon Apr 22 06:45:00 1996
The default end   time for the DSR is:  Mon Apr 22 07:45:00 1996
Use default time? (y/n) [y] -->
Do you wish to transfer the report to a remote host? (y/n) [n] -->
You may choose ALL machines in the Site or ONE machine.
Enter ALL (a) or ONE (o).  [o] -->

Please wait while report data is collected.
```

Example (cont.)

```

=====
|                               ON DEMAND STATUS REPORT - PM01 |
=====
MACHINE ID:   PM01
CLLI CODE:    CCCCSSBBAAI

REPORT DATE:  Mon Apr 22 08:14:40 1996

REPORT START TIME:  04:22:96:06:45:00
STOP TIME:         04:22:96:07:45:00

FIELD UPDATES:    NO FIELD UPDATES INSTALLED

LOGINS:

LOGINS FOR 04/22/96
  TIME   LOGIN ID   TIME   LOGIN ID   TIME   LOGIN ID   TIME   LOGIN ID
-----
07:05:20 root      07:05:40 root      07:12:10 root

CALL PEG COUNTS:
                ** NOT APPLICABLE **

ERROR MESSAGES:
LEV MESSAGE  COUNT LEV MESSAGE  COUNT LEV MESSAGE  COUNT LEV MESSAGE  COUNT
-----
** NO ERRORS REPORTED FOR THE INTERVAL REQUESTED **

LAN COMMUNICATIONS: (Down times are in minutes)

LAN A:  pm01 FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
-----
07:00    0   07:15    0   07:30    0

LAN B:  pm01b FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
-----
07:00    0   07:15    0   07:30    0
<<< FILES ARE MISSING FOR LAN DATA

=====
|                               ON DEMAND STATUS REPORT - PM01 |
=====

MACHINE ID:   PM01
REPORT DATE:  Mon Apr 22 08:15:03 1996

No Response from pm01 - Machine ID:  PM01

LAN COMMUNICATIONS: (Down times are in minutes)

```

Example (cont.)

```

LAN B: pm01b FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
----- -- ----- -- ----- -- ----- --
07:00 15 07:15 15 07:30 15
<<< FILES ARE MISSING FOR LAN DATA

=====
|                                     ON DEMAND STATUS REPORT - VP00                                     |
=====

MACHINE ID:  VP00
CLLI CODE:   CCCCSSBBAAI
REPORT DATE: Mon Apr 22 08:11:58 1996

REPORT START TIME: 04:22:96:06:45:00
STOP TIME:         04:22:96:07:45:00

FIELD UPDATES:    NO FIELD UPDATES INSTALLED

LOGINS:

LOGINS FOR 04/22/96
  TIME  LOGIN ID  TIME  LOGIN ID  TIME  LOGIN ID  TIME  LOGIN ID
-----
07:05:11 root    07:31:32 root    07:35:13 root    07:40:21 root
07:43:26 root

CALL PEG COUNTS:
                ** NOT APPLICABLE **

ERROR MESSAGES:
LEV MESSAGE  COUNT  LEV MESSAGE  COUNT  LEV MESSAGE  COUNT  LEV MESSAGE  COUNT
-----
** TWIP016      2

LAN COMMUNICATIONS: (Down times are in minutes)

LAN A:  vp00 FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
----- -- ----- -- ----- -- ----- --
07:00 0 07:15 0 07:30 0

LAN B:  vp00b FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
----- -- ----- -- ----- -- ----- --
07:00 0 07:15 0 07:30 0

<<< FILES ARE MISSING FOR LAN DATA

```

Example (cont).

```
LOGINS:
** NO LOGINS REPORTED DURING THE REQUESTED INTERVAL **

CALL PEG COUNTS:
** NOT APPLICABLE **

ERROR MESSAGES:
LEV MESSAGE  COUNT LEV MESSAGE  COUNT LEV MESSAGE  COUNT LEV MESSAGE  COUNT
-----
** NO ERRORS REPORTED FOR THE INTERVAL REQUESTED **

LAN COMMUNICATIONS: (Down times are in minutes)

LAN A:  ps00 FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
----- --
07:00      0  07:15      0  07:30      0

LAN B:  ps00b FOR 04/22/96
Interval Down Interval Down Interval Down Interval Down
----- --
07:00      0  07:15      0  07:30      0
<<< FILES ARE MISSING FOR LAN DATA

Please wait while temporary files are removed.
```

## **eqirep**

---

### **Synopsis**

This command generates the Equipment Inventory Report for the site or a single machine.

### **Command Format**

**eqirep**

### **Description**

This command generates the Equipment Inventory Report for the site or a single machine. This report can come to the screen or be transferred to a file over the Datakit network to a predefined and preauthorized host machine, if the user has been preauthorized to do file transfers between the PM machine and their destination host machine on the Datakit network. A "\*" at the end of a line of data in the report indicates an administration error where the live configuration does not match the administered configuration.

**Example**

```

Do you wish to transfer the report to a remote host? (y/n) [n] -->
You may choose ALL machines in the Site or ONE machine.
Enter ALL (a) or ONE (o). [o] -->

Please wait while report data is collected.

=====
|                               EQUIPMENT INVENTORY DATA REPORT                               |
=====

Current Date/Time:  Mon Apr 22 08:17:55 1996

Most Recent Change in Administerable Data Was - 03/26/96 13:58:31 CST

MACHINE INFORMATION:  CLLI           CLEI           MACHINE ID  FIC

                      CCCCSSBBAAI  0000000000   PM01        000000.00.00

SOFTWARE INFORMATION:

The following software packages have been installed:

CONVERSANT VIS V4.0 Base ORACLE DBMS 6.0.30
CONVERSANT VIS V4.0 Extended ORACLE DBMS 6.0.30
Core Maintenance Features (CMF) (PM - SVR3.2.3) V#.#) V#.# R#.0[##/##/##]
C Software Development Set          4.1.5
Multiplexed Host Interface to Datakit(R) VCS Software 3.2v3
Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V#.#) V#.# R#.0[##/##/##]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2

MAIN PLUG-IN INFORMATION

Slot  Card Type   Card No.   CLEI           Hardware Version           Status
-----
  9   DATAKIT           0000000000  HS386 Datakit Interface  ADMIN
 16   CPU                GCPI10EGAA  D486DXC-50-0ATTR2 Ser:1  ADMIN
 17   VIDEO              GCPIJ0GGAA  WDXLR833124 Ser:1      ADMIN

```

Example (cont.)

```

18  ALARM          GCUQACLXAA  CO Alarm          ADMIN
19  LAN           GCUQACKXAA  StarLAN 10 PC-NAU ADMIN
21  LAN           GCUQACKXAA  StarLAN 10 PC-NAU ADMIN
25  SCSI CNTRL   QCPQAKCJAA  BusLogic BT542B Ver:H ADMIN

                                SUMMARY SECTION

Card Type          CLEI          Total Count      INSERV #      OOS #
ALARM             GCUQACLXAA      1                 1              0
CPU              GCPI10EGAA      1                 1              0
DATAKIT          000000000      1                 1              0
LAN              GCUQACKXAA      2                 2              0
SCSI CNTRL       QCPQAKCJAA      1                 1              0
VIDEO            GCPIJ0GGAA      1                 1              0
=====
|                               EQUIPMENT INVENTORY DATA REPORT                               |
=====

Current Time/Date:  Mon Apr 22 08:18:20 1996

NO RESPONSE from pm01 - Machine ID:  PM01

=====
|                               EQUIPMENT INVENTORY DATA REPORT                               |
=====

Current Date/Time:  Mon Apr 22 08:15:15 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:57:55 CST

MACHINE INFORMATION:  CLLI          CLEI          MACHINE ID  FIC
                    CCCCSSBAAI  0000000000  VP00       000000.00.00

SOFTWARE INFORMATION:

                    The following software packages have been installed:
CONVERSANT VIS V4.0 Configuration Package
CONVERSANT VIS V4.0 Application Software
CONVERSANT VIS V4.0 Tl Board Driver
CONVERSANT VIS V4.0 SP Board Driver
CONVERSANT VIS V4.0 Feature Test Script Package
Core Maintenance Features (CMF) (VP - CVIS V#.#) V#.# R#.0 [##/##/##]
C Software Development Set      4.1.5

```

Example (cont.)

```

Editing Package Version 2.1
Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
MAP2000 Downloadable Firmware P2.3.1
MAP2000 V2.0 Base System 03/27/96
Network Support Utilities Package (1.2) Version 2.1
Network Adjunct Platform (NAP) (SVR3.2.3) V#.#) V#.# R#.0[##/##/##]
AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2

MAIN PLUG-IN INFORMATION

Slot Card Type      CLEI      Software ID      Software Version      Status
1  CONTROL      GCPQARJJAA Slot=1,Subrack=1      ADMIN *
2  SWITCH      GCPQARKJAA Slot=2,Subrack=1      ADMIN *
3  PRI      GCPQARMJAA Slot=3,Subrack=1      ADMIN *

                               Slot=4,Subrack=1      ADMIN *
5  TGEN      GCPQARPJAA Slot=5,Subrack=1      ADMIN *
8  TDET      GCPQARNJAA Slot=8,Subrack=1      ADMIN *
16 POWER      GCPQARLJAA Slot=16,Subrack=1      ADMIN *
32 POWER      GCPQARLJAA Slot=32,Subrack=2      ADMIN *

RESOURCE PLUG-IN INFORMATION

Slot  Card Type  Card No.  CLEI      Hardware Version      Status
1    SP-2      1    ASPQACMAAB  AYC2C SP Ser:6      INSERV
3    SP-2      2    ASPQACMAAB  AYC2C SP Ser:6      INSERV
5    T1      0    GCUQACJXAB  AYC11 T1 Vin:6      FOOS
16   CPU      GCPi10EGAA  D486DXC-50-0ATTR2 Ser:2      ADMIN
17   VIDEO    GCPIJ0GGAA  WDXLR833124 Ser:1      ADMIN
18   ALARM    GCUQACLXAA  CO Alarm      ADMIN
19   LAN      GCUQACKXAA  StarLAN 10 PC-NAU      ADMIN
21   LAN      GCUQACKXAA  StarLAN 10 PC-NAU      ADMIN
25   SCSI CNTRL  QCPQAKCJAA  BusLogic BT542B Ver:H      ADMIN

```

Example (cont.)

```

                                SUMMARY SECTION

Card Type          CLEI          Total Count    INSERT #    OOS #
ALARM              GCUQACLXAA        1             1           0
CONTROL            GCPQARJAA         1             0           1   *
CPU                GCFI10EGAA        1             1           0
LAN                GCUQACKXAA        2             2           0
POWER              GCPQARLJAA        2             0           2   *
PRI                GCPQARMJAA        2             0           2   *
SCSI CNTRL        QCPQAKCJAA        1             1           0
SP-2              ASPQACMAAB        2             2           0
SWITCH            GCPQARKJAA        1             0           1   *
T1                GCUQACJXAB        1             0           1
TDET              GCPQARNJAA        1             0           1   *
TGEN              GCPQARPJAA        1             0           1   *
VIDEO             GCPIJ0GGAA        1             1           0

WARNING
A "*" indicates a board may not be properly administered.

=====
|                               EQUIPMENT INVENTORY DATA REPORT                               |
=====

Current Date/Time:  Mon Apr 22 08:18:48 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:59:25 CST

MACHINE INFORMATION:  CLLI          CLEI          MACHINE ID    FIC
                      CCCCSSBBAAI  0000000000    PS00          000000.00.00

SOFTWARE INFORMATION:

                      The following software packages have been installed:

Core Maintenance Features (CMF) (OTHER - SVR3.2.3)V#.#) V#.# R#.0[##/##/##]
C Software Development Set      4.1.5
Editing Package Version 2.1

Extended Terminal Interface Package Version 2.0
FACE HELP Version 1.2
FACE Version 1.2.2
FMLI Version 1.2
Network Support Utilities Package (1.2) Version 2.1

```

Example (cont.)

```

AT&T 386 Network Interface Release 2.0
Perl version 5.001 unofficial patchlevel 1m 1
Relay Output Card Driver (RELY) 1.0
SCSI Support Package - Version 2.3
Software Update Package - Denver - Version 4.0
Remote Terminal Package Version 2.1
UNIX System V/386 Release 3.2 Upgrade - Version 2.2 to Version 2.3
UNIX System V/386 Release 3.2 Version 2.3 Maintenance Disk #1
AT&T Enhanced TCP/IP WIN/386 Release 3.2
    
```

MAIN PLUG-IN INFORMATION

Slot	Card Type	Card No.	CLEI	Hardware Version	Status
16	CPU		GCPI10EGAA	D486DXC-50-0ATTR2 Ser:2	ADMIN
17	VIDEO		GCPIJ0GGAA	WDXLR833124 Ser:1	ADMIN
18	ALARM		GCUQACLXAA	CO Alarm	ADMIN
19	LAN		GCUQACKXAA	StarLAN 10 PC-NAU	ADMIN
21	LAN		GCUQACKXAA	StarLAN 10 PC-NAU	ADMIN
25	SCSI CNTRL		QCPQAKCJAA	BusLogic BT542B Ver:H	ADMIN

SUMMARY SECTION

Card Type	CLEI	Total Count	INSERV #	OOS #
ALARM	GCUQACLXAA	1	1	0
CPU	GCPI10EGAA	1	1	0
EPORT	0000000000	1	1	0
LAN	GCUQACKXAA	2	2	0
SCSI CNTRL	QCPQAKCJAA	1	1	0
VIDEO	GCPIJ0GGAA	1	1	0

SITE SUMMARY INFORMATION

Card Type	CLEI	Total Count	INSERV #	OOS #	
ALARM	GCUQACLXAA	3	3	0	
CONTROL	GCPQARJJAA	1	0	1	*
CPU	GCPI10EGAA	3	3	0	
DATAKIT	0000000000	1	1	0	
LAN	GCUQACKXAA	6	6	0	
POWER	GCPQARLJAA	2	0	2	*
PRI	GCPQARMJAA	2	0	2	*
SCSI CNTRL	QCPQAKCJAA	3	3	0	
SP-2	ASPQACMAAB	2	2	0	
SWITCH	GCPQARKJAA	1	0	1	*
T1	GCUQACJXAB	1	0	1	
TDET	GCPQARNJAA	1	0	1	*
TGEN	GCPQARPJAA	1	0	1	*
VIDEO	GCPIJ0GGAA	3	3	0	

## eqisrep

### Synopsis

This command generates the Equipment Inventory Summary Report for the site or a single machine.

### Command Format

**eqisrep**

### Description

This command generates the Equipment Inventory Summary Report for the site or a single machine. This report can come to the screen or be transferred to a file over the Datakit network to a predefined and preauthorized host machine, if the user has been preauthorized to do file transfers between the PM machine and the user's destination host machine on the Datakit network.

### Examples

**eqisrep**

```

Do you wish to transfer the report to a remote host? (y/n) [n] -->
You may choose ALL machines in the Site or ONE machine.
Enter ALL (a) or ONE (o). [o] -->

Please wait while report data is collected.

=====
|                               EQUIPMENT INVENTORY DATA SUMMARY REPORT                               |
=====

Current Date/Time:  Mon Apr 22 08:21:01 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:58:31 CST

MACHINE INFORMATION:  CLLI          CLEI          MACHINE ID      FIC
                      CCCCSSBBAI    0000000000      PM01             000000.00.00

SOFTWARE INFORMATION:
NO APPLICATION INSTALLED.

                          SUMMARY SECTION

Card Type      CLEI          Total Count    INSERV #    OOS #
ALARM          GCUQACLXAA    1              1           0
CPU            GCPI10EGAA    1              1           0
DATAKIT        0000000000    1              1           0
LAN            GCUQACKXAA    2              2           0
SCSI CNTRL     QCFQAKCJAA    1              1           0
VIDEO          GCPIJ0GGAA    1              1           0
    
```

Example (cont.).....

```
=====
|                               EQUIPMENT INVENTORY DATA SUMMARY REPORT                               |
=====
```

Current Time/Date: Mon Apr 22 08:21:24 1996

NO RESPONSE from pm01 - Machine ID: PM01

```
=====
|                               EQUIPMENT INVENTORY DATA SUMMARY REPORT                               |
=====
```

Current Date/Time: Mon Apr 22 08:18:19 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:57:55 CST

```
MACHINE INFORMATION:  CLLI          CLEI          MACHINE ID      FIC
                      CCCCSSBAAI  0000000000    VP00            000000.00.00
```

SOFTWARE INFORMATION:  
NO APPLICATION INSTALLED.

SUMMARY SECTION

Card Type	CLEI	Total Count	INSERV #	OOS #	
ALARM	GCUQACLXAA	1	1	0	
CONTROL	GCPQARJAA	1	0	1	*
CPU	GCP110EGAA	1	1	0	
LAN	GCUQACKXAA	2	2	0	
POWER	GCPQARLJAA	2	0	2	*
PRI	GCPQARMJAA	2	0	2	*
SCSI CNTRL	QCPQAKCJAA	1	1	0	
SP-2	ASPQACMAAB	2	2	0	
SWITCH	GCPQARKJAA	1	0	1	*
T1	GCUQACJXAB	1	0	1	
TDET	GCPQARNJAA	1	0	1	*
TGEN	GCPQARPJAA	1	0	1	*
VIDEO	GCPIJOGGAA	1	1	0	

WARNING  
A "\*" indicates a board may not be properly administered.

```
=====
|                               EQUIPMENT INVENTORY DATA SUMMARY REPORT                               |
=====
```

Current Date/Time: Mon Apr 22 08:21:51 1996

Most Recent Change in Administrable Data Was - 03/26/96 13:59:25 CST

```
MACHINE INFORMATION:  CLLI          CLEI          MACHINE ID      FIC
                      CCCCSSBAAI  0000000000    PS00            000000.00.00
```

SOFTWARE INFORMATION:  
NO APPLICATION INSTALLED.

Example (cont.)

SUMMARY SECTION				
Card Type	CLEI	Total Count	INSERV #	OOS #
ALARM	GCUQACLXAA	1	1	0
CPU	GCPI10EGAA	1	1	0
EPORT	0000000000	1	1	0
LAN	GCUQACKXAA	2	2	0
SCSI CNTRL	QCPQAKCJAA	1	1	0
VIDEO	GCPIJ0GGAA	1	1	0

SITE SUMMARY INFORMATION				
Card Type	CLEI	Total Count	INSERV #	OOS #
ALARM	GCUQACLXAA	3	3	0
CONTROL	GCPQARJJAA	1	0	1 *
CPU	GCPI10EGAA	3	3	0
DATAKIT	0000000000	1	1	0
EPORT	0000000000	1	1	0
LAN	GCUQACKXAA	6	6	0
POWER	GCPQARLJAA	2	0	2 *
PRI	GCPQARMJAA	2	0	2 *
SCSI CNTRL	QCPQAKCJAA	3	3	0
SP-2	ASPQACMAAB	2	2	0
SWITCH	GCPQARKJAA	1	0	1 *
T1	GCUQACJXAB	1	0	1
TDET	GCPQARNJAA	1	0	1 *
TGEN	GCPQARPJAA	1	0	1 *
VIDEO	GCPIJ0GGAA	3	3	0

WARNING  
A "\*" indicates a board may not be properly administered.

Please wait while temporary files are removed.

## **ficadm**

---

### **Synopsis**

This command administers the Machine FIC value on the machine for which the command is run.

### **Command Format**

**ficadm [-d] [-m <mach\_id>] [-v <fic>]**

The arguments for the **ficadm** command are:

- d** Display the current value
- m <mach\_id>** Machine ID where command is to run
- v <fic>** The new value for MACH\_FIC (**FFRRRR.CC.SS**)
  - FF** — Floor
  - RRRR** — Row
  - CC** — Cabinet
  - SS** — Slot

### **Description**

This command administers the Machine FIC value on the machine for which the command is run. This value specifies where in the building the machine is located.

The 2-character Floor value (**FF**) specifies the floor where the machine is.

The 4-character Row value (**RRRR**) specifies the lineup (row) on the floor.

The 2-character Cabinet value (**CC**) specifies which cabinet the machine is in.

The 2-character Slot value (**SS**) specifies which slot in the cabinet the machine is in. The Slot should be 1s-based (**01**, **02**, **03**), numbered from bottom to top in the cabinet.

**Example**

**ficadm**

```
Current MACH_FIC value = 000000.00.00
```

## **\_Install**

### **Synopsis**

The **\_Install** command installs TCS Release 2.4 software.

### **Command Format**

```
./_Install [<mach_name> <mach_name> ...]
```

or

```
./_Install [<mach_id> <mach_id>...]
```

The arguments for the **\_Install** command are:

**mach\_name**      Machine name that will be installed

**mach\_id**        Machine ID that will be installed

Note that in this command, **-m** is not part of the argument.

### **Description**

The **\_Install** command installs TCS Release 2.4 software. It is assumed that the master bundle has already been downloaded to the site and its contents extracted into the **/usr/install/tcs\_2.4** directory. The **\_Distribute** command should be executed before using this command. The **\_Distribute** command ensures that the necessary cpio file is on every machine before starting the installation. Most often you will run **\_Install** with no arguments. **\_Install** with no arguments installs software on all machines at the site, including the machine from which the command is run. Occasionally, when replacing or adding a machine to a site, you would use a machine name or machine ID as an argument.

You must be **root** to run this command.

### **Example**

When using **\_Install** with no arguments, the command defaults to installing all machines defined in the **VP\_name\_list** and **PM\_name\_list** files (ssap1, ssap2, and ssa01 through ssa10).

```
cd /usr/install/tcs_2.4  
./_Install
```

When specific machines are addressed, software installation is made to only those machines.

```
cd /usr/install/tcs_2.4  
./_Install vp02 vp08
```

### **Command Status Display States**

Four states may be displayed during the install process:

- **Submitted:** A batch job was submitted by the master PM to install the software.
- **Running:** A batch job was submitted to a machine and is executing.
- **Finished:** The software installation process is complete on the machine. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- **ABORTED:** An error occurred during the install process. Escalate the problem to the appropriate support organization. Do not re-attempt to install.

### **See Also**

**\_Distribute**

**\_Commit**

**\_Remove**

## lancheck

### Synopsis

This command checks TCP/IP connectivity.

**lancheck -m <mach\_id>**

The argument for the **lancheck** command is:

**-m <mach\_id>** Machine ID where command is to run

### Description

This command checks TCP/IP connectivity between machines in the LAN environment, performing a TCP/IP ping operation on each machine and each LAN and displaying the results. The **lancheck** command does not examine the administration of the machine table or the administration of machines in that table.

**lancheck** differs from **comcheck**. **comcheck** is an application-level, message-based communications check. **lancheck** is a TCP/IP-based communications/connectivity check.

### Example

The following example checks the TCP/IP connectivity on both LANs for PM01:

**lancheck -m pm01**

```
running command "/usr/add-on/nap/bin/lancheck" on pm01
Please wait while TCP/IP PING operations are done to all machines.
=====
| TCP/IP LAN Connectivity Check |
=====
Machine  LAN-A  LAN-B
-----  -
pm00     UP     UP
pm01     DOWN  DOWN
vp00     UP     UP
ps00     UP     UP
```

### See Also

**comcheck**

## **listlrpa**

---

### **Synopsis**

This command lists (or repairs if needed) the processes in the LRPA configuration file.

### **Command Format**

**listlrpa** [-m <mach\_id>] [<process\_name> | **all** | **repair**]

The arguments for the **listlrpa** command are:

<b>-m</b> <mach_id>	Machine ID where command is to run
<process_name>	Name of the process in the LRPA configuration file that you would like to list
<b>all</b>	List all processes in the LRPA configuration file
<b>repair</b>	Repair a corrupt configuration file

### **Description**

This command lists (or repairs if needed) entries to the long-running process alarm (LRPA) configuration file. This file is used by the **procchk** cron job that checks and raises alarms for entries exceeding their administered time limit. Processes are checked every 15 minutes, beginning on the hour. Processes are alarmed or not, depending on the time limit specified in the **-t** argument.

Because alarm situations are evaluated every 15 minutes, short alarm limits of less than 15 minutes present a special case. Short alarm processes will be alarmed if they are running at the time the cron job checks the `lrpa.cfg` file. If the process is no longer running when the cron job executes, then no alarm displays.

If the process has been alarmed for less than 15 minutes, but is still running when the cron job executes, an alarm is generated to reflect the time the process exceeded the time specified in the **-t** argument.

You can pipe the output of this command through the UNIX **pg** command.

**Example**

**listlrpa -m pm01**

```
init      0:15
proc1    0:15
proc2    0:45
proc3    1:22
```

**See Also**

**addlrpa**

**displrpa**

**chglrpa**

**remlrpa**

## **logcapture**

---

### **Synopsis**

This command captures specific log files from machines at a NAP site. These log files are used for troubleshooting.

### **Command Format**

**logcapture -m <mach\_id>**

**logcapture <mach\_name>**

The arguments for the **logcapture** command are:

**-m <mach\_id>**      Machine ID where command is to run  
**<mach\_name>**      Machine name where command is to run

### **Description**

This command captures VP and PM log files. These files are used for troubleshooting.

When **logcapture** is used without arguments, log files from both PM machines are captured. If logcapture is used with a PM machine ID, log files from both PM machines are captured. PM log files are placed in **/usr/nesac/logs/PMnnMMDDYYHHMM**, where:

<b>nn</b>	The machine instance of the PM where the command was executed
<b>MM</b>	Month
<b>DD</b>	Day
<b>YY</b>	Year
<b>HH</b>	Hour (0–23)
<b>MM</b>	Minutes

The PM log files that are captured include:

**/usr/add-on/ssa/log/ALARM.LOG**  
**/usr/add-on/ssa/log/remtrans**

When **logcapture** is executed for a VP machine, the following are captured:

- Log files from the specified VP machine.

The VP log files that are captured include:

**/usr/add-on/ssa/log/ssa.log**

**/usr/add-on/ssa/log/ALARM.LOG**

**/usr/add-on/mega/log/wip.log**

Output of a **dispcnnc** from the specified VP machine

Output of a **megpeg all** from the specified VP machine

These files are placed in **/usr/nesac/logs/VPnnMMDDYYHHMM**, where:

<b>nn</b>	The machine instance of the VP where the command was executed
<b>MM</b>	Month
<b>DD</b>	Day
<b>YY</b>	Year
<b>HH</b>	Hour (0–23)
<b>MM</b>	Minutes

## Example

### logcapture

When specific machines are addressed, the log is captured only on those machines. In the next example, logs are captured for machine name ssa20:

### logcapture ssa20

```
ssampm2-R# logcapture ssa20
Get the VP log files
User is logged in as root.
Copying log files from: ssa20
  Copying /usr/add-on/ssa/log/ssa.log
  ssa20 /usr/add-on/ssa/log/ssa.log copied...
  Copying /usr/add-on/ssa/log/ALARM.LOG
  ssa20 /usr/add-on/ssa/log/ALARM.LOG copied...
  Copying /usr/add-on/mega/log/wip.log
  ssa20 /usr/add-on/mega/log/wip.log copied...
Capturing 'megpeg all' output from ssa20 in mpeg.out
Capturing 'dispconn' output from ssa20 in dispconn.out
All Done...
```

## **logcat**

---

### **Synopsis**

This command allows for a circular log file to be unwrapped and displayed in proper order.

### **Command Format**

**logcat** [-m <*mach\_id*>] [-f <*file\_name*>]

The arguments for the **logcat** command are:

**-m** <*mach\_id*>      Machine ID where command is to run

**-f** <*file\_name*>      Full path name of circular log file

#### **NOTE:**

If you are a restricted user, do not use the **-f** option. **logcat** will prompt you for a filename.

### **Description**

This command unwraps a circular file and displays it to you in proper order. You can pipe the output of this command through the UNIX **pg** command.

#### **WARNING:**

*Large files will take time to finish displaying. You must read the entire file and cannot delete out of the file.*

## Examples

### **logcat -m pm01 -f /usr/add-on/nap/log/lancheck.log**

```
running command "/usr/add-on/maint/bin/logcat -f /usr/add-on/nap/log/lancheck.log" on pm01
(Mon Apr 22 08:23:08.46):lancheck started.
(Mon Apr 22 08:23:18.01):ping_mach: pm01 FAILED:had greater than 0% packet loss.
(Mon Apr 22 08:23:18.01):pingem: ping failed to pm01.
(Mon Apr 22 08:23:28.01):ping_mach: pm01b FAILED:had greater than 0% packet loss.
(Mon Apr 22 08:23:28.01):pingem: ping failed to pm01b.
(Mon Apr 22 08:23:44.95):lancheck started.
(Mon Apr 22 08:23:55.01):ping_mach: pm01 FAILED:had greater than 0% packet loss.
(Mon Apr 22 08:23:55.12):pingem: ping failed to pm01.
(Mon Apr 22 08:24:05.01):ping_mach: pm01b FAILED:had greater than 0% packet loss.
(Mon Apr 22 08:24:05.01):pingem: ping failed to pm01b.
```

### **logcat -m pm01 -f /usr/add-on/nap/log/lancheck.log | grep "Apr 22 08:23:55"**

```
(Mon Apr 22 08:23:55.01):ping_mach: pm01 FAILED:had greater than 0% packet loss.
(Mon Apr 22 08:23:55.12):pingem: ping failed to pm01.
```

## **logmsg**

---

### **Synopsis**

This command allows you to manually generate an alarm to test the alarm subsystem on demand.

### **Command Format**

**logmsg [-m <mach\_id>] [-a <alarm\_id>] [-t <message\_text>]**

The arguments for the **logmsg** command are:

- |                                |   |
|--------------------------------|---|
| <b>-m &lt;mach_id&gt;</b>      | Machine ID where command is to run  |
| <b>-a &lt;alarm_id&gt;</b>     | Alarm ID to be used. If not specified, the CMF_INFORM alarm is used. The alarm ID must be the uppercase string for the mnemonic of the alarm. |
| <b>-t &lt;message text&gt;</b> | Quoted text (must be enclosed in quotation marks). If not specified, the utility will use "Test Message" for the line of text.                |

#### **⇒ NOTE:**

If you don't enter any options for this command, an informational message will be generated to the alarm system.

### **Description**

This command allows you to manually generate an alarm to test the alarm subsystem on demand.

After using the **logmsg** command to place a message, use the **displog** command to check the log file for a newly generated message.

### **Example**

**logmsg -a CMF\_INFORM -t "Test Message"**

Then type **displog -n 10** to see the last 10 entries in the error log file.

## **logpeg**

---

### **Synopsis**

This command triggers the call-processing DIP to log internal peg counts to its circular log file.

### **Command Format**

**logpeg [-m <mach\_id>]**

The argument for the **logpeg** command is:

**-m <mach\_id>**     Machine ID where command is to run

### **Description**

This command triggers the call-processing DIP to log internal peg counts to its circular log file. Use the **logcat** command to display the log file (*/usr/add-on/ssa/log/ssa.log*).

### **Example**

**logpeg -m vp07**

Then type **logcat -m vp07** to see the contents of the circular log file captured with **logpeg**. You will be prompted for the file name when you enter the **logcat** command.

### **See Also**

**logcat**

## **machadm**

### **Synopsis**

This command administers the machine table in the PM environment.



#### **CAUTION:**

*To prevent corruption of the administration for this application do not use this command to change the machine table.*

### **Command Format**

**machadm [-m <mach\_id>] [-d]**

**machadm -a <uname>**

**machadm -u <uname>**

The arguments for the **machadm** command are:

<b>-m &lt;mach_id&gt;</b>	Machine ID where command is to run
<b>-d</b>	Display only
<b>-a &lt;uname&gt;</b>	To set Admin=Y for existing table entry
<b>-u &lt;uname&gt;</b>	To set Admin=N for existing table entry

### **Description**

This command administers the machine table in the PM environment. The machine table defines the network of machines, the LAN configurations, and the administration state of machines. This table is used by all the administration commands in the PM environment to determine where to run commands (**-m <mach\_id>** option or a site-based operation to all local/active machines). The command only runs on PM machines.



#### **CAUTION:**

*If you have the TCS application use **ssa\_admin**. If you do not have TCS, machadm is the only method of administering the machine table.*

### **Example**

**machadm -m pm01**

**machadm -a ssap1**

**machadm -u ssap1**



## **machidadm**

### **Synopsis**

This command administers the machine ID file in the stand-alone environment.

### **Command Format**

**machidadm [-d] [-v *MMII*]**

The arguments for the **machidadm** command are:

- d**                    The current value
- v *MMII***            MM is machine type; II is machine instance

### **Description**

This command administers the machine ID file in the stand-alone environment. In the PM environment, the **machadm** command performs this operation automatically.

### **Example**

**machidadm -d**

```
Current MACH_ID Value = PM01
```

### **See Also**

**machadm**

## **megpeg**

---

### **Synopsis**

This command displays call-processing measurements for the MAP 2000.

### **Command Format**

**megpeg** [-m <mach\_id>] [-r] <section>

The arguments for the **megpeg** command are:

- m** <mach\_id> Machine ID where command is to run
- r** Reset measurements to zero after they are displayed
- <section>** Section is one of the following:
  - rchan** — resource channel measurements
  - conn** — bridging measurements
  - dsp** — tone generation, tone detection, call progress tone generation, and call-classification measurements
  - msg** — messaging measurements
  - all** — all of the above measurements

### **Description**

This command displays counts and time statistics for various application-requested resources, and the messaging traffic required to provide the resources.

You can pipe the output of this command through the UNIX **pg** command.

### Example

#### **megpeg -m vp07 all**

```
running command "/usr/add-on/nap/bin/megpeg all" on ssa07

Timestamp = 830361827

Wed Apr 24 10:03:47 1996

RESOURCE CHANNEL MEASUREMENTS since Tue Apr 16 12:05:00 1996

    0 rchans in use at Tue Apr 16 12:05:00 1996

    0 times when no rchan immediately available

    0 resource channel requests
    0.00 seconds of resource channel usage

BRIDGING MEASUREMENTS since Tue Apr 16 12:05:00 1996

    0 full bridge requests not to be confirmed
    0 full bridge requests needing confirmation
    0 full bridge confirmations received

    0 half bridge requests not to be confirmed
    0 half bridge requests needing confirmation
    0 half bridge confirmations received

    0 full bridge disconnect requests
    0 half bridge disconnect requests

    0 circuit connect failures

TONE GENERATION MEASUREMENTS since Tue Apr 16 12:05:00 1996

    0 tone generation requests
    0 tone generation failures

TONE DETECTION MEASUREMENTS since Tue Apr 16 12:05:00 1996

    0 tone detection connection requests
    0 tone detection confirmations received
    0 tone detection connection failures

    0.00 seconds waiting for confirmations
    0.00 seconds maximum wait at Tue Apr 16 12:05:00 1996

    0 tone detection configuration requests
    0 tone detection disconnect requests
    0 tone detection cancel requests
    0 tone detection failures
    0.00 seconds of tone detection usage
```

```
0 tone detection data messages received
  0 first-digit time-out messages received
  0 inter-digit time-out messages received
  0 sequence time-out messages received
  0 tone detection data failures received

CALL PROGRESS TONE GENERATION MEASUREMENTS since Tue Apr 16 12:05:00 1996

  0 call progress tone generation requests
  0 call progress tone generation automatic disconnects
  0 call progress tone generation disconnect requests
  0 call progress tone generation failures

0.00 seconds of call progress tone generation usage

MESSAGING MEASUREMENTS since Tue Apr 16 12:05:00 1996

  163 UUI messages sent to Communicore
  3181 UUI messages received from Communicore

  10 connection management messages received
  0 service circuit messages received
```

## **napsetup**

---

### **Synopsis**

This command sets the machine name and sets up networking files. On machines with Datakit installed, it also sets the Datakit system name. This command replaces **ssa\_setup**.

### **Command Format**

**/usr/add-on/nap/bin/napsetup**

### **Description**

This step automatically happens at the end of the software install process, but if the machines come preloaded with the correct software (you are not doing an upgrade), you must manually run the **napsetup** command.

You must run **napsetup** on the machine you are administering.

You must be **root** to run this command.

### **Example**

For an explanation of the output from **napsetup**, see "Running napsetup on the VP" on page 4-37.

## **p24\_rep**

---

### **Synopsis**

This command generates the 24-Hour Maintenance Report.



#### **WARNING:**

*This command is run by CRON and CANNOT BE RUN BY THE USER.*

### **Command Format**

**Not a user command; generated by CRON.**

### **Description**

This command generates the 24-Hour Maintenance Report. This command is run by cron and *CANNOT BE RUN BY THE USER*. It is listed here to describe the incomplete and complete data fields.

An "I" after the `MACHID` field in the report indicates an incomplete data condition where part or all of the information for that interval is missing for some reason.

A `dsrrep` command should be run to determine what is missing.

A "C" after the `MACHID` field in the report indicates an complete data condition for the report.

A ">" after the end of the errors line indicates that the error data was truncated. For complete information run the **dsrrep** command.

**Example**

```

SEG p24_rep
07:13:95:14:54:51 DNVRCOPECA1 MachID=VP18 C Logins=0 PegI=213221 PegO=213219
No LANA=00:15 No LANB=00:00 FU= NO FIELD UPDATES INSTALLED
ERRORS: *C:APPL110=1 APPL111=1 APPL203=1 MEGA005=1 MEGA009=1 MEGA010=5 MEGA012=>

07:13:95:14:55:12 DNVRCOPECA1 MachID=PM00 C Logins=4 PegI=n/a PegO=n/a
No LANA=00:15 No LANB=00:00 FU= NO FIELD UPDATES INSTALLED
ERRORS: *C:APPL002=2 APPL106=6 APPL108=288 APPL115=16 APPL201=14 **:APPL101=1 *>

07:13:95:14:55:26 DNVRCOPECA1 MachID=PM01 C Logins=1 PegI=n/a PegO=n/a
No LANA=00:15 No LANB=00:00 FU= NO FIELD UPDATES INSTALLED
ERRORS: *C:APPL002=2 APPL108=288 APPL115=14 APPL201=9 **:NONE *:NONE
EOM
    
```

In the example above, each machine's data takes 3 lines. The data collected reports on the previous 24 hour period.

Using the first three lines as an example, the fields have the following meanings:

<b>Example Data</b>	<b>Explanation</b>
07:13:95:14:54:51	Date and time data was generated
DNVRCOPECA1	Site clii
MachID=VP18	Machine ID
C	Complete flag. Denotes whether the report's data are complete or incomplete
Logins=0	Number of logins for the 24 hour period
PegI=213221	Number of inbound PRI setup messages
PegO=213219	Number of outbound PRI setup messages
No LANA=00:15	Hours and minutes LAN A was down
No LANB=00:00	Hours and minutes LAN B was down

*Continued on next page*

FU= NO FIELD UPDATES INSTALLED	Field updates per software package. Each package is allowed 8 characters for data. Data are truncated after the 80th column.
ERRORS:	Number of errors generated, in order of severity: critical errors (*C), major errors (**), then minor errors (*). If no errors for a level of severity occurred, you see the word NONE.
*C:APPL110=1 APPL111=1 APPL203=1 MEGA005=1 MEGA009=1 MEGA010=5 MEGA012=>	Number of each error class that occurred. Here, for the critical errors, there was 1 APPL110 error and 5 MEGA010 errors.  The error report line is truncated, as shown by the >.

**See Also**

**dsrrep**

**ping**

---

See the **lancheck** command.

## **primadm**

---

### **Synopsis**

This command administers the machine instance of the primary PM machine.

### **Command Format**

**primadm [-d] [-r] [-l] [-v <prim\_oamp>]**

The arguments for the **primadm** command are:

- |                             |  |
|-----------------------------|--|
| <b>-d</b>                   | Display the current value  |
| <b>-l</b>                   | Runs the command on this machine (local mode); normally the command runs on all machines at the site   |
| <b>-r</b>                   | Resynchronizes the current value   |
| <b>-v &lt;prim_oamp&gt;</b> | New value for PRIM_OAMP; it is the machine instance value of the PM machine that serves as the primary |

### **Description**

This command administers the machine instance of the primary PM machine. This value is used by this package to resolve which PM machine will generate the 24-Hour Maintenance Report to the external monitoring system (TNM). This value is not used in the stand-alone environment.

### **Example**

**primadm -d**

```
The -d option on a site based operation displays local value.  
Current PRIM_OAMP Value = 0
```

### **See Also**

**machadm**

## **rcardadm**

---

### **Synopsis**

This command administers the resource card table on the MAP/100C for the specified MAP 2000 machine that is commanded. Use **cardadm** to administer other Communicore modules and PM circuit cards.

### **Command Format**

**rcardadm [-m <mach\_id>] [-d]**

The arguments for the **rcardadm** command are:

- m <mach\_id>**      Machine ID where command is to run
- d**                      To display only

### **Description**

This command administers the resource card table for the specified machine. It brings up an interactive menu interface to add, change, or delete information for all the resource cards in the machine. To exit the menu press **q**.

Refer to "Equipment Configurations" on page 8-13 of Chapter 8, "Maintenance" for Communicore module and MAP/100C card administration information.

**Table 0-0. MAP/100C Nondisplayable Cards CLEI Codes**

<b>Card Type</b>	<b>CLEI</b>	<b>Hardware Version</b>
CPU	GCPI10EGAA	D486DXC-50-0ATTR2 Ser:2
CPU	GCPQAKKJAA	D486DXC-50-0ATT-REV-ASer1
CPU	GCPQAKHJAA	386/25 (0MB) Ser:1
CPU	GCPQAKYJAA	386/25 (8MB) Ser:1
CPU	GCPQAKJJAA	386/25 (12MB) Ser:1
ESDI CNTRL	0000000000	ESDI Disk Controller
TAPE CNTRL	0000000000	ESDI Tape Controller
SCSI CNTRL	QCPOAKCJAA	BusLogic BT542B Ver:H
SCSI CNTRL	0000000000	Adaptec AHA1542B
VIDEO	0000000000	WDXLR83160
VIDEO	QCPOAKCJAA	WDXLR831124-Rev.X2 Ser:1

*Continued on next page*

**Table 0-0. MAP/100C Nondisplayable Cards CLEI Codes — Continued**

<b>Card Type</b>	<b>CLEI</b>	<b>Hardware Version</b>
VIDEO	GCPIJ0GGAA	WDXLR833124 Ser:1
VIDEO	GCPQAWFJAA	CP-110-0318-627 S1:1 VID
ALARM	GCUQACLXAA	CO Alarm
LAN	GCUQACKXAA	StarLAN 10 PC-NAU
DATAKIT	0000000000	HS386 Datakit Interface

*Continued on next page*

**Table 0-0. MAP/100C Displayable Cards CLEI Codes**

<b>Card Type</b>	<b>CLEI</b>	<b>Hardware Version</b>
COSBIB	GCPQAKMJAA	AYC15 COSIB Vin:1
COSBIB	ASPQACNAAB	AYC15 COSIB Vin:2
T1	GCPQAK8AAB	AYC3B T1 Ser:1-3
T1	GCPQAK8AAC	AYC3B T1 Ser:4
T1	GCUQACJXAA	AYC11 T1 Vin:4-5
T1	GCUQACJXAB	AYC11 T1 Vin:6
TR	GCUQACHXAA	AYC5B Analog T/R Ser:2-4
IVP4	GCPQAL1JAA	AYC6B IVP4 Ser:1-4
IVP6	GCPQAL2JAA	AYC10 IVP6 T/R Vin:1
IVP6	GCPQAL2JAB	AYC10 IVP6 T/R Vin:2
IVP6	GCPQAMBJAA	AYC16 IVP6-IU T/R Vin:1
IVP6	GCPQAMBJAB	AYC16 IVP6-IU T/R Vin:2
IVP6	GCPQAL8JAA	AYC26 IVP6-IA T/R Vin:1
IVP6	GCPQAL8JAB	AYC26 IVP6-IA T/R Vin:2
IVP6	GCPQAMAJAA	AYC27 IVP6-IG T/R Vin:1
IVP6	GCPQAMAJAB	AYC27 IVP6-IG T/R Vin:2
IVP6	GCPQAL6JAA	AYC28 IVP6 T/R Vin:1
IVP6	GCPQAL6JAB	AYC28 IVP6 T/R Vin:2
E1/T1	GCPQATDJAA	CP-AYC21 S1:1 E1 Interface
ACCK	GCPQAMCJAA	AYC22 ACCK Intf. Vin:1
CMP	ASPQMFTAAA	AYC7 Companion Ser:1
CMP	ASPQMFTAAB	AYC7 Companion Ser:2
CMP	GCPQATEJAA	AYC23 CMP(4MB)Vin:1
CMP	GCPQATFJAA	AYC24 CMP(16)Vin:1
SP-2	ASPQACMAAA	AYC2C SP Ser:1-5
SP-2	ASPQACMAAB	AYC2C SP Ser:6

*Continued on next page*

**Table 0-0. MAP/100C Displayable Cards CLEI Codes — *Continued***

<b>Card Type</b>	<b>CLEI</b>	<b>Hardware Version</b>
SP-2	0000000000	AYC2B SP
SP-8	GCUQACEXAA	AYC9 TTS Ser:1-5
SP-8	GCUQACEXAB	AYC9 TTS Ser:6

*Continued on next page*

The following **rcardadm** command shows typical usage and output:

**rcardadm -m vp00 -d**

```

running command "/usr/add-on/maint/bin/rcardadm -d" on vp00
=====
|           Resource Card Table           |
=====
Slot   Card      Card  CLEI      Hardware
Number Type      Number
-----
01     SP-2      01    ASPQACMAAB  AYC2C SP Ser:6
03     SP-2      02    ASPQACMAAB  AYC2C SP Ser:6
05     T1        00    GCUQACJXAB  AYC11 T1 Vin:6
16     CPU              GCPI10EGAA  D486DXC-50-0ATTR2 Ser:2
17     VIDEO             GCPIJ0GGAA  WDXLR833124 Ser:1
18     ALARM            GCUQACLXAA  CO Alarm
19     LAN              GCUQACKXAA  StarLAN 10 PC-NAU
21     LAN              GCUQACKXAA  StarLAN 10 PC-NAU
25     SCSI CNTRL      QCPQAKCJAA  BusLogic BT542B Ver:H

```

**See Also**

**cleiadm**

**cardadm**

## **rds1adm**

---

### **Synopsis**

This command administers the resource DS1 table on the MAP 2000 machine for which the command is run.

### **Command Format**

**rds1adm [-m <mach\_id>] [-d]**

The arguments for the **rds1adm** command are:

- m mach\_id**      Machine ID where command is to run
- d**                      Display only

### **Description**

This command administers the resource DS1 table on the MAP 2000 machine for which the command is run. It displays an interactive menu to administer information for all the resource DS1/T1 modules in the machine.

**⇒ NOTE:**

Do not use this command for TCS because the DS1 table is not administered (the default table is used).

### **Example**

**rds1adm -m vp01 -d**

```
running command "/usr/add-on/maint/bin/rds1adm -d" on vp01
=====
|                               Resource DS1/E1 Table                               |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Slot  DS1/E1 Card      ADJUNCT  ADJUNCT  SWITCH  SWITCH
Number Type   Number BTFN DSX_BAY  DSX_PJ  DSX_BAY  DSX_PJ
---  ---  ---  ---  ---  ---  ---  ---
05    PRID   00    0000 00000000 0000    00000000 0000
```

## **remlrpa**

---

### **Synopsis**

This command removes a process entry from the LRPA configuration file.

### **Command Format**

**remlrpa** [-m *<mach\_id>*] *<process\_name>* | **all**

The arguments for the **remlrpa** command are:

- |                                  |   |
|----------------------------------|---|
| <b>-m</b> <i>&lt;mach_id&gt;</i> | Machine ID from which to remove the entry                                     |
| <i>&lt;process_name&gt;</i>      | Name of the process you would like to remove from the LRPA configuration file |
| <b>all</b>                       | Removes all processes from the LRPA configuration file                        |

### **Description**

This command removes entries from the long-running process alarm (LRPA) configuration file. This file is used by the **procchk** cron job that checks and raises alarms for entries that have exceeded their administered time limit.

### **Example**

**remlrpa init**

```
Successfully removed (init).
```

### **See Also**

**addlrpa**

**displrpa**

**chglrpa**

**listlrpa**

## **\_Remove**

---

### **Synopsis**

The **\_Remove** command removes TCS Release 2.4 software and restores the machine to TCS Release 2.3 software.

### **Command Format**

```
./_Remove [<mach_name> <mach_name> ...]
```

or

```
./_Remove [<mach_id> <mach_id>...]
```

The arguments for the **\_Remove** command are:

***mach\_name***      Machine name that will be removed

***mach\_id***        Machine ID that will be removed

Note that in this command, **-m** is not part of the argument.

### **Description**

The **\_Remove** command removes TCS Release 2.4 software and restore the machine to TCS Release 2.3 software. The TCS Release 2.4 software files are deleted.

You must run the **\_Remove** command from directory **/usr/install/tcs\_2.4**.

This command must be run from the primary PM (PM01) where the **tcs\_2.4\_cpio** was placed.

You must be **root** to run this command.

### **Example**

When **\_Remove** is used with no arguments, it defaults to executing the script and removing all machines defined in the **VP\_name\_list** and **PM\_name\_list** files (ssap1, ssap2, and ssa01 through ssa10).

```
cd /usr/install/tcs_2.4  
./_Remove
```

When specific machines are addressed, software is removed on only those machines.

```
cd /usr/install/tcs_2.4  
./_Remove pm02 vp08
```

### **Command Status Display States**

Four states may be displayed during the removal process.

- **Submitted:** A batch job was submitted by the master PM to remove the software.
- **Running:** A batch job was submitted to a machine and is executing.
- **Finished:** The software removal process is complete on the machine. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- **ABORTED:** An error occurred during the removal process. Escalate the problem to the appropriate support organization. Do not re-attempt to remove.

### **See Also**

**\_Commit**

## **remove**

---

### **Synopsis**

This command removes specified resources from service.

### **Command Format**

**remove** [-m <mach\_id>] <resource\_type> <range> [*immed*]

The arguments for the **remove** command are:

<b>-m &lt;mach_id&gt;</b>	Machine ID where the command is to run
<b>&lt;resource_type&gt;</b>	<b>card, rcard, chan, rchan, channel, or rchannel</b>
<b>&lt;range&gt;</b>	A single number ( <b>2</b> ), comma-separated list ( <b>2,3,4</b> ), number range ( <b>2-4</b> ), or <b>all</b> resources to remove
<b><i>immed</i></b>	Remove the resources immediately, dropping any phone calls that are using the resources

### **Description**

Removes specified resources from service.

#### **⇒ NOTE:**

If another **remove** command is running, any subsequent **remove** command is blocked and a message is printed to the screen. Wait and try again.

If you use the **immed** argument with the command, the resource is removed abruptly and does not permit calls to drop gracefully. The customer is cut off abruptly.

#### **⚠ WARNING:**

*If you perform **remove** on a VP for any value or range that includes any of modules 1 through 3 (including **all**), the Communicore and the MAP/100C will be unable to communicate when the modules and cards are restored to service. To re-establish communications after the modules and cards are restored, cycle the VP using the following steps:*

```
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## Example

**remove -m vp00 rcard all immed**

```
running command "/usr/add-on/nap/bin/remove rcard all" on vp00
Channel 0 changed to state MANOOS.
Channel 1 changed to state MANOOS.
Channel 2 changed to state MANOOS.
Channel 3 changed to state MANOOS.
Channel 4 changed to state MANOOS.
Channel 5 changed to state MANOOS.
Channel 6 changed to state MANOOS.
Channel 7 changed to state MANOOS.
Channel 8 changed to state MANOOS.
Channel 9 changed to state MANOOS.
Channel 10 changed to state MANOOS.
Channel 11 changed to state MANOOS.
Channel 12 changed to state MANOOS.
Channel 13 changed to state MANOOS.
Channel 14 changed to state MANOOS.
Channel 15 changed to state MANOOS.
Channel 16 changed to state MANOOS.
Channel 17 changed to state MANOOS.
Channel 18 changed to state MANOOS.
Channel 19 changed to state MANOOS.
Channel 20 changed to state MANOOS.
Channel 21 changed to state MANOOS.
Channel 22 changed to state MANOOS.
Channel 23 changed to state MANOOS.
Card 0 changed to state MANOOS.

Remove card 1. Asking for equipment...
Card 1 changed to state MANOOS.

Remove card 2. Asking for equipment...
Card 2 changed to state MANOOS.
```

## See Also

**chg\_state**

**restore**

## **resetclk**

---

### **Synopsis**

This command resets the T1 clock source on a MAP 2000 machine.

### **Command Format**

**resetclk [-m <mach\_id>]**

The argument for the **resetclk** command is:

**-m <mach\_id>**      Machine ID where the command is to run

### **Description**

This command, which resets the T1 clock source on a MAP 2000 machine, is used when a connection to a T1 clock synch source has been lost on a MAP 2000 machine.

### **Example**

**resetclk -m vp07**

```
running command "/usr/add-on/nap/bin/resetclk" on ssa07  
Communicore TDM clock source reset
```

### **See Also**

**dispclk**

**setclk**

## **restadm**

---

### **Synopsis**

This command restores CMF administration data for a single machine from the backup directory.

### **Command Format**

**restadm [-m <mach\_id>] [-r <mach\_id>]**

The arguments for the **restadm** command are:

- m <mach\_id>** Machine ID where command is to run
- r <mach\_id>** Machine ID from which data are to be restored

### **Description**

This command restores CMF administration data for a single machine from the backup directory (**/usr/maint/backup**) on the machine from which the command is run to the production directory (**/usr/add-on/maint/admin**) on the machine that is specified (**-r** option on a PM machine) or implied (non-PM machine). For non-PM machines, the **-r** option is not supported because only one machine is involved. The current production administration data are removed and replaced with the backup data.

When using this command, remember these two points:

- If you are on a PM, you *must* use the **-r** option.
- If the **-m** option names a VP, the **-r** option is invalid

### Example

On VP01 enter:

**restadm**

```
running command "/usr/add-on/maint/bin/deladm" on ssa01
copying admin files from /usr/maint/backup/VP01 to ssa01
```

On PM01 enter:

**restadm -m pm02 -r pm01**

```
running command "/usr/add-on/maint/bin/restadm-r on pm01" on ssap2
running command "/usr/add-on/maint/bin/deladm" on ssap1
copying admin files from /usr/maint/backup/PM01 to ssap1
```

On PM01 enter:

**restadm -r pm02**

```
running command "/usr/add-on/maint/bin/deladm" on ssap2
copying admin files from /usr/maint/backup/PM02 to ssap2
```

On PM01 enter:

**restadm -r vp07**

```
running command "/usr/add-on/maint/bin/deladm" on ssa07
copying admin files from /usr/maint/backup/VP07 to ssa07
```

On PM02 enter:

**restadm -m pm01 -r vp07**

```
running command "/usr/add-on/maint/bin/deladm" on ssa07
copying admin files from /usr/maint/backup/VP07 to ssa07
```

### **See Also**

**backadm**

**backtape**

**resttape**

## restore

---

### Synopsis

This command restores specified resources and any dependent resources to service.

### Command Format

**restore** [-m *<mach\_id>*] *<resource\_type>* *<range>*

The arguments for the **restore** command are:

<b>-m</b> <i>&lt;mach_id&gt;</i>	Machine ID where command is to run
<b>&lt;resource_type&gt;</b>	<b>card, rcard, chan, rchan, channel, or rchannel</b>
<b>&lt;range&gt;</b>	A single number ( <b>2</b> ), comma-separated list ( <b>2,3,4</b> ), number range ( <b>2-4</b> ), or <b>all</b> resources to restore

### Description

Restores specified resources and any dependent resources to service.

#### **NOTE:**

If another **restore** command is running, any subsequent **restore** command is blocked and a message is printed to the screen. Wait and try again.

#### **WARNING:**

*If you perform **restore** on a VP for any value or range that includes any of modules 1 through 3 (including **all**), the Communicore and the MAP/100C will be unable to communicate when the modules and cards are restored to service. To re-establish communications after the modules and cards are restored, cycle the VP using the following steps:*

```
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## Example

### **restore -m vp00 rcard all**

```
running command "/usr/add-on/nap/bin/restore rcard all" on vp00
Channel 0 changed to state FOOS.
Card 0 changed to state FOOS.
Channel 1 changed to state FOOS.
Channel 2 changed to state FOOS.
Channel 3 changed to state FOOS.
Channel 4 changed to state FOOS.
Channel 5 changed to state FOOS.
Channel 6 changed to state FOOS.
Channel 7 changed to state FOOS.
Channel 8 changed to state FOOS.
Channel 9 changed to state FOOS.
Channel 10 changed to state FOOS.
Channel 11 changed to state FOOS.
Channel 12 changed to state FOOS.
Channel 13 changed to state FOOS.
Channel 14 changed to state FOOS.
Channel 15 changed to state FOOS.
Channel 16 changed to state FOOS.
Channel 17 changed to state FOOS.
Channel 18 changed to state FOOS.
Channel 19 changed to state FOOS.
Channel 20 changed to state FOOS.
Channel 21 changed to state FOOS.
Channel 22 changed to state FOOS.
Channel 23 changed to state FOOS.

Card 1 changed to state INSERV.

Card 2 changed to state INSERV.
```

## See Also

**chg\_state**

**diagnose**

**remove**

## **resttape**

---

### **Synopsis**

This command provides the ability to restore the CMF administration backup directory containing CMF data from a previous **backtape** operation.

### **Command Format**

**resttape** [-m <*mach\_id*>]

The argument for the **resttape** command is:

**-m** <*mach\_id*>    Machine ID where command is to run

### **Description**

This command provides the ability to restore the backup directory of CMF data (**/usr/maint/backup**) from a previous backtape operation. The backup directory (**/usr/maint/backup**) on the machine from which it is run is removed and the backed-up version is read in from streaming tape. This command does not copy any administration data to the production directory (**/usr/add-on/maint/admin**).

### **Example**

**resttape**

When command processing finishes, the prompt displays.

### **See Also**

**backtape**

**restadm**

## **s24adm**

---

### **Synopsis**

This command administers the hour when the 24-hour maintenance report will be generated to the external monitoring system.

### **Command Format**

**s24adm [-d] [-r] [-v <hour>]**

The arguments for the **s24adm** command are:

<b>-d</b>	Displays the current value
<b>-r</b>	Resync current value
<b>-v &lt;hour&gt;</b>	New hour value (0-23)

### **Description**

This command administers the hour when the 24-hour maintenance report will be generated to the external monitoring system (TNM). The default is 0:15 AM when the package is installed. As stated previously, the **primadm** command administers which PM machine will send out the report in the PM environment.

### **Example**

**s24adm**

```
Current STRT_24 Value = 0
```

### **See Also**

**primadm**

## **setclk**

---

### **Synopsis**

This command sets the Communicore TDM primary and secondary clock sources.

### **Command Format**

**setclk** [-m *mach\_id*] <primary> <backup>

The arguments for the **setclk** command are:

- |                          |  |
|--------------------------|--|
| <b>-m <i>mach_id</i></b> | Machine ID of the MAP 2000 machine where the command is to run |
| <b>primary</b>           | The primary clock source PRI card number                       |
| <b>backup</b>            | The secondary clock source PRI card number                     |

If *mach\_id* is not specified, **setclk** sets the clock sources on the machine it is run from.

### **Description**

This command sets the Communicore TDM primary and secondary clock sources.

#### **NOTE:**

A **chgstate off**, **down**, or **reboot** forces clock sources to return to the default settings (Primary 4 and Backup 6).

### **Example**

**setclk -m vp01 4 6**

```
Setting Communicore TDM clock sources: Primary 4 and Backup 6.....  
synchronization change completed.
```

### **See Also**

**dispclk**

**resetclk**

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## \_Siteload

The **\_Siteload** command has been removed from this version. See the **download** command.



## **snapshot**

---

### **Synopsis**

This command creates a full backup image tape for a machine. Use this image tape to reload software on machines of the same type in case of disaster recovery.

### **Command Format**

#### **snapshot**



#### **CAUTION:**

*You must run snapshot while logged into the machine you are creating an image of. The machine must be removed from service or traffic will be blocked. Follow imaging procedures found in "Making an Application Image Tape" on page 4-83 to prevent blocked calls.*

### **Description**

A VP machine requires only one 3M DC 6525 525-Mbyte cartridge tape. A PM machine requires one or two tapes.



#### **NOTE:**

You must use a 3M DC 6525 525-Mbyte cartridge tape to snapshot a machine.

This command takes approximately 2 hours to run on a PM and 30 minutes to run on a VP.

Use the procedure "Making an Application Image Tape" on pages 45-83 through 45-85 to take a snapshot of a machine.

## Example

### snapshot

Tape Backup complete.  
1) Remove the tape from the tape drive.  
NOTE: Depending on the type of tape drive, the tape drive light may be on or off. Ignore the light, remove the tape.  
2) Label the tape with the appropriate Application Name, Version, and Release Numbers, Machine Type, and Current Date.  
3) Write-Protect The Tape.

## **ssa\_admin**

---

### **Synopsis**

This command displays the SSA Administration Menu.

### **Command Format**

**ssa\_admin**

### **Description**

You must run this command from a PM.

From this menu, you can do the following:

- End your SSA administration session
- Go to the Adjunct Database Administration menu
- Go to the Machine Administration menu
- Run 3 administration commands:
  - Communication Check (**comcheck**)
  - Start Database Audit (**dbaudit**)
  - View Database Audit Results (**audresults**)

### **Example**

**ssa\_admin** displays this menu:

```
Enter the type of action you wish to perform.
End SSA Administration session      => 0
Communications Check               => 1
Adjunct Database Administration     => 2
Machine Administration              => 3
Start Database Audit                => 4
View Database Audit Results         => 5
==>
```

## The Options on the Adjunct Database Administration Form

This section explains the six options on the Adjunct Database Administration form in the **ssa\_admin** command menu. One of the options can be changed; the others must not be changed.

Option	Meaning	Default Preferred (& Range)	Administration
PM_pref	Names the PM that is the central alarm and measurement collector	ssap1 (ssap2)	Change to ssap2 only if ssap1 fails or is going to be taken out of service; change back after ssap1 is restored to service
max_db	Maximum number of customer records in the database	100,000	Provided by SMW administrator
oobdt_wt_timer	Length of time for data to be transferred on a data transfer	3 (1-200) seconds	DO NOT CHANGE
time_aud	Hour of the day a periodic audit is run	23	DO NOT CHANGE
time_daud	Number of seconds the secondary PM waits for the PM controlling the audit to complete the audit	6000	DO NOT CHANGE
time_faud	Number of seconds a machine has to generate its audit files	6000	DO NOT CHANGE



### WARNING:

*Those features that say DO NOT CHANGE will, if changed, cause the system to function incorrectly or not at all.*



### NOTE:

The `master_time` field is a read-only field.

**ssa\_commit**

---

See the **\_Commit** command.

**ssa\_display**

---

See the **disp\_status** command.

**ssa\_distribute**

---

See the **\_Distribute** command.

**ssa\_install**

---

See the **\_Install** command.

**ssa\_remove**

---

See the **\_Remove** command.

**ssa\_setup**

---

See the **napsetup** command.

## t1lb

---

### Synopsis

This command turns on and off the line loopback for PRI modules on a call-processing machine.

### Command Format

```
t1lb [-m <mach_id>] <resource_type> <range> [<mode>]
```

The arguments for the **t1lb** command are:

<b>-m &lt;mach_id&gt;</b>	Machine ID where command is to run
<b>&lt;resource_type&gt;</b>	<b>card</b> is currently the only valid choice
<b>&lt;range&gt;</b>	A single card number ( <b>4</b> ), a comma-separated list ( <b>6,7</b> ), a range of numbers ( <b>6-7</b> ), or <b>all</b> resources to turn on
<b>&lt;mode&gt;</b>	Either <b>on</b> or <b>off</b>

**⇒ NOTE:**

The **<mode>** argument is required for Communicore modules, but is invalid for MAP/100C cards.

### Description

Remove PRI modules from service and verify the LEDS are off by entering

```
displed -m <mach_id> card <range>
```

before running this command.

While in loopback mode, the STATUS LED is on and the LPBK (loopback) LED is flash while framing. A near-end loopback is in effect.

**⇒ NOTE:**

If another **t1lb** command is running, any subsequent **t1lb** command is blocked and a message is printed to the screen. Wait and try again.

### Example

**t1lb -m vp07 card 4 off**

```
running command "TERM=at386;export TERM;/usr/add-on/nap/bin/t1lb card 4 off" on ssa07  
Board 4 loopback OFF
```

## **tracecp**

---

### **Synopsis**

This command observes call processing.

### **Command Format**

**tracecp** [-m *<mach\_id>*] [-t *<timeout>*]

The arguments for the **tracecp** command are:

- m** *<mach\_id>* Machine ID where command is to run
- t** *<timeout>* Number of seconds to perform the trace. (If you do not specify a time, a default of 180 seconds is used.)

### **Description**

**tracecp** displays calls as they happen. For each call made, it shows:

- Type of call ( BT-H, BT-V, CC-H, CC-V, EST-H, EST-V, ST-H, ST-V, or RCP )
- The incoming channel (*cp*)
- The outgoing channel (*rp*)
- The dialed number (*dn*)
- The billing number (*bn*)
- The SSC (*ttt*)
- The routing number (*rout\_no*)
- The destination number (*dest*)
- How many calls are currently up, including this one (*up*)
- How many outgoing channels are free (*free*)
- How many 3-way conferences are up (*3way*)

This information displays as the dip makes the call; there is no delay.

**Example****tracecp**

```

BT-V CALL cp=066, rp=034, dn=8005384445, bn=3035381092, ttt=384445, rout_no=3\
844451234, dest=0040051234, up=54, free=166, 3way=0.
BT-V CALL cp=067, rp=035, dn=8005384445, bn=3035381092, ttt=384445, rout_no=3\
844451234, dest=0040051234, up=55, free=165, 3way=0.
BT-V CALL cp=068, rp=036, dn=8005384445, bn=3035381092, ttt=384445, rout_no=3\
844451234, dest=0040051234, up=56, free=164, 3way=0.
BT-V CALL cp=069, rp=037, dn=8005384445, bn=3035381092, ttt=384445, rout_no=3\
844451234, dest=0040051234, up=57, free=163, 3way=0.
ST-H CALL cp=070, rp=038, dn=8005384454, bn=3035381092, ttt=384454, rout_no=3\
844541234, dest=0040041234, up=54, free=166, 3way=0.
ST-H CALL cp=071, rp=039, dn=8005384454, bn=3035381092, ttt=384454, rout_no=3\
844541234, dest=0040041234, up=55, free=165, 3way=0.
ST-H CALL cp=096, rp=041, dn=8005384454, bn=3035381092, ttt=384454, rout_no=3\
844541234, dest=0040041234, up=56, free=164, 3way=0.
ST-H CALL cp=097, rp=042, dn=8005384454, bn=3035381092, ttt=384454, rout_no=3\
844541234, dest=0040041234, up=57, free=163, 3way=0.
ST-H CALL cp=098, rp=043, dn=8005384455, bn=3035381092, ttt=384455, rout_no=3\
844551234, dest=0040051234, up=54, free=166, 3way=0.
ST-H CALL cp=099, rp=044, dn=8005384455, bn=3035381092, ttt=384455, rout_no=3\
844551234, dest=0040051234, up=55, free=165, 3way=0.
ST-H CALL cp=100, rp=045, dn=8005384455, bn=3035381092, ttt=384455, rout_no=3\
844551234, dest=0040051234, up=56, free=164, 3way=0.
ST-H CALL cp=101, rp=047, dn=8005384455, bn=3035381092, ttt=384455, rout_no=3\
844551234, dest=0040051234, up=57, free=163, 3way=0.

```

Output from tracecp for a TCS transfer call:

```

CC-H CALL cp=000, rp=033, dn=8005383904, bn=3035381092, ttt=383904, rout_no=3\
904, dest=40040000, up=1, free=219, 3way=0.
OUTGOING CALL to TP id=00, cp=000, rp=033, tp=034, dest=8002553907, apn=0, oo\
bd=3.
CC-H CALL cp=001, rp=035, dn=8005383907, bn=3035381092, ttt=383907, route_no=3\
907, dest=40070000, up=2, free=217, 3way=1.

```

**See Also**

**dispcnnc**









































## **What's in This Chapter?**

---

This chapter includes information on:

- Troubleshooting and system redundancy
- Service states for modules, cards and channels
- D-channel connectivity
- Monitoring NAP
- Troubleshooting connectivity problems
- Rebooting VPs and PMs
- Troubleshooting the application
- Troubleshooting the power supply fan status
- Troubleshooting the firmware downloads
- Troubleshooting Communicore problems

## Service States for Modules, Cards and Channels

Individual Communicore and MAP/100C cards and channels for both can be in various states. For example, a T1 card state attempts to match the status of its channels, and individual channels may be in different states. In this case, the card state reflects the highest service-channel state. Table 6-1 on page 6-2 shows each possible state with the highest service state, `inserv`, given first, along with a description of what the state means and what action changes the state of a module, card or channel.

**Table 6-1. Service States**

State	Description/Action
<code>inserv</code> (in service)	The card or channel is in service and working correctly.
<code>netoos</code> (network out of service)	Non-T1 cards are never in this state. The card is working correctly (receiving T1 framing), but it is waiting for the correct response from the 4ESS/Communicore before it can bring the 4ESS channel/Communicore resource channel ( <code>rchannel</code> ) into service. For example, if the D- or B-channels have been taken out of service by the 4ESS, the VP shows these channels as <code>netoos</code> until they are put back in service on the 4ESS and receive proper signaling.
<code>hwoos</code> (hardware out of service)	The card or channel depends on another card or channel not in service as defined by the application.
<code>appoos</code> (application out of service)	The DIP software process has not made connections with the primary rate interface (PRI) and the application is waiting to make the PRI connection. This could happen if the VP is administered as <i>inactive</i> , PM communications are lost, or initialization is delayed due to processing of customer/speed-dialing database updates. To clear this, perform the following: <ol style="list-style-type: none"> <li>1. Check to see if the VP is administered as <i>inactive</i> (use the <b>ssa_admin</b> command).</li> <li>2. Run the <b>comcheck</b> command to see if the problem is PM communication.</li> </ol>

*Continued on next page*

**Table 6-1. Service States — Continued**

State	Description/Action
	<p>3. Verify that the D-channels are up, because call channels could remain in the appoos state if the D-channel was not up long enough for the application to register. Use the <b>disp_status -m &lt;mach_id&gt;</b> command from the PM.</p> <p>4. Perform a <b>chg_state -m &lt;mach_id&gt; off</b>, and then restart the application software using the <b>chg_state -m &lt;mach_id&gt; on</b> command.</p>
foos (facility out of service)	The module or card the channel is on is not receiving T1 framing from the far-end (4ESS / Communicore). This implies a failed connection or far-end trouble. Once the connection is restored, the module or card transitions out of this state. Communicore modules are set to the foos state on initialization, but they should transition out of this state.
broken	For MAP/100C cards, software on the VP cannot communicate with the module and has removed it from service, marking it broken. Run diagnostics on this card before attempting to put it back in service. For Communicore modules, broken means diagnostics (probably periodic maintenance) have failed. Run the <b>diagnose</b> command (which leaves the module in manoos if it passes the test). If the diagnostics pass, run the <b>restore</b> command to bring one module back in service, or the <b>chg_state -m &lt;mach_id&gt; on</b> command to bring all modules back in service. If the diagnostics fail, replace the module and download to it. Modules in the broken state will probably fail diagnostics and will require replacement. See warning below.

*Continued on next page*

**Table 6-1. Service States — Continued**

State	Description/Action
manooos (manually out of service)	<p>The module, card or channel has been taken out of service manually, the default state when a system has not been administered. However, all the cards on the VP machines should be administered inserv. First, determine who took the card or channel out of service and why. The card, along with all other cards in the VP, can be put back in service by using the <b>chg_state -m &lt;mach_id&gt; on</b> command. If you wish, you can put individual cards back in service using the <b>restore</b> command. See warning below.</p> <p><b>⇒ NOTE:</b> When a T1 card is restored from the manooos state, it first transitions through the foos state.</p>

 **WARNING:**

If you perform **restore** on a VP for any value or range that includes any of modules 1 through 3 (including **all**), the Communicore and the MAP/100C will be unable to communicate when the modules and cards are restored to service. To re-establish communications after the modules cards are restored, cycle the VP using the following steps:

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

State transitions are logged as *events* or *informational messages* in the system log.

Table 6-2 on page 6-6 provides the channel layouts and channel dependencies for TCS.

**Table 6-2. TCS Channel Dependencies**

<b>This Resource:</b>			<b>Has This Dependency:</b>		
<b>T1 Logical Slot</b>	<b>Channel</b>	<b>I/O</b>	<b>T1 Logical Slot</b>	<b>Channel</b>	<b>I/O</b>
4	0-22	Incoming	6	24-46	Outgoing
	23 (D-chan)	Outgoing		No dependency	
6	24-47	Outgoing		No dependency	
7	48-71	Incoming	9	72-95	Outgoing
9	72-95	Outgoing		No dependency	
10	96-119	Incoming	12	120-143	Outgoing
12	120-143	Outgoing		No dependency	
13	144-167	Incoming	15	168-191	Outgoing
15	168-191	Outgoing		No dependency	
18	192-215	Incoming	19	216-239	Outgoing
19	216-239	Outgoing		No dependency	
21	240-263	Incoming	22	264-287	Outgoing
22	264-287	Outgoing		No dependency	
24	288-311	Incoming	25	312-335	Outgoing
25	312-335	Outgoing		No dependency	
27	336-359	Incoming	28	360-383	Outgoing
28	360-383	Outgoing		No dependency	
30	384-403	Incoming	31	408-427	Outgoing
31	404-431	Outgoing		No dependency	

The following dependencies also apply:

- All call channels (0 through 22, and 24 through 431) are dependent on D-channel 23 (the 4ESS)
- D-channel 23 is dependent on modules 1 through 3
- Rchannel 23 is dependent on the PRI SP card
- The PRI SP card is dependent on the voice SP card
- Rchannels 0 through 22 are dependent on rchannel 23

In addition, the following channels have dependencies on the associated tone detector (TD):

**Table 6-3. Channel and Tone Detector Dependencies**

<b>These channels:</b>	<b>Depend on:</b>
0-22, 48-55	TD in slot 8
56-71, 96-110	TD in slot 11
111-119, 144-165	TD in slot 14
166,167, 192-215, 240-244	TD in slot 20
245-263, 288-299	TD in slot 21
300-311, 336-354	TD in slot 26
355-403	TD in slot 29

## Understanding D-Channel Connectivity

---

The introduction of Communicore into the VP architecture complicates troubleshooting, because there are now multiple D-channels on the VP. Because all communication takes place over D-channels (the MAP/100C with the Communicore, and the VP with the 4ESS), you *must* understand D-channel connectivity to perform troubleshooting successfully. There are two basic levels of functionality and communication supported over the D-channels:

1. MAP/100C to the Communicore (that is, Communicore control messages)
  - Receiving status
  - Initiating Communicore diagnostics
  - Communicore call control
2. VP to 4ESS
  - D-channel messaging (that is, Q.931) for 4ESS call handling

 **NOTE:**

When referring to modules, cards and channels during troubleshooting, the following terminology applies:

- Resource cards (rcard) and resource channels (rchannel or rchan) are cards on the MAP/100C
- Cards (card) and channels (channel or chan) are modules on the Communicore

Resource channel 23 (rchan 23, which is the D-channel between the MAP/100C and the Communicore) must be in service before the MAP/100C and the Communicore can communicate with each other. This means the following modules must be in service:

- Modules 1 through 3 on the Communicore (control, switch, PRI T1 to MAP/100C)
- Rcards 0 through 2 on the MAP/100C (AYC11 T1 to Communicore, AYC2C SP voice, and AYC2C SP PRI)
- Power/maintenance module in the first subrack of the Communicore

**⇒ NOTE:**

Although module 3 on the Communicore terminates the D-channel from the MAP/100C, only the module status is shown for this module, since the channel status is identical to the resource channel status on resource card 0.

For the VP to provide minimal call-processing capability, both rchannel 23 (on the MAP/100C) and channel 23 (D-channel to the 4ESS on module 4 of the Communicore) must be in service. This means the following additional modules must be in service:

- Module 4 (PRI T1 to 4ESS on the Communicore), as well as its associated outgoing T1, or module 4 and a pair (incoming/outgoing) of T1s
- At least one tone-generator module
- At least one tone-detector module

**⇒ NOTE:**

The second subrack is not essential for minimal call-processing capability, but its absence severely reduces capacity.

Module 4 of subrack 1 contains the D-channel to the 4ESS, which is frame-relayed by the Communicore to the MAP/100C via the D-channel on module 3 to resource card 0 on the MAP/100C. This means rchannel 23 carries control messages both to and from the Communicore, as well as D-channel signaling (that is, Q.931 messaging) to and from the 4ESS network.

If you suspect D-channel problems, or want to determine general VP sanity (besides checking for alarms), display the status of both rchannel 23 and channel 23. Make sure you run this command from the PM.

```
disp_status -m <mach_id> rcard 0
disp_status -m <mach_id> card 4
```

1. Verify that rchannel 23 is in service
2. Verify that channel 23 is in service

3. Verify that neither of these alarms was raised (use the **disp\_alarms** command):

- MEGA001 (packet-connection failure)
- MEGA019 (management call between the MAP/100C and the Communicore failed)

When the modules, cards or channels on the VP are transitioning between states, these changed states display on the screen when you run the **disp\_status** command. Keep running this command until modules, cards and channels stabilize (until status is the same at least twice in a row). After resolving all alarms, run the **clr\_lights** command and turn off alarm lights and reset alarm relays. Bring the modules and cards into service, and turn up calls to the machine.

All three cards on the MAP/100C, the T1 and the SPs, are connected over the TDM bus, and all must work properly for the VP to function. If cards or channels are in a foos state, ensure that the machine is properly connected to the Communicore.

### **Resource Channel 23 (MAP/100C)**

The **disp\_status** command, specifically **disp\_status -m <mach\_id> rcard 0**, may reveal that channel 23 on the MAP/100C is not in service. If the channel is not listed as inserv, it may be manoos, netoos, hwoos, foos, or broken.

If resource channel 23 is not in service, take the following actions:

- If the channel is manoos, enter this command:

**restore -m <mach\_id> rcard 0**

Wait a few minutes for the channels to change to inserv.

- If the channel is netoos (not receiving proper signaling from the Communicore):

1. Have the TCC busy-out all trunks to the VP at the 4ESS (except the D-channel) by putting them in a **mtc.lko** state.

2. Enter these commands:

```
chg_state -m <mach_id> mtce  
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

Wait to see if the channel state changes to inserv.

3. Enter this command:

```
diagnose -m <mach_id> rcard 0
```

Replace the T1 if the diagnostics fail.

4. Because the current Communicore module status is unavailable without the D-channel, visually inspect the Communicore, including the module's LEDs.
5. Power-cycle the Communicore onsite, and wait to see if the state for rchannel 23 changes to inserv.
6. Replace these Communicore modules, in this order: 3, 2, 1 (PRI, switch, control 360) and download firmware. See "download" on page 5-70 for instructions and warnings on how to download firmware.
7. If this does not clear the problem, escalate it.
  - If the channel is hwoos (the card on which the D-channel is dependent is not in service), check the status of resource cards 1 and 2, and diagnose, replace and download, and/or restore as needed. See "download" on page 5-70 for instructions and warnings on how to download firmware.
  - If the channel is foos (not receiving T1 framing), check the onsite cabling for the Communicore.
    1. Check cabling between the Communicore and the MAP/100C.
    2. Enter this command:
 

```
diagnose -m <mach_id> rcard 0
```
    3. Power-cycle the Communicore.
    4. Visually inspect the Communicore, including the module's LEDs, and, if necessary, replace and download to these modules, in this order: 3, 2, 1 (PRI, switch, control 360). See "download" on page 5-70 for instructions and warnings on how to download firmware.
    5. If this does not clear the problem, escalate it.
- If the channel is broken, diagnose rcard 0. If the rcard fails diagnostics or remains broken, replace the AYC11 T1 circuit card.

After the reboot procedure is complete, enter:

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

After the D-channel or channels are restored, verify the VP's status. Use this command:

```
disp_status -m <mach_id>
```

**⇒ NOTE:**

Wait for the audit to complete. Remember to have the TCC put the channels back into service if they were busied-out.

## **Channel 23 (Communicore)**

---

The **disp\_status** command, specifically **disp\_status -m <mach\_id> rcard 0**, may reveal that channel 23 on the MAP/100C is not in service. If the channel is not listed as *inserv*, it may be *manoos*, *netoos*, *hwoos*, *foos*, or *broken*.

If resource channel (rchannel) 23 is in service, but channel 23 is *not* in service, take the following actions:

- If the channel is *manoos*, enter this command:

**restore -m <mach\_id> card 4**

- If the Communicore channel is *netoos* (not receiving proper signaling from the 4ESS):

1. Have the TCC busy-out all trunks to the VP at the 4ESS (except the D-channel) by putting them in a **mtc.lko** state.

2. Enter this command:

**diagnose -m <mach\_id> card 4**

3. If the module fails the diagnostics, replace it and download firmware. See "download" on page 5-70 for complete instructions and warnings for a download.

4. Enter these commands:

**diagnose -m <mach\_id> card 1**

**diagnose -m <mach\_id> card 2**

5. Replace the module or modules that fail diagnostics and download firmware to them. See "download" on page 5-70 for complete instructions on doing a download.

6. Visually inspect the Communicore, including the module's LEDs, and replace modules as needed. See "download" on page 5-70 for instructions and warnings on how to download firmware.

7. Power-cycle the Communicore onsite, and wait to see if the state for channel 23 changes to *inserv*.

8. Replace these Communicore modules in this order: 4, 2, 1 (PRI, switch, control 360). See "download" on page 5-70 for instructions and warnings on how to download firmware.

9. If the problem is not cleared, it may be a 4ESS problem, so escalate it.

- If the channel is *hwoos* (the module on which the D-channel is dependent is not in service), use this command:

**disp\_status -m <mach\_id>**

Take steps to get the dependent modules in service.

- If the channel is *foos* (not receiving T1 framing):

1. Have the TCC busy-out all trunks to the VP at the 4ESS (except the D-channel) by putting them in a **mtc.lko** state.
  2. Enter this command:
  3.       **diagnose -m <mach\_id> card 4**
  4. If the module fails the diagnostics, replace it. See "download" on page 5-70 for instructions and warnings on how to download firmware.
  5. Check the cabling to the 4ESS.
  6. Visually inspect the Communicore, including the module's LEDs. If necessary, replace these modules, in this order: 4, 2, 1 (PRI, switch, control 360). See "download" on page 5-70 for instructions and warnings on how to download firmware.
  7. If the problem is not cleared, it is probably a 4ESS problem, so escalate it.
- If the channel is broken, diagnose module 4. If module 4 fails diagnostics or remains broken, replace it. See "download" on page 5-70 for instructions and warnings on how to download firmware.

**⇒ NOTE:**

When replacing modules you must download firmware. See "download" on page 5-70 for complete instructions on doing a download.

After restoring the D-channel or channels, verify the VP's status. Use these commands:

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on  
disp_status -m <mach_id>
```

**⇒ NOTE:**

Wait for the audit to complete. Remember to have the TCC put the channels back into service if they were busied-out.

## **Monitoring NAP**

---

NAP alarms are sent to the Total Network Management (TNM) system for remote monitoring by the TCC. Some of the VP information may be filtered out on TNM, but most alarms are displayed on the alarm monitor.

NAP application alarms have a number and alarm level associated with them. Alarm levels consist of critical, major, minor, and informational. Refer to "Alarm Numbering" on page 7-4 to see the alarm numbering system.

Descriptions of CONVERSANT generic alarms are in CONVERSANT VIS Version 4.0 Maintenance (referenced in the preface, About This Book).

## **Logging Into a PM or VP**

---

To run most troubleshooting and maintenance commands on either a PM or a VP as a *remote* user, log directly in to the PM. If, however, you are onsite, you can either log directly into the PM, or you can log into the problem VP and troubleshoot from that VP.

**⇒ NOTE:**

If you have two or more monitors and keyboards, you can keep one hooked up to the PM and use the other one to troubleshoot directly on the VPs.

**⇒ NOTE:**

Not all commands will run on the VP. If a command does not work, run it from the PM.

### **Isolating a Problem to a Specific VP or PM**

PM and VP problems are reported troubles that may or may not have caused an alarm. For NAP, the TCC usually monitors multiple VPs and both PMs at a particular site. Proactive monitoring techniques can be used in each of these procedures to help isolate the problem. Once you isolate the problem to a VP or PM, follow the procedures specific to the problem or alarm encountered.

1. Check any VP *or* PM with active alarms.

The current active alarm might not be recognized as causing the reported problem, but the fact that the alarm has occurred makes this VP or PM the best choice to check first.

2. Check the VPs *or* PMs that last reported an alarm.

A previous alarm might appear unrelated to the reported problem; however, a side effect of the previous alarm might be causing the problem.

3. Check the VP *or* PM that last had a similar problem.

If a problem occurred once on a VP or PM but was not completely or correctly resolved, then it is likely to occur again. It would be worthwhile to check that VP or PM to see if the problem has reappeared.

4. Sequentially check the VPs or PMs.

This is the least preferable method of isolating the problem but quite often the only method available. This method involves logging in to each individual VP or PM until you isolate the problem.

## **General Troubleshooting Information**

This troubleshooting section includes information on the following:

- Rebooting a VP
- Rebooting a PM
- What to do if the reboot fails
- Checking PM-to-Datakit connectivity
- What to do for a PM software timeout
- How to handle PM corruption
- Checking PM-to-VP LAN connectivity
- Checking VP-to-4ESS connectivity
- Checking VP LAN connectivity
- Troubleshooting the application
- Troubleshooting the power supply fan status
- Troubleshooting the firmware downloads
- Troubleshooting Communicore problems

## Reboot Procedures

Many VP problems can be remedied by rebooting the affected machine. Use the following guidelines when you need to reboot.

### Rebooting a VP

The reboot process first gracefully idles all channels: it takes idle incoming channels out of service, allows existing calls to finish and, as the channels carrying the calls become idle, it takes them out of service. When all incoming channels are out of service, all outgoing channels are taken out. The reboot then stops and starts VP software (including NAP and UNIX). The reboot also resets all hardware drivers. For information on the **chg\_state** reboot command, refer to Chapter 5, "Command Reference".

The reboot procedures listed below check the integrity of the entire system.

From the 4ESS:

1. Have the TCC busy-out all trunks to the VP at the 4ESS (except the D-channel).

From the PM:

1. Enter **chg\_state -m <mach\_id> reboot [grace\_period]**.

The machine waits for active calls to finish and then reboots. You see the message `Graceful idle of channel successful` just before the VP goes out of service.

Wait at least five minutes after this message for the VP to reboot, then display the machine status using the command in step 2.

2. Enter **disp\_status -m <mach\_id>**.

If you have waited 30 seconds after entering the command and no status displays, the machine is still initializing. Rerun the **disp\_status** command until you get a status display.

The states of each module, card, as well as the channels on the T1 cards and PRI modules, display. The states change rapidly during initialization. Rerun the command until all states stabilize, that is, until the same status displays with two successive **disp\_status** commands.

3. Do one of the following:

- a. If the status display shows that:

All modules/cards= inserv

All channels = inserv

it means the VP is up and communicating. Go to Step 5.

- b. The MAP/100C is waiting for the Communicore if the status display shows that:

rchan 23 (the D-channel) = netoos  
all other rchannels = hwoos  
rcards 1 & 2 (the SP cards) = inserv

The Communicore is waiting for the 4ESS if the status display shows that:

chan 23 (the D-channel) =netoos

1. Turn up service from the 4ESS (D-channel only).
  2. Go back to step 2.
- c. If you have already turned voice processing off and on and the **disp\_status** command is still not showing the inserv results, the problem or alarm is not yet resolved. In this case:
1. Reboot the VP a second time.
  2. If you have rebooted the machine twice and the **disp\_status** command does not show all modules, cards and channels are inserv, go to step 7.
- d. If, ten minutes after rebooting, the status display *does not show* all modules, cards and channels are inserv and service from the 4ESS to the VP is turned up, continue.

4. Enter these commands:

```
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

This turns voice processing off and on, which resets certain functions. Display the status again to see if this resolved the problem, using the command in step 2.

5. Enter this command, which will clear any alarms caused by rebooting (usually generic CONVERSANT alarms TWIP013 through TWIP018).

```
clr_lights -m <mach_id>
```

6. Do one of the following:

- a. If all alarms are cleared, the reboot is finished; STOP here.
- b. Repeat this reboot procedure (in other words, go to step 1) if the alarm that caused you to reboot is still present.

If you have rebooted twice and the alarm is still present, continue.

7. To get the alarm history for this VP, enter this command:

```
disp_alarm -m <mach_id> local all
```

8. Escalate the problem and report the alarm history.
9. If the Communicore needs to be rebooted, power-cycle the machine.

**⇒ NOTE:**

If the problem is resolved, wait for the audit to complete, call the TCC and ask them to return the channels to service.

## Rebooting a PM

The two provisioning and maintenance (PM) machines completely duplicate each other; if you must reboot a PM, you can do so without losing system processing or capacity. Run the reboot command on the PM being rebooted so you can see each step displayed as it is executed.

Reboot a PM:

- When it is part of an alarm troubleshooting procedure
- When you have to replace a card or other hardware component

**⇒ NOTE:**

You never want both PMs out of service at the same time, so be sure and use the right machine name (*PM01* or *PM02*) in the reboot command. This way you won't inadvertently take the PM that is working correctly out of service. Don't reboot one PM unless the other is operating correctly. If both PMs are failing or operating irregularly, or if one PM has a major failure, see the next section, "If the PM Reboot Fails."

From the good PM:

1. Log in as **root**, restricted user.
2. If the PM being rebooted is *PM01*, change *PM\_pref* to *PM02* by entering **ssa\_admin** and selecting **3** (*Adjunct Database Administration*) from the menu.

*PM\_pref* identifies the PM that collects alarms and measurements.

From the PM being rebooted:

1. Enter **chg\_state -m <mach\_id> reboot**.

You see the message:

```
Wait 60 seconds for the state change to complete
and then a message saying the system is going out of service.
```

2. Log in as restricted user.
3. Enter **disp\_status -m <mach\_id>**.
4. Do one of the following:
  - a. If the status shows the NAP system is on, go to Step 5.

- b. If the status shows the NAP system is off on this machine, wait a few minutes and rerun the **disp\_status** command.
- c. If you fail to get the `NAP system on` message after running the **disp\_status** command several times:
  1. Enter **chg\_state -m <mach\_id> off**.
  2. Enter **chg\_state -m <mach\_id> on**.
  3. Rerun the **disp\_status** command. If you still can't get the `NAP system on` message after several tries, go to Step 7.
5. Enter **clr\_lights -m <mach\_id>**.

This clears any alarms caused by the reboot.
6. Run **disp\_alarms all** to see if there are any alarms to be resolved.
7. If there are alarms, continue with step 8, otherwise:
  - a. If the PM just rebooted is PM01, change the PM\_pref back to PM01 (run **ssa\_admin** and select 3).
  - b. STOP; this ends the reboot.
8. If the same alarm or new alarms are occurring, or if you can't get the machine on message:
  - a. If you have rebooted the PM just once, repeat the reboot procedure.
  - b. If you have rebooted the PM twice:
    1. Enter **disp\_alarms -m <mach\_id> local all** to get the alarm history for this PM.
    2. Immediately escalate the problem.

### **If the PM Reboot Fails**

If the PM reboot does not clear the problem, or it has a major problem (for example, losing the hard disk), it may need to be replaced, or the software may need to be reloaded.

If one PM has failed but the other PM is still functioning properly, go to Chapter 4, "Software Installation and Administration" and follow the steps for this checklist:

#### **Checklist: Reloading an Existing PM at an Existing Site**

If both PMs fail and need to be replaced or reloaded, go to Chapter 4, "Software Installation and Administration" and follow the steps for this checklist (skip the step that has you reload the software onto all VPs):

#### **Checklist: Installing a New Site**

## **PM-to-Datakit Connectivity**

---

### **Symptoms**

The following symptoms may signal problems with NAP operation or connectivity. Refer to "Troubleshooting PM-to-Datakit Connectivity Problems" on page 6-21, to clear the problems.

- SMW/DCROS/TNM cannot talk to a PM machine  
Possible causes:
  - Datakit path from SMW/DCROS/TNM to NAP site is administered incorrectly
  - PM machine is down
  - SMW ID (smw1 and smw2) passwords have changed
  - Datakit connectivity between machines is lost
- SMW/DCROS connects to the PM but commands are not acknowledged or executed  
Possible causes:
  - Software protocol problem between SMW/DCROS and PM
  - PM machine corrupted
- SMW/DCROS can connect to PM, but time-out errors occur for some operations/requests  
Possible cause:
  - the PM machine is corrupted
- SMW/DCROS receives a response with a failure return code  
Possible causes:
  - PM system is in operational state *off* rather than *on*
  - PM system is corrupted
  - An administration limit has been reached
- SMW/DCROS cannot pull files from the PM  
Possible causes:
  - Datakit connectivity between SMW/DCROS and the PM is impaired
  - An administration error on SMW/DCROS exists (the Datakit path to the PM is administered incorrectly, or the **dkauthorize** command was not run)

Troubleshooting guidelines for many of the conditions in this section are listed on the following pages.

## Troubleshooting PM-to-Datakit Connectivity Problems

### ⇒ NOTE:

The following scenarios deal with Datakit and involve problems that do not generate NAP alarms. The information is provided as a high-level technical background to help you troubleshoot connectivity through the network. This information does not apply to the LAN.

Ensure that the Datakit is up and running between SMW/DCROS and the PM:

1. Run **dkcu <PM datakit dialstring>** to the PM from SMW/DCROS. If you get a login prompt from the system, log in as [enter ID], with password [obtain password]. If this login sequence works and you can log in to the system, Datakit connectivity is fine and the PM interface to Datakit works.
  - a. If the **dkcu** command works, ensure that the Datakit address administered on SMW/DCROS is correct.
  - b. If the **dkcu** command fails from SMW/DCROS, run the **dkcu** command from the PM system console to the PM Datakit address. If this command works, the Datakit interface to the PM is working and you have isolated the problem to the Datakit network. Call the DWAN support group for help.
2. If **dkcu** from the PM console to the PM Datakit address fails, one of the following conditions exists:
  - a. The Datakit connection to that PM is down.
  - b. The Datakit fiber card is broken.
  - c. The fiber cable between the PM and Datakit is broken.
  - d. The PM Datakit interface card is broken.

To isolate these problems, ensure that both red lights on the back of the Datakit fiber interface connector (on the Datakit hub) are off. If one or both of these lights are on, the Datakit fiber may be down. If both lights are off, the problem is on the PM or the CPM-HS Datakit card.

- a. Enter **chg\_state -m <mach\_id> reboot** to clear the problem.
- b. If the problem isn't cleared, run **dkdiagnose** to check the PM fiber interface card and fix problems. To do this:

From the good machine, enter:

```
dkdiagnose -m <mach_id>
```

where **mach\_id** is the bad machine.

- c. Escalate if **dkdiagnose** does not clear the problem.

## **PM-to-VP LAN Connectivity Symptoms and Solutions**

---

Alarm APPL115, and sometimes alarm APPL002, signal one of the following conditions:

- One or both LANs are down
  - One or both PM machines are down
  - One or multiple VP machines are down
  - A LAN hub is down
  - Connectivity problems exist between:
    - PM and LAN hub
    - LAN hub and LAN hub
    - LAN hub and VP machine (if a VP machine cannot communicate over either LAN, the VP is probably down)
1. Enter **comcheck all** on both PMs. This command traces LAN connectivity to isolate which of the above conditions is causing the problem.

If the PM cannot communicate with other machines, that PM or a LAN component (LAN cable, hub, or physical connection to the PM) is not working. If **comcheck all** shows a specific machine is down, the problem is probably confined to that machine. To confirm this:

- a. Ensure the machine is administered as *active* through the administration interface by running **ssa\_admin**.

**⇒ NOTE:**

Chapter 5, "Command Reference" provides complete procedures for accessing and using the NAP administration interface and all NAP-specific commands. In addition, see "Troubleshooting PM-to-Datakit Connectivity Problems" on page 6-21.

- b. Inspect physical wiring to ensure the machine is properly connected to the LAN hub.
- c. Ensure that the StarLAN 10 Network PC NAU cards in the machine are working by using this command for all administered machines:

**lancheck**

Check the TCP/IP report to see if the LAN interfaces are working.

- d. If a LAN interface is not working and all other hardware checks proved all right, replace the appropriate StarLAN 10 Network PC NAU card.
2. If the alarms are not cleared, escalate.

## **VP Troubleshooting**

---

Most VP problems center on external interfaces: the T1 interface to the 4ESS and the dual StarLAN system connecting all VPs to the two PMs at a NAP site. Problems with VP hardware and software can also occur, but are rare. Problems with both operation and connectivity can generate alarms, which specify the problem, and can generate symptoms, which require more troubleshooting to isolate and fix the problem.

### **NOTE:**

All VP troubleshooting and maintenance commands are run from one of the two PM machines at a NAP site. Before running commands from the PM, you must identify the VP machine you want to affect.

VP machines are named VP01 through VP10. You must specify the particular VP name when issuing a command.

Most VP problems trigger alarms, and because all VP-specific alarms identify the machine in trouble, you have the machine name on which to run the diagnostic or maintenance command. To resolve an alarm, follow the troubleshooting instructions given for the specific alarm in this chapter.

Troubleshooting VP operation and connectivity when alarms are not generated involves verifying T1 and StarLAN connectivity.

## **Troubleshooting LAN Connectivity**

1. Run the **comcheck all** command all to verify LAN connectivity. This command attempts to talk to each VP over both LANs and displays the results. If communication is down to a VP, be sure the power to that machine is on by checking the power LEDs on that machine in the CO.
2. If the machine is not powered up, turn the power switch ON, wait about five minutes and run **comcheck all** again to ensure that all is OK.
3. If the VP has power, slide the machine out of the rack and ensure the green lights on the StarLAN 10 Network PC NAU cards are lit.
4. If all lights are not lit, trace LAN wiring to the LAN hub. If you cannot find a problem with the wiring, replace the StarLAN 10 Network PC NAU card.

### **CAUTION:**

*Before replacing VP hardware on a MAP/100C, you must power down that VP machine.*

## **Troubleshooting the TCS Application**

---

### **APN Redirections and OOB Data for Blind Transfer**

**ssa.log** provides logging information for TCS for APN redirections and OOB data for BT. A conceptual discussion of OOB data is found in "Out-Of-Band Data Transfer (OOBD)" on page 1-20.

Below is a sample **ssa.log** message providing this information:

```
(Fri Jan 19 11:45:26.98):OUTGOING CALL to TP id=01, cp=002, rp=092,
tp=093, dest=3032946043, apn=X, oobd=Y
```

For the apn indicator X:

- x=0 indicates the call was not to an APN number.
- x=1 indicates the call was to an APN number in the speed dial table.

For the oobd indicator Y:

- Y=0 indicates BT Out-Of-Band Data is administered for this call, but no IEs were received before either the DISConnect message was received or the timer expired.
- Y=1 indicates BT Out-Of-Band Data is administered for this call, and one IE (either Codeset 0 or Codeset 7) was received in the DISConnect message.
- Y=2 indicates BT Out-Of-Band Data is administered for this call, and two IEs (both Codeset 0 and Codeset 7) were received in the DISConnect message.
- Y=3 indicates BT Out-Of-Band Data is not administered for this call.

### **Logging of Tone Detectors**

**ssa.log** logs the tone detectors within TCS.

Following is a sample **ssa.log** message providing this information:

```
(Wed Apr 24 11:45:26.98):Tone Det: id=00, rp=024, bd=14, ch=0.
```

To turn up logging, enter:

```
ssautl -l0x1017
```

To return logging to the default field level, enter:

```
ssautl -l0x17
```

**⇒ NOTE:**

Only users logged in as **root** (*not* restricted users) can change the logging level.

## **Troubleshooting the Power Supply Fan Status**

If the power supply fan's LED on the front of the MAP/100C is OFF, you will need to check the fan/power supply unit. See "MAP/100C Switches and Indicators" on page 3-2 for the location of this LED. If the LED is indeed off, check to see if the fan is functioning. If the fan is not functioning, replace the fan/power supply unit as outlined below.

### **Remove the Power Supply**

1. Perform a logical shutdown of the MAP/100C software.
2. Switch off the MAP/100C power supply switch located on the front panel.
3. Switch off the MAP/100C circuit breaker located on the rear panel.
4. At the rear of the chassis, extend the frame slide rails and remove the slide-rail / frame-cable tie-down bar.
5. Open the power supply access door (the topmost door).
6. Remove the power supply using the following steps:
  - a. Remove the two screws on the bottom of the power supply that secure it to the chassis.
  - b. Pull the power supply forward and lift the tabs out of the slots to remove the power supply from the chassis.
  - c. Disconnect the input power connector from the circuit card on the right side of the chassis.

- d. Disconnect the three orange connectors and one white connector on the left side of the power supply unit.

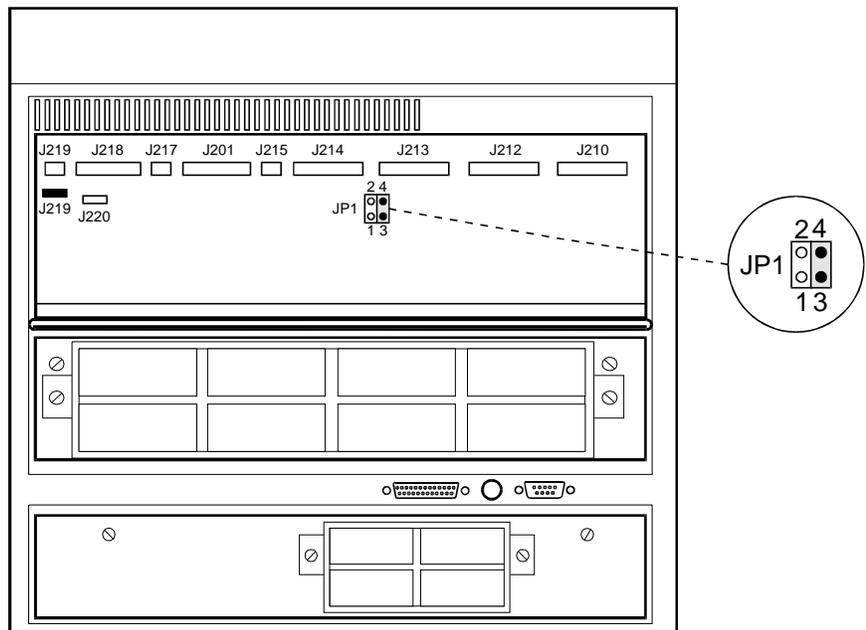
### Install the Power Supply

If the power supply is being replaced because the LED on the front panel indicated the power supply fan was failing, yet the fan appears to be operating properly, perform step 1. Otherwise go to step 2.

1. With the power supply out of the unit, check the power supply backplane for JP1. This is located in the lower right quadrant of the backplane. If JP1 is in position 1-2, move the jumper to position 3-4 before installing the replacement power supply.

**⇒ NOTE:**

If jumper JP1 is in position 1-2, the power supply fan LED may inaccurately indicate a fault. The fan is operating correctly, but you need to set the jumper to 3-4 for proper operation of the LED



m100jmp C.JL 051596

**Figure 6-1. Power Distribution Board: JP1 Settings**

2. Install the power supply using the following steps:
  - a. Connect the input-power connector to the circuit card on the right side of the chassis. The cable connector is keyed.

- b. Connect the three orange connectors and one white connector on the left side of the power-supply unit. The cable connectors are keyed.
- c. Place the power-supply tabs in the slots on the bottom of the power-supply bay.
- d. Push the power supply into the chassis and secure it with two screws.
- e. Switch on the MAP/100C circuit breaker.
- f. Switch on the MAP/100C power-supply switch located on the front panel.
- g. Check the fan status LED on the front panel. If JP1 has been switched and the fan is operating, a front interface-panel LED problem may exist.
- h. Clean, dry and replace the power-supply fan filter. Refer to "Cleaning the MAP/100C Fan Filters" on page 8-2.
- i. Close the power-supply access panel door and tighten the captive screws.
- j. At the rear of the chassis, extend the frame slide rails, and install the slide-rail / frame-cable tie-down bar.

## **Troubleshooting the Firmware Downloads**

The command **download** downloads Communicore firmware. The firmware download fails when the **download** command exits for any of these reasons:

- A module or a module type not found
- The firmware file not found
- Reattempts of downloads fail

The following sections explain how to determine the cause and ways to solve the problem.

### **Can't Find a Module or a Module Type**

If **download** can't find a module of the type specified, an onscreen message tells which type of module cannot be found. Try the following procedures to determine the problem:

#### **Run `chkconfig` to Check for the Module**

1. Enter this command line:

```
chkconfig -m <mach_id> -v
```

2. Check to see if the module is listed on the screen.
  - If it *is not* listed, look in the VP.
    - If the module *absent*, install it and rerun **chkconfig** as shown above.
    - If the correct module is present but not listed, reseal the module and rerun **chkconfig** as shown above.
    - If the incorrect module is present, install the correct module and rerun **chkconfig** as shown above.
  - If it *is* listed, examine the line item on the screen for valid information. *No* fields should contain all zeros.
    - If you see invalid information, reseal the module and rerun **chkconfig** as shown above.
    - If the results look valid from the **chkconfig** output but the firmware is out of date, rerun **download** for the module having outdated firmware. See "download" on page 5-70 for cautions and command usage.

- If the module is listed as broken, follow these steps:
  - a. Reseat the module.
  - b. Run **diagnose -m <mach\_id> card <card\_no>**
  - c. If the module fails, reseat the module again.
  - d. Run **diagnose -m <mach\_id> card <card\_no>** again.
  - e. If the module fails again, replace the module and download firmware to it. See "download" on page 5-70 for cautions and command usage.
  - f. Include a copy of the output with the WMS trouble ticket and with the module you will return to the factory. Specify the serial number of the module when returning it to the factory.
  - g. Rerun **diagnose** to check the new module and the firmware download:  
**diagnose -m <mach\_id> card <card\_no>**
  - h. If the module passes, make a note on the output explaining what failed when you ran the first **diagnose**.
- 3. If the problem cannot be resolved, escalate to the next level of support.

## Can't Find Firmware File or Download Fails Reattempts

An onscreen message appears during the download if **download** can't find the firmware or if attempts to download the firmware fail.

If the firmware can't be found, copy the missing firmware file from another machine or reload the machine from a snapshot tape. If necessary, replace with an appropriate file (**boot, param, dsp, main**).

If the download fails,

1. Use the **remove** command and remove the card from service.

**remove -m <mach\_id> card <card\_no>**

2. Determine if the module can be reseated hot or if you must turn the power to the Communicore down. See "Removing Communicore Modules" on page 8-9 and "Removing Communicore Modules Hot" on page 8-10.
3. Reseat the module.
4. Enter **diagnose -m <mach\_id> card <card\_no>**

to test the module again.

5. If **diagnose** is successful, try to download one more time.
6. If unsuccessful enter:

**chkconfig -m <mach\_id> -v**

to make sure that the modules are the proper type and reside in the proper slot. Refer to "Run chkconfig to Check for the Module" on page 6-29.

7. If the correct cards are in the correct slot, replace the problem card and download again. See "download" on page 5-70 for cautions and command usage.

## Troubleshooting Communicore Problems

### Noise Complaints

If a customer complains of noise or static on a call, suspect a noisy Communicore module or backplane.

Enter **diagnose -m <mach\_id> bus |pg**

and take appropriate action based on the results of the output. Refer to page "Installing Communicore Modules" on page 8-8 to see if you can replace the noisy module hot or cold. If you need to replace the module, download firmware to the module afterward. See "download" on page 5-70 for cautions and command usage.



#### **CAUTION:**

*A defective module may interrupt service.*

### Tone Detector Status Lights Have Gone Off

If the tone-detector modules have failed, the status light on the module will not be lit. See "Communicore Module Indicators" on page 3-8 for details about module status lights.

1. Check to see if the module has been removed administratively by entering

**disp\_status -m <mach\_id> card <card\_no>**

2. Depending on the status of the module, as reported by **disp\_status**:

- If the module is `manoo`s or `broken`, reseal the module (and tag it as a `resseat`.) and run the **diagnose** command on it:

**diagnose -m <mach\_id> card <card\_no>**

— If it passes, use **restore** to restore it to service:

**restore -m <mach\_id> card <card\_no>**

— If it fails, replace the module and download the firmware. See "download" on page 5-70 for cautions and command usage. Include a copy of the output with the module when returning it to the factory.

- If the module is `inservice` but dark:

- a. Run the **remove** command:

**remove -m <mach\_id> card <card\_no>**

- b. Then run the **diagnose** command:

**diagnose -m <mach\_id> card <card\_no>**

— If it passes, use **restore** to restore it to service.

- If it fails, replace the module and download the firmware. Include a copy of the output with the module when returning it to the factory.

### Customer Cannot Transfer Calls

If a customer complains that they cannot successfully transfer a call (a \*t operation) check the tone detector and tone generator modules of the VP in question as follows:

1. Enter **disp\_status -m <mach\_id> card all**  
to verify that all modules are in the correct state
2. Enter **disp\_status -m <mach\_id> rcard all**  
to verify that all cards are in the correct state
3. If the module is `manooos` or `broken`, reseal the module (and tag it as a reseal) and run the **diagnose** command on it:

**diagnose -m <mach\_id> card <card\_no>**

If it passes, use **restore** to restore it to service:

**restore -m <mach\_id> card <card\_no>**

If it fails, replace the module and download the firmware. Include a copy of the failed output with the trouble ticket and with the module when returning it to the factory.

4. If all cards are in the proper status and in service, enter:  
**diagnose -m <mach\_id> bus | pg**
5. If the Communicore bus passes diagnostics, escalate the problem to the next level of technical support, which will do the following steps.
6. Examine the **ssa.log** file. (You need to turn up the logging level to determine which tone detector is causing problems with transferring calls).

To turn up logging, log in as **root** and enter:

**ssautl -l0x1017**

7. Examine the log. Correct problems as appropriate. If unable to resolve the problem, escalate to the next level of support.
8. Enter **ssautl -l0x17**  
to change the logging level back to normal operating levels so that performance will not be affected.

## Subrack Failure

If all Communicore modules fail a **diagnose bus** command, suspect a total subrack failure. An entire subrack may fail for several reasons:

- The cable between the two subracks is faulty, causing all upper subrack modules to fail diagnose
- The backplane is faulty, either of the subracks fails diagnosis
- All cards in a subrack really are bad. See "Modules in the Communicore Subracks (Configured for TCS)" on page 8-16 for instruction on how to replace modules.



### **CAUTION:**

*Prior to using the following steps, TCC must turn down all customer traffic for the machine you are working with.*

1. If you suspect the intrasubrack cable, replace the cable with the following steps: Enter **remove -m <mach\_id> card all immed** to remove Communicore modules from service.
2. Remove power from the Communicore. See "Normal Shutdown Procedures" on page 3-38.
3. Remove the intrasubrack cable.
4. Check the cable for bent pins.
5. Straighten any bent pins. Replace the cable with a new one if needed.
6. Restore the power to the Communicore as described in "Communicore Power" on page 3-35.
7. Enter **restore -m <mach\_id> card all** to restore all modules to service.
8. Enter **diagnose -m <mach\_id> bus | pg** and verify that all modules pass diagnosis.

If you have eliminated a faulty cable, replace the backplane with the following steps:

1. Enter **remove -m <mach\_id> card all immed** to remove Communicore modules from service.
2. Remove power from the Communicore. See "Normal Shutdown Procedures" on page 3-38.
3. Remove the PRI cables from the front of the Communicore.
4. Disconnect the intrasubrack cable from the subrack you intend to replace.
5. Physically remove all modules. See "Removing Communicore Modules" on page 8-9.

6. Standing at the back of the frame, release the retaining clips that hold the backplane in place.
7. Remove the backplane assembly.
8. Install the new backplane to the frame,
9. Reinsert all modules. See "Installing Communicore Modules" on page 8-8.
10. Reattach all PRI cables and the intrasubrack cable.
11. Restore the power to the Communicore as described in "Communicore Power" on page 3-35.
12. Enter **restore card all**  
to restore all modules to service.
13. Enter **diagnose bus | pg**  
and verify that all modules pass diagnosis.

### **No Communication Between MAP/100C and Communicore Modules**

Failure of the MAP/100C to communicate with the Communicore modules presents particularly difficult diagnostic and corrective measures. If communication between the MAP/100C and Communicore is down, you may encounter problems such as these:

- Initialization takes an excessively long time and the Communicore appears not to come up
- MEGA019 alarm displays
- You receive no response to Communicore-specific commands such as **diagnose**, **disp\_status**, or **displed**

Such a communication failure may occur for several reasons:

- T1 card in the MAP/100C has failed
- Control 360 module in the Communicore has failed
- Switch module in the Communicore has failed
- The PRI module in slot 3 of the Communicore has failed
- The intrasubrack cable is faulty

If you suspect a failure of a T1 card in the MAP/100C, perform these steps:

1. Run diagnose on the resource cards:

**diagnose -m <mach\_id> rcard all**

**and make sure all cards are in service.**

2. If the command fails, replace the failed card, following the steps in the section "Installing MAP/100C Circuit Cards" on page 8-5.

If you suspect that a failure of a Communicore module is the problem, do the following:

1. Power-cycle the Communicore:
  - a. Remove the power connector from the power module in subrack 2 and then subrack 1.
  - b. Install the power connector in subrack 2 and then subrack 1. Wait 10 minutes for communication to be established.

If this solves the problem, the Communicore should initialize well. If timely initialization does not occur, go on. You may also want to run the **displed** command to see if it executes.

2. Have the onsite work force check the LEDs of the control, switch, and PRI modules.

If the LEDs are off when they should be on, you will have to replace these modules. See "Communicore Module Indicators" on page 3-8 to recognize correct LEDs.

If the LEDs on these modules light correctly, examine the other modules' LEDs. Replace any of those modules if needed.

3. Replace Communicore modules by following the instructions in the section "Replacing Communicore Modules" on page 6-37.

If you suspect that the intrasubrack cable is faulty, replace the cable by following the steps in "Subrack Failure" on page 6-34.

## Replacing Communicore Modules

Many diagnostic situations result in replacing Communicore modules. Use the steps below when you must take out a bad module and replace it with a new one.



### **CAUTION:**

*Before replacing Communicore modules, turn down traffic to the machine.*

1. Determine if you can replace the module without powering down the Communicore. Refer to page "Installing Communicore Modules" on page 8-8 to see if you can replace the module hot or cold.
2. If required, remove power from the Communicore as described on "Normal Shutdown Procedures" on page 3-38.
3. Remove and replace the module as discussed on "Removing Communicore Modules" on page 8-9.
4. If necessary, restore power to the Communicore as described in the section "Communicore Power" on page 3-35.  
Initialization should proceed in a timely manner, and Communicore-specific commands should respond appropriately.
5. If these steps do not establish communication between the MAP/100C and the Communicore, see the troubleshooting steps for "No Communication Between MAP/100C and Communicore Modules" on page 6-35.
6. If you still can't establish communications, escalate the problem to the next tier of support.
7. If these measures do restore communication between the MAP/100C and the Communicore, download firmware to the new module. See "download" on page 5-70 for cautions and command usage.

## **Replacing or Installing the Communicore Chassis/Backplane**

---

To remove a Communicore chassis, use a screwdriver to release each tab on the bottom of the chassis.

To install a Communicore chassis/backplane, first unpack a chassis/backplane assembly from each box and snap each into a mounting frame:

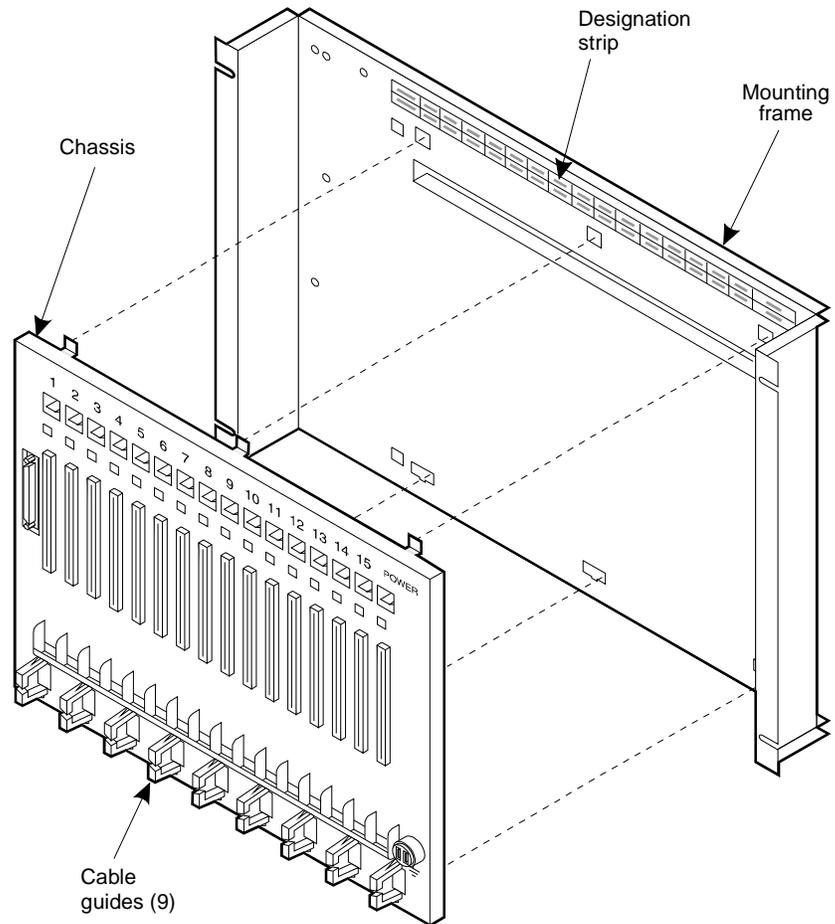
1. Insert the three tabs on the top of a chassis into the slots on the top of the mounting frame as in Figure 6-2 on page 6-39.
2. Rotate the chassis downward and snap the bottom three tabs into their slots as in Figure 6-3 on page 6-40.

On a 4ESS frame there are two subrack chassis panels. These panels are steel with mounting notches as shown in Figure 6-2.

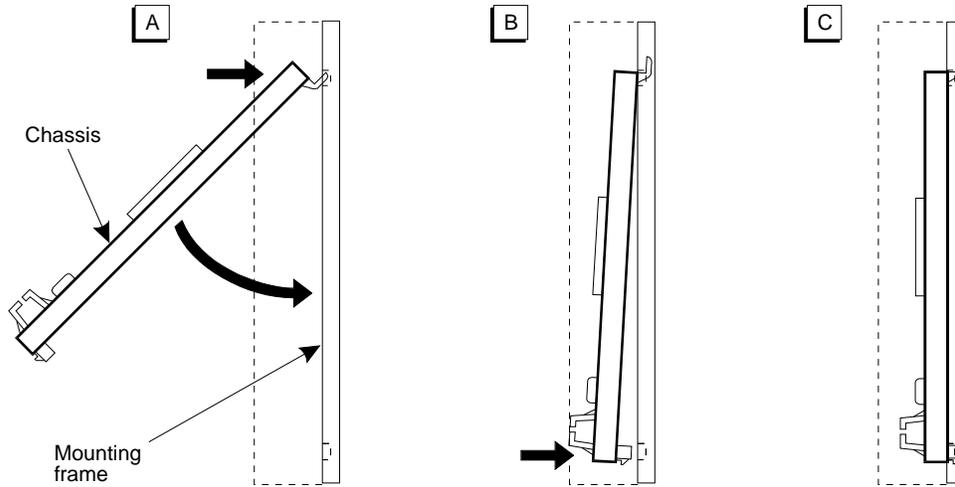
On a 5ESS cabinet there is one steel chassis panel with mounting notches.

**⇒ NOTE:**

Replace *only* the chassis backplane.



**Figure 6-2. Inserting the Chassis/Backplane Assembly into a 4ESS Mounting Frame**



---

**Figure 6-3. Inserting the Chassis/Backplane Assembly into the Mounting Frame**

## Connecting the Intersubrack Cable

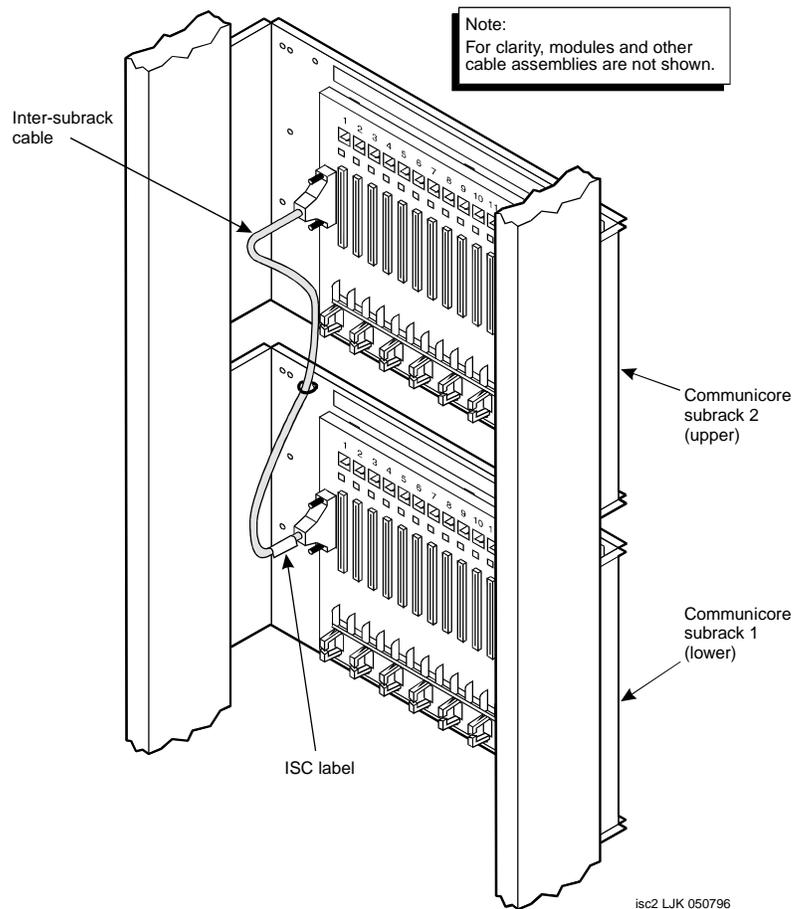
To connect the intersubrack cable, unpack the intersubrack cable and connect the two subracks.



### CAUTION:

Turn off power to both subracks before connecting or disconnecting the inter-subrack cable (ISC). Incorrect cable orientation will cause a D-channel failure.

Connect the two subracks with the ISC (Comcode 407066554) as shown in Figure 6-4. Be sure to orient the cable so that the end labeled subrack 1 is attached to subrack 1 (lower).



**Figure 6-4. Connecting the Inter-Subrack Cable**



---

## **Alarm Resolution**

# **7**

---

### **What's in This Chapter?**

This chapter contains information about:

- NAP symptoms, alarms, and informational messages
- Alarm descriptions and troubleshooting procedures for NAP, CMF, and application-specific alarms

## **What Makes Up a NAP Alarm?**

---

NAP indicates system problems in three ways: system symptoms, informational messages, and alarms. *Error messages, errors, faults*, or similar terms may also be used by the system software.

Informational messages and alarms are sent to Total Network Management (TNM) and the Technology Control Center (TCC). The TCC personnel have their own filters for alarms they see on a regular basis.

Symptoms, informational messages, and alarms are defined this way:

- *Symptoms* signal problems that may need troubleshooting.
- *Informational messages* report on system operation and potential problems.
- *Alarms* signal problems that need attention at one of the following levels:
  - *Critical alarms* are generated when a problem seriously degrades system operation, when a NAP feature is not working, when voice or information processing is jeopardized, and when immediate attention is needed.
  - *Major alarms* are generated when a problem degrades system operation or call processing but does not destroy all service. As with critical alarms, major alarms need prompt attention.
  - *Minor alarms* are generated from non-serious but service-affecting troubles, or from troubles in the application process that are not essential to call-processing operation. Action is needed, but it does not have to be immediate action.

Several groups of alarms are discussed in this section. The following sections explain the message format for each group of alarms, how the alarms are numbered, and the alarm categories common to both groups of alarms.

## Message Syntax for Alarms

---

The following example shows alarm fields as they appear on the TNM screen at the TCC.

**⇒ NOTE:**

The **bold** characters in the following example appear in all application and platform alarm messages. All other characters are shown here as examples (like the date and time); these vary depending on the source and type of alarm.

```
CCCCSSBBCAXPMXX 96-06-15 11:03:05
*C APPL112 -- -- --- SSA: APPLICATION TIMEOUT error: REMTRANS: hndl_
timer: LAN B comm check timed out to machine 1
```

**⇒ NOTE:**

At some locations you may not see all lines of text in exactly this format. However, each alarm message should contain the information described here.

The alarm message fields are:

- Site CLLI Code

<i>CCCC</i>	City abbreviation
<i>SS</i>	State (in the continental U.S.) with the affected NAP site (standard state abbreviations are used for this field)
<i>BB</i>	4ESS building with the affected NAP site
<i>CAX</i>	Application ID — Values for this field: CA1 = TCS
<i>MMXX</i>	Machine affected — MM is the machine; XX is the number from the specific application's machine table.

**⇒ NOTE:**

This field identifies the specific machine affected by your diagnostic and maintenance commands if the machine is a VP. For PM alarms, the message text field identifies the machine causing the problem.

- 96-06-15: Current date (year/month/day)
- **11:03:05**: Current 4ESS network time (central standard time)
- \*c: Alarm levels — \*C (critical), \*\* (major), or \*(minor) — Informational messages are prefaced with the word INFO.

- **APPL112: Alarm ID** — The numbering system for the NAP platform or adjunct software alarms is explained in “Alarm Numbering” on page 7-4. All other alarms are CONVERSANT general alarms. Descriptions of these generic alarms are in CONVERSANT VIS Version 4.0 Maintenance (referenced in the preface, About This Book).
- **SSA: APPLICATION TIMEOUT error: REMTRANS: hndl\_timer: LAN B**

Specifies the basic problem with hardware, software, or communication links. This message is unique for each alarm.

**⇒ NOTE:**

This field identifies the specific machine affected by your diagnostic and maintenance commands if the machine is a VP. For PM alarms, the message text field identifies the machine causing the problem.

The message text (`comm check timed out to machine 1` in the example above) identifies the machine with the problem. In this message, numbers 1 through 20 refer to VP machines, 21 refers to PM01, and 22 refers to PM02.

## **Alarm Numbering**

---

Application alarms for AT&T INTUITY CONVERSANT System Version 4.0 are numbered APPLxxx (including informational messages). The following table explains the numbering system for these alarms and the other alarms raised by the NAP platform and adjunct software. Any other alarm that you may see is a CONVERSANT generic alarm. Descriptions of these generic alarms are in CONVERSANT VIS Version 4.0 Maintenance (referenced in the preface, About This Book).

Alarm numbers have the following ranges:

<b>Alarm/Message Type</b>	<b>Alarm Number Range</b>
Hardware	APPL001 through APPL099
Call-processing and other software	APPL100 through APPL199
Customer-database software	APPL200 through APPL299
Informational messages	APPL300 through APPL399
CMF	CMFxxx
MAP 2000 platform alarms	MEGAxxx
NAP	NAPxxx

The application alarm numbers are provided below, along with descriptions for each alarm.

<b>Alarm Number</b>	<b>Alarm Description</b>
APPL001	Datakit error
APPL002	LAN error
APPL101	Audit-data error
APPL102	Billing-update failure
APPL103	Call-merge failure
APPL104	Child-processes error
APPL105	Configuration error
APPL106	Database error
APPL107	Datakit-protocol error
APPL108	Disk-I/O error
APPL109	IPC shared-memory error
APPL110	No outgoing channels
APPL111	PRI-to-application error
APPL112	Message-queue error
APPL113	Software error
APPL114	Application-timer error
APPL115	Application-timeout error
APPL201	Customer-record transaction
APPL202	Customer-record database full
APPL203	Missing customer record
APPL300	Informational message

The CMF alarm number is provided below, along with a description of the alarm.

<b>CMF Alarm Number</b>	<b>Alarm Description</b>
CMF001	Informational messages for the core maintenance features

The MAP 2000 platform alarms are provided below, along with their descriptions:

<b>Alarm Number</b>	<b>Alarm Description</b>
MEGA001	Packet-connection failure
MEGA002	Communicore restarted
MEGA003	Communicore module <x> failed
MEGA004	TDM primary clock source on Communicore was lost
MEGA005	Communicore subrack <x> was removed or failed
MEGA006	T1 error on Communicore module
MEGA007	TDM primary clock source recovered
MEGA008	Communicore module failed a background diagnostic
MEGA009	PRI D-channel removed from service
MEGA010	PRI D-channel <x> down
MEGA011	PRI D-channel <x> up
MEGA012	WIP terminated with return-code <x>
MEGA013	Communicore module <x> was added
MEGA014	Communicore subrack <x> was added or reset
MEGA015	Communicore module <x> is framing
MEGA016	Communicore module <x> is not framing
MEGA017	Communicore module <x> transitioned to service-state <x>
MEGA018	TDM backup clock source on Communicore was lost
MEGA019	Management call between MAP/100C and Communicore failed
MEGA020	Communicore module manually removed from service
MEGA021	All resource channels are temporarily busy
MEGA022	Communicore denied a control request
MEGA023	Informational message when MAP 2000 is ready to accept user commands
MEGA024	Communicore module has out-of-date firmware

The NAP alarm numbers are provided below, along with a description of each alarm.

<b>NAP Alarm Number</b>	<b>Alarm Description</b>
NAP001	Specified process exceeded administered time allotment
NAP002	Problem with system configuration or a configuration file
NAP003	Problem with system software

The remainder of this chapter provides an example of each application alarm and platform alarm, along with descriptions, the effect the problem has on system service, information to interpret the application text, and troubleshooting procedures.

## Alarms

---

### APPL001

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
*C APPL001 -- -- ---SSA: Datakit error: <application text>
```

#### Description

The PM cannot communicate over Datakit with SMW or DCROS.

#### Effect

Although the PM cannot communicate with SMW or DCROS, call processing is not affected, but the PM is unable to take customer-record or speed-dialing updates. Also, DCROS is unable to collect measurements from the PM.

#### Application Text

Identifies the PM affected.

#### Troubleshooting

1. Have DCROS/SMW personnel try to communicate with the PM once more.
2. If the PM still cannot communicate, reboot the affected machine. Enter:

```
chg_state -m <mach_id> reboot.
```



#### **CAUTION:**

*Before you reboot a PM, check to see if it is the preferred machine. If it is, change its status to secondary, and make the secondary PM (the one that is operating properly) the preferred PM (use the **ssa\_admin** command, discussed in Chapter 5). Perform the reboot on the machine now statused as secondary. When the problem is cleared, change the PMs back to their original status.*

3. If the reboot does not solve the problem, see "Troubleshooting PM-to-Datakit Connectivity Problems" on page 6-21.

## **APPL002**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL002 -- -- ---SSA: LAN error: <application text>
```

### **Description**

This alarm is generated by a PM or VP, and signals a problem with either machine or StarLAN connectivity.

#### **⇒ NOTE:**

You will rarely see the APPL002 error; instead, the higher-level software process will report LAN problems as APPL115, Application Timeout.

### **Effect**

Because NAP connectivity includes duplicate, redundant LANs, a problem exists when one or both LANs are down, or when one or both PM machines are down. If one LAN is down, system performance is degraded. If both LANs are down, the affected machine cannot communicate. The PM is unable to take customer-record or speed-dialing updates. Also, DCROS is unable to collect measurements from the PM.

### **Application Text**

Specifies the application (or machine) that cannot communicate over one or both LANs.

## Troubleshooting

This alarm signals one of the following conditions:

- One or both LANs are down
- One or both PM machines are down
- One or multiple VP machines are down
- A StarLAN hub is down
- Connectivity problems exist between:
  - PM to hub
  - Hub to hub
  - Hub to VP machine (if a VP machine cannot communicate over either LAN, the VP is probably down)

1. Enter **comcheck all** on both PMs. This command traces LAN connectivity and operation to isolate which of the above conditions is causing the problem.

If the PM cannot communicate with other machines, then that PM or a LAN component (LAN cable, hub, or physical connection to the PM) is not working. If **comcheck all** shows that a specific machine is down, the problem is probably confined to that machine. To confirm this:

- a. Ensure that the machine is administered as active through the NAP administration interface (use the **ssa\_admin** command).
  - b. Inspect physical wiring to insure that the machine is properly connected to the LAN.
  - c. Ensure that the StarLAN cards in the machine are working by using the **lancheck** command. This command provides a report on TCP/IP connectivity.
  - d. If the StarLAN interface is not working, and all other hardware checks proved all right, you must replace the appropriate StarLAN card.
2. If the alarms are not cleared, escalate the problem.

### **NOTE:**

Chapter 5, "Command Reference" provides complete procedures for accessing and using the NAP administration interface and all NAP-specific commands.

In addition, see "PM-to-VP LAN Connectivity Symptoms and Solutions" on page 6-22.

## APPL101

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
** APPL101 -- -- --- SSA: AUDIT DATA error: <application text>
```

### Description

A customer record or one of the provisioned data files on a machine is out of synch with the master database. This alarm is triggered by a level-1, on-demand database audit.

### Effect

The customer record or the provisioned data file is missing or mismatched on the specified machine. At a minimum, some calls may be handled incorrectly. It may happen, however, that *all* calls are handled incorrectly.

### Application Text

Specifies the customer record or data file that is out of synch.

### Troubleshooting

1. [Remove service from the box.](#)
2. [Run `dbsynch <mach\_id>`](#)
3. Enter `dbaudit <mach_name> 2`
4. Check the audit results. Use this command:

#### **audresult**



#### **NOTE:**

For more information about the **audresult** command, refer to Chapter 5, "Command Reference"

5. [When the machine is synchronized, restore it to service.](#)
6. Escalate if alarms continue after this audit.

## **APPL102**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** APPL102 -- -- --- SSA: BILLING UPDATE FAILURE: <application
    text>
```

### **Description**

A billing update failure has occurred.

### **Effect**

Calls are not being billed correctly.

### **Application Text**

The application text identifies the failure.

### **Troubleshooting**

If a single billing update failure occurs, no investigation is necessary. If multiple failures occur on the same box, remove traffic from that box and escalate the trouble. If multiple failures from multiple boxes occur with different dialed numbers, work with the a 4ESS technician to verify the problem as a 4ESS trouble.

## APPL103

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
**APPL103 -- -- --- SSA:CALL MERGE FAILURE: <application text>
```

### Description

An attempt to merge a call has failed or the calling party disconnect message has not been received by TCS.

### Effect

Inefficient use of trunks at the TCS site and potential for reduced traffic capacity if facilities are very busy.

### Application Text (if applicable)

If the timer (SSA\_CALL\_MERGE) expires before TCS receives a response from the 4ESS (either success or failure), the DIP logs the failure of the call-merge request. If not previously reattempted, the DIP will reattempt the call merge. If previously reattempted, the calls remain hairpinned without changing the call state. If the DIP receives a FACility message indicating Return Error, the DIP will log the failure of the call-merge attempt.

Error codes:

- If rejected with the causes listed below, or if a reattempt has been made previously, the call remains hairpinned without a change in call state and the call merge is not reattempted:
  - Cause #6 (HEX1) (channel unacceptable)
  - Cause #31 (HEX 1F) (normal unspecified)
  - Cause #50 (HEX 32) (requested facility not subscribed)
- If rejected with the cause listed below, and not previously reattempted, the DIP may reattempt the call merge after checking the states of the calls. The DIP also cancels the SSA\_CALL\_MERGE timer for that call merge request.
  - Cause #98 (HEX 62) (message not compatible with call state or message type nonexistent or not implemented)
- If the DIP receives a FACility message indicating reject (resource limitation), the DIP logs the failure of the call merge attempt. If not previously reattempted, the DIP reattempts the call merge operation. If

previously reattempted, calls remain hairpinned without changing the call state. The DIP also cancels the SSA\_CALL\_MERGE timer for that call merge request.

- If the DIP receives a STATUS message with the cause listed below, it logs the failure of the call-merge attempt. The calls remain hairpinned without changing the call state. The DIP also cancels the SSA\_CALL\_MERGE timer for that call merge request.
  - Cause #96 (HEX 60) (invalid FACility message format)
- If the DIP receives a FACility message indicating reject (invalid formatted FACility information element), it logs the failure of the call-merge attempt. The calls remain hairpinned without changing the call state. The DIP also cancels the SSA\_CALL\_MERGE timer for that call-merge request.
- This alarm will also be raised if, on the second attempt, a message is not received regarding the CP disconnecting. If the message that the CP has disconnected does not come within two seconds of the first message (about the TP disconnecting) then this alarm is raised. (The log shows the attempt on which the alarm was raised.)

### **Troubleshooting**

Clear this alarm as soon as possible.

1. Verify that Call Merge has been provisioned by partnering with a 4ESS technician.
2. Check the alarm logs to see what machines are affected to determine if the trunk group is provisioned correctly or the generic is not correct.

## **APPL104**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL104 -- -- ---- SSA: CHILD PROCESS error: <application text>
```

### **Description**

A software process does not have the system resources needed to support a subordinate process.

### **Effect**

System performance may be degraded or stopped. If this alarm occurs on a VP, calls are stopped.

### **Application Text**

Specifies the process affected.

### **Troubleshooting** —

1. Reboot the affected machine.

**⇒ NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate if alarms continue after the reboot.

## **APPL105**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL105 -- -- --- SSA: CONFIGURATION error: <application text>
```

### **Description**

Cards are not configured correctly as specified by the application text.

### **Effect**

Calls are not processed.

### **Application Text**

Identifies the affected machine.

### **Troubleshooting**

Readminister the SP and T1 cards by rebooting the VP.

1. Reboot the affected machine.



**NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.\_\_\_\_

2. Escalate if alarms continue after the reboot.

## APPL106

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
*C APPL106 -- -- --- SSA: DATABASE error: <application text>
```

### Description

A PM database problem exists.

### Effect

The PM cannot access or update the specified database. If the trouble is with the customer records (this would be defined in the application text), call processing could be affected.

### Application Text

Specifies the PM database affected.

### Troubleshooting

1. [Reboot the affected machine.](#)



#### NOTE:

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.



#### CAUTION:

*Before you reboot a PM, check to see if it is the preferred machine. If it is, change its status to secondary, and make the secondary PM (the one that is operating properly) the preferred PM (use the **ssa\_admin** command, discussed in Chapter 5). Perform the reboot on the machine now statused as secondary. When the problem is cleared, change the PMs back to their original status.*

2. If this does not resolve the alarm, the PM database is probably corrupted. Escalate the problem to the Advanced Features Services Center (AFSC).

## APPL107

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
*C APPL107 -- -- ---SSA: Datakit PROTOCOL error: <application
  text>
```

### Description

SMW or DCROS cannot communicate with the specified PM machine through Datakit.

 **NOTE:**

See the software process descriptions in Chapter 1, “Understanding NAP” for more information on what these processes do and how they interact.

### Effect

Communication between affected machines stops. Call processing is not affected, but the PM is unable to take customer-record or speed-dialing updates. Also, DCROS is unable to collect measurements from the PM.

### Application Text

Specifies the interface process affected. *DCRIP* refers to an interface for the DCROS; *SMWI* refers to an interface process for the SMW.

### Troubleshooting

1. Have DCROS/SMW personnel try to communicate with the affected PM once more.
2. If the PM still cannot communicate, reboot the affected machine.

 **NOTE:**

Use the complete reboot command sequence described in “Reboot Procedures” on page 6-16.\_\_\_\_

3. Before you reboot a PM, check to see if is the preferred machine. If it is, change its status to secondary, and make the secondary PM (the one that is operating properly) the preferred PM (use the **ssa\_admin** command, discussed in Chapter 5). Perform the reboot on the machine now statused as secondary. When the problem is cleared, change the PMs back to their original status.

4. Switch the other PM to *preferred* using the NAP administration interface explained in Chapter 5.
5. If the reboot does not resolve the problem, see “Troubleshooting PM-to-Datakit Connectivity Problems” on page 6-21.

## APPL108

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL108 -- -- --- SSA: DISK I/O error: <application text>
```

### Description

The system has an I/O problem reading and writing files.

### Effect

A machine is probably out of disk space and the system therefore cannot write to a file. Whether or not call processing is affected depends on the file to which data is being written.

### Application Text

The application cannot read or write to a specified file.

### Troubleshooting

Sometimes this error appears when certain files cannot be opened. If so, no troubleshooting action is necessary.

For example, if you see in the <application text> portion of the message the following text:

```
Can't open /usr/add-on/ssa/data/prov/sd.xxxxxxxx (sd file)
```

there is no need to take action.

If there are other messages in the application text portion of the error, do the following:

1. Reboot the affected machine.

**⇒ NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate if alarms continue after the reboot.

## APPL109

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL109 -- -- --- SSA: IPC SHARED MEMORY error: <application
  text>
```

### Description

A software process cannot allocate the memory needed, indicating that something is wrong between two processes that should be able to talk to each other.

### Effect

Call processing is most likely affected.

### Application Text

Specifies the software process affected.

### Troubleshooting

1. Reboot the affected machine.



**NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate if alarms continue after the reboot.

## **APPL110**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** APPL110 -- -- --- SSA: NO OUTGOING CHANNELS: <application text>
```

### **Description**

All outgoing channels are unavailable.

### **Effect**

No outgoing channels are available, so that a call to an RP or TP will not be completed.

### **Application Text**

Specifies outgoing channels affected.

### **Troubleshooting**

1. Enter **disp\_status -m <mach\_id>** and ensure that all channels are in service.
2. Take appropriate action to get channels in service. If all channels are in service, the machine is full (has reached its capacity).
3. Escalate the problem if you cannot get the channels in service.

## APPL111

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL111 -- -- --- SSA: PRI TO APPLICATION error: <application
text>
```

### Description

The VP is receiving invalid or unexpected information across the D-channel.

### Effect

Calls are not being handled properly.

### Application Text

Identifies the PRI message that has a problem.

### Troubleshooting

1. This alarm suggests that 4ESS trunks to the VP machines are configured or administered incorrectly *at the 4ESS*. Ensure that all trunks from the 4ESS are properly configured and administered, and are set for the application.
2. Partner with the trunk maintenance organization to fix this problem.



#### NOTE:

See the section on ISDN-PRI in Chapter 1 of this book for further information.

3. If the problem is not cleared, escalate to the next level of support.

## **APPL112**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL112 -- -- --- SSA: IPC MSG QUEUE error: <application text>
```

### **Description**

The application cannot send or receive IPC messages or cannot create a message queue.

### **Effect**

Call processing is most likely affected.

### **Application Text**

Specifies the software process affected. Use this information to help isolate and troubleshoot the problem.

### **Troubleshooting**

1. Reboot the affected machine.



#### **NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate this problem if the reboot does not clear it.

## APPL113

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL113 -- -- --- SSA: SOFTWARE error: <application text>
```

### Description

Application-specific software anomalies trigger this alarm.

### Effect

Although this alarm covers a variety of problems, you can learn what caused it by checking the application text. This alarm always impairs TCS operation. Resolve this alarm quickly.

### Application Text

Describes the machine that the application is having trouble with.

### Troubleshooting

Sometimes this error appears when delivering information about a call being in the box too long. If so, no troubleshooting action is necessary.

For example, there is no need to take action if you see in the <application text> portion of the message any of the following text:

- bogus cp\_ht=xxxxxxx
- bogus rp\_ht=xxxxxxx
- bogus tp\_ht=xxxxxxx

where xxxxxx is the number of seconds the call has remained.

If there are other messages in the application text portion of the error, do the following:

1. Reboot the affected machine.



**NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate this problem if the reboot does not clear it.

## APPL114

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL114 -- -- --- SSA: APPLICATION TIMER error: <application
  text>
```

### Description

An application cannot synchronize timers with related server processes. The timer is used by application processes to time out when it expects a reply from another process, or to kick off processes scheduled at regular intervals.

### Effect

If the problem occurs on a If on a PM, PM operations can be affected. If on a VP, call processing may be affected.

### Application Text

Specifies the software process affected.

### Troubleshooting

1. Reboot the affected machine.



**NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate this problem if the reboot does not clear it.

## APPL115

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL115 -- -- --- SSA: APPLICATION TIMEOUT error: <application
text>
```

### Description

An application timed out while talking to a software process on either its own machine or another one. This alarm is usually caused by connectivity problems between machines or by attempts to talk to machines that are down.

Software process descriptions are provided in Chapter 1, "Understanding NAP".

#### NOTE:

When a machine is disconnected from the LAN, the alarm is not raised until the next system heartbeat. The alarm is raised by the PM, and not by the disconnected machine.

### Effect

If the problem occurs on alf this alarm condition occurs on a PM, PM operations can be affected. If it occurs on a VP, call processing may be affected.

### Application Text

Specifies the operation that timed out and the machine or process on which it failed.

### Troubleshooting

Check the CLLI code message (that is, the machine ID reported in the alarm) to see where the problem occurred. Then follow one of the two procedures outlined below.

- If the problem occurs on a local software process:

1. Reboot the affected machine.

**⇒ NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

2. Escalate this problem if the reboot does not clear it.

- If the application timed out to a process on a remote machine:

1. Run **comcheck all** to isolate the problem to a local machine, a remote machine, or to the LAN.

**⇒ NOTE:**

The **comcheck** command tells you which machines are up and which of the two LANS is up or down. For more information about the **comcheck** command, refer to Chapter 5, "Command Reference".

2. If **comcheck** uncovers no problem and if alarms continue, reboot the machine. The problem may be transitory.

**⇒ NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

3. If **comcheck** cannot talk to the remote machine, follow the connectivity troubleshooting procedures under the heading "PM-to-VP LAN Connectivity Symptoms and Solutions" on page 6-22.

## APPL201

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
*C APPL201 -- -- --- SSA: CUSTOMER RECORD TRANSACTION error:
  <application text>
```

### Description

A customer-record (update) transaction has not been applied to the specified machine.

 **NOTE:**

When a VP is disconnected from the LAN, the alarm is not raised until the next system heartbeat. The alarm is raised by the PM, and not by the disconnected VP.

### Effect

The VP or PM does not have the latest update for the customer record (for example, a new customer record was added, but the update failed and no calls can come in for that customer). On the VP, call processing may be impacted for this customer.

### Application Text

Specifies the machine and range of transaction sequence numbers. This information may be helpful to AFSC personnel.

### Troubleshooting

1. Run **comcheck all** to ensure that all connectivity is sound.

 **NOTE:**

The **comcheck** command tells you which machines are up, and which of the two LANS is up or down. For more information about the **comcheck** command, refer to Chapter 5, "Command Reference".

- 
2. If comcheck found that a machine cannot communicate, diagnose connectivity problems as outlined in "PM-to-VP LAN Connectivity Symptoms and Solutions" on page 6-22.

## **APPL202**

---

```
DNVRCOPCCA1PM01 96-01-11 09:53:39
*C APPL202 -- -- --- 1480 SSA: CUSTOMER REC DATABASE FULL:
  <application text>
```

### **Description**

The PM database record limit has been reached.

### **Effect**

The SMW cannot add any more records (including the one just attempted) on both PMs at the NAP site.

### **Application Text**

Specifies that the record limit is reached and that the latest record was not applied to the database.

### **Troubleshooting**

1. Contact the SMW system administrator and determine what needs to be done.
2. If necessary, delete customer records through the SMW.

## APPL203

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C APPL203 -- -- --- SSA: MISSING CUSTOMER RECORD : <application
  text>
```

### Description

A VP machine has received a call for which no matching customer call record exists. The record may be provisioned incorrectly, or there may be a problem distributing the record.

### Effect

The mismatched call cannot be completed and is rejected by the VP.

### Application Text

Specifies either the machine to which the call comes or the missing call record.

### Troubleshooting

First ensure that the SMW system has provisioned the record properly. Once this is done, follow these steps:

1. Run **comcheck all** from the NAP administration interface to ensure that PMs are communicating with the affected VP.

 **NOTE:**

The **comcheck** command tells you which machines are up, and which of the two LANS is up or down. For more information about the **comcheck** command, refer to Chapter 5, "Command Reference". If **comcheck all** does not run, troubleshoot LAN connectivity. See "Troubleshooting PM-to-Datakit Connectivity Problems" on page 6-21.

2. Run **comcheck all** again when LAN connectivity is verified.

3. If you can communicate over at least one LAN, run an audit on the VP to ensure that the VP database is in sync with the rest of the NAP system. Enter **dbaudit <mach\_name> 2** from the NAP interface or command line.

**⇒ NOTE:**

For more information about the **dbaudit** command, refer to Chapter 5, "Command Reference".

4. Escalate if the above steps do not isolate the problem and if alarms continue.

## **APPL300**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39  
INFO APPL300 -- -- --- <application text>
```

### **Description**

Informational messages report on failure conditions that have cleared, as well as other system conditions.

### **Effect**

None.

### **Application Text**

The informational message could be, for example:

```
Alarms cleared, Lights turned off
```

or:

```
Reboot Machine. Over 6 months since last reboot
```

### **Troubleshooting**

If you see the text in the first example above, no troubleshooting is necessary. If you receive the message in the second example, arrange for a convenient time to reboot the machine in question.

## **CMF001**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39  
INFO CMF001 -- -- --- INFO only: <application text>
```

### **Description**

This is an informational message for the core maintenance features.

### **Effect**

This is an informational message, probably a test message generated by the **logmsg** command.

### **Application Text**

Specifies whatever was provided to the **logmsg** command.

### **Troubleshooting**

NA

## MEGA001

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA001 -- -- --- Packet connection failure for D channel <X>
Cause Code: <Y>
```

### Description

The Communicore was unable to make a packet connection, which is necessary to establish (frame relay) the D-channel between the 4ESS and MAP/100C. This always refers to the D-channel from the VP to the 4ESS.

### Effect

Without the D-channel, calls cannot be processed, although active calls and connections are unaffected (talk paths are retained). Active calls are affected if further steps are taken to determine the problem (that is, **chg\_state**, **diagnose cards**, etc).

### Application Text

Specifies which D-channel was unable to make a packet connection and the cause of the failure.

### Troubleshooting

1. Display the status of the D-channels on the VP (MAP/100C and Communicore). Use these commands:

```
disp_status -m <mach_id> rcard 0
disp_status -m <mach_id> card 4
```

If either D-channel is not in service, perform generic DCHAN down troubleshooting provided in "Understanding D-Channel Connectivity" on page 6-7.

2. If D-channels are in service, stop and start the voice system after you call the TCC and have them take the channels out of service. When that is done, use these commands:

```
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

3. If the problem continues, run diagnostics on the Communicore switch, control, and the first two PRI modules (modules 1 through 4) as this alarm most likely implicates these modules. Use this command:

**diagnose -m <mach\_id> cards 1-4**

4. Reseat any modules that fail diagnosis.
5. Replace any modules that fail diagnostics after reseating.
6. Replace the switch module if the problem continues.
7. If replacing the failed modules or the switch modules does not clear the problem, escalate it.



**NOTE:**

When replacing modules you must download firmware. [See “download” on page 5-70 for download instructions and warnings.](#)

## MEGA002

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA002 -- -- --- Communicore restarted.
```

### Description

The Communicore has restarted because of an error condition.

### Effect

Calls are lost, but the system should come back up once the Communicore is sane again. Repeated or frequent occurrences of this alarm indicate faulty equipment on the Communicore.

### Troubleshooting

1. Diagnostics should be run on the Communicore hardware, because RE\_START notification implies that the VP has recovered. Enter:  
**diagnose -m <mach\_id> card all**
2. Reseat any modules that fail diagnosis.
3. Replace any modules that fail diagnostics after reseating.
4. Turn down traffic at the 4ESS and escalate if modules pass diagnostics and the problem continues.

#### NOTE:

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

## MEGA003

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA003 -- -- --- Communicore card <card_no> failed
   (slot=<SS>,subrack=<sr>)
```

### Description

A module has been physically removed from the Communicore or it has failed and has been reset.

### Effect

The function of the failed module is lost. For example, calls that are active on the module at the time of failure are dropped and dependent, incoming channels are unavailable to handle calls.

### Application Text

Identifies the Communicore module and the location of the module that has been physically removed or has failed and reset.

### Troubleshooting

1. If reset is unexpected, busy-out affected channels at the 4ESS.
2. Diagnostics should be run on the module to determine the problem. Enter:  
**diagnose -m <mach\_id> card <card\_no>**
3. Replace the module if diagnostics fail or if resets continue.

#### **NOTE:**

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

## MEGA004

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA004 -- -- --- TDM primary clock source (card 4) on
Communicore      was lost. Location of this card is slot 4 in
subrack 1.
```

### Description

The Communicore has lost its primary TDM clock source (usually PRI module in slot 4, the first PRI module connected to the network). This error indicates that a failure has occurred on the PRI module or on the terminating network equipment.

### Effect

There may be no effect at all. However, this alarm may indicate hardware problems that could cause the D-channel to go out of service, in which case alarm MEGA009 would be raised.

### Troubleshooting

#### ⇒ NOTE:

Maintenance operations on the 4ESS typically cause clock problems from which recovery is automatic. Check to see if maintenance was recently performed on the 4ESS before proceeding with the following troubleshooting steps.

1. Display the status of module 4 on the Communicore (it should not be in service). Use this command:

```
disp_status -m <mach_id> card 4
```

#### ⇒ NOTE:

[If you suspect that the system is not synchronized, refer to the troubleshooting procedures for MEGA006.](#)

2. Put trunks in **cad.lko** state.
3. Have the TCC busyout trunks at the 4ESS.
4. Diagnose module 4 using this command:

```
diagnose -m <mach_id> card 4
```
5. If the module fails diagnostics, replace it.

 **NOTE:**

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

6. If the module passes diagnostics, cabling or the 4ESS is implicated.

## MEGA005

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA005 -- -- --- Communicore subrack 2 was removed or failed.
```

### Description

The [intrasubrack](#) cable is bad or has been physically removed, or a power/maintenance module failure may have occurred. This alarm is only seen for the second (upper) subrack because failure of the first (lower) subrack results in loss of Communicore-to-MAP/100C communication, preventing notification.

### Effect

Access to the modules in the subrack is lost. The VP can still handle calls (with reduced capacity) if the (upper) subrack 2 failed or has been disconnected, because the control and switch modules reside in the (lower) subrack 1 and D-channel termination/frame relaying is done on the lower subrack.

### Troubleshooting

1. Display the status of rchan 23 (D-channel) using this command

```
disp_status -m <mach_id> rcard 0
```

2. If the resource channel is in service, display the status of Communicore modules. Use this command:

```
disp_status -m <mach_id> card all
```

- a. If all modules on the second subrack are in the foos state, it implies that there is either an intrasubrack cabling problem or a bad power module in the second subrack.
- b. If rchan 23 (D-channel) is not in service, communication with the Communicore is down, and current status cannot be retrieved. Investigation and troubleshooting will have to be done on site to determine the source of the problem. As mentioned in the description, the problem is probably a bad or disconnected cable, a bad power module in the subrack, or a bad control module, switch module, or PRI module in slot 3. Refer to the procedures in "Understanding D-Channel Connectivity" on page 6-7. If the problem is not cleared, escalate it.

## MEGA006

---

```
DNVR COPCCA1VP01 96-01-11 09:53:39
** MEGA006 -- -- --- T1 error on Communicore card <B>
   (slot=<SS>,subrack=<sr>). Statistics:
   bpv=<b>,crc=<c>,framerr=<fe>,framslip=<fs>.
```

### Description

There are errors on the physical T1 link between the Communicore PRI module and the 4ESS. It could be:

- A hardware problem on the Communicore PRI module
- A problem on the physical line
- A problem at the 4ESS

### Effect

The effect on calls on the PRI module reporting trouble depends on the severity of the problem (the effects may range from none to dropped calls).

### Application Text

Identifies the Communicore module and the location of the module having problems, and the problem that caused the alarm, such as:

- `bpv` = bipolar violations,
- `crc` = cyclic redundancy checks
- `framerr` = framing bit errors
- `framslip` = framing slip errors.

A nonzero value in one or more of these fields indicates the problem that caused the alarm. The values of the fields indicate the number of errors that have occurred on the module in the last 15 minutes.

## Troubleshooting

You can expect this alarm if any maintenance activity took place on the module in the last fifteen minutes (for example, the module was replaced). In this case, wait for another occurrence of the alarm.

**⇒ NOTE:**

Also expect this alarm if maintenance activity took place on the 4ESS side of the T1. In this case, wait for another occurrence of the alarm.

- If the problem is with the PRI module in slot 3:
  1. Remove all trunks from service
  2. Wait to idle
  3. Reboot
- If the problem is with any other PRI module:
  1. Have the TCC take the channels on the PRI module out of service (first wait for any calls to clear).
  2. Diagnose the PRI module using this command:

**diagnose -m <mach\_id> card <x>**

3. Perform the appropriate step:
  - If the PRI module fails diagnostics, replace it.

**⇒ NOTE:**

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

- If the module passes diagnostics, then the problem is probably with the cabling or the 4ESS.
- Escalate the problem to the next level of support.
- [If the problem is that a Communicore is not synched to an external clock:](#)  
[Suspect this problem if multiple MEGA006 alarms indicating T1 frameslip errors occur for more than 30 minutes on the same machine. The statistics line will show zeros for all error types but `framslip`. For example:](#)

`bpv=0,crc=0,framerr=0,framslip=255.`

1. [resetclk -m <mach id>](#)
2. [Wait 40 minutes.](#)
3. [Verify that you didn't receive any MEGA006 alarms during the last 15 minutes.](#)
4. [If you did receive MEGA006 alarms, escalate to the TCC.](#)

## MEGA007

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
INFO MEGA007 -- -- --- TDM primary clock source on Communicore
is from card <x>. Location of this card is slot <SS> in
subrack <sr>.
```

### Description

This informational message identifies the new primary clock source. This source can be either of the following (listed in order of preference):

- The primary source (PRI module in slot 4)
- The secondary source (PRI module in slot 6)
- The internal clock, which is indicated by an invalid module number (card 33)

### Effect

The MEGA004 problem is resolved if the source is the primary clock source (PRI module in slot 4). If this is not the case, the D-channel is most likely down, preventing calls from being processed (although active calls may not be affected). If TDM timing is taken from an internal source, active calls may be affected, because clock drift may occur.

### Troubleshooting

No troubleshooting is necessary, because the problem is resolved if the primary clock source resumes. Refer to the MEGA004 alarm in the troubleshooting section for more information.

## MEGA008

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA008 -- -- --- Communicore card <B> failed a background
    diagnostic. Location is slot <SS> in subrack <sr>.
    Diagnostic that failed was <D>.
```

### Description

An unsolicited diagnostic report was received from the Communicore. This usually indicates some hardware problem on the identified hardware component.

### Effect

The effect depends on the module failing diagnostics and the test that failed.

### Application Text

Identifies the Communicore module and the location of the module that had an unsolicited diagnostic report. Also specifies the background diagnostic that failed.

### Troubleshooting

1. Display the status of the implicated module. Use this command:  
**disp\_status -m <mach\_id> card <x>**
2. If the problem is with a PRI module, have the TCC take the PRI module out of service on the 4ESS side.
3. Diagnose the module. Use this command:  
**diagnose -m <mach\_id> card <x>**
4. Replace the module if it fails diagnostics.

#### NOTE:

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

5. If the problem continues, escalate it.

## **MEGA009**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA009 -- -- --- PRI D-channel 1 removed from service.
```

### **Description**

The identified D-channel has been administratively removed from service.

### **Effect**

No calls can be placed and received by the associated PRI B-channels, but calls active at the time the D-channel was removed are unaffected.

### **Application Text**

Identifies the D-channel that has been removed from service, which is always the D-channel from the MAP/100C to the 4ESS.

### **Troubleshooting**

1. Enter **disp\_status -m <mach\_id> all**
2. Attempt to determine why the D-channel was removed and correct the problem as soon as possible.

## MEGA010

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA010 -- -- --- PRI D-channel <ch> down.
```

### Description

The identified D-channel has gone out of service. This alarm does not typically indicate a problem with the MAP/100C PRI software; instead it implicates either a PRI module, cabling, or the external equipment that terminates the D-channel.

### Effect

No calls can be processed by the associated call channels. Active calls are unaffected, but customers are not able to place additional calls to and from the system.

### Application Text

Identifies the D-channel that has gone out of service, which is always the D-channel from the MAP/100C to the 4ESS .

### Troubleshooting

1. Attempt to determine the source of the D-channel problem by displaying the status of the identified D-channel. Use this command:

```
disp_status -m <mach_id> rcard 0
```

**⇒ NOTE:**

You should verify that rchan 23 is in service for up-to-date status on Communicore modules to be displayed.

2. If the problem is not cleared, have the TCC take the channels out of service.
3. Diagnose the T1 card containing the D-channel. Use this command:

```
diagnose -m <mach_id> rcard 0
```

4. Replace the T1 card in the MAP/100C if it fails diagnostics.
5. Diagnose the SP card on the MAP/100C and the switch/control module on the Communicore if the T1 card containing a failed D-channel passes diagnostics (these cards play a part in PRI termination). Use these commands:

**diagnose -m <mach\_id> rcard 2**  
**diagnose -m <mach\_id> card 1**  
**diagnose -m <mach\_id> card 2**

6. If rchan 23 is not in service it may be necessary to perform a visual inspection and possibly replace the first three Communicore modules (control/switch/PRI) in the lower subrack:

Control module if either of the two LEDs is dark

OR

Switch module if a single LED is dark

OR

PRI module in slot 3 if the STATUS LED is dark

**⇒ NOTE:**

The STATUS LED on a tone-generator, tone-detector, or PRI module is dark if the module has been administratively removed.

To recover from the alarm, start and stop the voice system using the **chg\_state -m <mach\_id> off** and **chg\_state -m <mach\_id> on** commands.

7. Repeated or frequent failures followed by subsequent recoveries of a specific MAP/100C D-channel indicate faulty equipment along the D-channel connection. This equipment should be replaced.

**⚠ WARNING:**

*If you perform any commands on any of the first three modules of the Communicore, cycle the VP using the following steps:*

**chg\_state -m <mach\_id> on**  
**chg\_state -m <mach\_id> off**  
**chg\_state -m <mach\_id> on**

## **MEGA011**

---

```
DNVR COPCCA1VP01 96-01-11 09:53:39  
INFO MEGA011 -- -- --- PRI D-channel 1 up.
```

### **Description**

This informational message tells you that the identified D-channel has come back in service.

### **Effect**

Call processing can resume.

### **Application Text**

Identifies the D-channel that has come back in service, which is always the D-channel from the MAP/100C to the 4ESS.

### **Troubleshooting**

N/A.

## MEGA012

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA012 -- -- --- WIP terminated with return code <ret_code>.
```

### Description

The Communicore WSFE interface process (WIP) running on the MAP/100C has terminated with the accompanying return code.

### Effect

All VP functionality is lost.

### Application Text

Specifies which return code caused the Communicore WIP to terminate.

#### ⇒ NOTE:

Executing the **chg\_state -m <mach\_id> off** command will generate a MEGA012 alarm with return code <15>. This is normal and no troubleshooting needs to be done. For all other return codes, follow the troubleshooting procedures that follow.

### Troubleshooting

1. Have the TCC turn down the trunks in the network.
2. Take the VP down. Use these commands from the PM:

```
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

3. Monitor the system to see if it recovers on its own.  
Wait for 5 minutes.
4. If the system doesn't recover on its own, reboot the VP.

#### ⇒ NOTE:

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

5. If the problem continues, escalate it.

## MEGA013

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
INFO MEGA013 -- -- --- Communicore card <x> was added (slot=<SS>
subrack=<sr>)
```

### Description

This informational message tells you that a Communicore module has either been physically added or successfully reset.

### Effect

Service can resume.

### Application Text

Identifies the Communicore module and the location of the module that was added or reset.

### Troubleshooting

1. If the message is unexpected, diagnose the module. Enter:  
**diagnose -m <mach\_id> card <card\_no>**
2. Replace the card if needed.

#### NOTE:

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

## **MEGA014**

---

```
DNVR COPCCA1VP01 96-01-11 09:53:39  
INFO MEGA014 -- -- --- Communicore subrack 2 was added or reset.
```

### **Description**

This informational message tells you that the Communicore subrack has been added or reset after the WSFE interface process (WIP) has been initialized (normal startup). This always applies to the second (upper) subrack.

### **Effect**

Service can resume.

### **Application Text**

Identifies the subrack that was added or reset.

### **Troubleshooting**

If the message is unexpected and you continue losing the subrack, escalate. It is most likely a problem with the [intrasubrack](#) cable or the power module in the second subrack.

## MEGA015

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
INFO MEGA015 -- -- --- Communicore card <x> is framing
(slot=<SS>, subrack=<sr>)
```

### Description

The Communicore PRI module has regained framing. This is typically displayed after a module problem or cabling problem has been corrected.

### Effect

The PRI module is ready for service.

### Application Text

Identifies the Communicore module and the location of the module that has regained framing.

### Troubleshooting

- If this is a known cabling or hardware problem, the problem is fixed.
- If the module continually loses/regains framing:
  1. Call the TCC and ask them to take the channels out of service.
  2. Diagnose the module using the following command. You should replace the module, however, even if diagnostics pass.

**diagnose -m <mach\_id> card <x>**

#### **NOTE:**

When replacing modules you must download firmware.  
[See "download" on page 5-70 for download instructions and warnings.](#)

If the problem continues after you replace the card, cabling and the 4ESS are implicated.

If you **diagnose** any of the first three modules of the Communicore, cycle the VP using these steps:

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

## MEGA016

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA016 -- -- --- Communicore card <x> is not framing
    (slot=<SS>,subrack=<sr>)
```

### Description

The identified Communicore module is no longer receiving framing.

### Effect

Call capacity is affected because the channels on the module cannot handle calls. Any active calls on those channels are dropped.

### Application Text

Identifies the Communicore module and the location of the module that is no longer receiving framing.

### Troubleshooting

1. Ask the TCC to take the channels out of service.
2. Diagnose the module using the following command:  
**diagnose -m <mach\_id> card <x>**
3. If diagnostics pass and the problem continues, check the cabling.
4. Replace the module, replace the cable, and then implicate the 4ESS.



#### **NOTE:**

When replacing modules you must download firmware.  
See "download" on page 5-70 for download instructions and warnings.

 **WARNING:**

If you **diagnose** any of the first three modules of the Communicore, cycle the VP using the following steps:

```
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## **MEGA017**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39  
INFO MEGA017 -- -- --- Communicore card 1 (slot=1,subrack=1)  
transitioned to <service_state>.
```

### **Description**

The identified Communicore module has transitioned to a new service state. This is an informational message only, so a problem may not exist. The event that caused the module to change state raises an alarm if warranted.

### **Effect**

The effect is dependent on the new service state.

### **Application Text**

Identifies the Communicore PRI module and the location of the module that has changed to a new service state.

### **Troubleshooting**

N/A

## MEGA018

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
* MEGA018 -- -- --- TDM backup clock source (card 6) on
Communicore was lost. Location of this card is slot 6 in subrack
1.
```

### Description

The Communicore has lost its backup TDM clock source. The Communicore usually takes its backup timing from the second PRI module (in slot 6) connected to the network. This error indicates a failure has occurred on the PRI module or the terminating network equipment.

### Effect

Unless the primary clock is lost, channels on the second PRI module cannot handle calls. If the primary clock is lost, the VP is inoperable, although active calls may be preserved.

### Troubleshooting

1. Call the TCC and ask them to take the channels out of service.
2. Diagnose the module using this command:  
**diagnose -m <mach\_id> card <x>**
3. Replace the module if it fails diagnostics.

#### NOTE:

When replacing modules you must download firmware. [See "download" on page 5-70 for download instructions and warnings.](#)

4. If diagnostics pass, the problem is probably with cabling or terminating network equipment such as the 4ESS.

## MEGA019

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA019 -- -- --- Management call between CONVERSANT and
    Communicore failed with a cause value of <x>.
```

### Description

MAP/100C / Communicore communication is lost.

### Effect

Although no further call processing (including DTMF) can be done, active calls are unaffected unless further action is taken (that is, stop versus diagnose).

### Application Text

The application text indicates the cause value (<x>) of the failed call.

### Troubleshooting

#### NOTE:

If you observe a MEGA014 (MEGA\_RK\_ADD) during troubleshooting, it means that Communicore-MAP/100C communication has resumed.

1. Display the status of resource card 0. Use this command:

```
disp_status -m <mach_id> rcard 0
```

2. If rchan 23 is not in service, call the TCC and ask them to turn down the trunks at the 4ESS.
3. Enter these commands:

- a. Change the state of the VP. Use these commands:

```
chg_state -m <mach_id> mtce  
chg_state -m <mach_id> on
```

- b. Diagnose resource card 1 (SP PRI) using this command:

```
diagnose -m <mach_id> rcard 1
```

4. A visual inspection of Communicore modules may be required if rchan 23 (D-channel) is not in service. Refer to the troubleshooting section of MEGA010 for instructions regarding module replacement based on LED status. Also, if rchan 23 is in service and the MEGA014 alarm doesn't appear within a few minutes, visually inspect the modules.
5. If nothing is discovered, the Communicore is still implicated, so manually power-cycle the lower subrack .
6. Escalate if the problem continues.



**WARNING:**

If you **diagnose** any of the first three modules of the Communicore, cycle the VP using the following steps:

```
chg_state -m <mach_id> on
chg_state -m <mach_id> off
chg_state -m <mach_id> on
```

## MEGA020

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
** MEGA020 -- -- --- Communicore card <x> (slot=<SS>,
subrack=<sr>) was manually removed from service.
```

### Description

The Communicore module indicated by <x> in the alarm text has been manually removed from service.

### Effect

The effect of this is application-dependent on the module removed from service. If manoos displays for a tone detector module, you will lose tone detection capacity.

### Application Text

The application text indicates the removed module, as well as its slot and subrack.

### Troubleshooting

Since the module was taken out of service manually, you must first determine why. Once you know why the module was taken out of service, you'll know what steps to take to get it back in service; for example, whether to diagnose the module, replace it, or restore it.

#### NOTE:

When replacing modules you must download firmware. See "download" on page 5-70 for download instructions and warnings.

## **MEGA021**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
* MEGA021 -- -- --- All resource channels are temporarily busy.
```

### **Description**

A call was denied access to a resource channel.

### **Effect**

The only impact is that the call is denied access to a resource channel and cannot go through. If the problem persists and exceeds a major alarm threshold, follow the troubleshooting procedures outlined below, because the alarm is service-affecting (calls are being denied NAP functionality).

### **Application Text**

There is no application text for this alarm.

### **Troubleshooting**

1. You should not see this alarm in the field, since the NAP service is engineered to prevent this from happening. However, if you do see this problem and it persists; that is, it exceeds the threshold for major alarms, have the TCC take the channels out of service.
2. Escalate the problem immediately.

## **MEGA022**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA022 -- -- --- Communicore denied a call control request.
The Communicore is in a potentially unstable state.
```

### **Description**

The Communicore control module denied one of the following call-control operations:

- Making a voice path
- Sending DTMF signals
- Connecting a tone detector

This alarm results from excessive demands on the Communicore.

### **Effect**

A caller did not receive the service that was expected. One or more calls

- May not have received DTMF tones
- May not have DTMF detectors connected
- May have a corrupted or incomplete voice path

The system continues to process calls, but they may not be handled properly.

### **Application Text**

The application text reports the denied request.

### Troubleshooting

1. Have the TCC turn down the trunks in the network.
2. Take the VP down. Use these commands from the PM:

```
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

3. Monitor the system to see if it recovers on its own.
4. Reboot the VP.



**NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

5. If the problem continues, escalate it.

## **MEGA023**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39  
INFO MEGA023 -- -- --- The MAP2000 system is ready to accept  
maintenance commands.
```

### **Description**

This informational message tells you when maintenance operations involving the Communicore or the Communicore WSFE interface process (WIP) may begin.

### **Effect**

Maintenance operations may proceed.

### **Application Text**

None

### **Troubleshooting**

N/A

## **MEGA024**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C MEGA024 -- -- --- Communicore card x (slot = y; subrack = z)
firmware verification failed: reason.
```

### **Description**

The indicated Communicore module has failed firmware verification. The cause of the failure is also given in the alarm text.

### **Effect**

Either the indicated module has not had the most recent firmware downloaded to it or the installation of the firmware package was not completely successful and it should be reinstalled. Either of these conditions could be service-affecting.

### **Application Text**

The application text indicates the module in question, giving its slot and subrack numbers and telling why the firmware verification test failed.

### **Troubleshooting**

If the reason given is, "can't open release file <file>" or "can't read firmware directory <dir>," there are problems with the installation of the firmware package so the firmware package should be reinstalled.

If the reason given is "firmware does not match firmware files in <dir>," the newest firmware has not been downloaded successfully to the indicated module.

## **NAP001**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
**      NAP001 -- -- --- Long running process error: <process>.
```

### **Description**

This major alarm tells you that a particular process has exceeded its administered time allotment.

### **Effect**

The specified process has exceeded its administered time allotment.

### **Application Text**

Specifies the process that has exceeded its administered time allotment.

### **Troubleshooting**

Investigate why the process is still running.

## **NAP002**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C    NAP002 -- -- --- NAP configuration error: <error>.
```

### **Description**

This alarm tells you that there is a problem with the system configuration or a configuration file as specified in the message

### **Effect**

LRPA (long-running process alarm) operations are probably failing.

### **Application Text**

Identifies the system or file with the system-configuration problem.

### **Troubleshooting**

1. Run this command to repair the problem:  
**listlrpa -m <mach\_id> repair**
2. If the problem is not cleared, escalate to the next level of support.

## **NAP003**

---

```
DNVRCOPCCA1VP01 96-01-11 09:53:39
*C    NAP003 -- -- --- NAP software error: <error>.
```

### **Description**

This alarm tells you there is a system-software problem, as described in the message.

### **Effect**

Some NAP operations may be failing.

### **Application Text**

Identifies the software with the problem.

### **Troubleshooting**

1. Have the TCC turn down the trunks in the network.
2. Take the VP down. Use these commands from the PM:  
**chg\_state -m <mach\_id> off**  
**chg\_state -m <mach\_id> on**
3. Monitor the system to see if it recovers on its own.  
Wait for at least 30 minutes.
4. If the system doesn't recover on its own, reboot the VP.



#### **NOTE:**

Use the complete reboot command sequence described in "Reboot Procedures" on page 6-16.

**What's in This Chapter?**

This chapter includes information on:

- Preventive maintenance
- Servicing equipment
- Equipment configurations
- Configuring and/or installing circuit cards and peripherals
- Parts list

## **Preventive Maintenance and Planned Inspections**

---

This section contains the following preventive maintenance and planned inspection procedures for the NAP equipment:

- Cleaning the diskette drive
- Cleaning the cartridge tape drive
- Cleaning the fan filters
- Rebooting Machines
- Visually inspecting the equipment as required to prevent premature equipment failures

### **Cleaning the Diskette Drive**

---

Because the disk heads are easily scratched, do not clean diskette drives. If you find that you can no longer read or write when your diskette drive is in use, replace the drive.

Refer to *CONVERSANT® Voice Information System Version 4.0 Maintenance*, AT&T 585-350-112, Issue 2 for instructions on how to remove and install the diskette drive.

### **Cleaning the Cartridge Tape Drive**

---

The read/write head on the tape drive should be cleaned after eight hours of operation or every two hours when using new tapes.

Use a 3M® DC 6000-series data-cartridge tape drive cleaning kit (or equivalent). Instructions, for up to 21 cleanings, are provided with each cleaning kit.

Clean capstan with a cotton swab and water. Use only water to prevent damage to the capstan material.

### **Cleaning the MAP/100C Fan Filters**

---

Clean the fan filters on the MAP/100C once a month, or more depending on the environment, even if the filter doesn't appear dirty.

The MAP/100C is equipped with three cooling fan filters; one is located behind the power supply filter access door, a second is on the fan access panel, and a third is on the drive bay door. To clean the filters, release the two captive screws that fasten the door to the unit and remove the filter. Rinse in warm water and blow dry.

To reinstall the filter, position it behind the door, close the door, and tighten the captive screws.

## **Rebooting Machines**

---

Each machine requires rebooting as a maintenance procedure at least once every 6 months. If a machine has not been rebooted for any other reason during a 6 month period, error APPL300 displays, instructing you to reboot. Rebooting clears memory and resets drivers, ensuring smooth operations and often preventing situations that would require an unplanned reboot of the machine.

## **Visual Inspection**

---

The visual inspection helps you to identify any obvious equipment problems before you perform more exhaustive tests. Perform a visual inspection of system equipment at least once a month unless local guidelines, such as central office guidelines, warrant a different schedule.



### **CAUTION:**

This is *only* a visual inspection. Do not physically touch anything in the unit unless you observe proper ESD precautions and the unit is gracefully powered down. Failure to power down before handling equipment can cause irreparable equipment damage.

1. Check the status of the visual indicators listed in the tables in "MAP/100C Switches and Indicators" on page 3-2. Notice that the second column of the tables lists the color of the indicator and the number of indicator lights on the unit.
2. If any of the indicators are not in the proper state, refer to *CONVERSANT® Voice Information System Version 4.0 Maintenance*, AT&T 585-350-112.



### **CAUTION:**

Make sure the unit has been gracefully powered down before you perform any replacement procedures such as reseating cables. Failure to power down before handling equipment can cause irreparable equipment damage.

3. Check the following cables to make sure that the connectors are not damaged or loose. Replace any damaged cables or reinsert loose connectors:
  - All external cables
  - TDM cable spanning slots inside the card cage (MAP/100C VP configurations only)
  - All connectors on the CPU card

- All connectors on the SCSI card
  - Both cables connecting the signal processor to the companion card (if so equipped)
  - All connections (power, control, and data) to all peripheral bay devices
4. Check the cooling fans by putting your hand behind them to feel the air circulating.
  5. Make sure each card is properly seated in the backplane and held in place with a screw.

**⇒ NOTE:**

The disk activity, diskette drive, and hard-disk drive lights are on or flashing while the disks are being accessed. This is normal. When there is no disk activity, the lights are off.

**Table 8-1. Normal State of the MAP/100C Visual Indicators**

<b>Indicator Description</b>	<b>Color (number of indicators)</b>	<b>Indicator Location</b>	<b>Normal State</b>
Fan status	Green (6)	Front of unit	ON
Diskette drive	Red or Amber (1)	On the diskette drive	ON, OFF
Hard drive	Amber (1)	On the hard disk drive	ON, OFF, or FLASH
Power	Green (1)	Front of the unit (on the user interface panel)	ON
Tape drives	Two different types of tape drives are available on the MAP/100C. The LEDs work differently on these two types of drives. For an explanation, refer to "Indicators on SCSI Cartridge Tape Drives" on page 3-6.		

## **Servicing Equipment**

---

For information on basic repair and maintenance tasks refer to: *CONVERSANT Voice Information System (VIS) Version 4.0 Maintenance*, 585-350-112.

### **Installing MAP/100C Circuit Cards**

---

Use this procedure to install or remove a circuit card in a MAP/100C machine.



#### **WARNING:**

*When handling circuit cards:*

- *Use caution to prevent damage from electrostatic discharge (ESD).*
- *Wear a ground strap that is correctly connected to a grounding system.*
- *Avoid any unnecessary handling of the cards.*
- *Do not touch the gold contact edge of the circuit card; this could cause contact corrosion.*

1. Do one of the following:

- If this machine has not been powered up or the power is OFF, go to step 2.
- If the power is ON, but you have not yet installed the NAP software, turn OFF both the power switch on the front user-interface panel and the circuit breaker on the back of the MAP/100C. Go to step 2.
- If the power is ON and you have installed the NAP software, enter this command from PM01 to shut down the system:

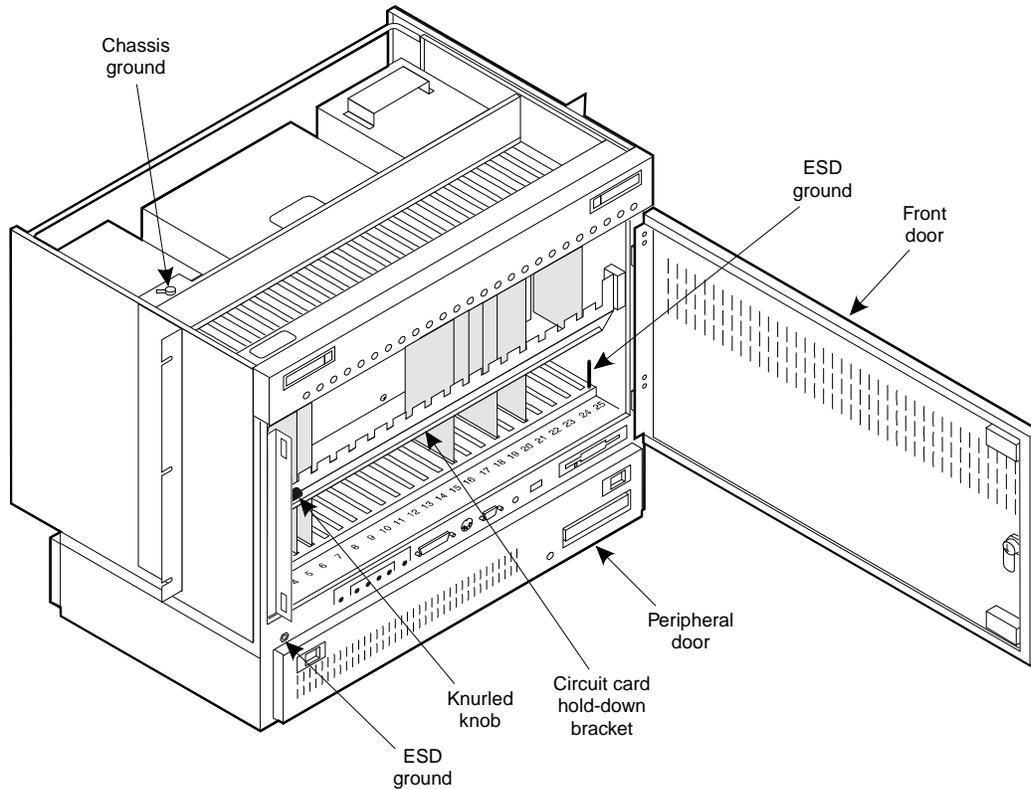
**chg\_state -m <mach\_id> down**

#### **NOTE:**

See the heading "chg\_state," in Chapter 5.

Wait until the screen indicates that the command finished, and turn OFF both the power switch on the front user-interface panel and the circuit breaker on the back of the MAP/100C.

2. Establish an ESD ground. Use either the connector labeled ESD ground on the front of the user-interface panel or the ground lug located on the top left side of the MAP/100C, as shown in Figure 8-1.
3. Inspect the new circuit card for damage.
4. Verify the switch and jumper settings for the circuit card using this chapter.
5. Standing at the front of the MAP/100C, unlatch and open the front door. Use the two slide latches on the upper and lower left corners of the front door.



---

**Figure 8-1. Front Door of the MAP/100C**

6. Remove the circuit card hold-down bracket using these steps:
  - a. Pull the knurled knob at the left side of the bracket.
  - b. Pull the bracket while rotating it from the left until the end of the bracket clears the side of the cabinet.
  - c. Pull the bracket out and to the left.
7. Do one of the following:
  - If this is a blank slot, remove the blank I/O faceplate for the correct slot. Save the screw and discard the blank I/O faceplate.
  - If you are removing an existing circuit card from a slot, disconnect the cables, unscrew the card faceplate, and remove the card. Save the screw.

8. Place the circuit card in the slot. Align the circuit card with the guide and push the circuit card in until it touches the slot.
9. Grasp the circuit card with both hands and push it into the backplane slot. Seat the circuit card by firmly pushing on it.
10. Install the circuit-card retaining screw.
11. Reconnect the circuit-card cables if these cables were removed.
12. Install the circuit card hold-down bracket.
13. Close and latch the front door, using the upper and lower left door latches.

### **Setting Circuit-Card Switches and Jumpers**

The remainder of this chapter provides the following information for the circuit cards that need switch settings and jumper configurations:

- The location of the DIP switches and jumper blocks on the circuit card
- A picture of the NAP-specific switch settings and jumper configurations for the circuit card
- A list of the switch settings and jumper settings for the circuit card

### **Switch Labeling**

The DIP switches on the circuit cards are labeled on one side with either OPEN or ON, which are equivalent. The switch is OPEN or ON when the switch is moved to the labeled side.

### **Jumper Block Labeling**

Jumper blocks usually have a label. One block consists of several numbered sets of jumper pins, with two or more pins per set. If a set of jumper pins has just two pins, put a jumper on that numbered set. If a numbered set of jumpers has more than two pins, the pins are usually labeled alphanumerically.

## **Installing Communicore Modules**

---

Installing Communicore modules includes positioning the module in the slot properly. After physically installing a module, be sure to download the firmware for the module.

 **CAUTION:**

*When handling Communicore modules:*

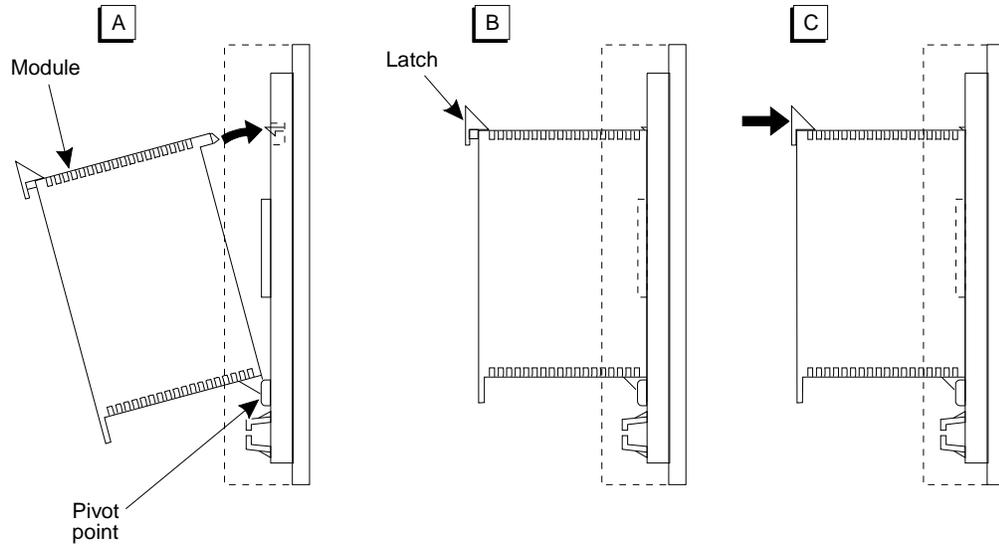
- *Do not touch the gold contact edge of the module; this could contaminate the module.*
- *Use caution to prevent damage from electrostatic discharge (ESD).*
- *Avoid any unnecessary handling of the modules.*
- *Wear a ground strap that is correctly connected to a grounding system.*

Insert each module into its corresponding slot on the chassis/assembly backplane. Refer to the designation strip along the top of the chassis/backplane assembly. Be sure to insert each Communicore module only into its designated backplane slot.

 **NOTE:**

The module numbers that appear along the top of each chassis/backplane assembly, illustrated in Figure 8-6 (Lower Subrack: 1 through 15, Upper Subrack: 1 through 15), are unrelated to the logical numbers assigned to these same modules (Lower Subrack: 1 through 15, Upper Subrack: 16 through 32).

After installing a Communicore module, you must download firmware for the module. See the **download** command in Chapter 5, "Command Reference", and page 4-41 on how to download firmware.



---

**Figure 8-2. Inserting Communicore Module (Side View)**

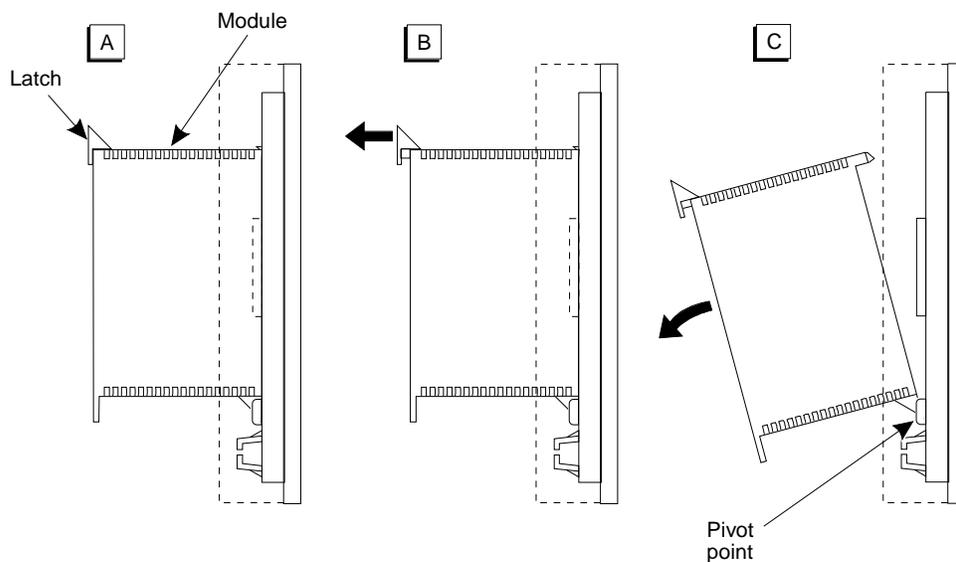
1. Place the pivot point of the module on the hook on the chassis as shown in Figure 8-2A.
2. Hold the module just below the latch and rotate it forward, snapping into the connectors as in Figure 8-2B. *Do this forcefully and swiftly, making sure the module is completely inserted.* The back of the module must be flush with the chassis.
3. Press the latch inward to lock the module in place as in Figure 8-2C.

### Removing Communicore Modules

To remove a module, simply reverse the installation process. This is shown in Figure 8-3 — pull the latch out and then remove the module by pulling from the top.

**⇒ NOTE:**

Special consideration must be given when removing a module *hot*, that is, while the Communicore is powered. See "Removing Communicore Modules Hot" on page 8-10 for details.



**Figure 8-3. Removing a Communicore Module**

### Removing Communicore Modules Hot

Special consideration must be given when removing Communicore modules hot, that is, while power is being supplied to the Communicore.



**NOTE:**

When any Communicore module is removed hot a MAP/100C alarm will sound.

Any module, *except for the power/maintenance module*, can be removed hot. Removing the power/maintenance module when the system is powered may result in damage to the Communicore.



**CAUTION:**

*Always disconnect the power cord from the power/maintenance module before removing or inserting it.*

Removing the first four modules will impact new calls and tone detection. For this reason, modules should first be administratively removed from the system before being physically removed. [Refer to "remove" on page 5-123 for the procedure to administratively remove modules.](#)

Removing a module administratively:

- Prevents future calls from being assigned to that module
- Allows calls currently assigned to that module to finish

After all active calls have finished, the module returns to an idle state. This causes the STATUS LED to go dark for the following modules:

- Tone Generator
- Tone Detector
- PRI (except slot 3 PRI in the TCS configuration)

For all other modules (switch, control, and power/maintenance) the STATUS LED will be on steadily, indicating an active state.



**CAUTION:**

*To prevent active calls from being dropped, Communicore modules must first be administratively removed from the system before being physically removed. Wait for calls to drop before removing modules.*

Table 8-2 lists other side effects, besides the loss of active calls, that can occur when a module is removed hot:

**Table 8-2. Consequences of Removing Communicore Modules Hot**

<b>Communicore Module</b>	<b>Consequences of Removing Hot</b>	<b>Maintenance Recommendation</b>
Power/Maint.	All power lost to system All active calls across system dropped All new calls across system prevented Possible damage to system	<b><i>NEVER REMOVE HOT!</i></b>  Remove all modules administratively and allow all active calls to finish.
Control	Service to all modules interrupted All active calls across system dropped All new calls across system prevented Loss of D-channel link to MAP/100C Loss of D-channel link to 4ESS	Remove all modules administratively and allow all active calls to finish. Then power system down before removing.

***Continued on next page***

**Table 8-2. Consequences of Removing Communicore Modules Hot — Continued**

<b>Communicore Module</b>	<b>Consequences of Removing Hot</b>	<b>Maintenance Recommendation</b>
Switch	All new calls across system prevented Loss of D-channel link to MAP/100C Loss of D-channel link to 4ESS	Remove administratively and allow all active calls to finish before removing hot.
Tone Detector	Loss of touch-tone detection for any active call on module All new calls on module prevented	Remove administratively and allow all active calls to finish before removing hot.
Tone Generator	Loss of touch-tone generation for any active call on module All new calls on module prevented	Remove administratively and allow all active calls to finish before removing hot.
Subrack 1 - Slot 4 PRI (D-channel)	Loss of D-channel link to 4ESS All new calls across system prevented Active calls on module are dropped Active calls across system remain up	Remove administratively and allow all active calls to finish before removing hot.
Subrack 1 - Slot 3 PRI (D-channel)	Loss of D-channel link to MAP/100C All new calls across system prevented Active calls on module are dropped Active calls across system remain up Loss of touch-tone detection for all active calls across system	Remove administratively and allow all active calls to finish before removing hot.
Any other PRI	Active calls on module are dropped All new calls on module prevented	Remove administratively and allow all active calls to finish before removing hot.

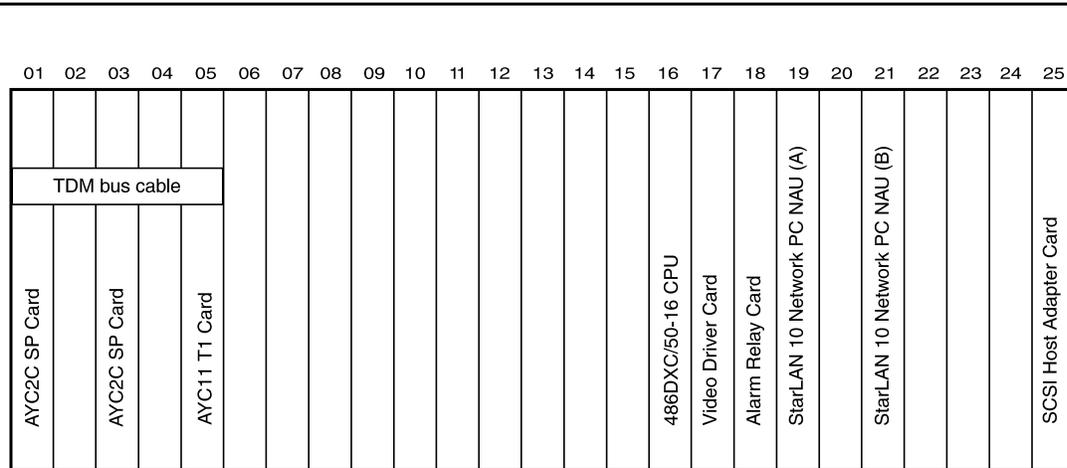
## **Equipment Configurations**

This section describes:

- VP and PM MAP/100C card-cage configurations
- TCS configuration for Communicore lower and upper subracks

### Circuit Cards in a MAP/100C TCS VP Machine

A TCS VP machine must have all the circuit cards installed as shown in Figure 8-4.

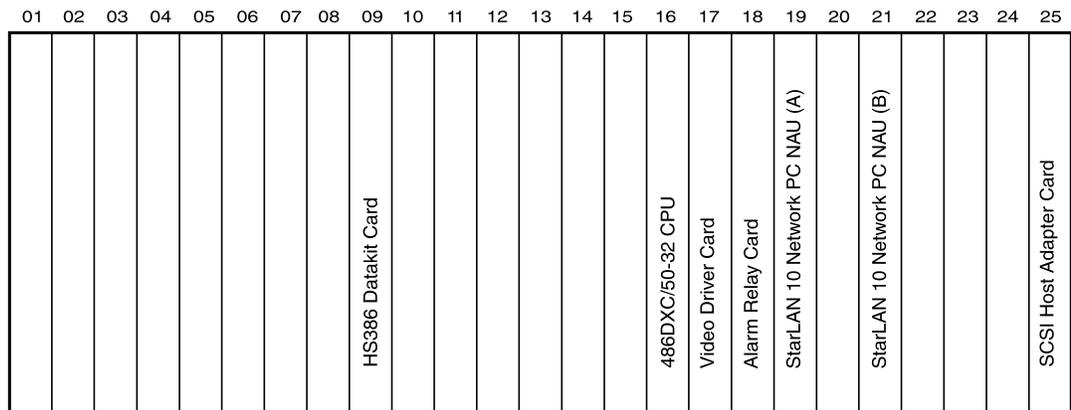


**Figure 8-4. Circuit Cards and Slots for the MAP/100C TCS VP**

Physical Slot No.	Circuit Card Name	Host Interrupt	Host I/O Port Address	Ram Address	Switch 1 (From DIP 1)	Switch 2 (From DIP 1)
1	AYC2C SP (V)	11	120-123		010 111	
3	AYC2C SP (PRI)	11	124-127		010 110	
5	AYC11 T1	12	220-221		111 100	
16	486DXC/50-16 CPU		370H		1001	
17	Video Driver			A0000		
18	Alarm-Relay		340-340		111 010	111 111
19	StarLAN 10 Network PC NAU (A)	5	360-367	D0000 D3FFF		
21	StarLAN 10 Network PC NAU (B)	7	368-36F	D8000 DBFFF		
25	SCSI Host Adapter	14	330-333	C8000	1111 1101	1110 0110
			For switch settings:		0=OFF 1=ON	

**Circuit Cards in a MAP/100C PM Machine**

A PM machine must have all the circuit cards installed shown in Figure 8-5.



**Figure 8-5. Circuit Cards and Slots for the MAP/100C PM**

Physical Slot No.	Circuit Card Name	Host Interrupt	Host I/O Port Address	Ram Address	Switch 1 (From DIP 1)	Switch 2 (From DIP 1)
9	HS386 Datakit	15	240-248			
16	486DXC/50-32 CPU		370H		1001	
17	Video Driver			A0000		
18	Alarm-Relay		340-340		111 010	111 111
19	StarLAN 10 Network PC NAU (A)	5	360-367	D0000 D3FFF		
21	StarLAN 10 Network PC NAU (B)	7	368-36F	D8000 DBFFF		
25	SCSI Host Adapter	14	330-333	C8000	1111 1101	1110 0110
			For switch settings:		0=OFF 1=ON	

## Modules in the Communicore Subracks (Configured for TCS)

TCS Communicore subracks must have all the modules installed as shown in Figure 8-6.

Logical slot numbers: 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Physical slot numbers: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Upper subrack	T O N E	P R I	P R I	P O W E R												
	G E N			D E T			D E T			D E T			D E T			

Logical slot numbers: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Physical slot numbers: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Lower subrack	C O N T R O L	S W I T C H	P R I (D)	P R I (D)	T O N E G E N	P R I	P R I	T O N E D E T	P R I	P R I	T O N E D E T	P R I	P R I	T O N E D E T	P R I	P O W E R

MAP/100C VP  $\xrightarrow{23B+D}$   
 AYC11 T1 (slot 5)  
 4ESS  $\xrightarrow{431B+D}$

**Figure 8-6. Modules and Slots for TCS Communicore Subracks**



## **Configuring and/or Installing Circuit Cards and Modules**

---

This section describes:

- VP and PM MAP/100C circuit-card switch and jumper settings
- Time-division multiplexing (TDM) bus cable connection
- MAP/100C peripheral-device circuit-card switch and jumper settings

### **AYC2C SP Cards**

---

This section describes the configuration and installation of TCS AYC2C Signal Processing (SP) cards.

The AYC2C SP card is used only in the MAP/100C VP configuration.

See Figure 8-7 and configure the AYC2C SP (voice) card in using these steps:

1. Check the AYC2C SP (voice) card in slot 1 to make sure that it has a set of TDM bus terminators installed next to the TDM bus connector. The printing on the bus terminators should face down, toward the bottom of the card.
2. Set the 6-position DIP switch to these positions: 010 111 (the switch is numbered 1 to 6, left to right).
3. Install the AYC2C SP (voice) card.

See Figure 8-7 and configure the AYC2C SP (PRI) card in using these steps:

1. Check the AYC2C SP (PRI) card in slot 3 to make sure that it does *not* have a set of TDM bus terminators installed next to the TDM bus connector.
2. Set the 6-position DIP switch to these positions: 010 110 (the switch is numbered 1 to 6, left to right).
3. Install the AYC2C SP (PRI) card.

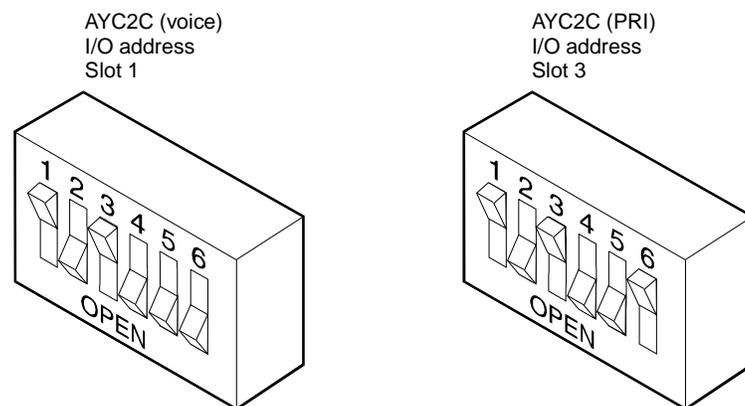
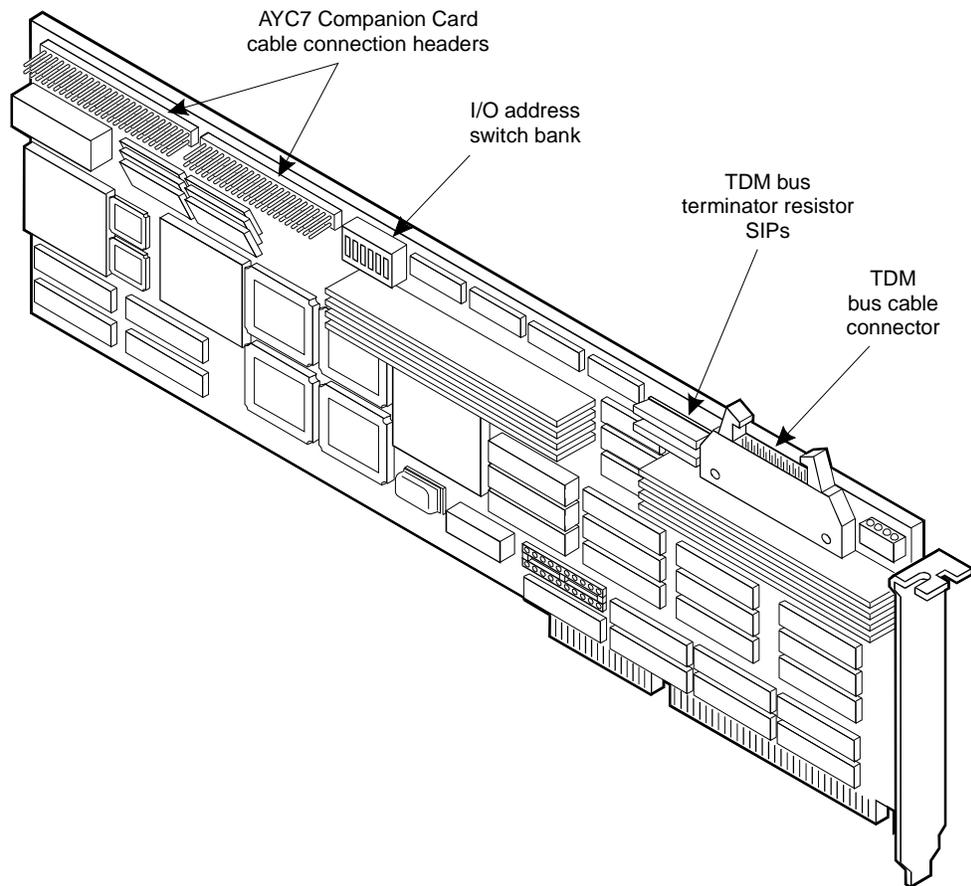


Figure 8-7. AYC2C SP Card Switch and Jumper Settings for TCS

## **AYC11 T1 Card**

---

This section describes the configuration and installation of the TCS AYC11 T1 card. The AYC11 T1 Rev S4, 5 or newer card is used only in the MAP/100C VP configuration.

When removing AYC11 T1 circuit cards from the MAP/100C, replace the circuit card with revision label AYC11 S4,5 or newer if possible. These circuit cards have been modified for noise reduction. The revision label is located at the end of the card, opposite the I/O faceplate and next to the yellow serial number label.

Jumpers on the AYC11 T1 card are factory preset and should not be changed with the exception of the IRQ jumper.

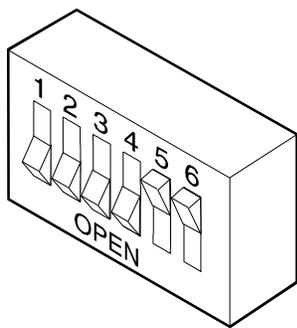
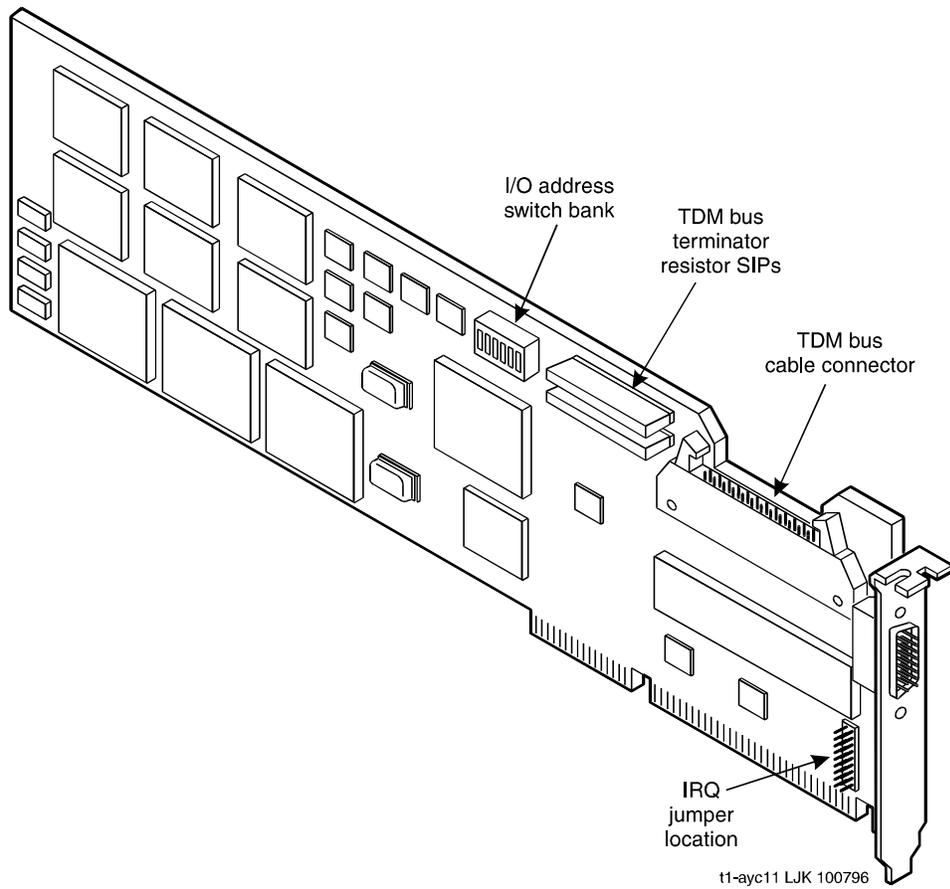
See Figure 8-8 and configure the AYC11 T1 card using these steps:



**NOTE:**

The first AYC11 T1 card is in slot 5 for the TCS configuration.

1. Set the six-position DIP switch to these positions: 111 100 (the switch is numbered 1 to 6, left to right).
2. Install a jumper on IRQ 12.
3. If this is the only AYC11 T1 card used, install TDM terminating resistors. Terminating resistors are installed next to the TDM bus connector. The writing on the bus terminators should face down toward the bottom of the card.
4. Install the AYC11 card.



T1-0

**Figure 8-8. AYC11 T1 Card Switch and Jumper Settings for TCS**

### **HS386 Datakit Card on the PM (Slot 9)**

This section describes the configuration and installation of the HS386 Datakit card in slot 9 of the PM.

The HS386 Datakit card is used only in the MAP/100C PM configuration.

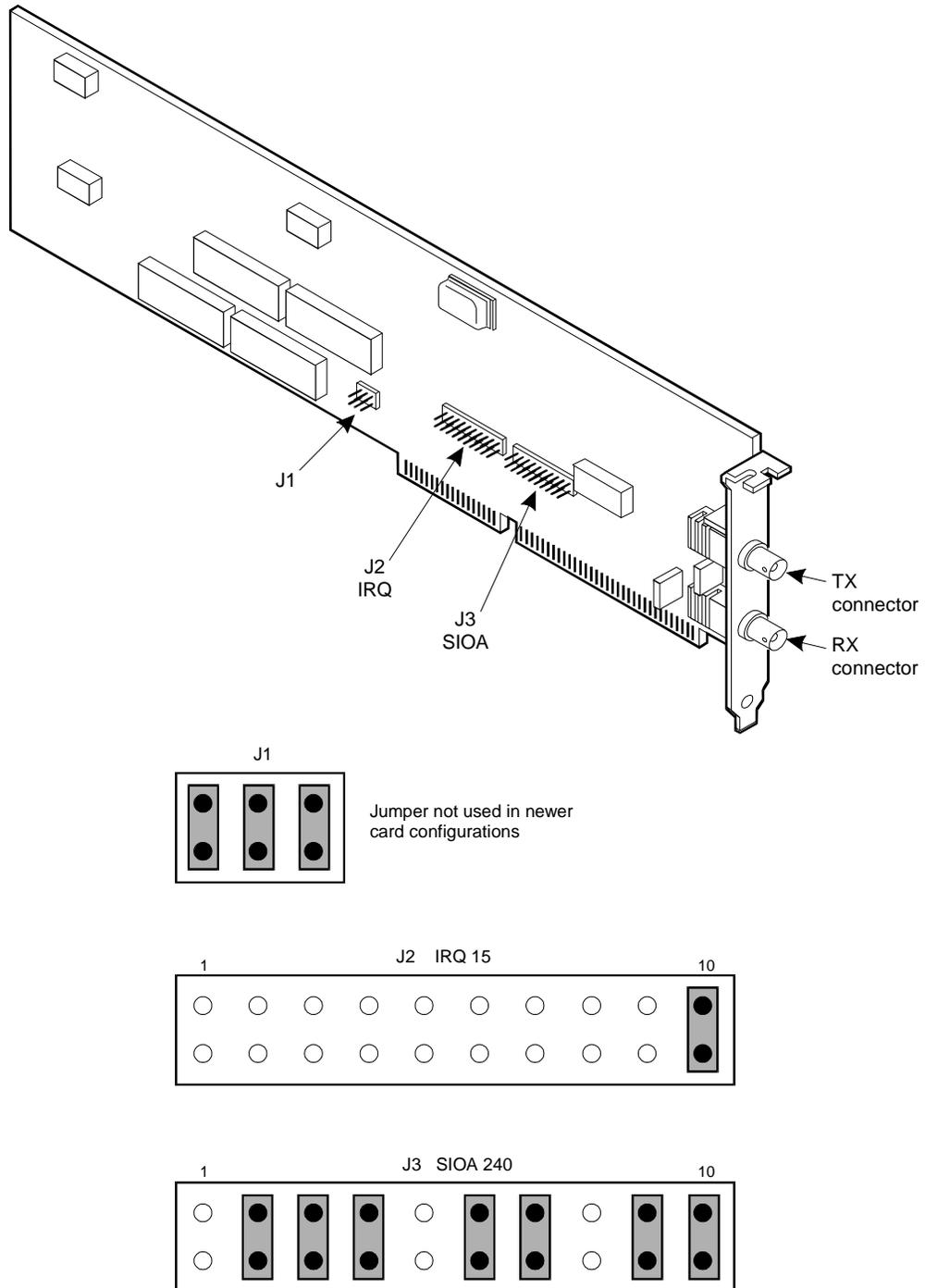
See Figure 8-9 and configure the HS386 Datakit card in slot 9 using these steps:

1. On the jumper block labeled J1, install jumpers on all three sets of pins. This jumper block is not installed on newer HS386 circuit cards.
2. On the jumper block labeled J2, install one jumper on the right-most (10th) sets of vertical pair of pins, as shown. Make sure there are no other jumpers installed on this block. This sets IRQ to 15.
3. On the jumper block labeled J3, starting from the left, install jumpers on the 2nd, 3rd, 4th, 6th, 7th, 9th, and 10th vertical pairs of pins, as shown. This sets start of input/output address (SIOA) to I/O address 240.
4. Install the HS386 Datakit card in slot 9.



**NOTE:**

The HS386 Datakit card is usually configured at the site and is always installed in slot 9.



**Figure 8-9. HS386 Datakit Card Jumper Settings**

## **486DXC/50-16 or -32 CPU Card (Slot 16)**

---

The next two sections describe the configuration and installation of the 486DXC/50-16 or 486DXC/50-32 CPU card in slot 16.

### **⇒ NOTE:**

There are two 486DXC/50 CPU card configurations. For information about your specific card, see Figure 8-10 for the release 1 card, or Figure 8-11 for the release 2 card.

### **Release 1**

This section describes the configuration and installation of the 486DXC/50-16 or 486DXC/50-32 CPU Release 1 card in slot 16.

The 486DXC/50 CPU release 1 card<sup>1</sup> is configured the same for the VP and PM machines with the following exceptions:

- The VP 486DXC/50 CPU release 1 card uses 16 Mbytes of RAM (refer to Figure 8-10 on page 8-25).
- The PM 486DXC/50 CPU release 1 card uses 32 Mbytes of RAM (refer to Figure 8-10 on page 8-25).



### **CAUTION:**

*If the CPU card is replaced or settings are changed, readminister the firmware to prevent boot errors. Also verify that the BIOS is the correct version. Refer to "Checking and Administering CMOS and BIOS Firmware" on page 4-20 of this book .*

See Figure 8-10 and configure the 486DXC/50 CPU release 1 card in slot 16 using these steps:

1. Set the four-position DIP switch 1 (SW1) to these positions: 1 0 0 1 (the switch is numbered 1 to 4, left to right).
2. Install the following jumpers:
  - a. JP1 pins 1 and 2 (determines processor type/speed 486DX)
  - b. JP2 pins 2 and 3 (determines processor type/speed 486DX)
  - c. JP3 pins 1 and 2 (determines processor type/speed 486DX)
  - d. JP4 pins 1 and 2 (determines DX configuration, default setting)
  - e. JP5 pins 2 and 3 (determines 128-Kbyte cache, default setting)(steps continued after figure)

---

1. The 486DXC/50 CPU card is manufactured by Texas Microsystems® (AT&T Comcode 406970731 with 16-Mbyte SIMM or 407019306 without 16-Mbyte SIMM. Replacement cards are only available without 16-Mbyte SIMM.)

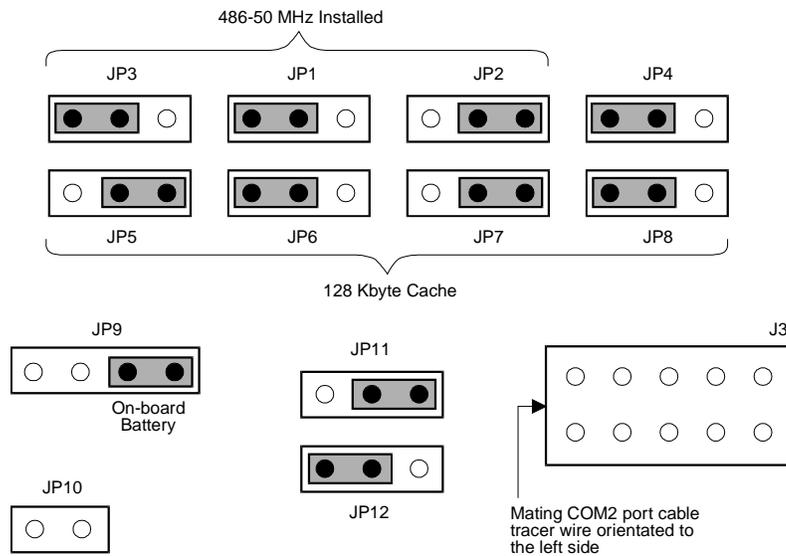
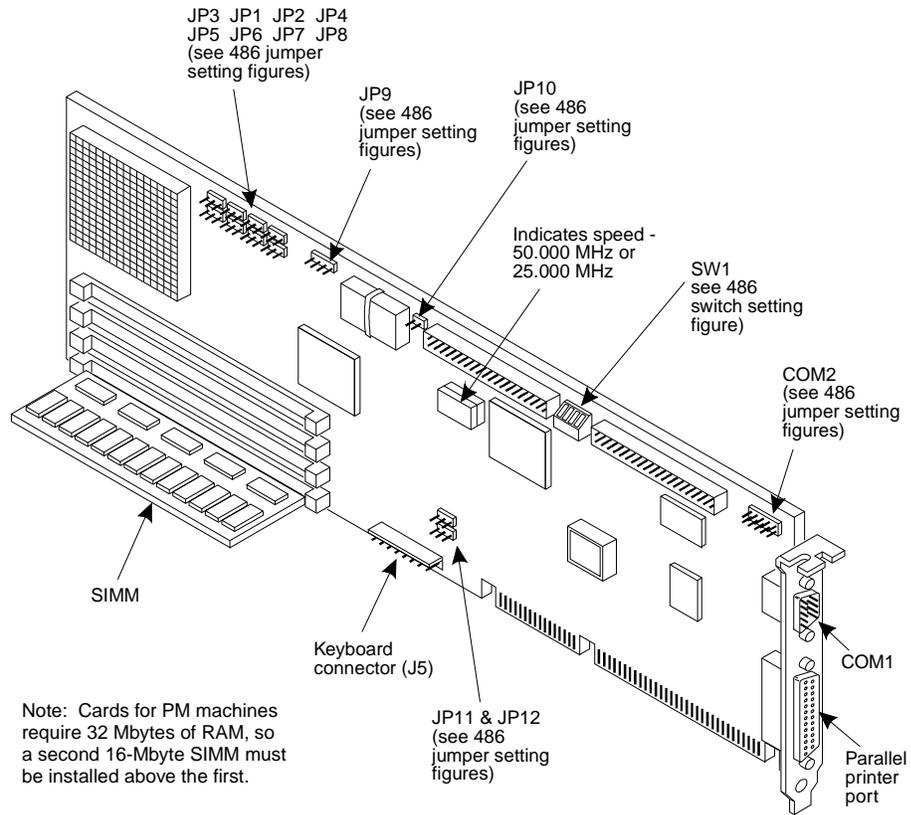


Figure 8-10. 486DXC/50 CPU Release 1 Card Switch and Jumper Settings

- f. JP6 pins 1 and 2 (determines 128-Kbyte cache, default setting)
  - g. JP7 pins 2 and 3 (determines 128-Kbyte cache, default setting)
  - h. JP8 pins 1 and 2 (determines 128-Kbyte cache, default setting)
  - i. JP9 pins 1 and 2 (on-board battery enabled, default setting)
  - j. JP11 pins 2 and 3 (watchdog timer disabled, default setting)
  - k. JP12 pins 1 and 2 (watchdog timer reset delay, default setting)
3. If a jumper is installed on JP10 (hard-drive activity LED), remove it.
  4. If the CPU card is a replacement card see Figure 8-12 to remove the 16-Mbyte SIMM from the old card and install it on the replacement card.



## Release 2

This section describes the configuration and installation of the 486DXC/50-16 or 486DXC/50-32 CPU Release 2 card in slot 16.

### **NOTE:**

There are two 486DXC/50 CPU card configurations. For information about your specific card, see Figure 8-10 for the release 1 card, or Figure 8-11 for the release 2 card.

The 486DXC/50 CPU release 2 card<sup>2</sup> is configured the same for the VP and PM machines with the following exceptions.

- The VP 486DXC/50 CPU release 2 card uses 16 Mbyte of RAM (refer to Figure 8-11 on page 8-29).
- The PM 486DXC/50 CPU release 2 card uses 32 Mbyte of RAM (refer to Figure 8-11 on page 8-29).

### **CAUTION:**

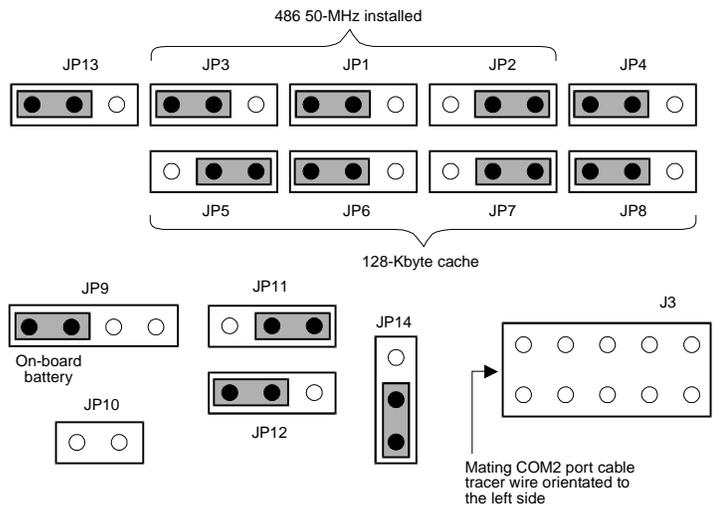
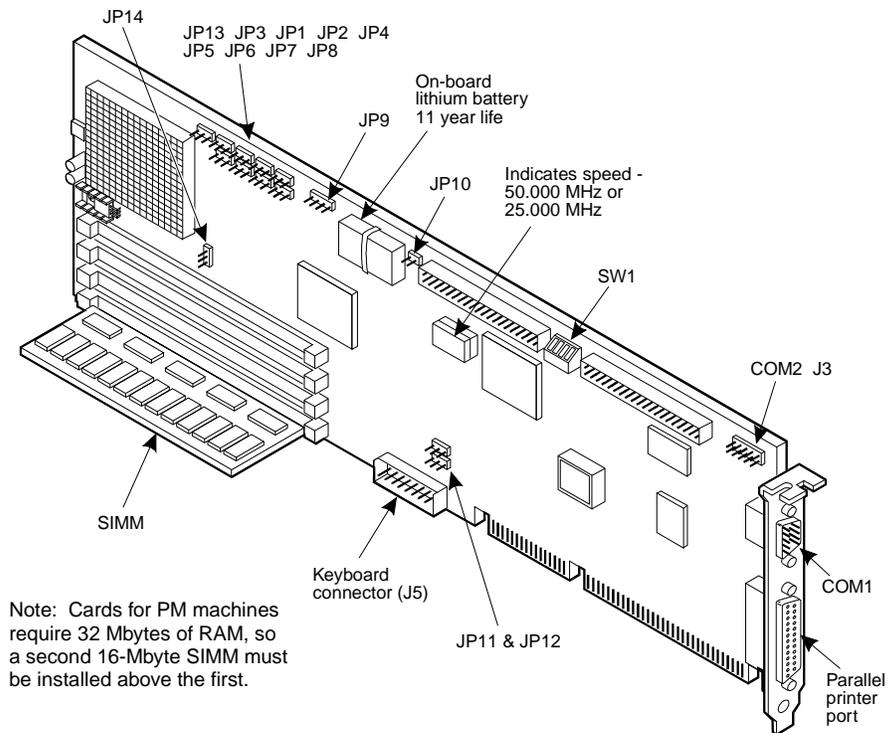
*If the CPU card is replaced or settings are changed, readminister the firmware to prevent boot errors. Also verify that the BIOS is the correct version. Refer to "Checking and Administering CMOS and BIOS Firmware" on page 4-20 of this book.*

See Figure 8-11 and configure the 486DXC/50 CPU release 2 card in slot 16 using these steps:

1. Set the 4-position DIP switch 1 (SW1) to these positions: 1 0 0 1 (the switch is numbered 1 to 4, left to right).
2. Install the following jumpers:
  - a. JP1 pins 1 and 2 (determines processor type/speed 486DX)
  - b. JP2 pins 2 and 3 (determines processor type/speed 486DX)
  - c. JP3 pins 1 and 2 (determines processor type/speed 486DX)
  - d. JP4 pins 1 and 2 (determines DX configuration, default setting)
  - e. JP5 pins 2 and 3 (determines 128-Kbyte cache, default setting)
  - f. JP6 pins 1 and 2 (determines 128-Kbyte cache, default setting)
  - g. JP7 pins 2 and 3 (determines 128-Kbyte cache, default setting)
  - h. JP8 pins 1 and 2 (determines 128-Kbyte cache, default setting)
  - i. JP9 pins 1 and 2 (on-board battery enabled, default setting)(steps continued after figure)

---

2. The 486DXC/50 CPU card is manufactured by Texas Microsystems® (AT&T Comcode 407308816 with 16-Mbyte SIMM or 407300342 without 16-Mbyte SIMM. Replacement cards are only available without 16-Mbyte SIMM.)

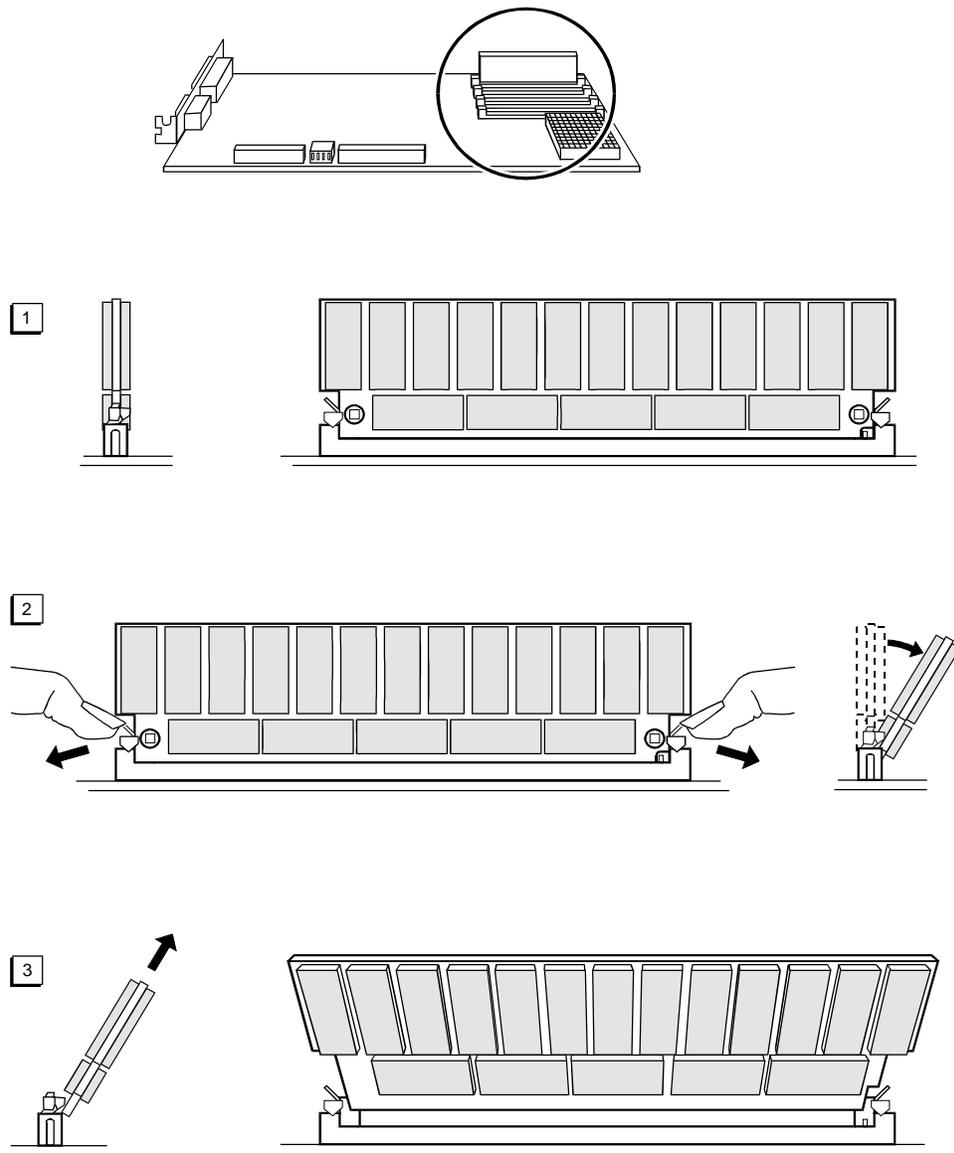


**Figure 8-11. 486DXC/50 CPU Release 2 Card Switch and Jumper Settings**

- j. JP11 pins 2 and 3 (watchdog timer disabled, default setting)
  - k. JP12 pins 1 and 2 (watchdog timer reset delay, default setting)
  - l. JP13 pins 1 and 2 (clock multiplier, default setting pins 1 and 2)
  - m. JP14 pins 2 and 3 (determines processor type 486DX, jumper lower two pins)
3. If a jumper is installed on JP10 (hard drive activity LED), remove it.
  4. If the CPU card is a replacement card see Figure 8-12 to remove the 16-Mbyte SIMM from the old card and install it on the replacement card.

### Removing the SIMM from the CPU Card

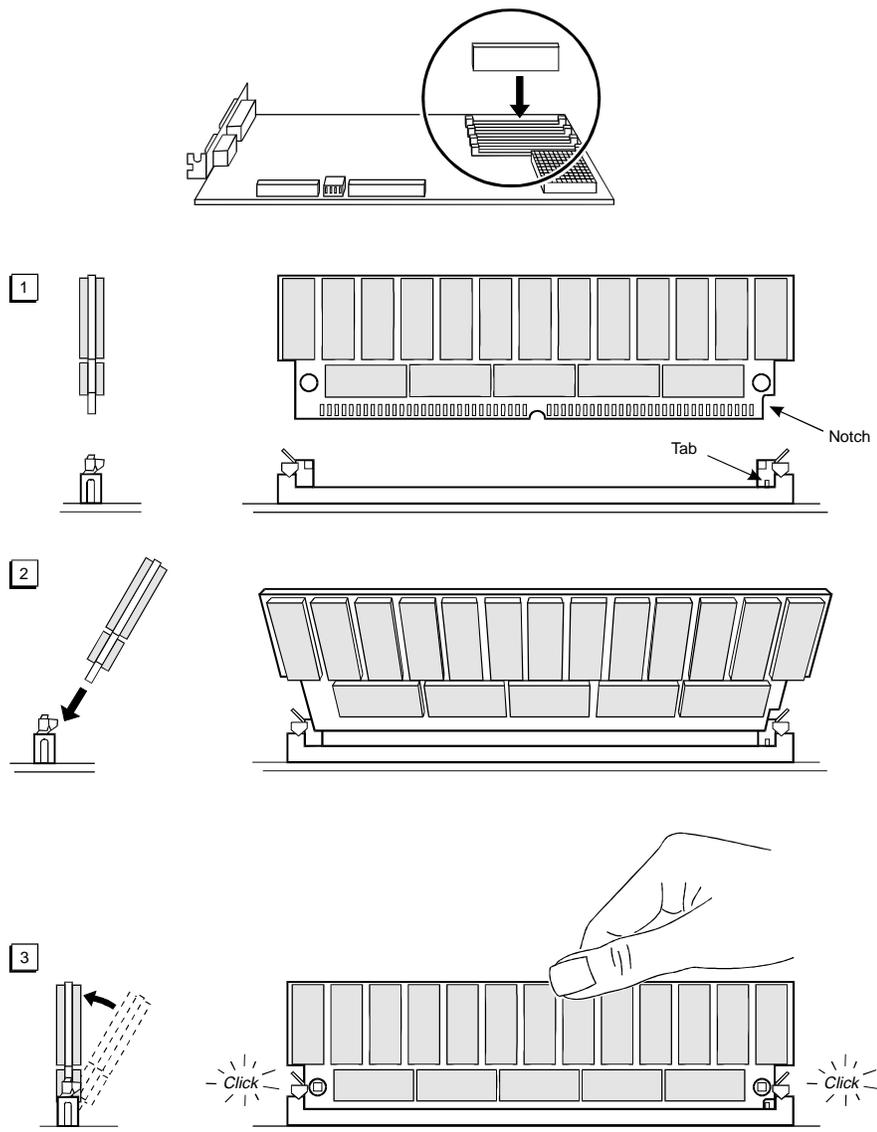
1. Place the CPU card on an ESD-approved work station.
  2. See Figure 8-12. Move the spring-loaded clips, located at each end of the memory SIMM, away from the SIMM. The SIMM will reposition at an angle when both clips are released.
  3. Remove the SIMM and place it in an ESD bag.
- 



**Figure 8-12. Removing the 16-Mbyte 72-Pin SIMM from the 486DXC/50 CPU Card**

### Installing the SIMM on the CPU Card

1. Place the replacement CPU card on an ESD-approved work station.
2. Insert the first 16-Mbyte SIMM at an angle in slot 1 of the CPU card. The SIMM is keyed with a notch cut on one end of it. See Figure 8-13.
3. Move the SIMM to the upright position. When the SIMM is properly installed, the retaining pins will engage it and the spring-loaded clips will snap into place.



**Figure 8-13. Installing the 16-Mbyte 72-Pin SIMM on the 486DXC/50 CPU Card**



## **Video-Driver Card (Slot 17)**

---

The next four sections describe the configuration and installation of the video-driver card in slot 17.

### **⇒ NOTE:**

There are four video-driver card configurations. See Figure 8-14 for type 1, Figure 8-15 for type 2, Figure 8-16 for type 3, and Figure 8-17 for type 4, for your specific card.

### **Type 1**

This section describes the configuration and installation of the type 1 video-driver card in slot 17.

The video-driver card jumper settings are factory preconfigured. See Figure 8-14 and check the card configuration before installation.

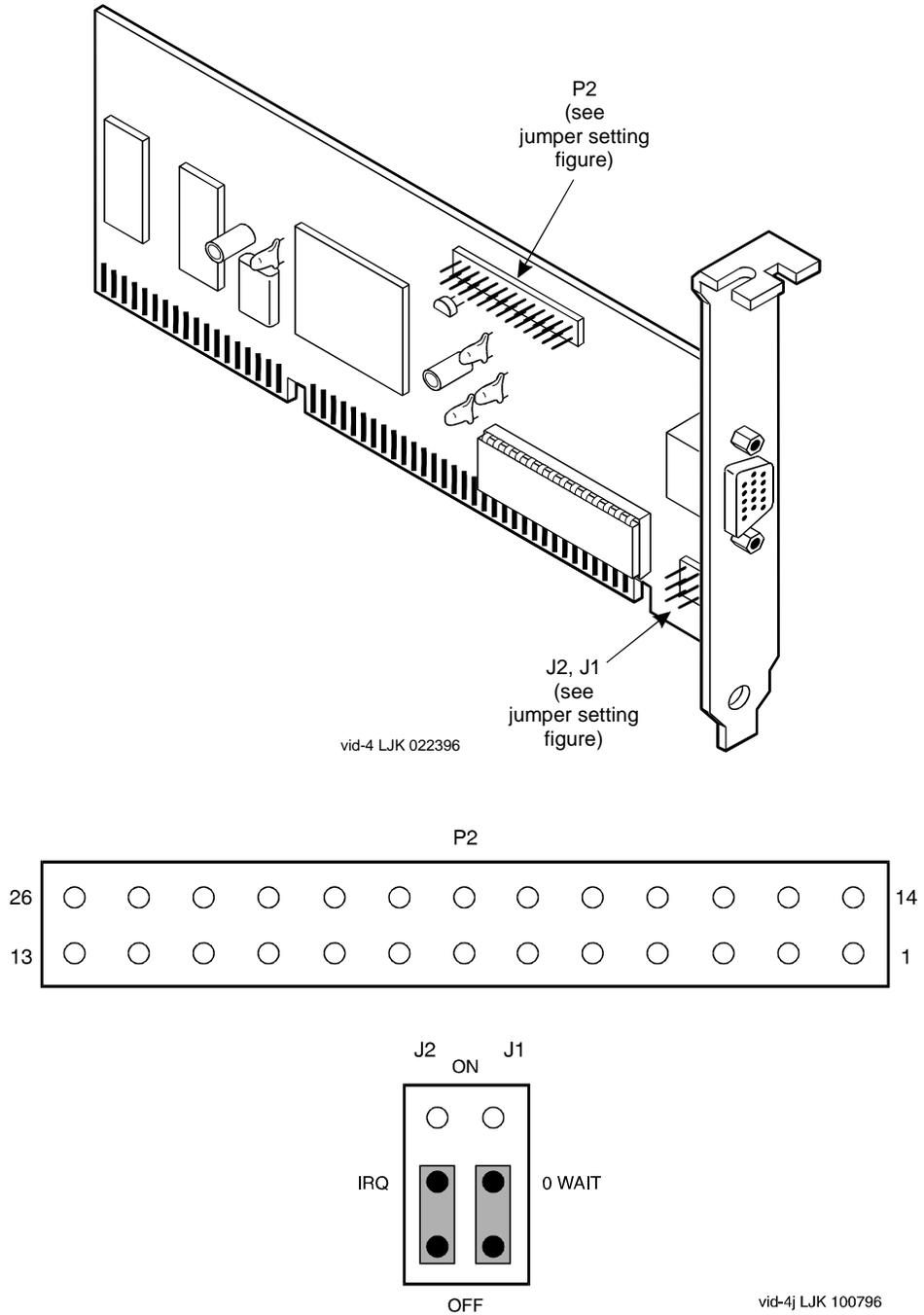
The video-driver card<sup>3</sup> (type 1) is configured the same for the VP and PM machines.

Configure the video-driver card (type 1) in slot 17 using these steps:

1. Install a jumper on J1 pins 2 and 3 (zero wait-state OFF).
2. Install a jumper on J2 pins 2 and 3 (IRQ OFF).
3. If installed, remove jumpers on P2.
4. Install the video-driver card in slot 17.

---

3. The video-driver card 110-0318-627 is manufactured by STB Systems, Inc.<sup>®</sup> (AT&T Comcode 407530013).



**Figure 8-14. Video-Driver Card Switch Settings (Type 1)**

## Type 2

This section describes the configuration and installation of the type 2 video-driver card in slot 17.

**⇒ NOTE:**

There are four video-driver card configurations. See Figure 8-14 for type 1, Figure 8-15 for type 2, Figure 8-16 for type 3, and Figure 8-17 for type 4, for your specific card.

The video-driver card switch and jumper settings are factory preconfigured. See Figure 8-15 and check the card configuration before installation.

The video-driver card<sup>4</sup> (type 2) is configured the same for the VP and PM machines.

Configure the video-driver card (type 2) in slot 17 using these steps:

1. Set the five-position DIP switch 1 (SW1) to these positions: 0 1 0 0 0 (the switch is numbered 1 to 5, left to right).
2. Install a jumper on JP3 pins 1 and 2 (address latch enable)
3. Install a jumper on JP5 (zero wait-state).

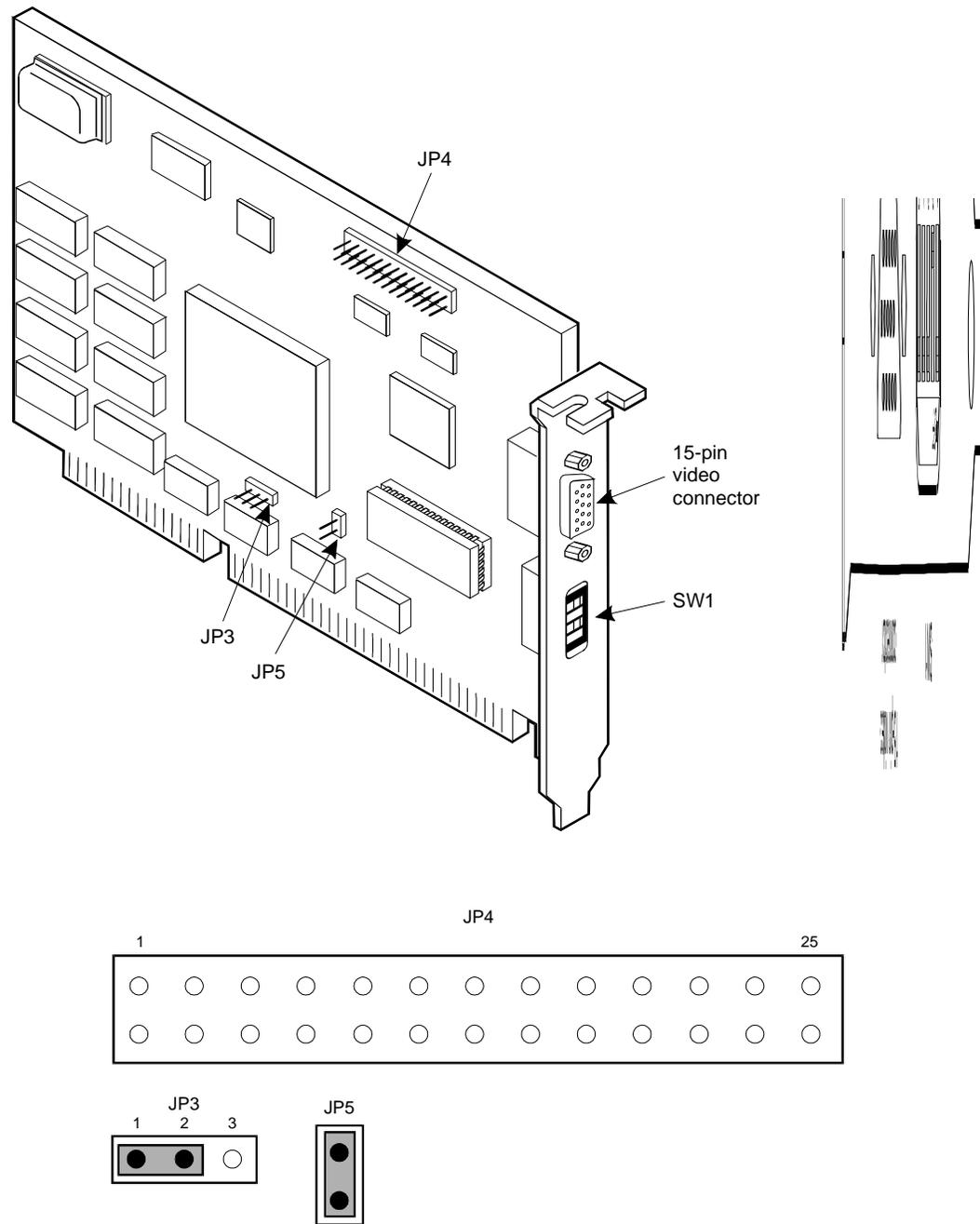
**⇒ NOTE:**

If a graphical speech editor is used, this jumper must be removed).

4. If jumpers are installed on JP4, pins 1 to 25, remove them.
5. Install the video-driver card in slot 17.

---

4. The video-driver card WDXLR831124 is manufactured by Western Digital Corporation® (AT&T Comcode 407095835).



**Figure 8-15. Video-Driver Card Switch Settings (Type 2)**

### Type 3

This section describes the configuration and installation of the type 3 video-driver card in slot 17.

**⇒ NOTE:**

There are four video-driver card configurations. See Figure 8-14 for type 1, Figure 8-15 for type 2, Figure 8-16 for type 3, and Figure 8-17 for type 4, for your specific card.

The video-driver card switch and jumper settings are factory preconfigured. See Figure 8-16 and check the card configuration before installation.

The video-driver card <sup>5</sup>(type 3) is configured the same for the VP and PM machines.

Configure the video-driver card (type 3) in slot 17 using these steps:

1. Set the 5-position DIP switch 1 (SW1) to these positions: 0 1 0 0 0 (the switch is numbered 1 to 5, left to right).
2. Install a jumper on JP3 (zero wait-state).

**⇒ NOTE:**

If a graphical speech editor is used, this jumper must be removed.

3. Install a jumper on JP4 pins 1 and 2 (address latch enable).
4. Install the video-driver card in slot 17.

---

5. The video-driver card WDXLR83160 is manufactured by Western Digital Corporation® (AT&T Comcode 406901884).

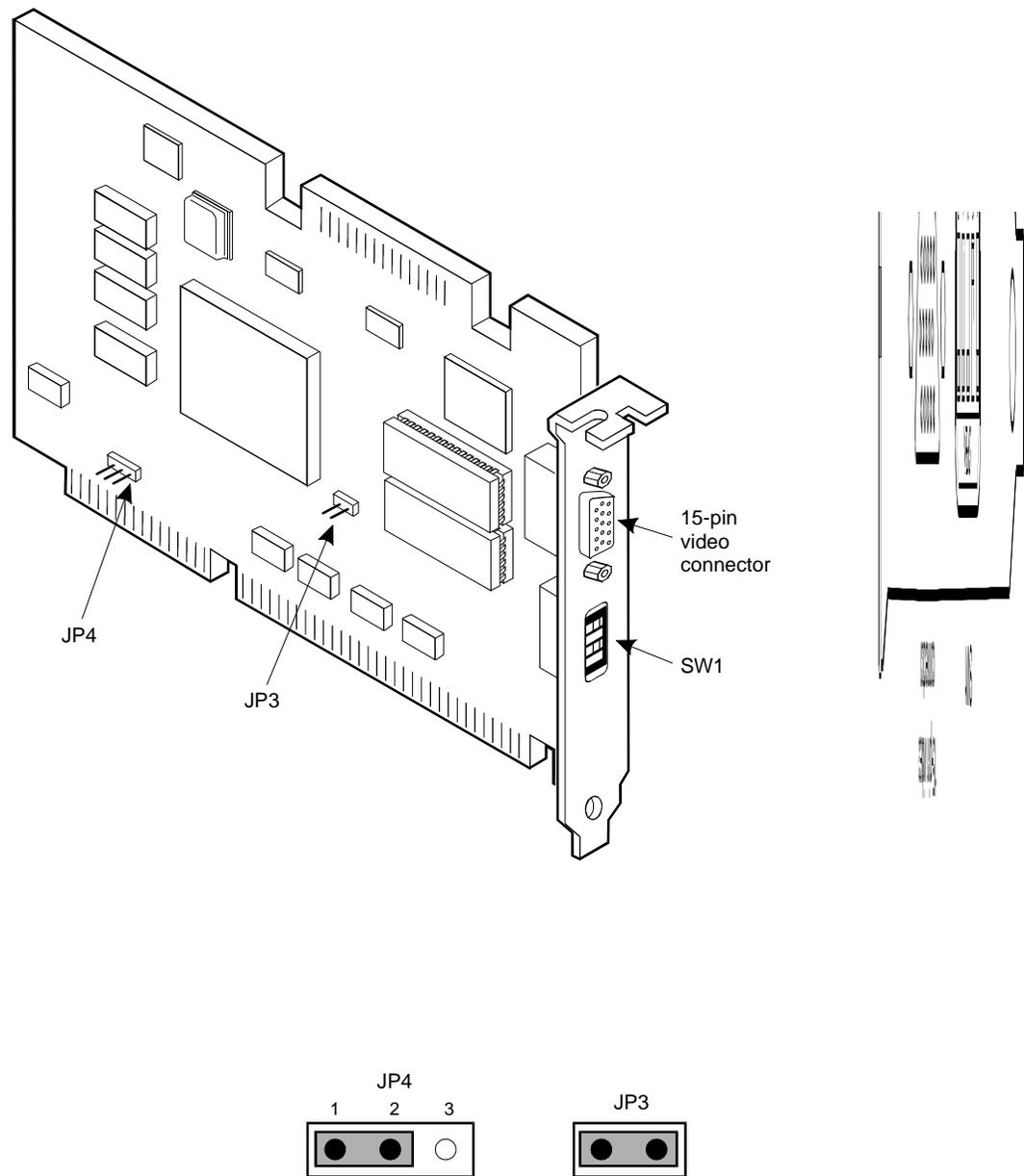


Figure 8-16. Video-Driver Card Switch Settings (Type 3)

## Type 4

This section describes the configuration and installation of the type 4 video-driver card in slot 17.

**⇒ NOTE:**

There are four video-driver card configurations. See Figure 8-14 for type 1, Figure 8-15 for type 2, Figure 8-16 for type 3, and Figure 8-17 for type 4, for your specific card.

The video-driver card switch and jumper settings are factory preconfigured. See Figure 8-17 and check the card configuration before installation.

The video-driver card<sup>6</sup> (type 4) is configured the same for the VP and PM machines.

Configure the video-driver card (type 4) in slot 17 using these steps:

1. Set the five-position DIP switch 1 (SW1) to these positions: 0 0 0 0 0 (the switch is numbered 1 to 5, left to right).
2. Check that a jumper is installed on JP1 pins 1 and 2 (factory use only).
3. If installed remove jumper on JP2 (zero wait-state disabled).

**⇒ NOTE:**

If a graphical speech editor is used, this jumper must be removed.

4. Install a jumper on JP4 pins 1 (60 Hz in mode 3,12, 5E, 5F).
5. Install a jumper on JP4 pins 2 (factory use only).
6. If a jumper is installed on JP4 pins 3 (factory use only) remove them.
7. If jumpers are installed on J2, pins 1 to 25, remove them.
8. Install the video-driver card in slot 17.

---

6. The video-driver card XLR833124 is manufactured by Western Digital Corporation® (AT&T Comcode 407334507).

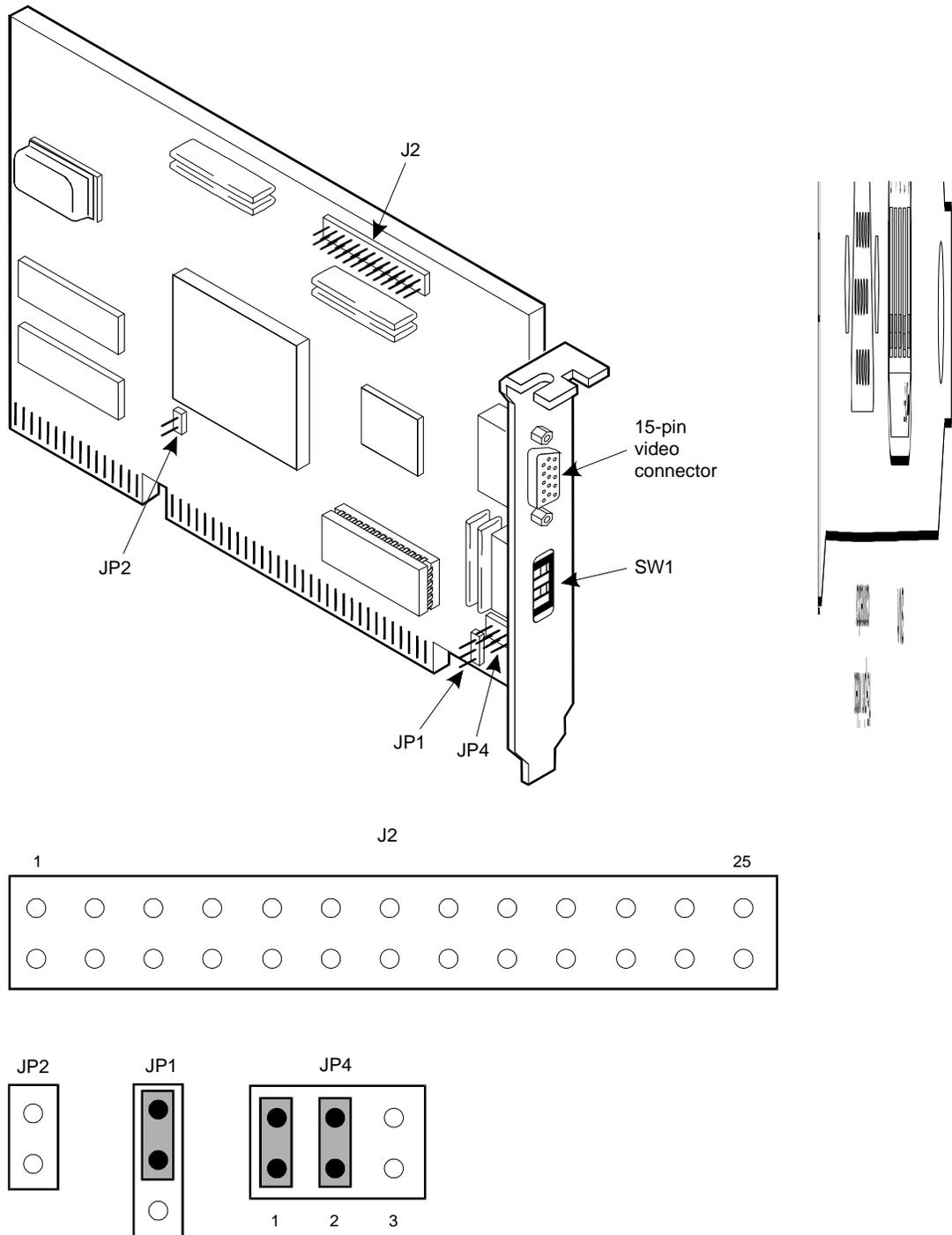


Figure 8-17. Video-Driver Card Switch Settings (Type 4)

## **Alarm-Relay Card (Slot 18)**

---

This section describes the configuration and installation of the alarm-relay card in slot 18.

The alarm-relay card<sup>7</sup> switch and jumper settings are factory preconfigured. See Figure 8-18 and check the card configuration before installation.

The alarm-relay card is configured the same for the VP and PM machines.

The sanity time-out interval is set for 363 seconds ( $4+9+20+40+90+200=363$ ).

Configure the alarm-relay card in slot 18 using these steps:

1. Set the 6-position dip switch 1 (SW1) I/O address to these positions: 111 010 (the switch is numbered 1 to 6, left to right).
2. Set the 6-position dip switch 2 (SW2) sanity time-out interval to these positions: 111 111 (the switch is numbered 1 to 6, left to right).
3. Install the following jumpers:
  - a. J3 B (sanity timer control latched time-out signal, default setting)
  - b. J8 (when jumpered and jumper J9 is removed, enables relay 7 to be controlled by bit 7)
4. If these jumpers are installed, remove them:
  - a. J7 (watchdog timer)
  - b. J9 (when jumpered enables relay 7 to be controlled by the sanity timer, default)

**⇒ NOTE:**

Jumpers J8 and J9 are not on earlier versions of the card.

5. Install the alarm-relay card in slot 18.

---

7. The alarm-relay card is manufactured by DDI, Inc. (AT&T Comcode 406901900).

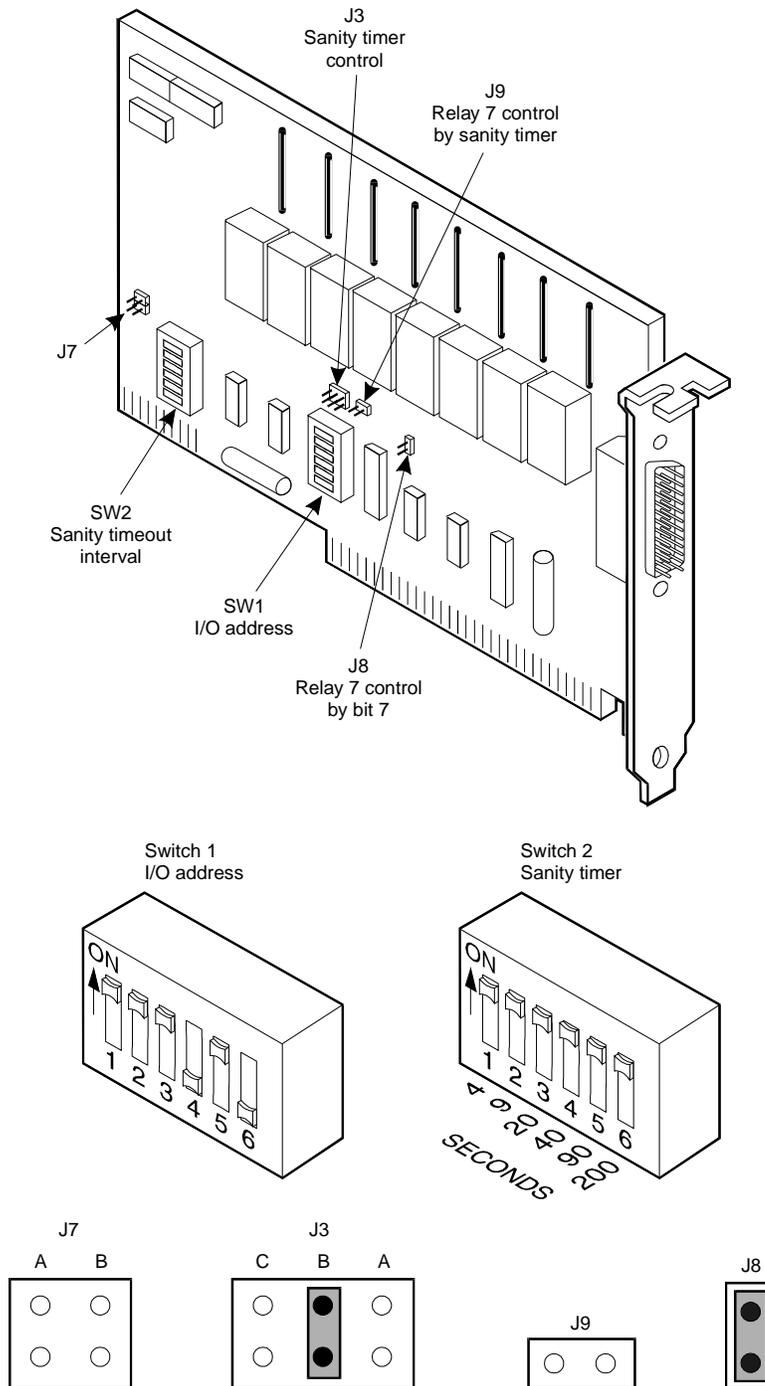


Figure 8-18. Alarm-Relay Card Switch and Jumper Settings

## **StarLAN 10 Network PC NAU Cards**

---

The next two sections describe the configuration and installation of the StarLAN 10 Network PC NAU (A and B) cards in slots 19 and 21.

### **⇒ NOTE:**

The StarLAN 10 network PC NAU cards in slots 19 and 21 are alike, but are configured differently. The StarLAN 10 network PC NAU card in slot 19 is referred to as the StarLAN A card because it is connected to a LAN A hub on the PM cabinet.

### **NAU (A) Card (Slot 19)**

This section describes the configuration and installation of the StarLAN 10 Network PC NAU (A) card in slot 19.

When the link-integrity switch is enabled, the physical connection between the StarLAN 10 network PC NAU card and the LAN hub is monitored by the link-status LED on the front of the card.

The StarLAN A card is configured the same way for the VP and PM machines. All VP and PM machines must have a card configured for StarLAN A in slot 19.

See Figure 8-19 and configure the StarLAN A card in slot 19 using these steps:

1. Configure the I/O address jumper J3 to the default 360-367 address, as shown.
2. Configure the RAM size jumper J5 to the default 16-Kbyte setting, as shown.
3. Configure the RAM address jumper J6 to the default D0000 address, as shown.
4. Configure the IRQ line jumpers J11, J12, and J15 to IRQ 5, as shown.
5. On the card faceplate, set the link-integrity switch to the left to enable it.
6. Install the StarLAN A card in slot 19.

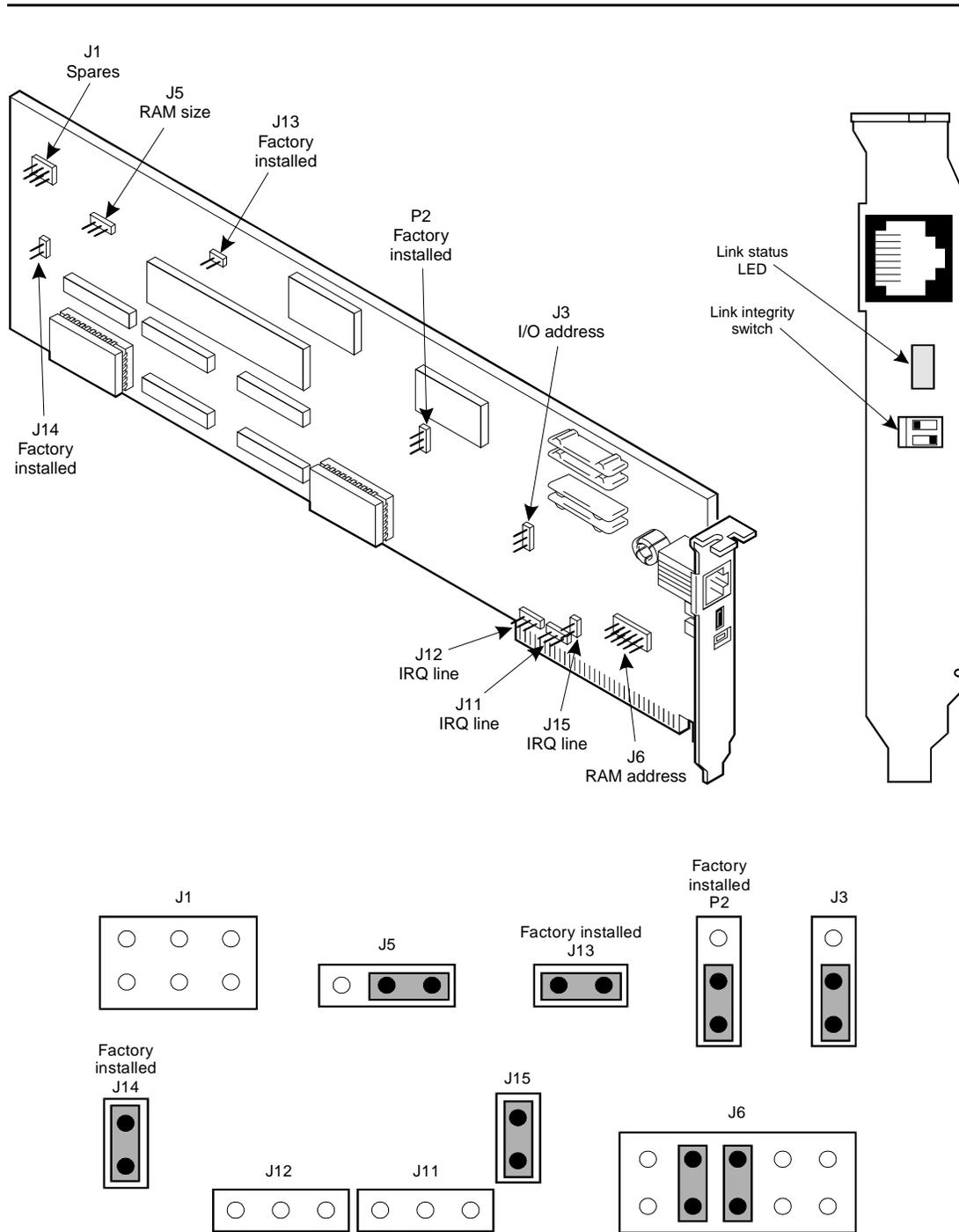


Figure 8-19. StarLAN A Card Jumper Settings

## NAU (B) Card (Slot 21)

This section describes the configuration and installation of the StarLAN 10 Network PC NAU (B) card in slot 21.

### NOTE:

The StarLAN 10 network PC NAU cards in slots 19 and 21 are alike, but are configured differently. The StarLAN 10 network PC NAU card in slot 21 is referred to as the StarLAN B card because it is connected to the LAN B hubs on PM cabinet.

When the link-integrity switch is enabled, the physical connection between the StarLAN 10 network PC NAU card and the LAN hub is monitored by the link-status LED on the front of the card.

The StarLAN B card is configured the same way for the VP and PM machines. All VP and PM machines must have a card configured for StarLAN B in slot 21.

See Figure 8-20 and configure the StarLAN B card in slot 21 using these steps:

1. Configure the I/O address jumper J3 to address 368-36F, as shown.
2. Configure the RAM size jumper J5 to the default 16-Kbyte setting, as shown.
3. Configure the RAM address jumper J6 to address D8000, as shown.
4. Configure the IRQ line jumpers J11, J12, and J15 to IRQ 7, as shown.
5. On the card faceplate, set the link-integrity switch to the left to enable it.
6. Install the StarLAN B card in slot 21.

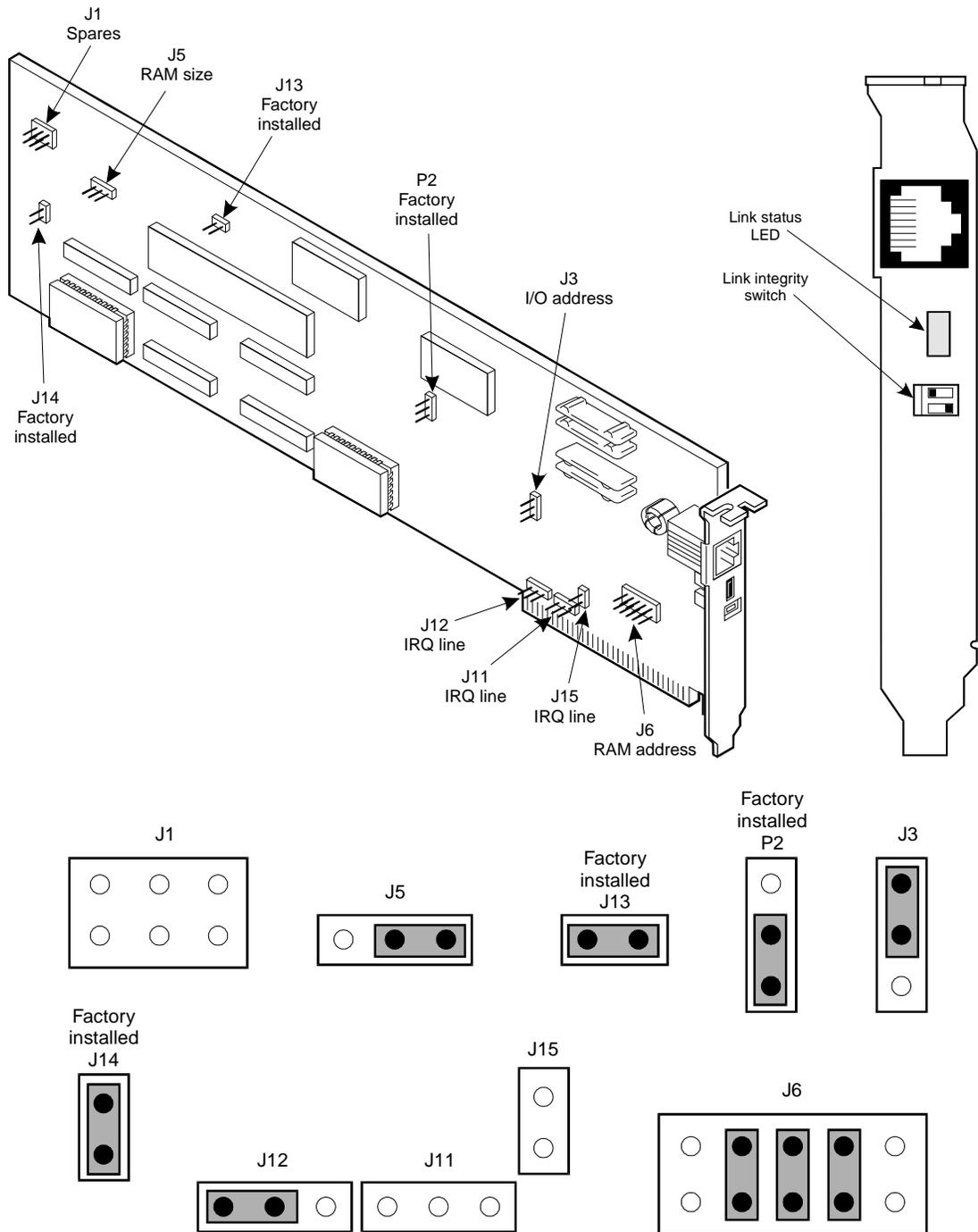


Figure 8-20. StarLAN B Card Jumper Settings

### **SCSI Host Adapter Card (Slot 25)**

---

This section describes the configuration and installation of the SCSI Host Adapter card in slot 25. The SCSI host adapter card<sup>8</sup> is configured the same way for the VP and PM machines.

See Figure 8-21 and configure the SCSI host adapter card in slot 25 using these steps:

1. Set the 8-position DIP switch 1 (SW1) to these positions: 1111 1101 (the switch is numbered 1 to 8, left to right).
2. Set the eight-position DIP switch 2 (SW2) to these positions: 1110 0110 (the switch is numbered 1 to 8, left to right).
3. Install terminating resistors on RP6, RP7, and RP8.
4. Install the following jumpers:
  - a. W 2 (factory installed)
  - b. W 4 (host interrupt channel 14)
  - c. W 9 (factory installed)
  - d. W 11 (DMA transfer speed used with W 13, host bus transfer rate is 8.0-MB/sec)
  - e. W 13 (DMA transfer speed used with W 11, host bus transfer rate is 8.0-MB/sec)
  - f. W 15 (enable floppy system controller, default)
  - g. W 16 (enable floppy system controller, default)
  - h. W 17 (3-pin jumper, pins A and B)(host I/O channel ready enabled, default)
  - i. W 19 (reserved for testing)
5. If these jumpers are installed, remove them:
  - a. W 3 (host interrupt channel 15)
  - b. W 5 (host interrupt channel 12)
  - c. W 6 (host interrupt channel 11, default)
  - d. W 7 (host interrupt channel 10)
  - e. W 8 (host interrupt channel 9)
  - f. W 14 (floppy subsystem primary address 3FX, default)
  - g. W 18 (reserved)
6. Install the SCSI host adapter card in slot 25.

---

8. The SCSI host adapter card model BT-542B is manufactured by BusLogic,<sup>®</sup> Inc. (AT&T Comcode 407021856).

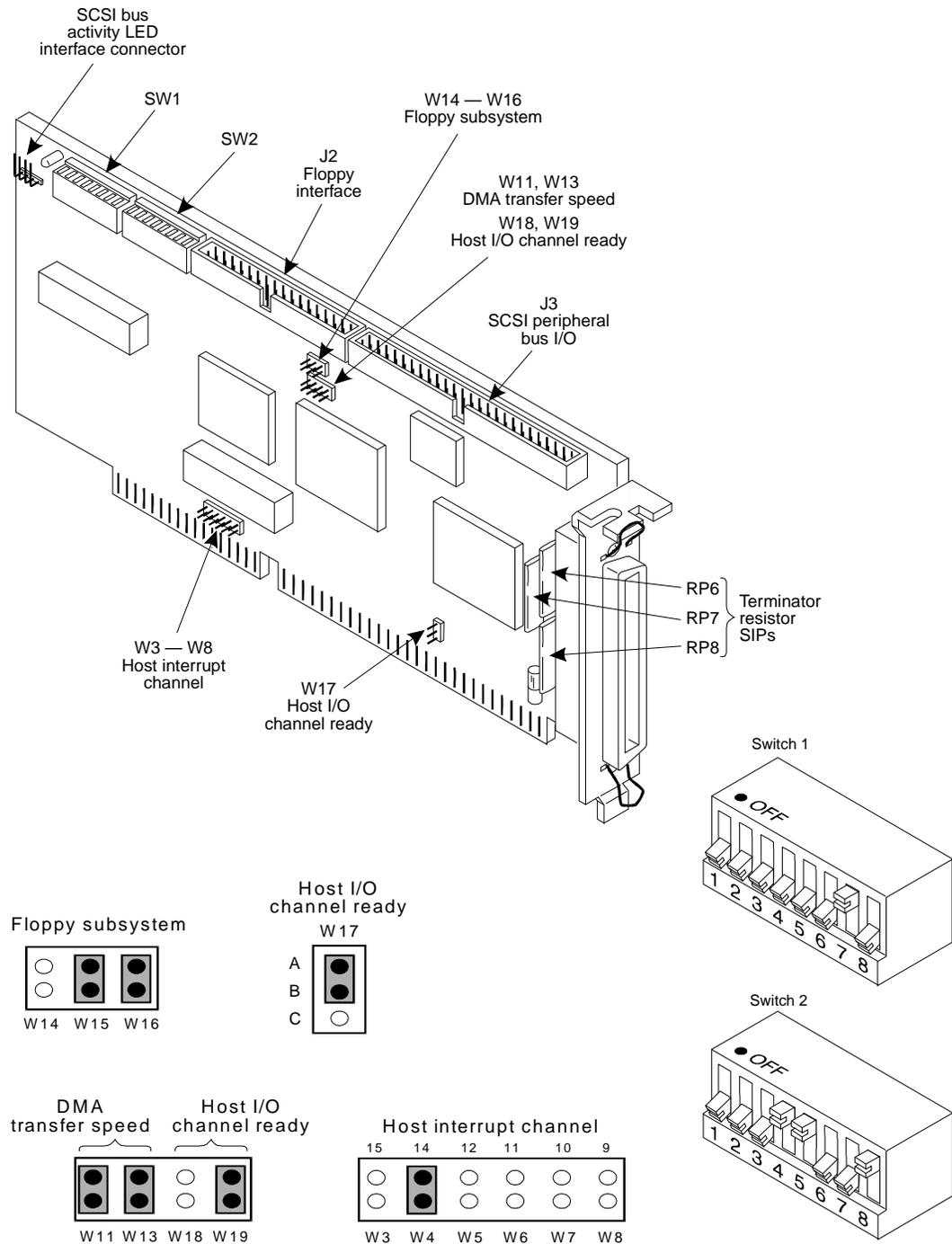


Figure 8-21. SCSI Host Adapter Switch and Jumper Settings

## **TDM Bus Cable**

---

This section describes the installation of the time-division multiplexed (TDM) bus cable.

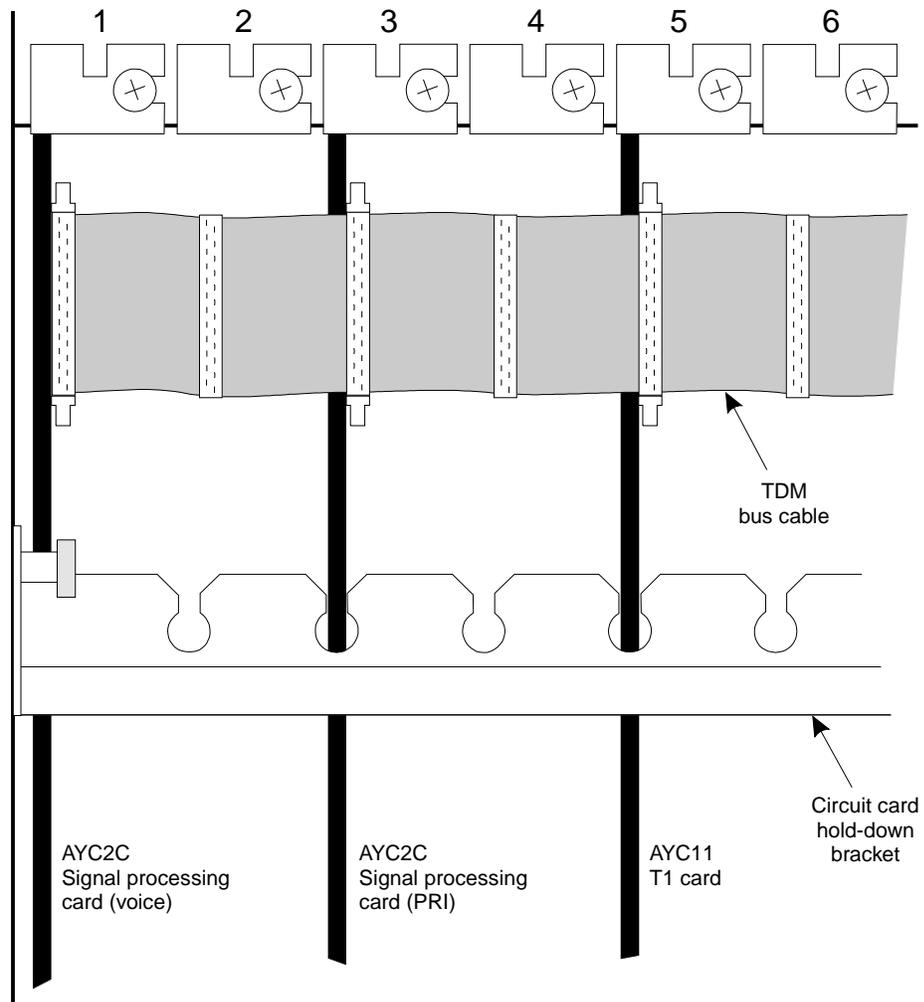
The TDM bus cable is a 24-wire ribbon cable with 15 24-pin connectors used to connect the AYC2C signal-processing cards and the AYC11 T1 cards in a TDM bus.

Install the TDM bus cable using these steps:

1. Check that terminating resistors are installed on the AYC2C signal-processing card in slot 1. Terminating resistors are located below the TDM bus card connector on the card when it is installed. If terminating resistors are not installed, remove the card and refer to "Configuring and/or Installing Circuit Cards and Modules" on page 8-18 in this chapter to install terminating resistors.
2. Make sure that terminating resistors are *not* installed on the any circuit cards installed between slot 1 and the last circuit card on the TDM bus. The TDM bus spans slots 1 through 15.
3. Check that terminating resistors are installed on the last circuit card in the TDM bus.
4. With the blue stripe on the ribbon cable facing down, plug the connectors on the TDM bus cable into the connector on each card from slot 1 to slot 15. The connectors on the cable and the cards are keyed. See Figure 8-22 for an example of an installed TDM bus cable.

 **NOTE:**

Problems are often caused by a bad TDM bus cable connection. When installing the TDM bus cable, push each connector firmly into the connector until you hear it snap into place.



**Figure 8-22. TDM Bus Cable on a MAP/100C (TCS application shown)**

## **2-Gbyte SCSI Hard-Disk Drives**

---

The next two sections describe the configuration of the 2-Gbyte SCSI hard-disk drives.

### **⇒ NOTE:**

There are two types of 2-Gbyte hard-disk drives. See Figure 8-23 for the IBM® Starfire™ 2-Gbyte hard-disk drive (comcode 407340942). See Figure 8-24 for the IBM® Orion™ 2-Gbyte hard-disk drive (comcode 407596857).

### **Type 1 (IBM Starfire)**

This section describes the configuration of the IBM Starfire 2-Gbyte SCSI hard-disk drive.

This 2-Gbyte SCSI hard-disk drive<sup>9</sup> is configured the same for the VP and PM machines.

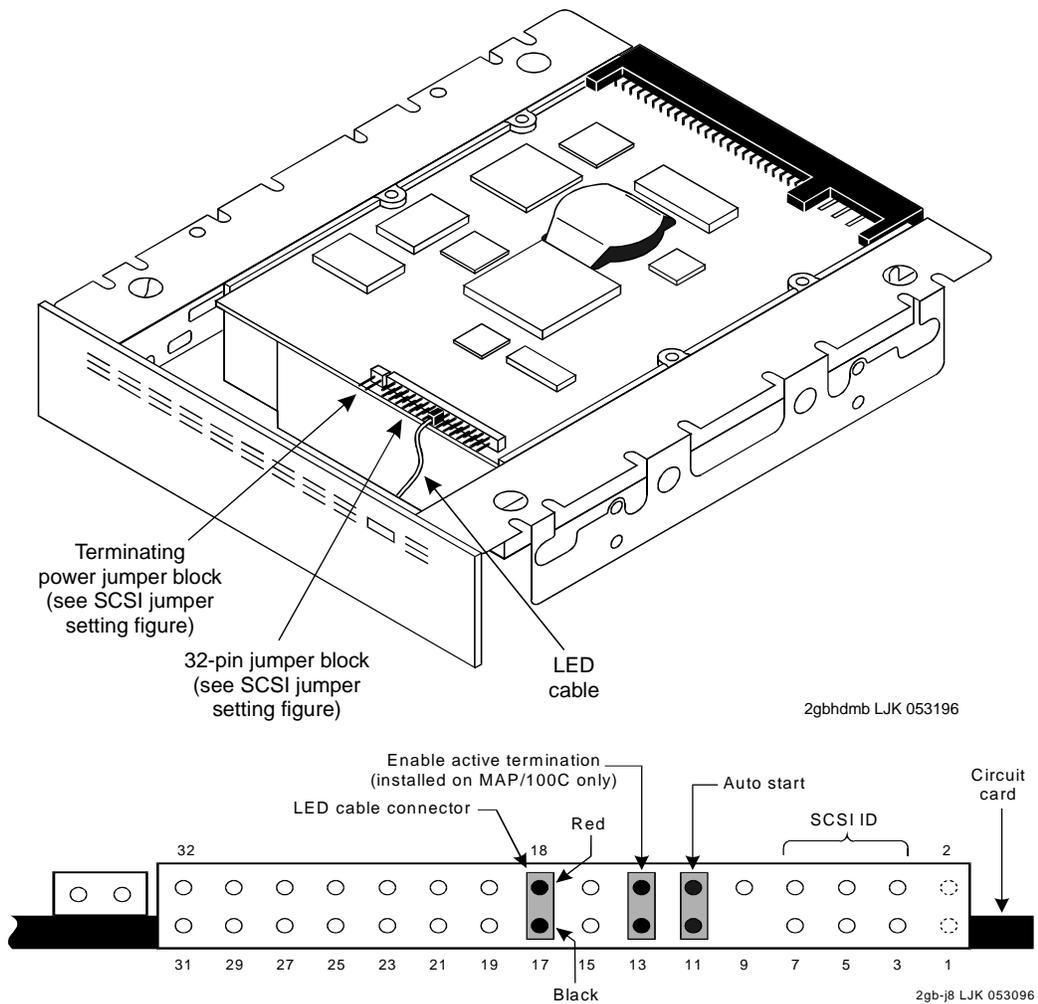
See Figure 8-23 and configure the 2-Gbyte SCSI hard-disk drive using these steps:

1. Install the following jumpers on the option block:
  - a. JP 11 to 12 (enables auto start)
  - b. JP 13 to 14 (enables active termination)
  - c. Use JP 17 to 18 to install the LED cable connector. Connect the black wire to JP17 and the red wire to JP 18
2. If these jumpers are installed on the option block, remove them:
  - a. Pins JP 1 to 2 have been removed by the manufacturer
  - b. JP 3 to 4 (SCSI address)
  - c. JP 5 to 6 (SCSI address)
  - d. JP 7 to 8 (SCSI address)
  - e. JP 10 (reserved)
  - f. JP 15 to 16 (master sync/slave sync)
  - g. JP 19 to 20 (write protect)
  - h. JP 21 to 22 (auto start delay)
  - i. JP 23 to 24 (option block when enabled affects JP 25 to 32)
  - j. JP 25 to 26 (disable target-initiated synchronous negotiation)
  - k. JP 27 to 28 (disable SCSI parity)
  - l. JP 29 to 30 (disable unit attention)

---

9. The SCSI hard disk drive is manufactured by IBM® Corporation (AT&T Comcode 407340942).

- m. JP 31 to 32 (customizing option, reserved)
- 3. If installed, remove the termination power enable jumper from pins 1 and 2 of the power termination block located next to the option block.
- 4. Install the 2-Gbyte SCSI hard-disk drive in the peripheral-bay shelf.



**Figure 8-23. 2-Gbyte SCSI Hard Disk Drive Jumper Settings**

- 5. Perform a low-level format of the hard disk drive using this procedure:
  - a. Insert the diskette labeled Low-Level Format V1.3 into the diskette drive.
  - b. Boot the system from the A: drive using the Low-Level Format diskette.

- c. At the A:\> prompt, enter **debug**  
The system responds by changing the prompt.
  - d. Enter **g=c800:6**  
The system responds with a menu.
  - e. Select option 2 and use **(TAB)** to select the AT&T Ohio IBM hard-disk drive.
  - f. Select option 3 to format the selected hard-disk drive. Formatting the hard-disk drive takes approximately one hour.
  - g. Enter **0** when prompted to set your interleave factor.
  - h. Enter **Y** to continue when the system warns you about the destructive nature of a low-level format.
  - i. Select option 5 to quit the menu.
  - j. Remove the Low-Level Format diskette from the diskette drive.
6. If you have an IBM Starfire® hard disk in any of the MAP/100Cs at your site you may need to upgrade the firmware for that drive. Upgrading the drive's firmware takes about 10 minutes per drive.
- a. Obtain the diskette labeled
  - b. IBM Starfire  
2.0 Gbyte Disk Drive  
(AT&T Comcode 407340942)  
Firmware Upgrade Version "4343". Be sure the diskette is write-enabled.
  - c. Discontinue traffic to the MAP/100C receiving the upgrade.
  - d. Insert the diskette into the diskette drive.
  - e. Reboot the machine.  
  
For a machine with the TCS application enter: **chg state reboot**  
  
See the command reference in the application guide for more information on the command.
  - f. When the machine reboots, look for these messages on the screen:  
  

<code>TARGET LUN 0-0 is ATT OHIODFMSS2F</code>	<code>3232</code>
<code>TARGET LUN 0-3 is TANDBERT TDC 4200</code>	<code>=07:</code>

  
If the firmware is 4343, it is up to date. Go to step l.  
  
If the firmware is 3232, as in the example above, it is out of date. Go to step g.
  - g. The machine boots with MS-DOS.
  - h. When the menu displays, select 1, code update.

- i. Observe the following text on the first line:  
`Target=0      Update = YES      Filename = a:\im1a24c.bin`  
If your screen does not match the previous line, contact the appropriate support organization.
- j. Press **F2** to start the firmware upgrade.  
Upgrading takes about 2 minutes.
- k. When the upgrade process is complete, press **F3** to exit the menus:
- l. Remove the diskette.
- m. Reboot the machine by power-cycling the machine.
- n. Restore the machine to service following normal procedures.
- 7. Contact the TCC to reload software and to return the unit to service. Refer to "Software Installation Checklists" on page 4-5 and select the appropriate installation procedure for VP or PM machine.

## Type 2 (IBM Orion)

This section describes the configuration of the IBM Orion 2-Gbyte SCSI hard-disk drive.

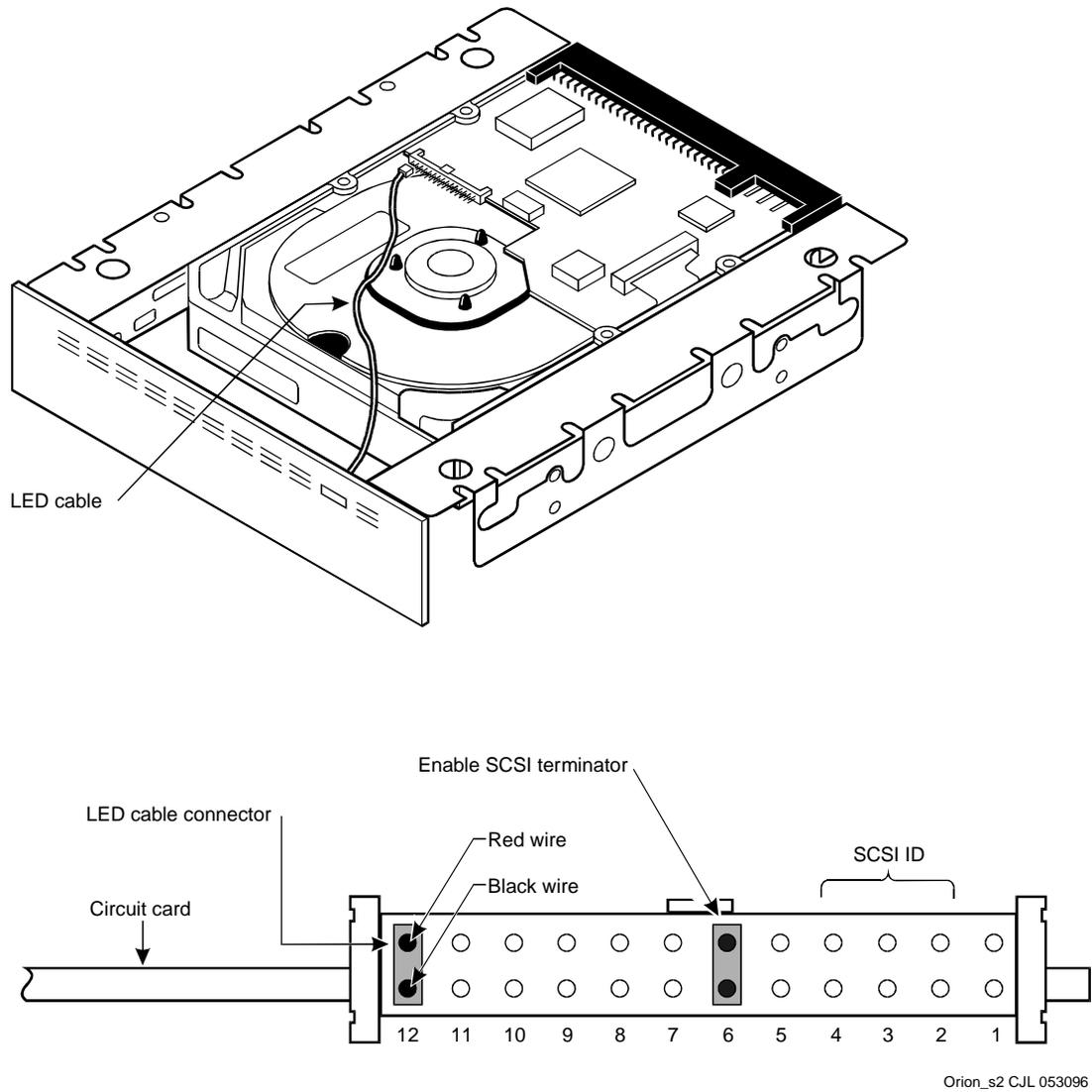
### NOTE:

There are two types of 2-Gbyte hard-disk drives. See Figure 8-23 for the IBM® Starfire™ 2-Gbyte hard-disk drive (comcode 407340942). See Figure 8-24 for the IBM® Orion™ 2-Gbyte hard-disk drive (comcode 407596857).

This 2-Gbyte SCSI hard-disk drive is configured the same for the VP and PM machines.

See Figure 8-24 and configure the 2-Gbyte SCSI hard-disk drive using these steps:

1. Install the following jumpers on the option block:
  - a. JP 6 (enable SCSI terminator)
  - b. Use JP 12 to install the LED cable connector. With the circuit-card side facing up, connect the LED cable connector with the red wire on top.
2. If these jumpers are installed on the option block, remove them:
  - a. JP 1 (reserved)
  - b. JP 2 (DAS2 SCSI device ID bit 3)
  - c. JP 3 (DAS1 SCSI device ID bit 2)
  - d. JP 4 (DAS1 SCSI device ID bit 1)
  - e. JP 5 (disable auto spin up)
  - f. JP 7 (disable unit attention)
  - g. JP 8 (reserved)
  - h. JP 9 (enable auto start delay)
  - i. JP 10 (delay start 6/12)
  - j. JP 11 (disable SCSI parity check)
3. Install the 2-Gbyte SCSI hard-disk drive in the peripheral-bay shelf.
4. Ask the TCC to reload the software and return the unit to service. Refer to "Software Installation Checklists" on page 4-5 and select the appropriate installation procedure for VP or PM machine.



**Figure 8-24. 2-Gbyte SCSI Hard Disk Drive Jumper Settings**

## **1.765-Gbyte SCSI Hard Disk Drive**

This section describes the configuration of the 1.765-Gbyte SCSI hard-disk drive.

This 1.765-Gbyte SCSI hard-disk drive<sup>10</sup> is configured the same for the VP and PM machines.

See Figure 8-25 and configure the 1.765-Gbyte SCSI hard-disk drive using these steps:

1. Install terminating resistors on RN1 and RN2.
2. Install the following jumpers:
  - a. WP (enables SCSI-2)
  - b. W1 (drive provides +5 V dc power to RN1 and RN2, default)
  - c. W2 (J1 pin 26 provides power to RN1 and RN2)
  - d. W4 (enables LED option)
  - e. W10 (spindle sync termination slave)
3. Connect the LED cable to the hard-disk drive. It may be necessary to bend pins upward slightly to install the connector.

The red wire connects to the top pin.

The black wire connects to the bottom pin.

4. Verify that factory-installed jumpers W 5 and W 7 are installed.
5. If these jumpers are installed, remove them:
  - a. SP1 (spindle motor delay option)
  - b. SP0 (spindle motor control option)
  - c. PTY (SCSI interface parity checking on)
  - d. ID2 (SCSI address to configure use ID0, ID1 and ID2)
  - e. ID1 (SCSI address to configure use ID0, ID1 and ID2)
  - f. ID0 (SCSI address to configure use ID0, ID1 and ID2)
  - g. W3 (reserved)
  - h. W11 (spindle sync termination master)
6. Install the 1.765-Gbyte SCSI hard-disk drive in the peripheral-bay shelf.
7. Ask the TCC to reload the software and return the machine to service.  
Refer to "Software Installation Checklists" on page 4-5 and select the appropriate installation procedure for VP or PM machine.

---

10. The SCSI hard disk drive is manufactured by Micropolis<sup>®</sup> Corporation (AT&T Comcode 407071950).

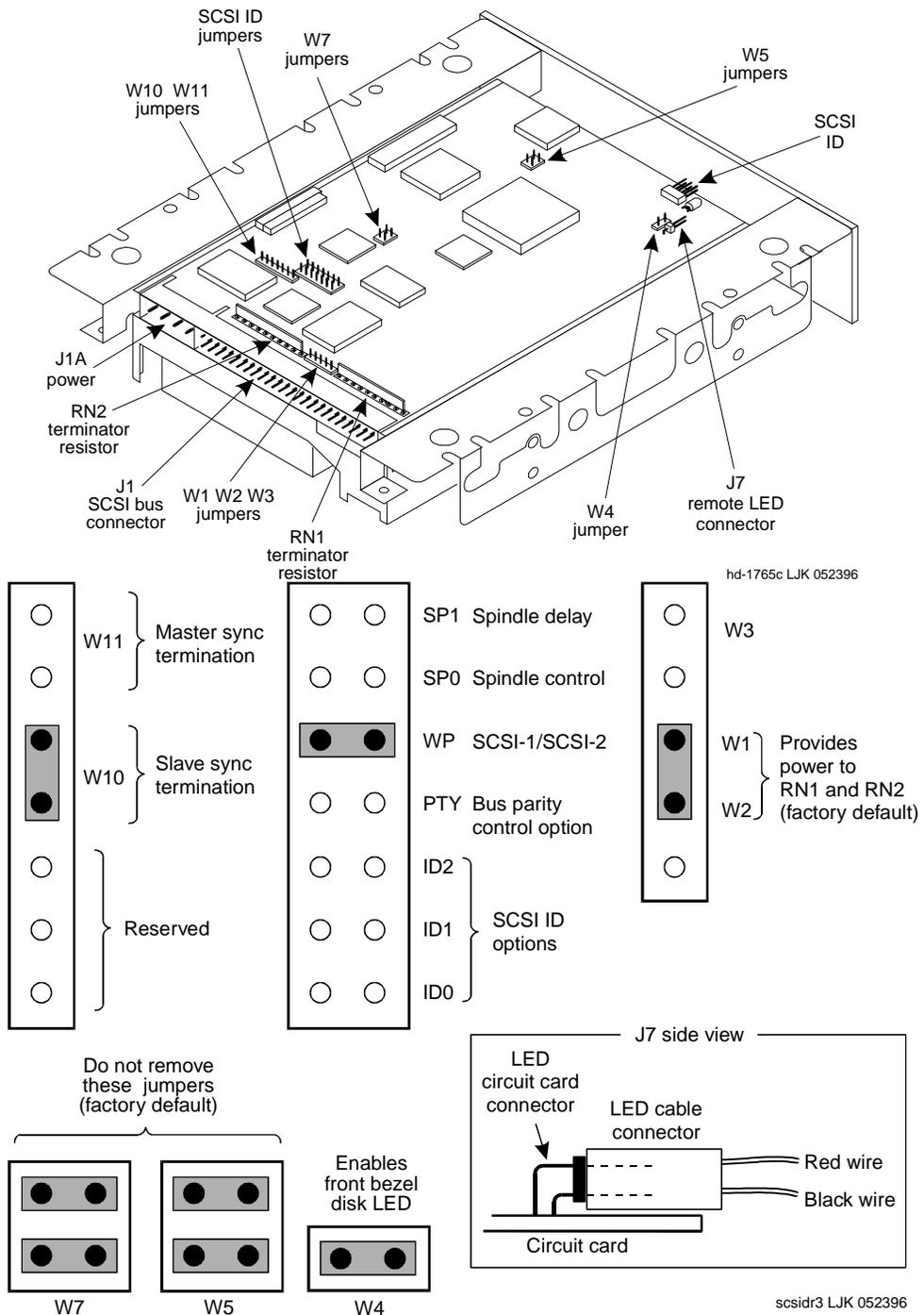


Figure 8-25. 1.765-Gbyte SCSI Hard Disk Drive Jumper Settings

## **525-Mbyte SCSI Cartridge Tape Drive**

This section describes the configuration of the 525-Mbyte SCSI cartridge tape drive.

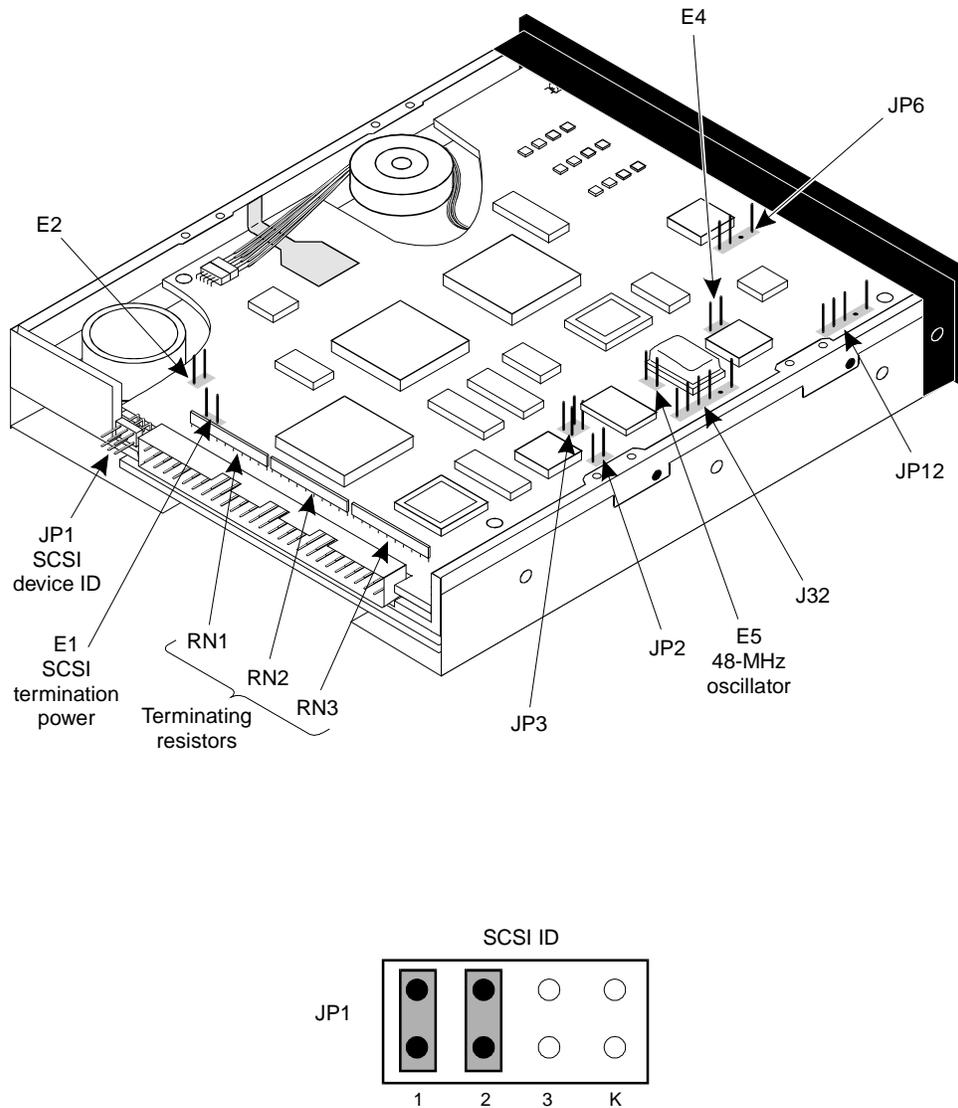
This cartridge tape drive<sup>11</sup> is configured the same for the VP and PM machines.

See Figure 8-26 and configure the 525-Mbyte SCSI cartridge tape drive using these steps:

1. Remove terminating resistors RN1, RN2, and RN3.
2. Install the following jumpers:
  - a. W1 (chassis ground, default, located on the motor-driver card, not shown)
  - b. E1 (SCSI termination power, default)
  - c. E5 (enables 48-MHz main oscillator, default)
  - d. JP1, pins 1 and 2 (SCSI device ID, set to ID 3, default)
3. If these jumpers are installed, remove them:
  - a. E2 (tape drive built-in test mode, default)
  - b. E4 (tape drive built-in test mode, default)
  - c. JP2 (tape drive built-in test mode, default)
  - d. JP3 (tape drive built-in test mode, default)
  - e. JP6 (tape drive built-in test mode, default)
  - f. JP12 (tape drive built-in test mode, default)
  - g. J32 (diagnostic test connector, factory use only, default)
4. Install the 525-Mbyte SCSI cartridge tape drive in the peripheral-bay shelf.

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11. The 525-Mbyte SCSI cartridge tape drive is manufactured by Wangtek<sup>®</sup> Corporation (AT&T Comcode 406844126).



**Figure 8-26. 525-Mbyte SCSI Cartridge Tape Drive Jumper Settings**

## **2.5-Gbyte SCSI Cartridge Tape Drive**

This section describes the configuration of the 2.5-Gbyte SCSI cartridge tape drive.

This cartridge tape drive<sup>12</sup> is configured the same for the VP and PM machines.

See Figure 8-27 and configure the 2.5-Gbyte SCSI cartridge tape drive using these steps:

1. Remove terminating resistors RP1, RP2, and RP3.
2. Install the following jumpers:
  - a. Parity
  - b. Select 0
  - c. Select 1
3. If these jumpers are installed, remove them:
  - a. TPWR
  - b. Select 2
  - c. Test Conn
  - d. Test in
  - e. Test out
4. Install the 2.5-Gbyte SCSI cartridge tape drive in the peripheral-bay shelf.

---

12. The SCSI 2.5-Gbyte streaming tape drive is manufactured by Tandberg Data, Inc. (AT&T Comcode 407334507).

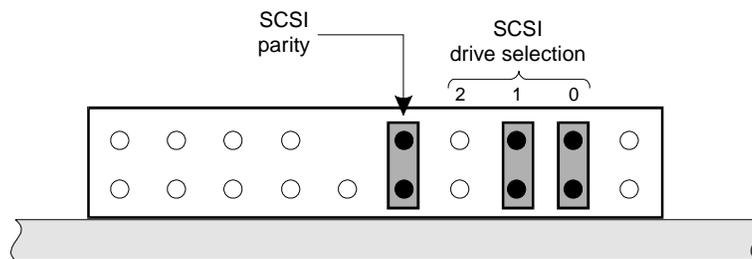
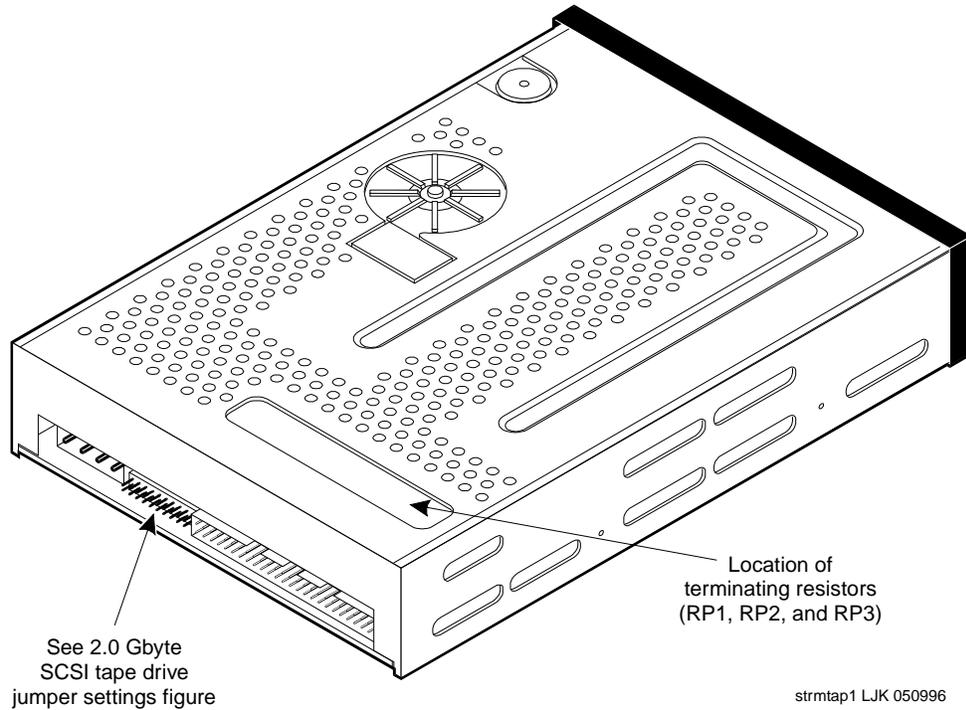


Figure 8-27. 2.5-Gbyte SCSI Cartridge Tape Drive Jumper Settings

## **NAP Parts Lists**

### **MAP 2000 Cabinet Parts List**

**Table 8-3. MAP 2000 Cabinet**

<b>Comcode</b>	<b>Description</b>
601783830	Fuse Panel
601783814	Alarm Panel
<b>Communicore</b>	
601792583	Backplane
H600-427, G2	Cable, power (lower subrack)
H600-427, G1	Cable, power (upper subrack)
407066554	Cable, Intersubrack
601795362 H600-428 GR1	Cable, PRI to AYC11
107314114	Control module
107698441	Control 360 module
107314171	Power/ Maintenance module
107314130	PRI T1 module
107314080	Switch module
107314163	Tone-Det module
107314148	Tone-Gen module
<b>MAP/100C</b>	
<b>Chassis</b>	
406833806	Power supply DC/DC -48 V dc
	Power-supply backplane
406548719	25-slot circuit-card backplane
406783407	Front I/O interface panel w/ LEDs
406783431	Rear I/O interface panel
406693812	Peripheral-bay fan

*Continued on next page*

**Table 8-3. MAP 2000 Cabinet — Continued**

<b>Comcode</b>	<b>Description</b>
406947333	Card-cage fan
406690818	Peripheral-bay fan filter
406690834	Card-cage fan filter
406690826	Power-supply fan filter
407005255	CPU/RMB keyboard adapter
407023431	Drive-bay power--distribution board W/RMB
<b>Peripheral devices</b>	
406832584	3.5-inch diskette drive, 1.44-MB
407340942	Hard-disk drive, (type 1 IBM Starfire) 2.0-GB SCSI 2
407596857	Hard-disk drive, (type 2 IBM Orion) 2.0-GB SCSI 2
407071950	Hard-disk drive, 1.765-GB SCSI 2
406827261	3.5-inch hard-disk universal bracket kit
407334507	Cartridge tape drive 2.5-GB SCSI 2
406844126	Cartridge tape drive 525-MB SCSI 2
<b>Circuit cards</b>	
106439839	AYC2C SP card
106406598	AYC11 TI card
601413172	AYC11 Kit w/ TDM cable
407019306	486DXC/50-16 CPU release 1 card w/o 16-MB memory
407300342	486DXC/50-16 CPU release 2 card w/o 16-MB memory
407244094	16-MB SIMM
407530013	Video-driver card
407334507	Video-driver card
407095835	Video-driver card
406901884	Video-driver card
406901900	Alarm-relay card
406817999 or 106260409	StarLAN 10 Network PC NAU card
407021856	SCSI host-adapter card

*Continued on next page*

**Table 8-3. MAP 2000 Cabinet — Continued**

<b>Comcode</b>	<b>Description</b>
	<b>Cables</b>
601412927 ED5P208-30 G7B	TDM-bus cable
ED5P208-30 G29	Keyboard cable, 10-inch
ED5P208-30 G31	Remote maintenance board (RMB) reset cable
ED5P208-30 G32	Internal fan-status cable
407023464	Fan-status discrete wire cable
406920504	SCSI-bus cable

## Provisioning and Maintenance (PM) Cabinet Parts List

**Table 8-4. Provisioning and Maintenance (PM) Cabinet**

<b>Comcode</b>	<b>Description</b>
601783830	Fuse Panel
601783814	Alarm Panel
<b>LANs</b>	
407375294	LattisHub 10BASE-T workgroup concentrator Model 2814 (Requires mounting shelf, comcode 847662921, used only in 5ESS cabinets mfg after 1/1/96).
106260433 or 106440936	StarLAN 10 Network SmartHUB Model B (Requires mounting shelf, comcode 847481348 in 5ESS cabinets. Used in 4ESS frames and 5ESS cabinets manufactured before 1/1/96).
106260433 or 106440936	StarLAN 10 Network Hub (Used only in 4ESS frames).
407314731	Power strip
<b>Cables</b>	
H600-434 G4	Hub-to-hub (StarLAN 10 hubs only)
H600-434 G7	Hub-to-PM01 and -PM02
<b>MAP/100C PM</b>	
<b>Chassis</b>	
406833806	Power supply DC/DC -48 V dc
	Power-supply backplane
406548719	25-slot circuit-card backplane
406783407	Front I/O interface panel w/ LEDs
406783431	Rear I/O interface panel
406693812	Peripheral-bay fan
406947333	Card-cage fan
406690818	Peripheral-bay fan filter
406690834	Card-cage fan filter
406690826	Power-supply fan filter

*Continued on next page*

**Table 8-4. Provisioning and Maintenance (PM) Cabinet — Continued**

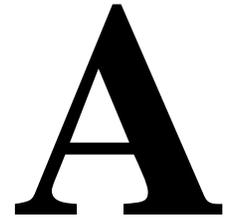
<b>Comcode</b>	<b>Description</b>
407005255	CPU/RMB keyboard adapter
407023431	Drive-bay power-distribution board W/RMB
<b>Peripheral devices</b>	
406832584	3.5-inch diskette drive, 1.44-MB
407340942	Hard-disk drive, type 1 (IBM Starfire) 2.0-GB SCSI 2
407596857	Hard-disk drive, (type 2 IBM Orion) 2.0-GB SCSI 2
407071950	Hard-disk drive, 1.765-GB SCSI 2
406827261	3.5-inch hard-disk universal bracket kit
407334507	Cartridge tape drive 2.5-GB SCSI 2
406844126	Cartridge tape drive 525-MB SCSI 2
<b>Circuit cards</b>	
601358765	HS386 Datakit card
407019306	486DXC/50-16 CPU release 1 card w/o 16-MB memory
407300342	486DXC/50-16 CPU release 2 card w/o 16-MB memory
407244094	16-MB SIMM
407530013	Video-driver card
407334507	Video-driver card
407095835	Video-driver card
406901884	Video-driver card
406901900	Alarm-relay card
406817999 or 106260409	StarLAN 10 Network PC NAU card
407021856	SCSI host-adapter card
<b>Cables</b>	
ED5P208-30 G29	Keyboard cable, 10 inch
ED5P208-30 G31	Remote maintenance board (RMB) reset cable
ED5P208-30 G32	Internal fan-status cable
407023464	Fan-status discrete wire cable
406920504	SCSI-bus cable





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# Upgrading to TCS Release 2.4



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## What's in This Appendix?

Use this procedure to either install a new site or to upgrade a TCS release 2.3 site to TCS release 2.4. If you are installing a new site with release 2.4, this appendix is part of the checklist in Chapter 4.

## Upgrade Overview

The procedures listed below correspond to the major headings in this chapter. In addition, the personnel responsible for each procedure are identified by the following letters shown in the margins:

- |           |   |
|-----------|---|
| <b>L</b>  | The procedure is performed by local, onsite personnel.                                |
| <b>R</b>  | The procedure is performed by remote escalation personnel such as the TCC or NESAC.   |
| <b>RM</b> | A joint effort between remote and local personnel is needed to perform the procedure. |

To upgrade a site, you must do the following:

1. Unbundle and distribute TCS release 2.4
2. Perform a remote manual shutdown of the site
3. Install TCS release 2.4
4. Perform postinstallation site administration and acceptance testing
5. Commit to the TCS release 2.4 installation

If necessary, you can back out of the upgrade as follows:

- Roll back from TCS release 2.4 to a previously installed TCS release 2.3
- If you installed TCS 2.4 as opposed to upgrading TCS 2.3, backing out leaves only platform software.

## Setting up the Site and Transferring tcs\_2.4\_cpio

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### Using a Tape or the push Command

---

**R** In this procedure the Technology Control Center (TCC) logs into the site through DWAN and prepares the site to receive the tcs\_2.4\_cpio.Z (a compressed release file).

Consider these factors in planning for the procedure:

- Ensure that the OSWF has a copy of the DIF assignments for use during the upgrade.
- Datakit authorization is required. Obtain authorization 48 to 72 hours in advance of the site upgrade.
- Save the site cli code and machine code before starting the upgrade.
- The site will remain in service.
- Estimated transfer time is 10 minutes.
- The best time to transfer the file is during a slow DWAN period, 48 hours before the upgrade maintenance window.

Perform these steps of the procedure:

1. From the TCC, log in to Datakit and the site PM01 machine using this command:

**dkcu <Datakit dialstring>**

2. At the `login` prompt enter your user login.
3. At the `password` prompt, enter the password for your user login.
4. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
5. At the prompt, enter **su - root**
6. At the `password` prompt, enter the site-specific root password.
7. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
8. Enter **cd /usr/install**
9. Enter **mkdir -m777 tcs\_2.4** to create the install directory.
10. Enter **CTRL d** to terminate the Datakit connection.

11. Enter **cd /u1/ssa**

to change to the TCC installation directory. (TCC designates the directory containing tcs\_2.4\_cpio.)

12. From the TCC installation directory, enter:

```
push <Datakit dialstring> tcs_2.4_cpio.Z /usr/install/tcs_2.4
```

**⇒ NOTE:**

Use the Datakit authorization and login, and use the complete 7-character Datakit address for the machine name.

This is a logical stopping point in the installation process.

## Unbundling and Distributing tcs\_2.4\_cpio

---

**R** In this procedure, the TCC unbundles and distributes the tcs\_2.4\_cpio file to the site's PM01.

These factors should be considered in planning for the procedure:

- Datakit authorization is required. Obtain authorization 48 to 72 hours in advance of the site upgrade.
- The site will remain in service with all 10 VPs and both PMs operating.
- Estimated distribution and unbundle time is 90 to 120 minutes

Perform these steps of the procedure:

1. From the TCC, log in to Datakit and the site PM01 machine using this command:

**dkcu <Datakit dialstring>**

2. At the `login` prompt enter your user login.
3. At the `password` prompt, enter the password for your user login.
4. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
5. At the prompt, enter **su - root**
6. At the `password` prompt, enter the site-specific root password.
7. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
8. Enter **cd /usr/install/tcs\_2.4**

Uncompress the bundle using the following command (this step takes approximately 6 minutes):

**uncompress tcs\_2.4\_cpio.Z**

9. Enter **cpio -idmu -Itcs\_2.4\_cpio**

to unbundle the cpio to the PM01. The cpio unbundle process takes approximately 5 minutes.

10. Enter **./\_Distribute**

to distribute the files to ssa01 through ssa10 and ssap2. The machines that the files will be distributed to are listed and the status can be monitored. The **\_Distribute** command without any machines listed distributes the files to all machines. Otherwise, the user can list the machines to be distributed. Be sure not to list any machine that is not in service or the distribution process will fail.

The distribution process may not finish in numerical order; for example, ssa08 may finish before ssa01.

Four states can be displayed during the distribution process.

- Submitted: A batch job was submitted by the master PM to distribute the cpio file to a machine.
- Running: A batch job was submitted to a machine and is executing.
- Finished: The software distribution process is complete on the machine. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- ABORTED: An error occurred during the distribution process. Analyze the log file and retry the **\_Distribute** command.

This is a breaking point in the installation process. If the installation process will continue, go to the next section. If installation is to be done at a later date when file distribution is complete, enter **CTRL+D** to terminate the Datakit link.

## **Manually Shutting Down the Site**

---

If you are upgrading the site from TCS 2.3 to TCS 2.4, follow all the steps in this section except for "Shut Down System Software", beginning with "Reroute Site Traffic".

If you are not upgrading, you are performing a new site installation of TCS 2.4. Begin with section "Shut Down Application and System Software" on page -11.

### **Reroute Site Traffic**

---

#### **RM**

In planning to shut down the site, consider these factors:

- The site will be out of service.
- Estimated shutdown time is 30 minutes .
- The best time to take the site down for the installation is at the beginning of the maintenance window.

Perform these steps of the procedure:

1. Call the NOC and skip (reroute) the site's traffic to another site.
2. After all the traffic has dropped off, put D-channels into a **moos** state.
3. Have the OSWF insert the loopback plugs in the T1s at the appropriate DSX.
4. From the TCC, log in to Datakit and the site PM01 machine using this command:  
  
**dkcu <Datakit dialstring>**
5. At the `login` prompt enter your user login.
6. At the `password` prompt, enter the password for your user login.
7. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
8. At the prompt, enter **su - root**
9. At the `password` prompt, enter the site-specific root password for PM01.
10. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).

Check the LAN connection from the LAN hubs to the StarLAN PC NAU cards with the next steps:

11. Enter this command to determine the machine name and the LAN card connection:

**comcheck all**

The following screen displays:

```

$ comcheck all

Communications Check.

You have selected all ACTIVE machines to be communications checked.

The request to start the communications check is being issued.
Please wait for the reply to the communications check request.
Communications Check Results

Mach  Lan A  Lan B  Mach  Lan A  Lan B  Mach  Lan A  Lan B  Mach  Lan A  Lan B
-----
ssa01 up    up    ssa02 up    up    ssa03 up    up    ssa04 up    up
ssa05 up    up    ssa06 up    up    ssa07 up    up    ssa08 up    up
ssa09 up    up    ssa10 up    up    ssa11 inact inact ssa12 inact inact
ssa13 inact inact ssa14 inact inact ssa15 inact inact ssa16 inact inact
ssa17 inact inact ssa18 inact inact ssa19 inact inact ssa20 inact inact
ssap2 up    up
    
```

### Set ssa\_admin to Inactive

#### R

1. From PM01, enter **ssa\_admin**

to make all machines inactive, including PM01. The SSA Administration menu displays:

```

Enter the type of action you wish to perform.

End SSA Administration session      => 0
Communications Check                => 1
Adjunct Database Administration     => 2
Machine Administration              => 3
Start Database Audit                => 4
View Database Audit Results         => 5
==>
    
```

2. Choose Machine Administration by typing **3**. This menu is displayed:

```

Enter the type of action you wish to perform.

Return to main menu.                => 0
Display current AMACH table         => 1
Update a table entry                 => 2
Restore other PM's AMACH table      => 3
==>
    
```

3. Choose Update a table entry by typing **2**. This message is displayed:

```
Enter the particular machine name that you want to update.

Valid machine names are ssa01 to ssa20 for VP machines and
ssap1 for this PM and ssap2 for the other PM.

==>
```



**NOTE:**

Although TCS can support up to 20 VP machines at a single site, no more than 10 are currently used at any site.

4. At the prompt, enter the name of the machine you want to make inactive (for example, **ssa01** for the first VP, **ssa08** for the eighth, etc.). Press **(ENTER)**. A screen like this one is displayed:

```
You have requested an update to the table entry for ssa01
The current entry is as follows.

Machine Uname      Machine Machine  Admin  Audit
Index            Type      Instance Status Pending
---            -
001      ssa01     VP        01      act    0

The current administered machine status is act
Enter 1 for active, 0 for inactive, or <CR> to keep current vaalue.
```

You are prompted to make the machine active or inactive at this screen:

```
The current administered machine status is act
Enter 1 for active, 0 for inactive, or <CR> to keep current value.
==>
```

5. At the prompt, enter **0** (zero) for inactive. A message prompts you to confirm your changes:

**⇒ NOTE:**

Ignore the warning message that appears. Traffic is already turned off, and you will run **chg\_state off** later in this procedure.

The new entry you have entered is as follows.

Machine Index	Uname	Machine Type	Machine Instance	Admin Status	Audit Pending
001	ssa01	VP	01	inact	0

Enter **y** to confirm, or <CR> to cancel request.

6. Enter **y** to confirm the change.

**⇒ NOTE:**

If you entered anything incorrectly using these steps, press **ENTER** at this confirmation message. The system displays the Machine Administration submenu shown in step 2 above, and you can begin again with step 3 to update a table entry.

If you enter **y** at this prompt, you will see this confirmation message, and you are returned to the Machine Administration submenu:

Your update has been completed on both PMs.

7. After making VP and PM machines inactive, enter **0** (zero) to return to the previous menu, and back out through the menus using **0** until you see the system prompt. This message is displayed:

End SSA Administration session.

8. Enter this command to confirm that all machines are inactive:

**comcheck all**

A screen like this one is displayed:

```

$ comcheck all

Communications Check.

You have selected all ACTIVE machines to be communications checked.

The request to start the communications check is being issued.
Please wait for the reply to the communications check request.
Communications Check Results

Mach  Lan A Lan B  Mach  Lan A Lan B  Mach  Lan A Lan B  Mach  Lan A Lan B
-----
ssa01  inact inact  ssa02  inact inact  ssa03  inact inact  ssa04  inact inact
ssa05  inact inact  ssa06  inact inact  ssa07  inact inact  ssa08  inact inact
ssa09  inact inact  ssa10  inact inact  ssa11  inact inact  ssa12  inact inact
ssa13  inact inact  ssa14  inact inact  ssa15  inact inact  ssa16  inact inact
ssa17  inact inact  ssa18  inact inact  ssa19  inact inact  ssa20  inact inact
ssap2  inact inact
    
```

### Shut Down Application and System Software

- If you are upgrading the site from TCS 2.3 to TCS 2.4, perform *only* "Shut Down Application Software".
- If you are not upgrading, you are performing a new site installation of TCS 2.4. Perform *only* "Shut Down System Software".

Perform only *one* of the preceding procedures.

### **Shut Down Application Software**

Perform the following steps when upgrading your site.

#### **R**

1. From PM01, after all of the channels are down, bring down all of the VPs. Enter the following command for each VP machine at the site. This means that if you have 10 VPs, you will enter this command 10 times:

**chg\_state -m <mach\_id> off**

where **<mach\_id >** is vp01 through vp10.

2. From PM01, shut down the application software on the PMs. Use these commands on PM01 (making sure to shut down PM02 first, and then PM01).

**chg\_state -m pm02 off**

**chg\_state -m pm01 off**

Your prompt is returned after the command completes.

This is the end of this procedure.

## Shut Down System Software

Perform the following steps when installing TCS 2.4 as a new installation.

1. Log on to the primary PM.
2. Shut down the system software on all VPs at the site, using this command:

**remsh <mach\_name> /etc/init 3**

where **<mach\_name>** is the machine name of a VP.

Run this command for each VP at the site, beginning with ssa01.

3. Shut down the system software on ssap2, using this command:

**remsh ssap2 /etc/init 2**

4. Shut down the system software on ssap1, using this command:

**remsh ssap1 /etc/init 2**

This completes the manual shutdown of the site.

## Installing TCS Release 2.4

---

**R** This procedure installs the TCS release 2.4 software on each VP and PM.

Consider these factors before performing the procedure:

- The site will be out of service with all 10 VPs and both PMs inactive.
- Estimated installation time is 3 hours.
- The best time to install is during a 12-hour maintenance window.

Perform the procedure:

1. From the TCC, log in to Datakit and the site PM01 machine using this command:

**dkcu <Datakit dialstring>**

2. At the `login` prompt enter your user login.
3. At the `password` prompt, enter the password for your user login.
4. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
5. At the prompt, enter **su - root**
6. At the `password` prompt, enter the site-specific root password.
7. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
8. Enter **cd /usr/install/tcs\_2.4**
9. Enter **./\_Install** to install the files on ssap1, ssap2 and ssa01 through ssa10. The machines to be installed are listed.

The **\_Install** command without any machines listed installs the files to all machines. Otherwise, the user can list the machines to be installed.

This prompt appears at the bottom of the list of machines to be installed:

Do you want to continue (Y/N)

- If **y** (yes) is selected, installation starts on the machines listed and status is monitored.

If the installation process stops, and the run level is 3 for the VPs and the run level for the PMs is 2, perform this procedure:

- a. Check the log files for processes running in the background, using the **ps -ef** command.
- b. Stop all **/usr/add-on/ssa/bin** processes.
- c. Enter **./\_Install** to install the files on ssap1, ssap2 and ssa01 through ssa10.

- d. Log files that have been partially generated are displayed and cleared. No user action is required.
- e. The installation process restarts and installation status is displayed.
- If **n** (no) is selected, no installation takes place; the **\_Install** script exits and the command prompt is displayed.

The installations may not finish in numerical order, for example, ssa08 may finish before ssa01.

The install script automatically performs these functions:

- Verifies that the correct packages have been installed and aborts the installation if there are unexpected results.
- Remotely installs each VP machine in parallel.
- Remotely installs each PM machine.
- Displays remote installation progress.

Four states can be displayed during the installation process.

- Submitted: A batch job was submitted by the master PM to install the software.
- Running: A batch job was submitted to a machine and is executing.
- Finished: Software installation is finished on the indicated machine. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- ABORTED: An error occurred during the installation process. Escalate the problem to the appropriate support organization. Do not attempt to re-install.

10. After the installation completes successfully, request a customer record database download from SMW.

Contact the AFSC and ask that the SMW be used to download a customer record database to the site. Specifically state that you have a TCS 2.4 site.

11. Confirm a successful download from SMW.

SMW should notify your AFSC representative and ask that the customer record database has been downloaded to the site. Your AFSC representative should pass this information on to you.

12. Enter **db\_reload**

to reload the customer record database to all machines at the site.

The following prompt appears at the bottom of the list of machines to be reloaded:

```
Do you want to continue (Y/N)
```

Press Y to begin the reload. A status screen indicates the progress of the **db\_reload** command. When **db\_reload** completes successfully, the screen displays this line:

```
ELAPSED TIME ##:##:## (db_reload status : completion)
```

This completes the installation of TCS release 2.4 on the VPs and PMs.

## Performing Postinstallation Site Administration and Acceptance Testing

---

**RM** Perform this entire procedure on one PM machine.

### Start Application and System Software

---

**⇒ NOTE:**

Machine names for the PMs are ssap1 and ssap2. Machine names for the VPs are ssa01 through ssa10.

1. From PM01, start the application software on the PMs. Use these commands on PM01 (making sure to start PM01 first, then PM02)

```
chg_state -m pm01 on  
chg_state -m pm02 on
```

2. From the PM01, start all of the VPs. Enter the following command for each VP machine at the site. This means that if you have 10 VPs, you will enter this command 10 times. Enter

```
chg_state -m <mach_id> on
```

where **<mach\_id>** is vp01 through vp10.

The following steps to make each machine at the site active. Make the machines active in the following order: ssap1, ssap2, and ssa01 through ssa10.

3. **su - <restricted user login id>**
4. Enter **ssa\_admin**
5. Enter **3** to select **Machine Administration**.
6. Enter **2** to select **Update a table entry**.
7. At the prompt, enter the name of the machine you are administering, using the machine name assigned during software installation. The names are ssap1 and ssap2 for the PMs, and ssa01 through ssa10 for the VPs.
8. At the prompt, enter **1** for active.
9. Enter **y** to confirm.
10. Repeat steps 6 through 9 above for each machine that needs to be changed.
11. When you see the confirmation message, enter **0** to return to the previous menu and back out through the menus using **0** until the system prompt is displayed.

## Perform LAN Communications Check

From the PM, run a communications check on all machines to ensure that they are all numbered correctly.

1. Enter this command:

**comcheck all**

A screen like this one displays:

```
$ comcheck all
Communications Check.
You have selected all ACTIVE machines to be communications checked.
The request to start the communications check is being issued.
Please wait for the reply to the communications check request.
Communications Check Results
Mach  Lan A Lan B  Mach  Lan A Lan B  Mach  Lan A Lan B  Mach  Lan A Lan B
-----
ssa01 up    up    ssa02 up    up    ssa03 up    up    ssa04 up    up
ssa05 up    up    ssa06 up    up    ssa07 up    up    ssa08 up    up
ssa09 up    up    ssa10 up    up    ssa11 inact inact  ssa12 inact inact
ssa13 inact inact  ssa14 inact inact  ssa15 inact inact  ssa16 inact inact
ssa17 inact inact  ssa18 inact inact  ssa19 inact inact  ssa20 inact inact
ssap2 up    up
```

2. Ensure that both LANs to all machines are up. You should see the word `up` under the `LAN A` and `LAN B` columns for each VP machine connected and administered.

## Perform a Machine Audit and Restore Traffic

1. From the PM, run **audresult** to verify that no audit is running.
2. When you're sure no audit is running, run a level-2 audit on all machines to ensure that all the VP databases are in sync. The command for this is:

**dbaudit all 2**

3. Run the **audresult** command again to check the audit results. You're checking to see that the `DB's Status` column reports all machines in sync.
4. Run **chkconfig -m vpxx -v**
5. Call the NOC and verify that the skip control is still in place.
6. Restore the D-channel.
7. Have the OSWF remove the loopback plugs from the T1s at the appropriate DSX.

8. For each VP, enter  
     **disp\_status -m vpxx card all | pg**  
 where **xx** is the machine number and verify that all cards are in service.
9. Call the NOC and have the skip changed to hard-to-reach so as to allow only test calls.
10. Perform test calls through each VP.
11. Call the NOC and have the skip removed one code at a time and check traffic flow.
12. Monitor the site traffic flow for one hour.

**Table A-1. Service States**

<b>Status</b>	<b>Meaning</b>	<b>Action</b>
foos	The card the channel is on is not physically connected to the 4ESS.	Connect it, then run the <b>chg_state</b> command again.
manoos	The channel has been manually removed from service.	Run the <b>chg_state</b> command again.
appoos	The application has removed the channel from service and is waiting.	Run the <b>chg_state</b> command again.
netoos	The channel is busied-out at the 4ESS.	
inserv	The channel is in service to the 4ESS.	
hwoos	The channel is waiting for another channel or card to come into service.	

## Validate NCMF Reports

---

Run these site-based reports from PM01.



### CAUTION:

Perform “Core Maintenance Feature Package Administration” on page -71 if you did not do so when you upgraded to TCS release 2.3. **If this is a new site installation you must perform CMF administration before continuing.** If you have already administered the core maintenance feature package, go on to step 1.

*Failure to administer this package will cause report generation to fail.*

1. Generate the DS1 report using the **ds1rep** command.
2. Generate a detailed status report using the **dsrrep** command.
3. Generate an equipment inventory report using the **eqirep** command.
4. Generate an equipment inventory summary report using the **eqisrep** command.

Save the new CMF administration.

Use a 320-Mbyte or 525-Mbyte cartridge tape. (Suggested tape — 3M DC 6320 320-Mbyte or 3M DC 6525 525-Mbyte. The tape capacity and type are stamped on the bottom plate of the tape cartridge.)

5. Make sure the cartridge tape is *not* write-protected.
6. Put a blank cartridge tape in the tape drive in PM01 and run this command on PM01:

### **backtape**

Put a label on the tape with application name, release, date, and machine name, for example, BACKTAPE CMF ADMINISTRATION, NAP/TCS RELEASE 2.4, 6/01/96, PM01.

7. Run this command from PM01:

### **backadm -m pm02**



### NOTE:

If this is a new site installation, return to the checklist in “Installing a New Site” on page -7.

## **Committing to TCS Release 2.4**

---

**R** This procedure commits the TCS release 2.4 software on each of the VPs and the PMs.

In planning for the procedure, consider these factors:

- The site will be in service with all 10 VPs and both PMs active.
- Estimated commit time is 30 minutes.
- The procedure can be run at any time up to one week after site acceptance.



**WARNING:**

*The **\_Commit** command removes all TCS release 2.3 software. TCS release 2.3 software cannot be recovered. The **\_Remove** command cannot be used after the **\_Commit** command has been executed. If the decision is made to remove TCS release 2.4, measurements taken from the time TCS release 2.4 was installed will be lost.*

Perform the commit procedure:

1. From the TCC, log in to Datakit and the site PM01 machine using this command:  
**dkcu <Datakit dialstring>**
2. At the `login` prompt enter your user login.
3. At the `password` prompt, enter the password for your user login.
4. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
5. At the prompt, enter **su - root**
6. At the `password` prompt, enter the site-specific root password.
7. At the `term =` prompt, enter the terminal type (for example: **xterm** or **630**).
8. Enter **cd /usr/install/tcs\_2.4**

9. Enter **./\_Commit** to begin committing TCS release 2.4 on ssa01 to ssa10 and ssap2. The machines to be installed are listed and the status is monitored. The committing of software may not finish in numerical order, for example, ssa08 may finish before ssa01.

The **\_Commit** command without any machines listed commits the files to all machines. Otherwise, the user can list the machines to be committed.

Four states may be displayed during the commit process:

- Submitted: A batch job was submitted by the master PM to commit the software.
- Running: A batch job was submitted to a machine and is executing.
- Finished: The software commit process for the current machine is finished. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- ABORTED: An error occurred during the commit process. Escalate the problem to the appropriate support organization. Do not attempt to recommit.

Create two application image VP tapes for one VP machine (one image tape for onsite backup and one for offsite), using the procedure "Making an Application Image Tape" on pages 45-84 through 45-85.

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## Rolling Back a TCS Release

---

**R** This procedure removes TCS release 2.4 and restores TCS release 2.3, if you had it, or simply removes TCS 2.4. The site software returns to the state it was in before TCS release 2.4 was installed. Any measurement files collected from the time TCS release 2.4 was installed to this time will be lost.

Factors to consider in planning this procedure:

- The site will be out of service with all 10 VPs and both PMs inactive.
- Estimated remove time is 45 minutes.
- Plan to perform this procedure only as a last resort and only during a maintenance window.

If you must perform the procedure:

1. From the TCC, log in to Datakit and the site PM01 machine using this command:

**dkcu <Datakit dialstring>**

2. At the `login` prompt enter your user login.
3. At the `password` prompt, enter the password for your user login.
4. At the `term =` prompt, enter the terminal type (for example: **xterm or 630**).
5. At the prompt, enter **su - root**
6. At the `password` prompt, enter the site-specific root password.
7. At the `term =` prompt, enter the terminal type (for example: **xterm or 630**).
8. Perform "Manually Shutting Down the Site" on page -7.
9. Enter **cd /usr/install/tcs\_2.4**



**WARNING:**

*Any measurement files collected from the time TCS release 2.4 was installed to this time will be lost. Any customer record changes made to the database will be lost.*

10. Enter ***J\_Remove*** to begin the remove process on ssap1, ssap2, and ssa01 through ssa10. The removal of software on each machine may not finish in numerical order; for example, ssa08 may finish before ssa01.

The ***\_Remove*** command without any machines listed removes files from all machines. Otherwise, the user can list the machines from which to remove.

The following prompt appears at the bottom of the list of machines to be removed:

Do you want to continue (Y/N)?

11. Enter ***Y*** or ***N***.
  - If you enter ***N***, no remove takes place; the ***\_Remove*** script exits and the command prompt displays.  
You are finished with this procedure.
  - If you enter ***Y***, removal starts on the machines listed and status is monitored.

The ***\_Remove*** script automatically checks for the following:

- Run level for the VP machines is 3
- Run level for the PM machines is 2
- No SSA processes are running

Four states may be displayed during the remove process:

- Submitted: A batch job was submitted by the master PM to remove the software.
- Running: A batch job was submitted to a machine and is executing.
- Finished: The software remove process for the current machine is finished. When all machines are finished or aborted, the status display terminates and the UNIX prompt returns.
- ABORTED: An error occurred during the remove process. Escalate the problem to the appropriate support organization. Do not attempt to re-install.

12. Perform postinstallation administration and testing by completing one of the two following procedures.
  - If you once had a TCS Release 2.3 and upgraded it to TCS Release 2.4, perform "Performing Postinstallation Site Administration and Acceptance Testing" on page -16.

- If you installed TCS Release 2.4 as a new site installation, and so did not have TCS Release 2.3, perform these steps:

- a. Log in to the primary PM.
- b. At the prompt enter **su -root**
- c. Enter:

**remsh ssap1 /etc/init 3**

**remsh ssap2 /etc/init 3**

**remsh <mach\_name> /etc/init 4**

where **<mach\_name>** is the machine name of every VP at the site. Begin with machine name ssa01.

- d. Enter **machadm**

and administer the Admin field to Y for all the machines physically present at the site. Administer machines beginning with the lowest number machine name to the highest number, that is, ssa01, ssa02...ssa10, then ssap1 and ssap2.

- e. Enter **lancheck**

to check the lan connectivity between machines.

This completes the roll back process to TCS Release 2.3 or NAP 2.3 platform software.



---

## Wiring Diagrams

# B

---

### What's in This Appendix?

This appendix provides wiring diagrams for NAP equipment in both 5ESS and 4ESS cabinets.

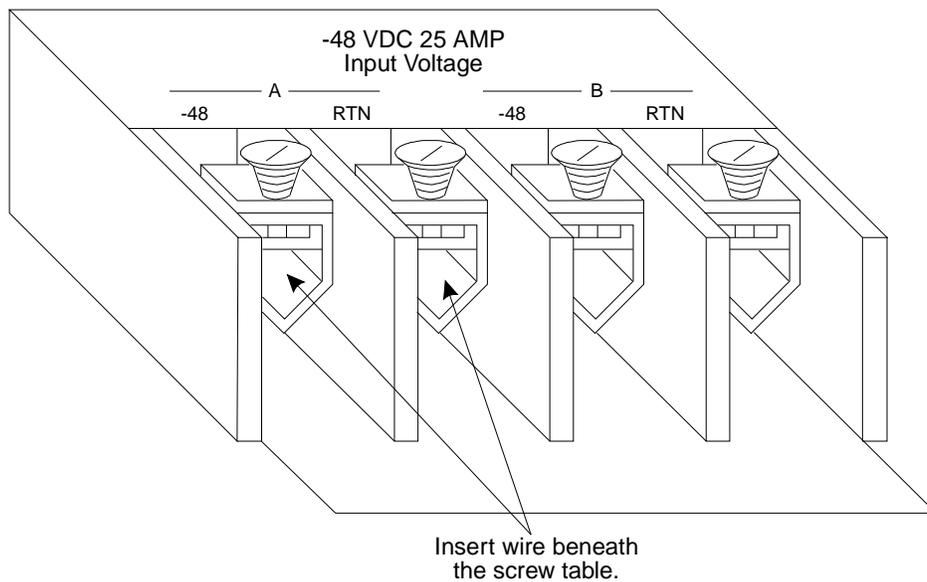
### NAP Wiring Diagrams

Refer to these diagrams for cabling information for NAP/TCS sites manufactured before January 1996.

- NJ-00352-32 *GBCS Order Guide for Frames*
- NE-00356-32 *Fairfield, NJ ADE*
- NT-00352-32 *MAP 1000*
- NE-00356-30 *Alarm Panel*
- NT-00356-32 *Alarm Panel*
- NE-00262-31 *Fuse Panel*
- NT-00262-31 *Fuse Panel*

Refer to these diagrams for cabling information for NAP/TCS sites manufactured after January 1996:

- PWR ARCH-018 *Power system Architecture for the MAP 2000*
- J1P336A-1 *Intuity Conversant MAP 2000 Voice Processing (VP) Cabinet*
- J1P336B-1 *Intuity Conversant MAP 2000 Provisioning and Maintenance (PM) Cabinet*
- NJ1P336 *Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Order Guide*
- NT1P336 *Network Adjunct Platform (NAP) Intuity Conversant MAP 2000 Central Office Provisioning, Interconnection and Installation*
- NE-00356-30 *Alarm Panel*
- NT-00356-32 *Alarm Panel*
- NE-00262-31 *Fuse Panel*
- NT-00262-31 *Fuse Panel*



---

**Figure B-1. Power Input Terminal on the MAP/100C**

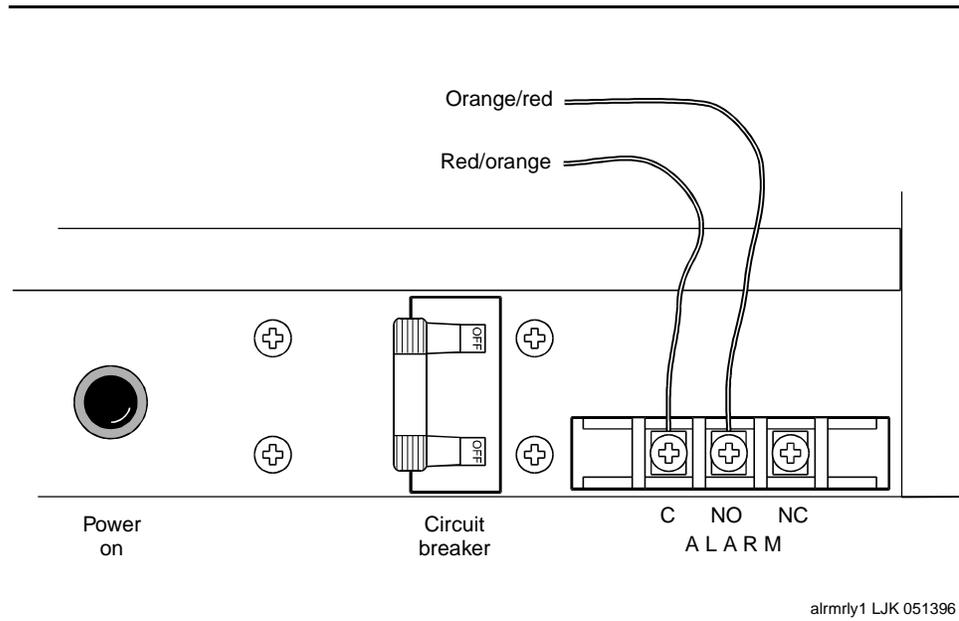
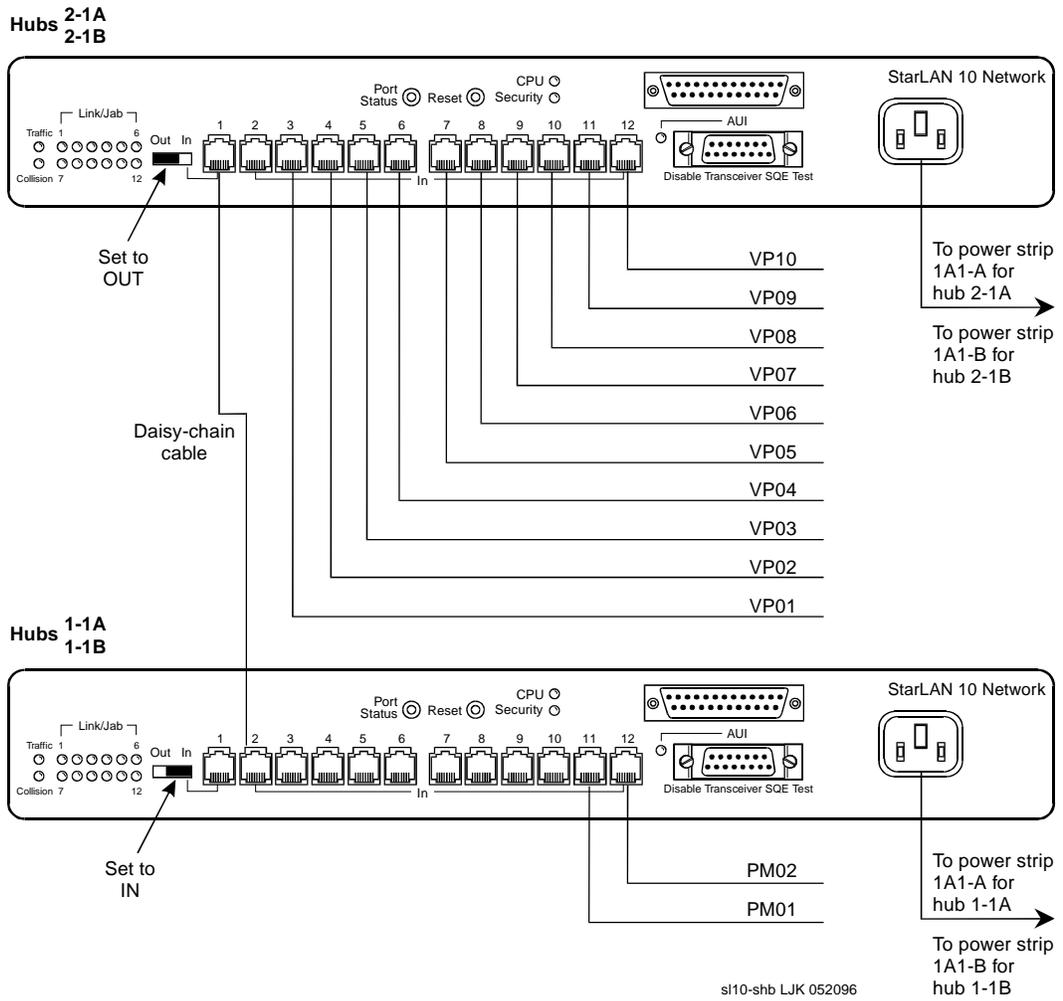
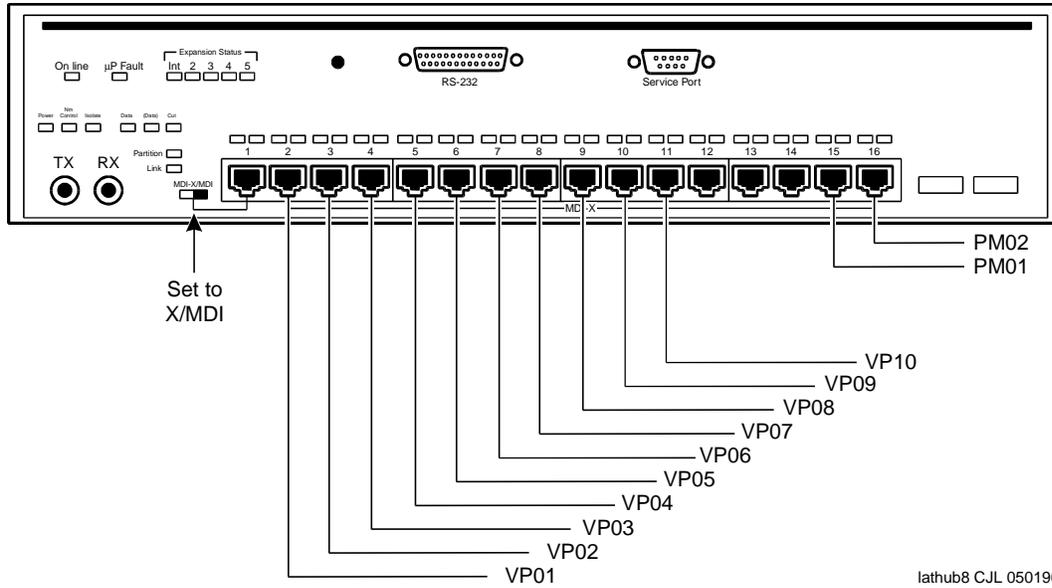


Figure B-2. Alarm Relay Terminal Block on MAP/100C





**Figure B-4. Cabling the StarLAN 10 Network SmartHUB B to StarLAN 10 Network PC NAU Circuit Cards**



lathub8 CJL 050196

**Figure B-5. Cabling the LattisHub 2814 10BASE-T Workgroup Concentrator to StarLAN 10 Network PC NAU Circuit Cards)**

---

# Site Acceptance Procedures for Hardware and Software Installations

# C

---

## What's in This Appendix?

This appendix provides the hardware acceptance testing checklist and system acceptance testing procedures. Use these instructions to check hardware installation and software installation and administration.

## Hardware Acceptance Testing Checklist

1. Verify that all documentation and drawings are onsite.
2. Verify that software tapes and diskettes are onsite and properly stored.
3. Verify that spare equipment is onsite. Refer to *AT&T Network Adjunct Platform, Release 2.1, Operations Support Guide* Issue 2.0 for a list of spare equipment.



**WARNING:**

*Equipment power is on. Use care when checking cables and components. Do not disconnect or reconnect cables when the power is on.*

4. Verify that the following procedures have been completed:
  - “Verifying the 5ESS Cabinet Hardware Installation” on page 2-9 of Chapter 2.
  - “Power-Up Procedures” on page 3-34 of Chapter 3.

The procedures listed above check these items:

- 5ESS cabinet installation
  - Component installation
  - Circuit card and module installation
  - 5ESS cabinet cabling
  - CO alarm cabling to the 5ESS cabinet
  - DSX-1 cabling to the 5ESS cabinet
  - Power and ground cabling to the 5ESS cabinet
  - Power and ground cabling to the MAP/100C and the Communicore
5. Verify that these administration and software tasks have been completed.
    - CPU firmware administration,
    - NAP software installation
    - Affiliate software installation (TCS)
    - Initial software administration is complete

## **T1 Status Check**

---

1. Verify that the MAP/100C T1 slot 5 is properly wired to the Communicore using the loopback method.
2. Verify that the connections between the Communicore and the DSX-1 are of the proper polarity.
  - a. Ensure that the loopback plug is in the DSX-1 jack for each T1 on the VP.
  - b. Set up a T-BERD<sup>1</sup> 209A test set (or equivalent) with MODE set at ESF and Rec-input set at DSX-MON. Then plug the cord into the DSX-1. You should see T1 pulses with no synchronization.

---

1. Registered trademark of Telecommunications Techniques Corporation.

- c. From the PM, enter this command:

**disp\_status -m vp $xx$**

where **xx** stands for the number identifying the VP. You should see these statuses:

Card 4: Function: PRI State: netoos  
All other PRI modules show PRI State: hwoos

**⇒ NOTE:**

Although the modules on the Communicore are physically labeled 1 through 15 on each subrack, their logical numbering (which displays as the result of a command) differs. The lower subrack counts the modules from left to right as 1 through 15, and the power module as slot 16. The upper subrack is logically numbered 17 through 32, where 32 is the power module. Refer to Chapter 8, "Maintenance," for the Communicore module layout.

- d. Remove the loopback plug from *one* of the T1s at the jack associated with the DSX-1. The T-Berd set should still see T1 pulses; if it doesn't, the DSX-1 IN/OUT jacks are wired turned-over and should be given back to the installer to correct.
- e. Check to see if the affected PRI module has changed to foos status. Use this command:

**disp\_status -m vp $xx$**

where **xx** stands for the number identifying the VP.

- f. Reinstall the loopback plug into the DSX-1 jack if you removed it in step 1(d).
- g. Check to see that the affected PRI module changed back to the status originally seen in step 1(c). Use this command:

**disp\_status -m vp $xx$**

where **xx** stands for the number identifying the VP.

- h. Repeat steps 1(c) through 1(g) to verify continuity and wiring on *each* T1 card of *each* VP.

## **System Acceptance Testing Procedures**

Use these procedures after the software has been installed and the site has been administered. During the system acceptance test, you perform these tasks:

- Run a Communications Check
- Run a Level-2 Audit
- Check Datakit Connectivity
- Check Machine Status
- Check the Alarm-Relay System

Perform this entire procedure on one PM machine, then follow steps 1 through 5 for the second PM.

### **⇒ NOTE:**

Machine names for the PMs are ssap1 and ssap2. Machine names for the VPs are ssa01 through ssa10. Machine IDs for the PMs are pm01 and pm02. Machine IDs for the VPs are vp01 through vp10.

1. Log on to the PM machine as **root**.

### **Run a Communications Check**

2. Run a communications check on all machines to ensure that they are all numbered correctly. The command for this is:

**comcheck all**

Ensure that both LANs to all machines are up. You should see the word `up` under the LAN A and LAN B columns for each VP machine connected and administered.

### **Run a Level-2 Audit**

3. Run a level-2 audit on all machines to ensure that all the VP databases are synchronized. The command for this is:

**dbaudit all 2**

4. Check the audit results. You're checking to see that the `DB's Status` column reports all machines `in-synch`. Enter this command:

**audresult**

### **Check Datakit Connectivity**

5. Call yourself to check Datakit connectivity. To do this:
  - a. Enter **dkcu <datakit\_address>** (the 2-character location code plus ssap1 or ssap2, for example, **drssap2**).
  - b. Verify that you get a login prompt, which means you have Datakit connectivity.
  - c. Enter **~.** (a tilde followed by a period) to drop the connection.

Perform these procedures on both PMs. For the second PM, the procedure ends here.

### **Check Machine Status**

6. Do the following for each VP machine. Use these commands on the PM.
  - a. Enter **diagnose -m <mach\_id> all**.  
Ensure that all tests show passed.
  - b. Enter:

```
chg_state -m <mach_id> on  
chg_state -m <mach_id> off  
chg_state -m <mach_id> on
```

Wait two minutes.

- c. Enter **disp\_status -m <mach\_id>** and check the status for the modules and cards. You should see:
    1. Resource card 0 listed as a T1 card with FUNCTION: PRI
    2. Resource card 1 listed as an SP card with FUNCTION: VOICE and STATE: inserv
    3. Resource card 2 listed as an SP card with FUNCTION: PRI and STATE: inserv

Check the channel status. Refer to the "Service States for Modules, Cards and Channels" on page 6-2 of Chapter 6, "Troubleshooting," for more information on these statuses.

## **Check the Alarm-Relay System**

7. Do the following for each machine in the network (VP and PM machines) to check the alarm-relay card wiring:

- a. Clear any existing alarms
- b. Enter this command to generate an alarm:

**logmsg -m <mach\_id> -a NAP\_CONFIG -t "alarm test"**

- c. Verify that you hear the frame alarm and that the alarm light on the frame and the row light at the end of the row are lit.
- d. Turn off the alarm lights and clear the alarm. Use this command:

**clr\_lights -m <mach\_id>**

## **Run Site-Based Reports**

8. Run these site-based reports from PM01. All report commands must be run as root to work properly.

**⇒ NOTE:**

The reports generated by these four commands can be directed to your screen or be transferred to a file over the Datakit network to a predefined and preauthorized host machine, if you are preauthorized to do file transfers between the PM machine and your destination host machine on the Datakit network. The screen prompts you to choose the machines to be included in the reports and where you want the reports sent.

Refer to Chapter 5, "Command Reference," if you want more details on these commands.

- a. Generate the DS1 report by entering:

**ds1rep**

- b. Generate the detailed status report by entering:

**dsrrep**

- c. Generate the equipment inventory report by entering:

**eqirep**

- d. Generate the equipment inventory summary report by entering.

**eqisrep**

This completes the acceptance procedures for the hardware and software at your AT&T INTUITY CONVERSANT System NAP site.

---

## Datakit Switch Administration

# D

---

### What's in This Appendix?

This appendix explains how to administer the Datakit switch for NAP.



**WARNING:**

*The HS386 Datakit card must be installed **before** you perform Datakit Switch Administration.*

### Administer the Datakit Switch

Perform steps 1 through 4 for each PM (ssap1 and ssap2) no matter where the Datakit card is installed (at the site or in the Datakit VCS). You will be administering primary and secondary groups for the PMs; when you enter the name for the secondary group, use the same name that you did for the primary PM, but append it with an **s** (for example, if you name the primary group **drssap1**, name the secondary group **drssap1s**).

You may have to enter a password to perform this administration, depending on the agreement between your organization and Datakit Administration. For each machine you also need to know the following (supplied by the MMOC DWAN Support Group):

- Host name
- Datakit node
- Slot number

The following conventions are used in these steps:

1. This typeface indicates what you see on your screen:

DIRECTION:

2. This typeface indicates that you should type the entry, exactly as shown:

**enter group**

3. Remember to press  after each data entry.

### **Step 1: Define the Group Name**

---

Type **enter group** and press **(ENTER)**.

1. **GROUP**: Enter the name for the PM, up to 8 characters, all in lowercase. This name must match the UNIX host name for the PM to which the fiber is connected.
2. **TYPE**: **local**
3. **DIRECTION**: **2way** (for primary) or **receive** (for secondary)
4. **DEVICE OR HOST**: Enter the name for the primary group, all lowercase.
5. **PASSWORD**: **none**
6. **ROUND ROBIN SERVICE**: **none**

### **Step 2: Define the Server Name for the Primary Group**

---

Type **enter address** and press **(ENTER)**.

1. **LEVEL**: **local**
2. **TYPE**: **mnemonic**
3. **MNEMONIC ADDRESS**: Enter the name for the primary group, up to 8 characters, all lowercase.
4. **PAD SUPPORT**: **no**
5. **DIRECTORY ENTRY**: Enter the name for the server, which can be up to 30 characters. Enclose the name in double quotes. If there is no dkserver, enter **none**
6. **GROUP (S)**: Enter the name for the primary group, all lowercase.
7. **ORIGINATING GROUP NAME SECURITY PATTERN (S)**: **none**
8. **INITIAL SERVICE STATE**: **in**

### **Step 3: Define the Server Name for the Secondary Group**

---

Type **enter address** and press **(ENTER)**.

1. **LEVEL**: **local**
2. **TYPE**: **mnemonic**
3. **MNEMONIC ADDRESS**: Enter the name for the secondary group, all in lowercase.
4. **PAD SUPPORT**: **no**

5. DIRECTORY ENTRY: Enter the name for the listener, which can be up to 30 characters. Enclose the name in double quotes. If there is no listener, enter **none**
6. GROUP (S): Enter the 8-character for the secondary group, all lowercase. Remember to append an **s** to this group name.
7. ORIGINATING GROUP NAME SECURITY PATTERN (S): **none**
8. INITIAL SERVICE STATE: **in**

#### **Step 4: Configure the CPM-HS Module**

Perform this procedure for each PM at your site.

1. Type **enter cpm** and press **(ENTER)**.
  - a. MODULE ADDRESS [2-127]: Enter the slot number on the MPC/Datakit VCS where the CPM-HS board is installed.
  - b. COMMENT: **fiber interface**
  - c. HARDWARE TYPE: **hs**
  - d. NUMBER OF CHANNELS: **64** (Split them as follows: channels 0 and 1 for maintenance, 2 through 58 for the primary group, and 59 through 63 for the secondary group.)
  - e. CONNECT-TIME BILLING: **off**
  - f. SINGLE or MULTIPLE GROUP (S): **multiple**
  - g. GROUP: Enter the name for the primary group, all lowercase, followed by a comma, and the name for the secondary group, appended with an **s**. For example:  
**drssap1, drssap1s**
  - h. ENDPOINT NUMBER OR RANGE: **none**
2. Type **restore cpm** and press **(ENTER)**.

---

# Abbreviations

---

## Numeric

**4ESS**

Electronic Switching System 4

**5ESS**

Electronic Switching System 5

---

**μ****μP**

microprocessor

---

**A****A**

Ampere

**AC**

alternating current

**Ack**

acknowledgment

**ACO**

alarm cut off

**AFSC**

Advanced Features Service Center

**ALRM\_MGR**

alarm manager

**ALRM\_SND**

alarm send

**AMI**

alternate mark inversion

**APN**

action point numbering

**appoos**

application out of service

**APPL**

application (alarm)

**AUI**

attachment (or autonomous) unit interface

---

**B****B8ZS**

binary 8-zero substitution

**B-channel**

bearer channel (for ISDN)

**BD**

board

**BDFB**

battery distribution fuse board

**BIOS**

basic input/output system

**BPV**

bipolar violation

**BT**

blind transfer

**BTFN**

base traffic number

**BT-H**

Blind Transfer for Human Agents

**BT-V**

Blind Transfer for Voice Response Units

---

**C****CAFS**

CONVERSANT Applications Field Support

**CC**

Consultation/Conference

**CC-H**

Consultation/Conference for Human Agents

**CC-V**

Consultation/Conference for Voice Response Units

**CD**

card (for example., CD type or CD options)

**CLEI**

common language equipment identifier

**CLLI**  
common language location identifier

**CMF**  
Core Maintenance Features

**CMOS**  
complementary metal-oxide semiconductor

**CNI**  
common network interface

**CO**  
central office

**Col**  
collision

**COM**  
communications port

**COS**  
class of service

**CP**  
calling party

**CPE**  
customer-premises equipment

**CPU**  
central processing unit

**CRC**  
cyclic redundancy check

**CVIS**  
CONVERSANT Voice Information System

---

## D

**DB**  
database

**DBFM**  
database file manager

**DBMS**  
database management system

**DCRIP**  
DCROS interface process

**DCROS**  
Data Collection and Reporting Operations System

**DC**  
direct current

**D-channel**  
data (signaling) channel (for ISDN)

**DCS**  
data collection service

**DFP**  
data file propagation

**DIP**  
data interface process

**DIR**  
directory

**DMA**  
direct memory access

**DN**  
dialed number

**DNIS**  
Dialed number identification service

**DS1**  
Digital Service 1

**DSP**  
digital signal processor

**DSR**  
demand status report

**DSU**  
data service unit

**DSX**  
digital signal cross-connect

**DTMF**  
dual-tone multifrequency

**DWAN**  
Datakit wide-area network

---

## E

**EGA**  
enhanced graphics adapter

**EMI**  
electromagnetic interference

**ENAC**

Engineering Network Administration Center

**EPROM**

erasable/programmable read-only memory

**ESD**

electrostatic discharge

**ESDI**

enhanced small-device interface

**ESF**

extended superframe

**ESP**

enhanced service provider

**ESS**

electronic switching system

**EST**

Enhanced Soft Transfer

**EST-H**

Enhanced Soft Transfer for Human Agents

**EST-V**

Enhanced Soft Transfer for Voice Response Units

**ET**

error tracker

---

**F**

**FAC**

facility number

facility message

**FACE**

Framed Access Command Environment

**FE**

framing bit error

**FIC**

frame identification code

**fifo**

first in, first out

**foos**

facility (far end) out of service

**FS**

framing slip (error)

---

**G**

**Gbyte**

gigabyte ( $2^{30}$  or 1,073,741,824 bytes)

---

**H**

**Hex**

hexadecimal

**hwoos**

hardware out of service

**Hz**

Hertz (cycles per second)

---

**I**

**ID**

identification

**IDE**

integrated drive electronics

**IE**

information element

**INFO 3**

Information Forwarding 3

**inserv**

in service

**I/O**

input/output

**IP**

Internet protocol

**IPC**

interprocess communication

**IRQ**

interrupt request (level)

**ISC**

intersubrack cable

**ISDN**

Integrated Services Digital Network

**ISDN-PRI**

Integrated Services Digital Network Primary Rate Interface

**ITN**

Integrated Test Network

---

**J**

**J**

jumper block

**JP**

jumper plug

---

**K**

**Kbyte**

kilobyte ( $2^{10}$  or 1024 bytes)

---

**L**

**LAN**

local area network

**LED**

light-emitting diode

**LIP**

LAN interface process

**LOS**

loss of signal

**LPBK**

loopback

**LRPA**

long-running process alarm

---

**M**

**mach**

machine

**manoos**

manually out of service

**MAP**

Multi-Application Platform

**Mbyte**

megabyte ( $2^{20}$  or 1,048,576 bytes)

**MCH**

modular communications hub

**MCOL**

measurement collector

**MDI**

media dependent interface

**MEGA**

MAP 2000 (platform alarm)

**MHz**

megaHertz ( $10^6$  or 1,000,000 cycles per second)

**MML**

machine-to-human language

**MMLI**

machine-to-human language interface

**MMOC**

Minicomputer Maintenance Operations Center

**moos**

manually out of service

**MPC**

Multi-Purpose Concentrator

**MSG**

message

---

**N**

**NAP**

Network Adjunct Platform

**NAU**

network access unit

**NEBS**

Network Equipment Building System requirements

**NESAC**

National Electronic Systems Assistance Center

**netoos**

network out of service

**NFAS**

nonfacility-associated signaling

**NM**

network management (control LED)

**NOC**

Network Operations Center

**NPA**

numbering plan area

**NSD**

Network Services Division

**NSCX**

network services complex

---

**O**

**OA&M**

operations, administration and maintenance

**OAM&P**

operations, administration, maintenance  
and provisioning

**ONAC**

Operations Network Administration Center

**OOB**

out-of-band

**OPM**

other PM

**OSWF**

onsite work force

---

**P**

**PACR**

post-answer call redirection

**PBX**

private branch exchange

**PC**

personal computer

**PDD**

post-dial delay

**Perl**

Practical Extraction and Reporting Language

**PID**

process ID

**PM**

provisioning and maintenance machine

**PMO**

Production Management Organization

**POTS**

plain old telephone service

**PPE**

packet processing element

**PRI**

primary rate interface

**PRIB**

PRI B-channel

**PRID**

PRI D-channel

**PROM**

programmable read-only memory

**PTY**

parity

---

**Q**

**QIC**

quarter-inch cartridge (drive standard)

---

**R**

**RAI**

remote alarm indication

**RAM**

random access memory

**RCP**

recurrent call prompter

**REMTRANS**

remote transaction

**RES**

resource

**RMB**

remote maintenance board

**RP**

redirecting party

**RP-RTN**

redirecting party routing number

**RP-SIC**

redirecting party service indicator code

**ROMS**

read-only memory shadowing

**RS**

recommended standard

**RTN**

return

**RX**

receive

---

**S**

**SCCS**

switching control center system

**SCSI**

small computer systems interface

**SD**

speed dialing

**SIMM**

single in-line memory module

**SIOA**

start of input/output address

**SIP**

single in-line module with pins

**SLAN**

StarLAN

**SMW**

service management workstation

**SMWI**

SMW interface

**SP**

signal processor

**SPIP**

SP interface

**SR**

subrack

**SSA**

small-scale adjunct

**STP**

solution and technology planning

**ST**

Soft Transfer

**ST-H**

Soft Transfer for Human Agents

**ST-V**

Soft Transfer for Voice Response Unit

**SW**

switch

**SWAN**

Security Watchdog for the AT&T Network

---

**T**

**T1**

transmission interface 1

**TCC**

Technology Control Center

**TCP/IP**

transmission control protocol/internet protocol

**TCS**

Transfer Connect Service

**TD**

tone detector

**TDET**

tone detector

**TDM**

time-division multiplexing

## Abbreviations

---

**TGEN**

tone generator

**TM**

time manager

**TMM**

Telocator Message Manager

**TNM**

Total Network Management

**TOPAS**

Testing Operations Provisioning Administrative System

**TP**

target party

**TSC**

Technical Service Center

temporary signaling connection

**TSG**

Technical Support Group

**TSM**

transaction state machine

**TWIP**

T1 input process

**TX**

transmit

---

**U****UART**

universal asynchronous receiver/transmitter

**UTC**

Coordinated Universal Time

---

**V****V**

Volt

**VCS**

Virtual Circuit Switch

**VGA**

variable graphics array

**VIS**

Voice Information System

**VP**

voice processor

**VROP**

voice response output process

**VRU**

voice response unit

---

**W****WIP**

WSFE interface process

**WSFE**

wideband switch-fabric entity



---

# Glossary

---

## Numeric

### **4ESS**

The AT&T electronic switching system used in central offices (COs).

### **4ESS frame**

Rack used for NAP systems. All new systems are in 5ESS cabinets.

### **5ESS cabinet**

Cabinet used for NAP systems.

---

## A

### **Advanced Features Service Center (AFSC)**

An AT&T work center with responsibilities that include provisioning and maintaining the SSA-based call redirection features.

### **alarm manager (ALRM\_MGR)**

A software process that collects potential alarms from provisioning and maintenance (PM) systems and voice processing (VP) systems at a NAP site, determines which of these alarms to raise, and alerts the ALRM\_MGR on the primary PM.

### **alarm send (ALRM\_SND)**

A software process that transmits alarms to Total Network Management (TNM).

### **answered redirection**

A condition that results in TCS if the target party answers and then drops or is dropped by the redirecting party.

### **AUDIT**

A software process that runs continuously or on demand, and does functions such as ensuring that both Provisioning and Maintenance (PM) systems are synchronized.

---

## B

### **back up**

The preservation of the information in a file in a different location, so that the data is not lost in the event of hardware or system failure.

### **Blind Transfer for Human Agents (BT-H)**

A TCS feature that allows the agent to transfer calls to other agents. Call progress tones are not available to the redirecting party.

### **Blind Transfer for Voice Response Units (BT-V)**

A TCS feature that allows the agent to transfer calls to other agents. Call progress tones are played to the VRU.

**byte**

A unit of measurement for data storage. On many systems, a byte is 8 bits (binary digits), the equivalent of one character of text.

---

## C

**card**

On a command line, the designation for a module in the Communicore.

**cartridge tape drive**

A high-capacity data storage/retrieval device that can be used to transfer large amounts of information onto high-density magnetic cartridge tape based on a predetermined format. This tape can be removed from the system and stored as a backup, or used on another system.

**caution**

An admonishment used when there is a possibility of a service interruption or a loss of data.

**class of service**

A collection of features and services assigned to each phone in a system.

**common language local identifier (CLLI)**

An equipment location code identifying each NAP location.

**common network interface**

A connecting point in or between networks that can be accessed using a standard set of protocols.

**Communicore**

A programmable switch controlled by a CONVERSANT. In the NAP platform, the Communicore is part of a MAP 2000 and is controlled by a MAP/100C. Previously referred to as an MCH-1000 or a WSFE.

**Consultation/Conference for Human Agents (CC-H)**

A TCS feature that allows 800 agents to conference in other agents, consult with other agents (while the caller is on hold), or transfer the caller to another agent. CC-H is the most general of the TCS PACR offerings.

**control 360 module**

A Communicore module that provides communications between itself, other Communicore modules, and the MAP/100C. The control 360 module gathers and disseminates a variety of status reports and control directives.

**CONVERSANT System**

A system used to automate functions such as supplying information to banking customers that would otherwise need human attendants. The CONVERSANT system software runs on an AT&T 6386 and on the CONVERSANT Multi-Application Platform (MAP) 100C. Also called an INTUITY CONVERSANT system.

**Core Maintenance Features (CMF)**

A NAP software package that provides standardized OAM&P support utilities, commands, and reports to the system.

---

## D

### **danger**

An admonishment used when there is a possibility of personal injury.

### **database file manager (DBFM)**

A software process that gets call record updates from the provisioning and maintenance (PM) systems, looks up data for call processing and routing, and searches the NAP database for routing information when a call setup message comes in from a PM system.

### **Data Collection and Reporting Operation System (DCROS)**

A CONVERSANT Multi-Application Platform (MAP/100C) that collects, stores, and formats call records from NAP sites.

### **data interface process (DIP)**

A software function that supplies call redirection logic for VP call-processing channels. The DIP handles application software calls by choosing trunks, setting up outgoing calls, and controlling conferences, speech recordings, digit collection, and the application script.

### **database**

A structured set of files, records, or tables.

### **Datakit**

The fiber circuit and software hubs that compose a Datakit wide-area network (DWAN).

### **DCROS interface process (DCRIP)**

A software function that retrieves call records from the provisioning and maintenance (PM) systems.

### **dedicated wide-area network (DWAN)**

An AT&T fiber network that connects all the 4ESS sites in the United States. Datakit hubs supply software functions for the network.

### **dialed number**

The number dialed by the person making a call. This may not be the same number sent out by the switch when it routes the call.

### **Dual-tone multi-frequency (DTMF)**

The signals used for dialing and signalling on a voice line. Also known as a touch-tone.

---

## E

### **Engineering Network Administration Center (ENAC)**

An AT&T work center with responsibilities that include NAP machines and PRI 4ESS traffic engineering and customer balancing.

### **enhanced service provider (ESP)**

A machine or series of machines that collects digits entered by a caller, such as a credit card number, before the caller is connected to an attendant. An ESP may or may not be owned by AT&T.

### **error tracker (ET)**

A software process that filters error conditions and determines whether alarms will be generated for them.

---

## F

### **firmware**

Computer programming functions that are implemented through memory units on the Communicore modules.

### **facility number (FAC)**

A 4ESS field that has to be administered with a specific trunk group number to ensure that each PRI channel is correctly identified.

### **fast flash LED**

A state in which a Communicore module LED flashes 3 times per second.

### **flash LED**

A state in which a Communicore module LED flashes once per second.

### **flutter-flash LED**

A state in which a Communicore module LED flashes rapidly in a pattern that may be irregular.

---

## G

### **gigabyte (Gbyte)**

Approximately one thousand million bytes (1,073,741,824 bytes).

### **ground bushing**

A bushing that is used to ground a Communicore subrack. A ground wire is attached from the bushing on the subrack to a mounting hole on the 5ESS cabinet.

---

## H

### **hard-disk drive**

A high-capacity data storage/retrieval device that is located inside a computer platform. A hard-disk

### **hub**

A device that connects nodes and other network devices in a LAN network.

---

## I

### **image tape**

A full image backup tape of a machine. An image tape can be used to reload software on machines of the same type in case of disaster recovery.

### **inbound subscriber**

An AT&T 800 service customer.

**information element (IE)**

A logical block of data in a Q.931 message — for example, information about calling, called, and redirecting-party identification.

**interprocess communication (IPC)**

A software process used by the data interface process (DIP) to control the script of an application software program.

**inter-subrack cable (ISC)**

A Communicore part that is used to connect Subrack-1 to Subrack-2. One end of the ISC is labeled "Subrack-1."

**INTUITY CONVERSANT System**

A system used to automate functions such as supplying information to banking customers that would otherwise need human attendants. The CONVERSANT system software runs on an AT&T 6386 and on the CONVERSANT Multi-Application Platform (MAP) 100C. Also called a CONVERSANT system.

---

**L**

**LEDs**

See *Status LEDs*

---

**M**

**machine-to-human language**

A language used to segment data transmitted across the TNM link.

**machine-to-human language interface process**

The process used to segment data transmitted across the TNM link.

**MAP/100C**

A frame-mounted 80486DX PC used primarily to provide services for large central office (CO) telecommunication switches and services.

**MAP 2000**

The hardware platform for the voice processing service at a NAP site. A MAP 2000 consists of a MAP/100C configured for voice processing and a Communicore.

**Master PM machine**

The PM machine which has the remote software install capability. All remote software installs are done from the master PM.

**MCH-1000**

Previous name for Communicore. See Communicore.

**measurement collector process (MCOL)**

A software function that synchronizes data between provisioning and maintenance (PM) systems and stores call measurement data.

**megabyte (Mbyte)**

A unit of measurement for data storage equal to 1,048, 576 bytes.

**Minicomputer Maintenance and Operations Center (MMOC)**

An AT&T work center with responsibilities that include maintaining DCROS and CompuLert, and administering and maintaining the Datakit network.

**module**

A Communicore circuit pack, covered with a plastic shell, that is inserted into the chassis/backplane assembly of a subrack.

**mounting bracket**

A Communicore part that fastens to the 5ESS cabinet in order to hold a chassis/backplane assembly in place.

**mounting hole**

A hole, located on the 5ESS cabinet, that is used to ground a Communicore subrack. A ground wire is attached from a bushing on the Communicore subrack to the mounting hole.

---

**N**

**network**

In this book, the AT&T 4ESS-based switched network.

**Network Adjunct Platform (NAP)**

A platform consisting of software and MAP 2000s, PMs, and (optionally) paging servers interconnected by a LAN and connected to the AT&T switch network by a standard AT&T 4ESS interface such as ISDN-PRI. This platform and the applications that run on it provide various types of 800 number call processing services. ????????

“Small Scale Adjunct (SSA)” formerly referred to the combination of the above platform and the application software now called Transfer Connect Service (TCS).

**network services complex (NSCX)**

A device that collects digits and plays announcements.

**Network Systems**

The AT&T business unit responsible for the AT&T network.

**non-facility associated signalling**

A method of signalling using Link Access Protocol for a D channel that is designed to control many T spans of 64Kb bearer channels.

---

**O**

**onsite workforce (OSWF)**

An AT&T work center with responsibilities that include hands-on work with 4ESS equipment and access.

**Operational Support Center (ONAC)**

An AT&T work center with responsibilities that include NAP architecture update and DCROS software support.

**option strap**

A plastic strap positioned over pins on the network access unit (NAU) and used to assign options.

**other PM (OPM) process**

A software function that applies database changes to local copies of the database on that provisioning and maintenance (PM) system.

**out-of-band signaling**

Signaling carried by a PRI D-channel between customer premises equipment (CPE) and the AT&T network.

---

## P

**PACR to POTS**

A TCS feature that allows a call to be redirected to non-800 numbers. Since some PACR customers may not want to allow their agents to redirect to non-800 numbers, the ability to redirect to POTS is provisionable.

**peg count**

Raw count of the number of calls. Usually peg counts show the number of calls received in a 24-hour period, a week, or a month. Peg counts do not reflect duration or any other call attributes.

**Perl**

Practical Extraction and Reporting Language

**Post-Answer Call Redirection (PACR)**

A TCS feature that enables inbound subscribers to transfer or redirect calls to another destination. PACR also supplies conferencing and consultation capabilities.

**power/maintenance module**

A Communicore module that provides power and maintenance functions for a single Communicore subrack.

**power cord**

A Communicore part that is used to supply power to a subrack. The power cord is attached from the fuse panel to the Power/Maintenance module on the Communicore subrack.

**PRI (T1) module**

A Communicore module that provides ISDN Layer 1 Primary Rate Interface T1 termination.

**Primary Rate Interface**

A digital interface capable of both receiving and originating telephone calls directly to/from an AT&T 4ESS switch.

**Production Management Organization (PMO)**

An AT&T work center with responsibilities that include resolving NAP and Service Management Workstation (SMW) problems, and supplying administration and maintenance support to DCROS.

**provisioning and maintenance (PM) system**

A system of centralized database management for NAP applications. Each PM is a CONVERSANT Multi-Application Platform (MAP) 100C.

## R

### **rcard**

On a command line, the designation for a resource card in a MAP/100C.

### **Recurrent Call Prompter (RCP)**

A TCS feature that increases Call Prompter capability by enabling customers to return to network-supplied call redirection touchtone prompts without making a second call.

### **redirection party**

A called party that is administered to redirect a call.

### **redirection party routing number (RP-RTN)**

In TCS, the routing number and domain indicator, provisioned at the TCS site, that TCS includes in the called party information element (IE) of the Q.931 setup message to the redirecting party.

### **redirection party service indicator code (RP-SIC)**

In TCS, the code for the redirecting party's termination type, which indicates, along with the call code, the service type of the redirecting party (for example, Megacom 800 or READYLINE® telecommunications service).

### **redirection attempt**

In TCS:

(1) For Post-Answer Call Redirection (PACR), a condition that results if a redirection request is received from the redirecting party, and the adjunct determines that the redirection number is valid and that the maximum number of PACR redirection attempts has not been exceeded. (2) For Recurrent Call Prompter (RCP), a condition that results if the adjunct receives Q.931 Call Proceeding on the outgoing call to the target party. A redirection attempt may cause answer supervision at the target party, a busy signal to the target party, network blocking, or any other disposition that is normally met while setting up a call.

### **redirection number**

In TCS, the number to which a call is redirected.

### **redirection request**

In TCS, a message or event, specific to a particular post-answer feature, that constitutes an 80A-service subscriber's request for call redirection.

### **remote transaction (REMTRANS) process**

A software function that takes database transactions and applies them to appropriate voice processing (VP) machines, and provisioning and maintenance (PM) machines.

### **resource card**

A circuit card in a MAP/100C. In command lines, designated by **rcard**.

### **retry counter**

In TCS, a count of the number of times the redirecting party has entered a redirection number or has been timed out while trying to enter a redirection number. The maximum number of retries is three.

## S

### **script**

A high-level program in a language the user can understand.

### **Service Management Workstation (SMW)**

A Sun Microsystems-based workstation in a system with file servers that enables provisioning and maintenance of customer records throughout the 4ESS network.

### **signal processor (SP) board**

One of two circuit boards used by the MAP/100C in the VP for voice processing and connectivity: one SP board provides voice announcements (with T1 boards) and the second SP board terminates the PRI for the calls.

### **SMW interface (SMWI) process**

A software function that applies customer record add/update/delete operations to the local provisioning and maintenance (PM) system database and tells REMTRANS to propagate the records to all VPs and the secondary PM.

### **Soft Transfer for Human Agents (ST-H)**

A TCS feature that allows the agent to transfer calls to other agents. The original agent (the redirecting party) can listen to announcements, so that the failed transfer attempts can be retried.

### **Soft Transfer for Voice Response Units (ST-V)**

A TCS feature, similar to ST-H, except that tones are played to the VRU instead of announcements.

### **Speed Dial (SD)**

A TCS feature that allows each subscribing 800 customer to provision a list of speed-dial codes and corresponding dialable numbers. The customer's agents can then use those speed-dial codes to dial the associated dialable numbers. A customer can limit its agents to be able to redirect calls to only SD numbers, thus giving the customer more control over call redirection.

### **SP input process (SPIP)**

A software function that interfaces with the signal processor (SP) circuit boards.

### **SSA**

Small Scale Adjunct. A previous name for Transfer Connect Service.

### **SSA MAP 2000**

A previous name for the hardware/software platform consisting of a MAP 2000 and the TCS (previously known as SSA) software.

### **SSA MAP 2000 site**

Previous name for a NAP site (when SSA, an earlier name for TCS, was the only application software run on the NAP platform).

### **StarLAN (SLAN)**

An AT&T 1-Mbps PC local area network (LAN) that links intelligent workstations, asynchronous terminal, printers, modems, and host computers.

### **status LEDs**

Circuit-board LEDs that indicate the status of a Communicore circuit board.

### **SWAN**

Security Watchdog for the AT&T Network. SWAN monitors security-related events and generates reports that point out where security vulnerabilities may lie.

**switch module**

A Communicore module that provides connections between interfaces for both packet and circuit switching.

---

## T

**target party**

In TCS, the called party that receives a redirected call.

**TCS**

See Transfer Connect Service

**Technical Service Center (TSC)**

The AT&T organization responsible for hardware and software alarm resolution, fault isolation, maintenance, remote diagnostics, and, when necessary, for providing procedural help to persons installing or operating NAP hardware and software.

**Technology Control Center (TCC)**

The AT&T organization responsible for resolving basic hardware and software alarms, isolating faults, and diagnosing problems, as possible. The TCC escalates unresolved issues to the Technical Service Center (TSC).

**time-division multiplexing (TDM)**

A technique for transmitting a number of separate signals simultaneously over one communications medium by quickly interleaving a piece of each signal one after another.

**tone detector module**

A Communicore module that contains a Digital Signal Processor (DSP) capable of detecting tones on a voice call.

**tone generator module**

A Communicore module that contains a Digital Signal Processor (DSP) capable of generating tones on a voice call.

**traffic**

The flow of information or messages through a communications network for voice, data, or audio services.

**transaction state machine (TSM)**

A software process that runs the script of a NAP software application.

**Transfer Connect Service**

A NAP software application package that provides subscribers with post-answer call-redirection features including detection and validation of redirection requests, initiation of a new outgoing leg for calls in the answered state, origination of out-of-band messages for network billing updates, 3-way conferencing, and the capability to play generic announcements.

TCS was formerly referred to as SSA (Small-Scale Adjunct).

**T1 input process (TWIP)**

A software function that interfaces with the T1 circuit boards.

---

## U

### **UNIX**

A multiuser, multitasking computer operating system developed by the Bell Telephone Laboratories division of AT&T.

---

## V

### **voice response output process (VROP)**

A software function that plays and retrieves speech phrases.

---

## W

### **warning**

An admonishment used when there is a possibility of equipment damage.

### **WSFE**

Previous name for the Communicore. See Communicore.

### **WIP**

Communicore (previously known as the WSFE) interface process



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