Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP)

Release 1.1

Provisioning Guide

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365-309-804R1.1
Issue 1, July 2002
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About this information product

Purpose This preface provides an overview of this information product, which is the Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP) Provisioning Guide.

The purpose of this Provisioning Guide is to describe the provisioning tasks that can be performed with Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP), Release 1.1.

Reason for reissue Issue 1 of this *Provisioning Guide* is a new document that supports the supports the Navis™ Optical PM - MRP, Release 1.1.

Safety labels This document does not use safety labels.

Intended audience This information product is written primarily for network planners, engineers, and sales teams. It may be used by anyone desiring specific information about the features, applications, and operations of Navis™ Optical PM - MRP.

How to use this information product

This document contains:

- *task* information, which includes provisioning tasks (that is, step-by-step instructions).

- *conceptual* information, which is specific data related to tasks.

Both types of information is presented within the chapters of this *Provisioning Guide*.

The following table describes the information in each chapter of this *Provisioning Guide*.

Section	Title	Description
Preface	About this information product	Explains this document's purpose, its intended audience, and how to use the document.
Chapter 1	Chapter 1, "System Overview"	Provides a product overview of the Navis™ Optical PM - MRP application.
Chapter 2	Chapter 2, "The Navis™ Optical PM - MRP Provisioning Process "	Provides an overview of the Navis™ Optical PM - MRP provisioning process and commonly used terminology.
Chapter 3	Chapter 3, "Network Element Configuration Tasks "	Contains tasks associated with noncontrolled network elements.
Chapter 4	Chapter 4, "Provisioning Tasks"	Describes tasks related to traffic provisioning.
Chapter 5	Chapter 5, "Provisioning Concepts"	Describes provisioning concepts associated with Navis™ Optical PM - MRP.
Chapter 6	Chapter 6, "Digital Transmission Rates"	Describes the Synchronous Digital Hierarchy (SDH), the relationships among digital links, paths, circuits, and the digital transmission hierarchy that Navis™ Optical PM - MRP supports.
Chapter 7	Chapter 7, "Network Element Port Addresses "	Lists the port addresses of the network elements supported by Navis™ Optical PM - MRP.

Section	Title	Description
Appendix A	Appendix A, "Navis™ Optical PM - MRP Network Elements Supported by Navis™ Optical PM - MRP through Alcatel 1354RM"	Lists network elements supported by Navis™ Optical PM - MRP through Alcatel 1354RM.
Index	Index	Enables the user to quickly find information on specific topics.

Conventions used

This document uses the following typographical conventions to distinguish between computer input and output.

- When describing the Navis™ Optical PM - MRP software, fields in windows and field entries are identified with **this font**.

- When describing the *UNIX*® environment, text and numbers that the user inputs to the computer are identified with `boldface type`.

- In the UNIX environment, text and numbers that the computer outputs to the user are identified with `monospace type`.

Related documentation

This information product is part of a set of documents that supports Navis™ Optical PM - MRP.

List of documents

The document set that supports Navis™ Optical PM - MRP includes:

1. *Navis™ Optical PM - MRP Administration Guide,* (365-309-803) - instructs users on how to administer Navis™ Optical PM - MRP and the network. This document includes tasks and conceptual information.

2. *Navis™ Optical PM - MRP Provisioning Guide,* (365-309-804) - instructs users how to use Navis™ Optical PM - MRP to provision and manage a network. This document includes tasks and conceptual information.

Glossary

The *Navis™ Optical NMS Administration Guide* contains a glossary that will be helpful to users of Navis™ Optical PM - MRP.

On-line documentation

On-line documentation for Navis™ Optical PM - MRP is provided in two formats:

1. An on-line version, in HTML format, of this document set is provided as part of theNavis™ Optical PM - MRP software.

2. An on-line version, in HTML format, of this document set is available on CD-ROM.
   Navis™ Optical PM - MRP User Documentation CD-ROM, (365-309-805) - includes the full set of documents listed above.

Screen help

The Navis™ Optical PM - MRP software includes screen help for each form, which describes the purpose of the form, each field, and each button.

Additional documents

The document set that supports Navis™ Optical Network Management System (NMS) also provides valuable information for the users of Navis™ Optical PM - MRP. The document set that supports Navis™ Optical NMS includes:

1. *Navis™ Optical NMS Getting Started Guide,* (365-309-260) - provides information needed when you are learning how to use the Navis™ Optical NMS software. It describes how to start and stop Navis™ Optical NMS, how to use the software, and how to interpret the graphical user interface. This document includes tasks and conceptual information.

2. *Navis™ Optical NMS Applications and Planning Guide,* (365-309-261) - describes the Navis™ Optical NMS features and applications, provides a product description and the hardware platforms for the product, and describes system planning and engineering, ordering, and product support. This document contains conceptual information only.

3. *Navis™ Optical NMS Provisioning Guide,* (365-309-262) - instructs users on how to use Navis™ Optical NMS to provision and manage a network. This document includes tasks and conceptual information.

4. *Navis™ Optical NMS Maintenance Guide,* (365-309-263) - instructs users on how to maintain Navis™ Optical NMS and the network. This document includes tasks and conceptual information.

5. *Navis™ Optical NMS Administration Guide,* (365-309-264) - instructs users on how to administer Navis™ Optical NMS and the network. This document includes tasks and conceptual information.

6. *Navis™ Optical NMS User Documentation CD-ROM,* (365-309-265) - the CD-ROM version of the Navis™ Optical NMS document set.

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1   System Overview

Overview

Purpose   This chapter provides a system overview of the Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP) application.

Contents

Section I: Product Definition

Overview

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Purpose   This section provides a product definition for the Navis™ Optical PM - MRP software product.

Definition   Navis™ Optical PM - MRP is a single transport management system designed for transport management across multiple, multi-vendor network management systems.

The set of nodes under the control of one network management system, such as Navis™ Optical NMS, is defined as a domain. Within the Graphical User Interface (GUI), a domain is referred to as an area.

On the Network Map, domains are represented by an icon for an area, so in Navis™ Optical PM - MRP, domains and areas are synonymous terms.

Capabilities   Navis™ Optical PM - MRP has the following capabilities:

- Provisioning of digital links between network elements that are in different domains

- Provisioning of circuits between network elements that are in different domains

- Provisioning of circuits between network elements that are in the same domain

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External interfaces

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Introduction   The Navis™ Optical PM - MRP interfaces are shown in the following
                     figure.

Figure 1-1 External Interfaces

Northbound
Interfaces

Navis™ Optical Provisioning Manager - Multi-Regional
Provisioning (MRP)

Southbound
Interfaces

G7 CORBA Interface

Network Management Systems
(Navis™ Optical NMS and Alcatel RM)

Element Management Systems

DWDM/SDH Network
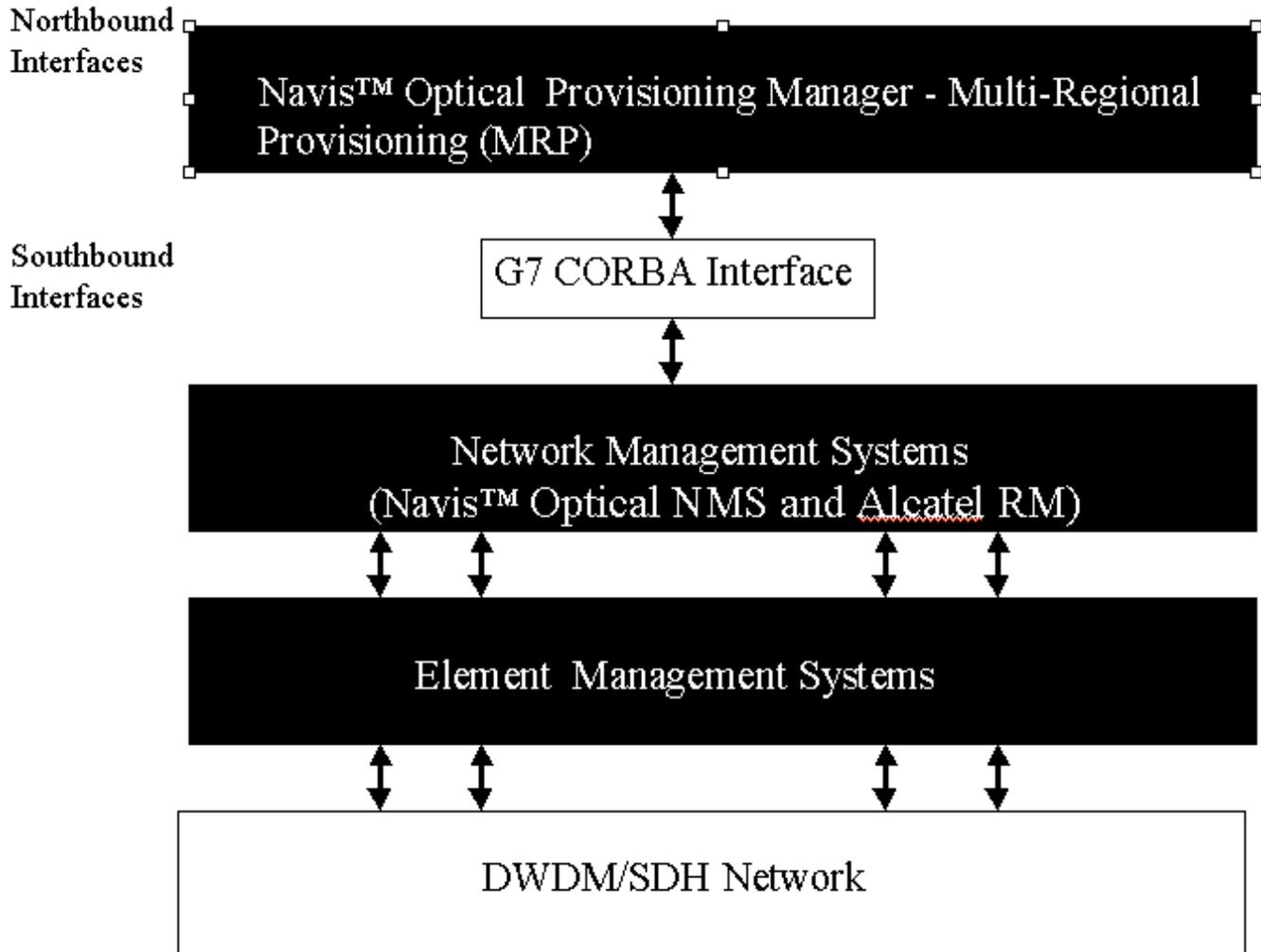
Northbound interfaces   Navis™ Optical PM - MRP has no northbound interfaces.

Southbound interfaces   Navis™ Optical PM - MRP has one southbound interface.

G7 2.0 CORBA interface to NMSs

Navis™ Optical PM - MRP interacts with network management
systems through an interface based on the G7 CORBA standard.

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Interfaces to other systems   Navis™ Optical PM - MRP interacts with some other systems that supply information used to manage the network. The following sections describe the interfaces to other systems.

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Supported network management systems

Introduction   Navis™ Optical PM - MRP manages the network by interacting with the NMSs in the network. Navis™ Optical PM - MRP is multi-vendor in nature and interacts with NMSs from Lucent Technologies and other vendors such as Alcatel®.

List of supported NMSs   Navis™ Optical PM - MRP interacts with the following network management systems (NMSs):

- Navis™ Optical NMS, Release 7.0

- Alcatel 1354 RM Network Manager, Release 5.4 with interface Navis™ Optical PM - MRP R1.1

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Supported and unsupported digital links

Introduction

The networks managed by Navis™ Optical PM - MRP include a variety of digital links. The following describes the digital links supported by Navis™ Optical PM - MRP.

List of supported digital links

Navis™ Optical PM - MRP supports the following digital link rates:

- For inter-domain digital links, the following synchronous digital hierarchy (SDH) links are supported depending on the network element capabilities:

    - STM-64: 9,953.28 Mb/s

    - STM-16: 2,488.32 Mb/s

    - STM-4: 622.08 Mb/s

    - STM-1: 155.52 Mb/s

- For intra-domain digital links, refer to the NMS vendor documentation.
  Note that intra-domain digital links cannot be provisioned with Navis™ Optical PM - MRP, but can be created by a supported NMS. Once created by that NMS, intra-domain digital links can be viewed in Navis™ Optical PM - MRP, however there is a limit to what detail is displayed.
  For example, regenerators visible on digital links in the Navis™ Optical NMS system will not display on the Navis™ Optical PM - MRP Network Map or in the graphical layout display of the intra-domain link. If you need to view an entire intra-domain digital link, use the Navis™ Optical NMS system.

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Unsupported digital links

Introduction   The following identifies digital links that are not supported by Navis™ Optical PM - MRP.

Description   Navis™ Optical PM - MRP does not support provisioning of 1+1 or 1x1 Multiplex Section Protected (MSP) digital links or MSP Protection Group names.

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Benefits

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Introduction   The benefits delivered by Navis™ Optical PM - MRP include fast service activation, state-of-the-art provisioning, reduced operating and equipment costs, and accurate record keeping.

These benefits enable service providers to capture market share and offer an improved level of service to customers, and to efficiently manage their resources.

List of benefits   Navis™ Optical PM - MRP provides service providers with the ability to:

- Control up to 24 NMS domains from a single seat
- Provision digital links and circuits between network elements that are in different domains
- Provision of digital links and circuits between network elements from different vendors
- Manage multi-technology SDH equipment
- Perform end-to-end SDH trail provisioning (semiautomatic and manual routing)
- View optical layers throughout the managed transport network
- Management of all NMSs in a network
- Simplify operational complexity using the user-friendly GUI
- Maximize bandwidth utilization with flexible provisioning options
- Engineer cost-effectiveness by using scalable platforms to effectively support different network sizes
- Maintain access security and establish a hierarchy of access levels
- Support for 64 simultaneous user logins
- Storing of maps for use as a background map

Customer support   Navis™ Optical PM - MRP customers are provided with responsive field support, effective user documentation, and high-quality product training.

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Section II: Features per functional area

Overview

Purpose   The features of Navis™ Optical PM - MRP are classified into several functional areas. This chapter gives a description of these features within each functional area.

Contents

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User support facilities

Introduction   Navis™ Optical PM - MRP provides a number of capabilities to facilitate the task of managing a network.

Graphical User Interface (GUI)   Navis™ Optical PM - MRP supports the user's daily operations with an easy-to-use graphical user interface (GUI).

Network Map   The main feature of the GUI is a Network Map on which all the domains in the network and all the links between domains are displayed. .

Important   On the Network Map, domains are represented by an icon for an area, so in Navis™ Optical PM - MRP, domains and areas are synonymous terms.

Other user support facilities   Navis™ Optical PM - MRP has the following user support facilities:

- Navis™ Optical PM - MRP is capable of handling up to 64 simultaneous user logins.

- Screen help is provided for each form.

- On-line access to the product documentation set is integrated into the Navis™ Optical PM - MRP software.

- Help facilities (context-sensitive) are supported. Help texts contain context-sensitive hyperlinks.

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Security issues

Introduction
Navis™ Optical PM - MRP security management allows authorized users to have different levels of access.

For each user, Navis™ Optical PM - MRP stores a login ID, password, user type, and user profile.

Controlling access
Only authorized users with correct login ID/password combinations are able to access Navis™ Optical PM - MRP.

User type
There is only one user type, which everyone is assigned.

User profile
The user profile controls which of the task groupings a user is allowed to perform. One or more user profiles can be assigned to each user.

Task groupings

There are four task groupings that can be used to build a user profile:

- Configuration Management
- NE Management
- Sys Administrator
- Configuration Management (View Only)

Predefined user profiles

Navis™ Optical PM - MRP comes with the following three predefined user profiles:

User profile	Allowed task groupings
Initial	• Configuration Management • NE Management
Provisioning (View Only)	• Configuration Management (View Only)
Combined	• All Tasks

Customized user profiles

The system administrator can create and assign additional user profiles.

Default behavior

By default, all new users are assigned to the Initial user profile.

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Configuration management

Introduction Navis™ Optical PM - MRP provides configuration management capabilities and features. From the Network Map or submap, manual provisioning of subnetwork connections and inter-domain digital links is supported. In addition, semi-automatic circuit provisioning is provided.

Navis™ Optical PM - MRP allows the user to create a Subnetwork Connection (SNC) at the Navis Optical NMS level without the creation of Physical Trans Port (PTP). At the Navis™ Optical PM - MRP level, when a database synchronization is performed, the SNC will not be reported to Navis™ Optical PM - MRP as this application makes requests based on PTPs.

Digital link provisioning Digital links between two network elements in the same domain are known as "intra-domain digital links." Intra-domain digital links cannot be provisioned using Navis™ Optical PM - MRP. Intra-domain digital links are added to the network at the NMS level, and can be viewed through a submap of the Navis™ Optical PM - MRP Network Map.

Navis™ Optical PM - MRP provides the user with an easy way to provision an SDH digital link between two network elements managed by two different NMSs. These digital links are known as "inter-domain digital links." To provision, the user selects the first network element and then specifies the transmission rate and port addresses. The user then selects the second network element, which belongs to a different domain, and specifies the transmission rate and port addresses. The result is a digital link that spans two domains — an inter-domain digital link.

Inter-domain digital links can also be disconnected with Navis™ Optical PM - MRP as long as the link is not carrying any circuits.

Optical links Optical links are not provisionable with Navis™ Optical PM - MRP.

Trail and circuit provisioning Trail and circuit provisioning can be done after digital links are in place. Both inter-domain circuits and intra-domain circuits can be provisioned using Navis™ Optical PM - MRP.

Two modes for trail and circuit provisioning

Only bidirectional connections can be set up. Broadcast and one-way connections are not supported.

Navis™ Optical PM - MRP provides two modes for trail and circuit provisioning: semi-automatic or manual.

- *Semi-automatic*: Using the semi-automatic mode, the user selects the link, the transmission rate of the trail or circuit, the bridges that are part of the trail or circuit, and the endpoints of the connection. The system then selects the channel on each link.

- *Manual*: Using the manual mode, the user completely specifies the trail in terms of links, facilities, and managed element cross-connections.

One-Step (Combo) Circuit Provisioning

One-Step provisioning is an optional feature in which a 24N, 30N, 480N, 672N, 672N, and 1920N circuits/trails can be provisioned without an explicit provisioning of TU12-VC11S, VC-12, VC-3, VC-3, AU3S and VC-4 respectively. The 24N, 30N, 480N, 672N, 672N, and 1920N circuits/trails provisioned using the One-Step provisioning are identified using VC12S-30N, VC3S-480N, VC3S-672N, AU3S-672N, and VC4S-1920N respectively. The selection of either TU12-VC11S-24N, VC12S-30N, VC3S-480N, VC3S-672N, AU3S-672N, or VC4S-1920N for provisioning is the selection of 24N, 30N, 480N, 672N, 672N, or 1920N provisioning respectively. However, there are some differences to note. These One-Step provisioned trails/circuits will have the characteristic of the SDH ("Skipped SDH") circuits/trails and as such inherit Path Trace Identifier (PTI) capabilities from their SDH parents.

The system precludes the existence of One-Step provisioned circuits/trails with "traditional" provisioned circuits/trails. Thus, once a selection is made to use One-Step provisioning during Navis™ Optical NMS installation, explicit provisioning of 24N, 30N, 480N, 672N, and 1920N will not be available to the user.

Ethernet Support   Virtual Concatenation is a standards-compliant, inverse, multiplexing protocol. Virtual Concatenation Groups (VCGs) which are supported by that protocol are not provisionable with Navis™ Optical PM - MRP therefore, the user is responsible for creating VCGs at the DMS level.

The member of the group gets designated from the Navis™ Optical PM - MRP-level, for example, there may be a group of five VC12s. A group may also contain up to seven VC4s for Navis™ Optical EMS network elements or up to four VC4s for ITM-SC network elements.

Assign Network Elements to user-defined submaps by Aggregate

Navis™ Optical PM - MRP permits network element assignment to user-defined submaps by aggregate association. For more information, see the *Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP) Administration Guide* for details.

Change network element ID

When a network element's Target Identifier (TID) is changed on a Craft Interface Terminal (CIT), an off-line tool script must be run in each affected application to reflect the name change. A script is first run at the EMS-level to support name changes to ITM-SC or Navis™ Optical EMS controlled network elements. After the script completes, a change script is run at theNavis™ Optical NMS-level to support network element name changes in the Navis™ Optical NMS application. The final step is to run the script at the Navis™ Optical PM - MRP-level.

For more information about these scripts, see *Appendix B* in the *Navis™ Optical Provisioning Manager - Multi-Regional Provisioning (MRP) Administration Guide*.

Other features

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<table>
<tr><td>Introduction</td><td>This section describes some of the other features of Navis™ Optical PM - MRP.</td></tr>
<tr><td>Improper disconnects</td><td>This feature identifies improper disconnects in the network.</td></tr>
</table>

Introduction

This section describes some of the other features of Navis™ Optical PM - MRP.

Improper disconnects

This feature identifies improper disconnects in the network.

An improper disconnect occurs when the intra-domain portion of a connection is disconnected or rearranged by the NMS for that domain. This applies only to an inter-domain connection created by Navis™ Optical PM - MRP and is detected when one or more intra domain SNC(s) is/are deleted which are part of the overall inter domain connection managed by Navis™ Optical PM - MRP.

When an improper disconnect occurs (assuming the system has no improper disconnects), the *first* oval icon positioned at the upper right corner of the Network map displays *red*. To view improper disconnects, double click the red icon to display the Improper Disconnects Query box. This permits the user to check the improper disconnect list for any reported improper subnetwork connections. See "Locate network discrepancies" (4-33) for details.

The user can reset the improper disconnection icon to *green* by clicking on the icon. The next time an improper disconnect occurs, the icon will change to *red* to inform the user.

On-line documentation

This feature provides on-line access to the product document set, integrated into the Navis™ Optical PM - MRP software.

The documentation set consists of the following documents:

- *Navis™ Optical PM - MRP Administration Guide*
- *Navis™ Optical PM - MRP Provisioning Guide*

The on-line documentation is accessed from the Help menu on the Network Map.

Shared Risk Group

In order to provide physical separacy between protected and service route, Navis™ Optical PM - MRP supports associations of shared risk groups to inter-domain digital links. One or more shared risk groups can be associated to one link, or a number of links can be associated with one shared risk group. Note that it is the user's responsibility to define the physical separacy.

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Section III: Strategies for ensuring high-availability

Overview

Purpose
Many customers use Navis™ Optical PM - MRP in a network where a high degree of system availability is a necessity. This section describes the high-availability strategies that can be used with Navis™ Optical PM - MRP to protect against system downtime.

Two high-availability strategies
There are two high-availability strategies:

- Uninterruptible Power Supply (UPS)
- Mirrored disks

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Uninterruptible Power Supply

Description   A UPS protects against power failures. It is used to protect the main servers and their essential peripherals from minutes of power failure. In the case of a longer power loss, the UPS enables the system to shut down gracefully.

When to use   The use of UPS is recommended in all cases. However, due to the site-specific nature of power requirements, it is not a mandatory requirement.

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Mirrored Disks

Description   Mirrored disks protect against disk failures. When mirrored disks are used, all data is written to two disk systems. In the event of a disk failure, no data is lost and there is no interruption of system operation at the time of the disk failure. The damaged disk will need to be replaced, which may require a system shutdown, but this can be done as part of scheduled maintenance and will not cause any unexpected downtime.

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Section IV: Applications

Overview

Purpose This section describes the applications supported by Navis™ Optical PM - MRP.

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Supported applications	1-22

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Supported applications

Introduction   One standard application has been defined for Navis™ Optical PM - MRP.

This application is used to define the hardware platforms for the application. The hardware required to support Navis™ Optical PM - MRP depends upon the size of the network to be managed. The size is measured using a unit called Network Element Equivalents (NEQ), which considers the number of network elements and the relative "weight" of each of the network elements. (One NEQ equals the loading of an ISM-4.) The network element weight is significant because some network elements require more hardware resources for management than others.

The hardware platforms for the application are described later in this chapter.

List of applications   One standard application has been defined for Navis™ Optical PM - MRP.

The standard application is:

- Large

Large application size   In the large application, each instance of Navis™ Optical PM - MRP is loaded on its own server. Navis™ Optical PM - MRP can communicate with all of the NMSs in the network, and with the network elements managed by NMSs.

The following figure illustrates the large application.

Figure 1-2 Large Application

Clients

Corporate Data
Communications Network

General Purpose
LAN

Navis™ Optical Optical PM - MRP

NMS(s) (for example
Navis™ Optical NMS
or Alcatel RM1354)
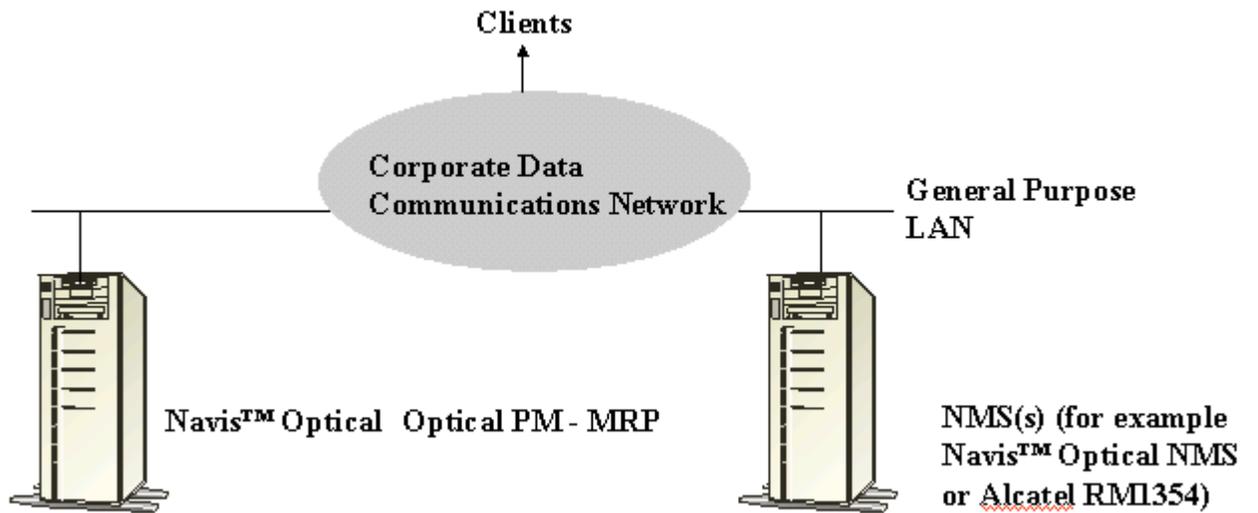
Characteristics   The large application has the following characteristics:

- Support for up to 24 NMSs in the network
- Support for 64 simultaneous user logins

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Section V: Hardware Platforms

Overview

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Purpose   This chapter describes the supported hardware architectures for Navis™ Optical PM - MRP.

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About the client-server architecture

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Introduction   Navis™ Optical PM - MRP and its communicating NMS systems are each based upon a client-server architecture that works in the following way:

- "Client" software components provide graphical user interfaces (GUIs).

- "Server" software components support the clients and interface with similar components of peer management systems.

The architecture of the system is such that each software component is capable of being hosted separately on distributed networked platforms. This architecture provides scalability, since each user has access to their own Navis™ Optical PM - MRP and NMS GUIs, which may be widely distributed on relatively lightweight client software platforms. At the same time, the architecture ensures that each user remains connected to centralized information on a powerful, protected server platform.

Server configurations   Two server configurations are supported. The different server configurations provide scalability and degrees of high availability. The server configurations are described in the next section, "Supported server hardware configurations" (1-26). Each server configuration is capable of interworking with any of the supported client configurations.

Client configurations   A number of client configurations are supported. The different client configurations provide scalability, consolidation with EMSs, and multi-platform support. The client configurations are described in "Supported client hardware configurations" (1-28), later in this chapter. Each client configuration is capable of interworking with any of the supported server configurations.

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Supported server hardware configurations

Introduction

The following server hardware configurations are supported for Navis™ Optical PM - MRP:

- Single server
- Single server with disk mirroring

Single server

The following figure illustrates the single server hardware configuration.

Figure 1-3 Single server hardware configuration
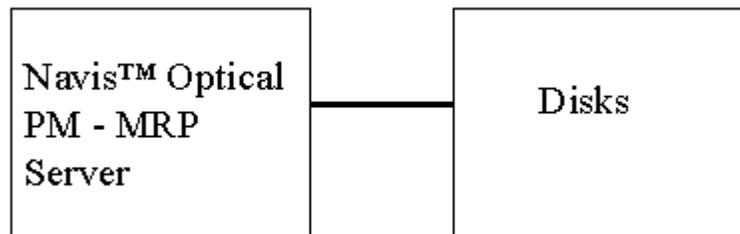
This configuration is an entry-level solution for customers without stringent high-availability requirements.

The Navis™ Optical PM - MRP server is an HP server running the HP-UX operating system.

Single server with disk mirroring

The following figure illustrates the single server hardware configuration.

Figure 1-4 Single server hardware configuration (with disk mirroring)
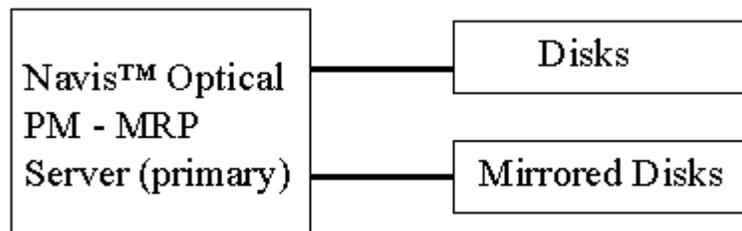
This configuration is an entry-level solution that provides automatic disk failure detection and recovery of all functionality following a disk failure.

The Navis™ Optical PM - MRP server is an HP server running the HP-UX operating system.

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Supported client hardware configurations

Introduction   The following client hardware configurations are supported for Navis™ Optical PM - MRP:

- Terminal server

Terminal server   The terminal server hosts client software, but exports the display to a separate machine, which is known as a "desktop terminal." The terminal server is not used by a user to view the display.

The desktop terminal can also:

- Launch Navis™ Optical PM - MRP via SAGE
- Co-display the GUI of other NMSs and EMSs alongside the Navis™ Optical PM - MRP GUI using SAGE

The following figure illustrates the terminal server hardware configuration.

Figure 1-5 Terminal server hardware configuration
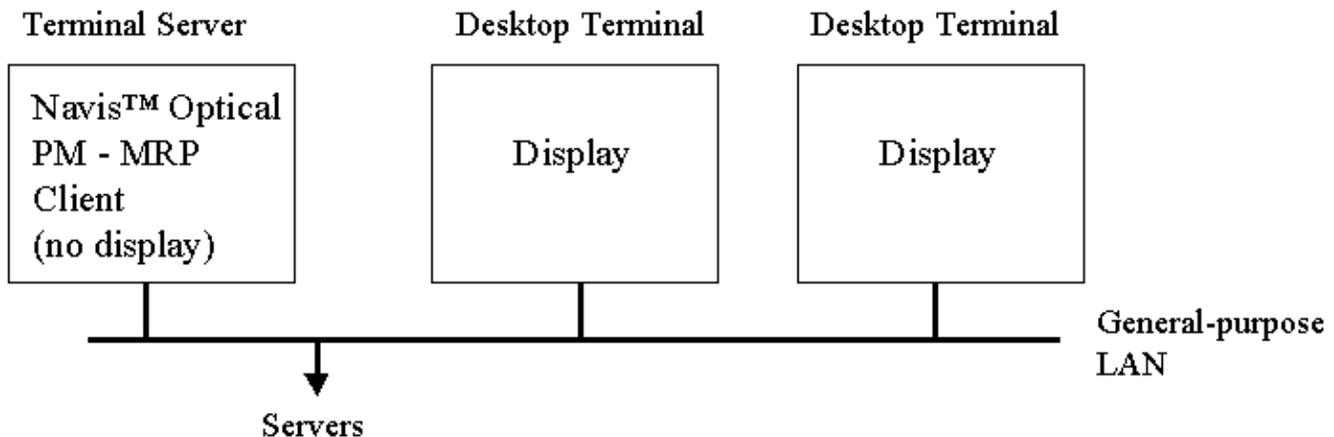
This configuration allows multi-platform integration with existing preferred desktop platforms. It also provides a simple upgrade path. (Growth in system or user requirements may be addressed by upgrading a single terminal server without upgrading each desktop terminal.)

The Navis™ Optical PM - MRP terminal server may be an HP NetServer running Windows® NT or Windows® 2000.

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Supported server platforms

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Introduction The supported server platforms are designed to cost-effectively support each Navis™ Optical PM - MRP application and hardware configuration.

The hardware required for a Navis™ Optical PM - MRP server depends upon the size of the network to be managed. The network size is measured using a unit called Network Element Equivalents (NEQ), which considers the number of network elements and the relative "weight" of each of the network elements. (One NEQ equals the loading of an ISM-4.) The network element weight is significant because some network elements require more hardware resources for management than others.

Table The following table shows the different Navis™ Optical PM - MRP server platforms that are orderable for this release.

Figure 1-6 Navis™ Optical PM - MRP server platforms

Components hosted	Application			Configurations		Platform Title	Hardware		
	# of users	# of NMSs	# of NEQs/NMS[a]	Single server	Single server with disk mirroring		HP 9000 server model	# of CPUs	Memory
Navis Optical PM - MRP server	64	24	5000	Y		Large PM - MRP server	L2000	4	4 Gb
					Y	Large PM - MRP server with disk mirroring	L2000	4	4 Gb
						Large PM - MRP server with Local Redundancy	L2000	4	4 Gb

a. This value is subject to a Network Fan-out scaling factor.

....

Supported client platforms

Introduction   The supported client platforms are designed to cost-effectively support each Navis™ Optical PM - MRP application, client-side operating system, and hardware configuration.

The supported client platforms permit consolidation of the client software of the following products onto the same platform:

- Navis™ Optical PM - MRP

- any NMS in the network

- any EMS in the network

Table   The following table shows the different Navis™ Optical PM - MRP client platforms that are supported, and the applications that are supported for each.

Figure 1-7 Navis™ Optical PM - MRP client platforms

Table 1: Supported new client platforms

Components hosted	Application		Configurations	Platform Title	Hardware		
	# user sessions served per terminal server	# of Physical Network Elements	Two-tier				
			Terminal server		Model	# CPUs	Memory
PM - MRP client	8	5000	Yes	HP-UX PM - MRP Terminal Server	Windows NT	2	4 Gb
PM - MRP client	8	5000	Yes	Large Windows PC PM - MRP Terminal Server	HP LH6000	4	4 Gb

☐

Section VI: Ordering

Overview

Purpose   This section describes how to order Navis™ Optical PM - MRP.

Contents

How to order Navis™ Optical PM - MRP

Overview   This section describes how to order Navis™ Optical PM - MRP.

Ordering Process   Navis™ Optical PM - MRP is ordered by calling a Lucent sales representative.

☐

Orderable items

....

Overview

This section lists the items that are orderable. The lists in this section should be used to help prepare an order before it is actually placed.

Application Software: Core

The following table contains the comcodes for the application software core.

Description	Comcode
Navis™ Optical PM - MRP Release 1.1 Core DAT: [includes 2 NMS Right To Use (RTU)]	109199430

Application Software: Optional Features

The following table contains the comcodes for the network element (Right To Use) RTU.

Description	Comcode
Navis™ Optical PM - MRP Release 1.1 Option: Information flow-through to DNA	109199406

Application Software: Lucent Management Connection RTUs

The following table contains the comcodes for the Lucent management connection RTUs.

Description	Comcode
Navis™ Optical PM - MRP Release 1.1 Network Element RTU: Lucent NMS Interface	109199422
Navis™ Optical PM - MRP Release 1.1 Network Element RTU: Lucent Network Elements	109199414

Documentation

The following table contains the comcodes for the Navis™ Optical PM - MRP user documentation.

Description	Comcode
Navis™ Optical PM - MRP Release 1.1 Administration Guide - English (365-309-803)	109199554
Navis™ Optical PM - MRP Release 1.1 Provisioning Guide - English (365-309-804)	109199562

....

Description	Comcode
Navis™ Optical PM - MRP Release 1.1 User Documentation CD-ROM (365-309-805)	109199570

□

2 The Navis™ Optical PM - MRP Provisioning Process

Overview

Purpose
This chapter provides an overview of the Navis™ Optical PM - MRP provisioning process.

Important note
This document instructs users on how to provision in theNavis™ Optical PM - MRP.

This document contains two types of chapters:

- *Task* chapters describe provisioning tasks (that is, step-by-step instructions).

- *Conceptual* chapters contain detailed information related to the tasks.

Task chapters are located in the front of the document; conceptual chapters follow the task chapters.

Contents

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What is provisioning?

Overview   Provisioning, as it pertains to Navis™ Optical PM - MRP, is the process of establishing a connection through a Navis™ Optical PM - MRP managed network and setting appropriate transmission parameters for an inter-domain digital link, and SDH circuit/trails for a specified rate.

This overview assumes that all of the administrative tasks needed to have the system fully operational have been completed.

Supported actions   Navis™ Optical PM - MRP allows users to perform the following actions for provisioning:

- **Add**: users can provision new digital links and circuit/trails.
- **Delete**: users can delete existing digital links and circuit/trails.
- **Modify**: users can modify an existing circuit/trail to create a new route.
- **Merge**: users can merge two or more circuits/trails of the same rate to form one new circuit/trail.

☐

Terminology overview

Overview This section provides the common terms and concepts necessary to understand the Navis™ Optical PM - MRP provisioning process.

For a complete listing of Navis™ Optical PM - MRP-related terms, refer to the glossary section of the *Navis*™ *Optical NMS Administration Guide.*

Area The Network Map displays fixed areas, each of which represents network elements managed by a particular network management system. With Navis™ Optical PM - MRP Release 1.1, areas cannot be expanded as in Navis™ Optical NMS.

On the Network Map, domains are represented by an icon for an area, so in Navis™ Optical PM - MRP, domains and areas are synonymous terms.

Channels When either a digital link or trail is channelized, it is subdivided into channels. For time division multiplexing (TDM) equipment, channels represent the time slots with which information is carried within a digital link or in a server trail. Channels are created by Navis™ Optical PM - MRP for use during circuit/trail provisioning. When creating channels for digital links, depending on the network element capability, alternate channels, to accommodate provisioning different rates of circuits/trails, are created.

Circuits Circuits generally carry customer service. Typically, circuits are plesiochronous digital hierarchy (PDH) and can ride on PDH channels or be mapped to SDH trails. Circuits can ride on trails and digital links.

Circuits ride on:

- Trails (for example, a CEPT-1 circuit riding on a VC-12 trail)
- Digital links (a circuit can ride on a digital link directly if the digital link is channelized to one channel, such as a CEPT-1 circuit riding on a CEPT-1 digital link).

PDH circuits can be provisioned over:

- PDH facilities (for example, a CEPT-1 circuit on a channel of a CEPT-4 facility)
- SDH trails (for example, a CEPT-1 circuit on a VC-12 trail)

SDH trails cannot be provisioned over a PDH facility.

The following figure shows an example of the relationship among digital links, trails, and circuits.

Figure 2-1 A circuit in relation to a trail and digital links
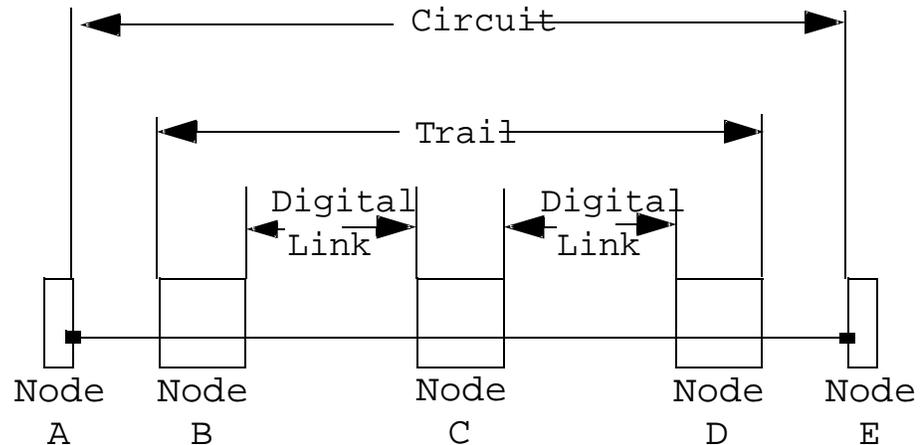
Digital links   *Digital links* are fiber or electrical connections between two points. These transport facilities are assignable to high-order and low-order circuits to carry customer services. Digital links can be of two types: SDH digital links or PDH digital links.

SDH digital links connect two SDH network elements or an SDH network element and a black box or equipment.

PDH digital links are asynchronous connections between two PDH ports of the network elements assignable to the PDH circuits.

The following figure shows an example of the relationship among digital links, trails, and circuits.

Figure 2-2 Relationship between digital links, trails, and circuits

....

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Domain The set of nodes under the control of one network management system, such as Navis™ Optical NMS, is defined as a domain. Within the GUI, a domain is referred to as an area.

On the Network Map, domains are represented by an icon for an area, so in Navis™ Optical PM - MRP, domains and areas are synonymous terms.

Equipment *Equipment* is a functional unit in a network that is not displayed on the Network Map and which Navis™ Optical PM - MRP cannot monitor or control. An example of equipment is customer premises equipment.

Network A *network* carries a payload from one point to another. This payload can consist of data, voice, video, or images. Digital links and trails carry the circuits that carry the data.

Network element A *network element* is a functional unit in a customer's network that displays on the Network Map and is controlled by the user. Network elements supply switching, transmission, or multiplexing functionality in a network and are either controlled or noncontrolled.

Optical layer An optical layer is a hierarchy of connections involving optical cross-connects and dense wavelength division multiplexing (DWDM) systems and network elements. It includes Optical Multiplex Section (OMS), Optical Link (OL), and Optical Channel (OCH) Trail. Note that Optical Layer Provisioning is not supported in Navis™ Optical PM - MRP.

Subnetwork connection A Subnetwork connection is a subset of circuits located within one domain.

Synchronous Digital Hierarchy *Synchronous Digital Hierarchy* (SDH) is a standard that defines the transmission hierarchy of a synchronous network.

Trails A trail is a logical connection between two adjacent, or nonadjacent SDH network elements. It may traverse one or more channels and supports add/drop capability along the trail.

Trails simplify provisioning by allowing users to establish routes through digital links and network elements so that circuits can be

assigned to the trail. This capability allows users to assign a circuit to a trail at the trail's A and Z ends without spelling out a list of digital links and cross-connections that make up the trail. Two or more trails may be connected as part of a circuit.

Trails ride on one or more digital links and also contain their own payload and overhead sections.

The following figure shows an example of the relationship between digital links, trails, and circuits.

Figure 2-3 Relationship between digital links, trails and circuits

Lucent Technologies
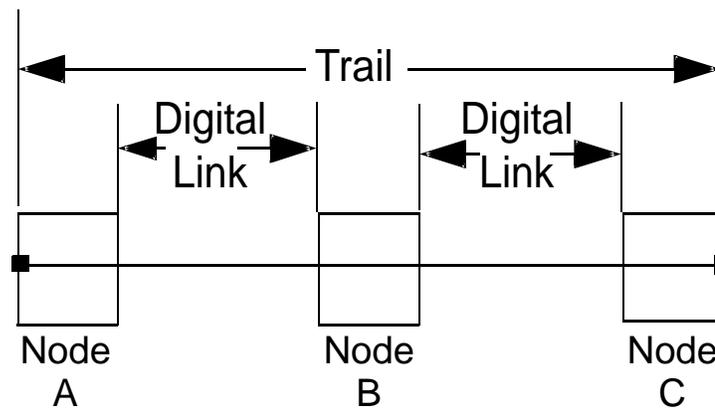
Provisioning process description

Overview   The following is an overview of the Navis™ Optical PM - MRP provisioning process as it relates to the order in which actions should occur.

Recommended order   The order in which provisioning tasks should occur is as follows.

1. Load the Navis™ Optical PM - MRP database (system administrator).

2. Provision inter-domain digital links between network elements in different domains.

3. Provision trails and circuits (can be either inter-domain trails/circuits or intra-domain trails/circuits).

☐

3 Network Element Configuration Tasks

Overview

Purpose

This chapter contains tasks used to add, modify, and delete network elements.

Adding network elements to the network

Network elements are added to the network at the NMS level. They appear on the Navis™ Optical PM - MRP Network Map either by notification or after a database synchronization is performed with the NMSs in the network, and the network elements are discovered. Database synchronization can only be performed by those with appropriate security privileges.

> **Important!** To view a list of network elements managed through ITM-SC and Navis™ Optical NMS, see the *Navis™ Optical Network Management System (NMS) Provisioning Guide*. To view a list of network elements supported by Navis™ Optical NMS through Alcatel 1354RM, see Appendix A, "Navis™ Optical PM - MRP Network Elements Supported by Navis™ Optical PM - MRP through Alcatel 1354RM" in this provisioning guide.

Contents

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....

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Tasks to support Noncontrolled Network Elements

Overview   This topic contains provisioning tasks used to add, modify and delete noncontrolled network elements, such as equipment.

About these tasks   Select the appropriate task to support noncontrolled network elements.

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Add equipment

....

Purpose   Use this task to add equipment to the Network Map.

Task   Complete the following steps to add equipment to the Network Map.

....

1   From the Network Map, select **Configuration > Equipment > Add**.

      Result:

      The Add equipment form is displayed. The **Model** field displays **EQPT**.

....

2   In the **Equipment ID** field, enter the network element identification.

....

3   In the **Acronym** field, enter an acronym.

....

4   In the **Customer Information** field, enter any information you wish other users to view.

....

5   Click **OK**.

      Result:

      A window informs you of the success or failure of the operation, and the newly added equipment can be viewed on the Equipment Display List.

E ND OF S TEPS

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Modify equipment

Purpose   Use this task to modify existing equipment.

Task   Perform the following steps to modify existing equipment.

1   From the Network Map, select **Configuration > Equipment > Display List**.

> **Result:**
>
> The Equipment Display List Query Box displays.

2   In the **Equipment ID** field, enter an equipment ID (or enter * to list all equipment).

3   Press **OK**.

> **Result:**
>
> The Equipment Display List window displays.

4   From the list, select the equipment you wish to modify.

> **Result:**
>
> The equipment becomes highlighted, and the **Actions** menu item becomes enabled.

5   Modify the acronym of the selected equipment.

6   Select **Actions > Update**.

> **Result:**
>
> The equipment is modified.
>
> E ND OF S TEPS

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Display equipment list

Purpose Use this task to display a listing of existing equipment.

Task Perform the following steps to display a list of existing equipment.

1 From the Network Map, select **Configuration > Equipment > Display List**.

> **Result:**
>
> The Equipment Display List Query Box form displays.

2 In the Equipment ID field, enter the ID of the equipment you wish to display (or enter ***** to list all existing equipment).

3 Click **OK**.

> **Result:**
>
> The Equipment Display List displays equipment in the network that matches the entered Equipment ID.

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Delete equipment

Purpose   Use this task to delete equipment from the Network Map.

Task   Complete the following steps to delete equipment from the Network Map.

....

1   Display the equipment list. (See <u>"Display equipment list" (3-6)</u>).

....

2   Select an entry.

....

3   Select **Actions > Delete Node**.

   Result:

   The equipment is deleted from the Network Map.

   E ND OF S TEPS

   ☐

Display Equipment/Facility list

Purpose Use this task to display existing equipment/facility lists.

Task Perform the following steps to display existing equipment/facility lists.

....

1 From the Network Map, right click a node and select **Equipment/Facility List**.

> **Result:**
>
> The Equipment/Facility form displays.

....

2 Continue with one of the following options.

- To display channel information associated with one of the listed items, select a row, then select **Actions > Channel Information**. The Channel Information Query box displays. See Step 2 of the "Display channel information" (4-40) task to continue.

- To display client/trail information associated with one of the listed items, select a row, then select **Actions > Client Trail List**. The Client Trail List Query box displays. See Step 2 of the "Display client trail list" (4-39) task to continue.

- To exit this form, select **File > Exit**.

E N D   O F   S T E P S
....

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4   Provisioning Tasks

Overview

Purpose   This chapter presents provisioning tasks usable with Navis™ Optical PM - MRP.

Contents

Section I: Inter-Domain Digital Links

Overview

Purpose This section contains provisioning tasks associated with inter-domain digital links. With Navis™ Optical PM - MRP, a user can provision digital links on a *inter-domain level* only.

If you attempt to provision digital links on an intra-domain level, the following message displays: `Please, use lower-level management system to provision intra-area digital link.`

For information on how to provision digital links on an *intra-domain level*, consult the appropriate NMS vendor documentation. For Lucent's Navis™ Optical NMS, refer to Chapter 3 of the *Navis™ Optical NMS Provisioning Guide*.

Important note about provisioning VC4s When provisioning a VC4, in general, the system allows the user to specify if the VC4 needs to be an infrastructure VC4. Note that the Lucent DMS (lower level management system) does not make use of this indication and determines from the port if the VC4 is to be terminated or not. Therefore, the Lucent DMS will not return an error when the user has specified infrastructure and the Lucent DMS has determined non-infrastructure VC4.

By default, the Provisioning Profile form's **Infrastructure VC4** box is checked, which indicates that structure should be applied. Note that a check box for the A and Z port is supported, which allows the user to define which end needs to be structured. Users may deselect this check box if a structure *should not* be applied.

When the check box is checked and the user submits the connection details, such as A/Z node, A/Z port, and rate, the lower level NMS system validates that the end nodes are capable of low order cross-connects. Note that the Lucent DMS does not perform a validation.

If the port(s) is unable to terminate the VC4, that system notifies Navis™ Optical PM - MRP of the unsuccessful attempt. The user also has to check the box for the port that has to be structured.

Upon notification, Navis™ Optical PM - MRPdisplays a message similar to the following: `The port on the following node does not terminate the VC4 <Domain_name>: <Node_name>: <Port_address>.`

Contents

Add an inter-domain digital link between controlled network elements (from a DMS map)

Purpose   Use this task to add an inter-domain digital link between two controlled network elements that belong to different domains. This task covers provisioning from a DMS map.

Task   Complete the following steps to add an inter-domain digital link between two controlled network elements on a DMS map. This task assumes that two controlled network elements are already provisioned in different domains.

1   From a DMS map, select the following:

- a *Z domain* and a *DMS-managed node* from the Z domain

Tip: Right click on a network element to see the domain to which it belongs.

> **Result:**
>
> The selected network elements are highlighted.

2   From a DMS map, select **Configuration > Digital Link > Add > (Select a digital link rate from the list)**.

> **Result:**
>
> The DMS map becomes the Provisioning Profile form. The **A Location** and **Z Location** fields are populated.

3   Under the **Essential** tab, enter a circuit ID for **CKT/Trail ID**.

> **Important!** If you are provisioning a VC4 with Lucent and Alcatel or Alcatel-only end nodes, see the *Important note about provisioning VC4s* description at the beginning of this section for more details.

4   Press the **A port** button.

> **Result:**
>
> The Port Selection form displays.

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between
controlled network elements (from a DMS
map)

Provisioning Tasks

....

5   Select a port and press **OK**.

> **Result:**
>
> The selected port displays within the Essential tab as the **A port**.

....

6   Repeat Step 4 and Step 5 to add the **Z port** (of course, exchange any instances of **A port** with **Z port**).

> **Result:**
>
> The selected port displays within the Essential tab as the **Z port**.

....

7   Under the **Parameters** tab, verify that **Order Action** is set to **Add** then complete the remaining Parameters tab fields.

> **Important!** If changes to PTI-related values are not accepted by DMS, a message similar to the following displays: `MODIFY PARAMETERS FAILED IN <Domain_name>: <network_element_ name> PLEASE SET PARAMETERS LOCALLY FROM LOWER LEVEL MANAGEMENT SYSTEM`.

....

8   Press **OK**.

> **Result:**
>
> The graphical layout form displays with the message, `Do you want to approve, cancel, or modify the order?`.

....

9   Press **OK**.

> **Result:**
>
> A Provisioning In-Progress pop up window displays followed by a confirmation window.

....

10   Confirm all confirmation windows that display.

> **Result:**
>
> The new inter-domain digital link connecting the two domains displays on the DMS map. If there is another inter-domain link

....

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between
controlled network elements (from a DMS
map)

Provisioning Tasks

that is already provisioned between the same two domains, no
new link will display on the DMS map.

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Add an inter-domain digital link between two controlled network elements from a submap

Purpose   Use this task to add an inter-domain digital link between two controlled network elements that belong to different domains from a submap.

Task   Complete the following steps to add an inter-domain digital link between two controlled network elements on the user-defined submap. This task assumes that two controlled network elements are already provisioned in different domains.

1   From the user-defined submap, select two DMS-managed nodes from different domains.

     Tip: Right click on a network element to see the domain to which it belongs.

> **Result:**
>
> The selected network elements are highlighted.

2   On the user-defined submap, select **Configuration > Digital Link > Add > (Select a digital link rate from the list)**.

> **Result:**
>
> The user-defined submap becomes the Provisioning Profile form. The **A Location** and **Z Location** fields are populated.

3   Under the **Essential** tab, enter a circuit ID for **CKT/Trail ID**.

     Important! If you are provisioning a VC4 with Lucent and Alcatel or Alcatel-only end nodes, see the ***Important note about provisioning VC4s*** description at the beginning of this section for more details.

4   Press the **A port** button.

> **Result:**
>
> The Port Selection form displays.

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between
two controlled network elements from a
submap

Provisioning Tasks

5   Select a port and press **OK**.

> **Result:**
>
> The selected port displays within the Essential tab as the **A port**.

6   Repeat Step 4 and Step 5 to add the **Z port** (of course, exchange any
instances of **A port** with **Z port**).

> **Result:**
>
> The selected port displays within the Essential tab as the **Z port**.

7   Under the **Parameters** tab, verify that **Order Action** is set to **Add**
then complete the remaining Parameters tab fields.

> **Important!** If changes to PTI-related values are not accepted by
> DMS, a message similar to the following displays: `MODIFY`
> `PARAMETERS FAILED IN <Domain_name>: <network_element_`
> `name> PLEASE SET PARAMETERS LOCALLY FROM LOWER LEVEL`
> `MANAGEMENT SYSTEM`.

8   Press **OK**.

> **Result:**
>
> The graphical layout form displays with the message, `Do you`
> `want to approve, cancel, or modify the order?`.

9   Press **OK**.

> **Result:**
>
> A Provisioning In-Progress pop up window displays followed by
> a confirmation window.

10   Confirm all confirmation windows that display.

> **Result:**
>
> The new inter-domain digital link connecting the two domains
> displays on the user-defined submap. If there is another
> inter-domain link that is already provisioned between the same

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between
two controlled network elements from a
submap

Provisioning Tasks

two domains, no new link will display on the user-defined
submap.

E ND OF S TEPS

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Add an inter-domain digital link between a controlled network element and an equipment (noncontrolled network element)

Purpose Use this task to add an inter-domain digital link between a controlled network element and an equipment (noncontrolled network element).

Task Complete the following steps to add an inter-domain digital link between a controlled network element and an equipment (noncontrolled network element) to the Network Map. This task assumes that network elements are already provisioned in different domains.

1 From the Network Map, select a controlled network element and a noncontrolled network element (such as equipment) from different domains.

Tip: Right click on a network element to see the domain to which it belongs.

Result:

The selected network elements are highlighted.

2 On the Network Map, select **Configuration > Digital Link > Add > (Select a digital link rate from the list)**.

Result:

The Network Map becomes the Provisioning Profile form. The **A Location** and **Z Location** fields are populated.

3 Under the **Essential** tab, enter a circuit ID for **CKT/Trail ID**.

Important! If you are provisioning a VC4 with Lucent and Alcatel or Alcatel-only end nodes, see the *Important note about provisioning VC4s* description at the beginning of this section for more details.

4 Press the **A port** button.

Result:

The Port Selection form displays.

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between a
controlled network element and an
equipment (noncontrolled network element)

Provisioning Tasks

....

5   Select a port and press **OK**.

> **Result:**
>
> The selected port displays within the Essential tab as the **A port**.

....

6   Repeat Step 4 and Step 5 to add the **Z port** (of course, exchange any instances of **A port** with **Z port**).

> **Result:**
>
> The selected port displays within the Essential tab as the **Z port**.

....

7   Under the **Parameters** tab, verify that **Order Action** is set to **Add** then complete the remaining Parameters tab fields.

> **Important!** If changes to PTI-related values are not accepted by DMS, a message similar to the following displays: `MODIFY PARAMETERS FAILED IN <Domain_name>: <network_element_name> PLEASE SET PARAMETERS LOCALLY FROM LOWER LEVEL MANAGEMENT SYSTEM`.

....

8   Press **OK**.

> **Result:**
>
> The graphical layout form displays with the message, `Do you want to approve, cancel, or modify the order?`.

....

9   Press **OK**.

> **Result:**
>
> A Provisioning In-Progress pop up window displays followed by a confirmation window.

....

10   Confirm all confirmation windows that display.

> **Result:**
>
> No inter-domain link between a controlled network element and equipment will be shown on the Network Map. Only the

....

Section I: Inter-Domain Digital Links
Add an inter-domain digital link between a
controlled network element and an
equipment (noncontrolled network element)

Provisioning Tasks

Equipment List associated with the network element or domain
will include the equipment ID.

E ND OF S TEPS

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Add a regenerator to an inter-domain digital link

Purpose   Use this task to add a regenerator to a digital link.

> **Important!** Regenerators are not supported over the TeleManagement Forum (TMF) interface. They *will not display* on the Navis™ Optical PM - MRP Network Map or in a graphical layout display of the intra-domain digital link in Navis™ Optical PM - MRP because they are not propagated upward from Navis™ Optical NMS to Navis™ Optical PM - MRP. Regenerators are visible in Navis™ Optical NMS, therefore, if you need to view an entire intra-domain digital link, use the Navis™ Optical NMS application.

Task   Complete the following steps to add a regenerator to a digital link.

1   From the Network Map, select a digital link.

        Result:

        The digital link becomes jagged.

2   Right click on the digital link.

        Result:

        The Link List form displays.

3   Select **Link List**.

4   Select the CKT/Trail ID corresponding to the digital link to which you want to add the regenerator.

        Result:

        The selection becomes highlighted, and the **Actions** menu item becomes enabled.

5   Select **Actions > Circuit/Trail List**.

Result:

The Circuit/Trail List form displays.

....

6 Select a circuit/trail ID.

Result:

The selection becomes highlighted and the **Action** menu item
becomes enabled.

....

7 Select **Actions > Graphical Layout**.

Result:

The Graphical Layout form displays.

....

8 Select **Actions > Modify > Regenerators/Optical Amplifiers**.

Result:

The Regenerator Selection form displays.

....

9 Select a regenerator from the **Non-Members** sub-window.

Result:

The **Add** and **Remove** buttons become enabled.

....

10 Press **Add**.

Result:

The regenerator is moved to the **Service** form.

....

11 Specify the regenerator's left/right ports and the service protection.

....

12 Press **OK**.

Result:

A Provisioning In-Progress pop up window displays followed by
a confirmation window.

....

....

13   Press **OK**.

....

14   From the Network Map, select **File > Query Again**.

Result:

A regenerator is added to the digital link.

E N D   O F   S T E P S

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Delete a regenerator from an inter-domain digital link

Purpose   Use this task to delete a regenerator from a digital link.

Task   Perform the following steps to delete a regenerator from a digital link.

1   From the Network Map, select a digital link.

2   Right click on the digital link.

    Result:

    A drop-down menu displays.

3   Select **Circuit/Trail List**.

    Result:

    The Circuit/Trail List form displays.

4   Select the CKT/Trail ID corresponding to the digital link from which you want to delete the regenerator.

    Result:

    The selection becomes highlighted, and the **Actions** menu item becomes enabled.

5   Select **Actions > Graphical Layout**.

    Result:

    The Graphical Layout form displays.

6   Select **Actions > Modify > Regenerators/Optical Amplifiers**.

    Result:

    The Regenerator Selection form displays.

7   Select a regenerator from the **Service** form.

Result:

The **Add** and **Remove** buttons become enabled.

....

8   Press **Remove**.

Result:

The regenerator is moved to the **Non-Members** window.

....

9   Press **OK**.

Result:

A Provisioning In-Progress pop up window displays followed by
a confirmation window.

....

10   Press **OK**.

....

11   From the Network Map, select **File > Query Again**.

Result:

The regenerator is deleted from the digital link.

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4 - 1 8   **Lucent Technologies**   365-309-804R1.1
                                                                               Issue 1, July 2002

Modify Order Parameters of an inter-domain digital link

Purpose Use this task to modify the order parameters of an existing inter-domain digital link.

Task Perform the following steps to modify the features of an existing digital link.

....

1 From the Network Map, select a digital link by clicking on it.

Result:

The digital link becomes jagged.

....

2 Right-click on the digital link.

Result:

The Link List form displays.

....

3 Select **Link List**.

....

4 Select a digital link from the list.

....

5 Select **Actions > Circuit/Trail List**.

Result:

The Circuit/Trail List form displays.

....

6 Select a circuit/trail ID.

Result:

Selection becomes highlighted and the **Actions** menu item becomes enabled.

....

7 Select **Actions > Graphical Layout**.

Result:

The Graphical layout form displays.

....

....

8   Select **Actions > Modify (make a selection)**.

Result:

A modification form will display depending upon your selection.

....

9   Perform any modification to the digital link through the three
available forms.

....

10   Once finished with your modifications, from the Network Map, select
File > Query Again.

Result:

The digital link is modified.

E ND OF S TEPS

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4 - 2 0   **Lucent Technologies**   365-309-804R1.1
                                                                   Issue 1, July 2002

Disconnect an inter-domain digital link

....

Purpose   Use this task to disconnect a digital link. The following caveats apply to this task depending upon the type of digital link you wish to disconnect.

Before you begin   Before disconnecting a digital link, note the following:

- Deletion of a digital link is permitted only if there are no in-effect, pending circuits or trails riding on it. Links still being used by connections *cannot* be disconnected.

- Any circuits or lower-order trails riding on a higher order trail, must be disconnected before there is any attempt at disconnecting a digital link.

Task   Complete the following steps to disconnect a digital link from a facility or circuit/trail. Be sure to read the ***Before You Begin*** information above before attempting to disconnect a digital link.

....

1   From the Network Map, select an inter-domain digital link.

....

2   Verify whether the link/trail is being used. See the "Check digital link connection" (4-23) task.

....

3   From the Network Map, select **Configuration > Digital Link > Disconnect**.

> **Result:**

> The Ckt/Trail Query Box is displayed.

....

4   In the **Order Number** field, enter the order number of the digital link to be disconnected.

....

5   Click **OK**.

> **Result:**

> A confirmation window displays.

....

....

6   Click **Yes**.

> **Result:**
>
> An action window displays.

....

7   Click **OK**.

> **Result:**
>
> The system disconnects the digital link if all validations are successful.

....

8   From the Network Map, select **File > Query Again**.

> **Result:**
>
> The digital link, linking the specified domains, displays from the Network Map.

E ND OF S TEPS
....

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4 - 2 2   **Lucent Technologies**   365-309-804R1.1
                                                                                        Issue 1, July 2002

Check digital link connection

Purpose   Use this task to verify if a digital link is being used by a connection.

> **Important!** This task should be performed before disconnecting a digital link. A digital link that is being used by a connection *cannot* be disconnected.

Task   Perform the following steps to verify if a digital link is being used by a connection.

....

1   From the Network Map or submap, right click on a link, then select **Circuit/Trail List**.

> **Result:**
>
> The Circuit/Trail List form displays.

....

2   Select a row, then select **Actions > Client Trail List**.

> **Result:**
>
> The Client Trail List query box displays with completed fields.

....

3   Press **OK**.

> **Result:**
>
> The Client Trail List form displays.

....

4   Determine if the Client Trail List form is populated with entries, then continue with one of the following options.

- If values *display*, then the digital link is being used by a connection and *cannot* be disconnected.

- If values *do not display*, then the digital link is not being used by a connection and *can* be disconnected. See "Disconnect an inter-domain digital link" (4-21) to continue.

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Section II: Subnetwork Connections

Overview

Purpose   This section contains provisioning tasks associated with circuits/trails. With Navis™ Optical PM - MRP, users can provision circuits on both the inter-domain and intra-domain level. This guide only covers inter-domain provisioning tasks. For information on how to provision circuits on the intra-domain level, consult the appropriate NMS vendor documentation. For Lucent's Navis™ Optical NMS, refer to Chapter 3 of the *Navis™ Optical NMS Provisioning Guide*.

Important note about provisioning VC4s   When provisioning a VC4, in general, the system allows the user to specify if the VC4 needs to be an infrastructure VC4. Note that the Lucent DMS (lower level management system) does not make use of this indication and determines from the port if the VC4 is to be terminated or not. Therefore, the Lucent DMS will not return an error when the user has specified infrastructure and the Lucent DMS has determined non-infrastructure VC4.

By default, the Provisioning Profile form's **Infrastructure VC4** box is checked, which indicates that structure should be applied. Note that a check box for the A and Z port is supported, which allows the user to define which end needs to be structured. Users may deselect this check box if a structure *should not* be applied.

When the check box is checked and the user submits the connection details, such as A/Z node, A/Z port, and rate, the Lucent DMS does not perform a validation, however the lower level NMS system validates that the end nodes are capable of low order cross-connects. If the port(s) is unable to terminate the VC4, that system notifies Navis™ Optical PM - MRP of the unsuccessful attempt. The user also has to check the box for the port that has to be structured.

Upon notification, Navis™ Optical PM - MRPdisplays a message similar to the following: `The port on the following node does not terminate the VC4 <Domain_name>: <Node_name>: <Port_address>.`

Contents

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Add a circuit/trail between two network elements

Purpose   Use this task to add a circuit/trail between two network elements. This task applies to creating a circuit/trail between: two controlled network elements, two noncontrolled network elements, or a controlled network element and noncontrolled network element.

Task   Complete the following steps to add a circuit/trail between two network elements. This task assumes that network elements and digital links have already been provisioned.

1   On the Network Map, select two network element icons joined by an inter-domain digital link.

Tip: Right click on the network element to see the domain to which it belongs.

> **Result:**
>
> The icons become highlighted.

2   On the Network Map, select **Configuration > Connection > Add > (Desired Circuit Rate)**.

> **Result:**
>
> The Provision Profile form is displayed.

3   Under the **Essential** tab, enter a circuit ID for **CKT/Trail ID**.

> **Important!** If you are provisioning a VC4 with Lucent and Alcatel or Alcatel-only end nodes, see the ***Important note about provisioning VC4s*** description at the beginning of this section for more details.

4   Press the **A port** button.

> **Result:**
>
> The Port Selection form displays.

....

5 Select applicable ports (depending on the circuit type, you will have
to select up to three ports) and press **OK**.

> **Result:**
>
> The selected port displays within the Essential tab as the **A port**.

....

6 Repeat steps 4 and 5 to add the **Z port** (of course, exchange any
instances of **A port** with **Z port**).

> **Result:**
>
> The selected port displays within the Essential tab as the **Z port**.

....

7 Select either **Semi-Automatic** or **Manual**. This task will assume you
select **Manual**.

Note: Semi-automatic allows users to provision a circuit/trail through
digital link selection only; channel selection is not required. Manual
provisioning requires digital link and channel selection.

....

8 Right click on the inter-domain digital link to which you want to add
the circuit/trail.

> **Result:**
>
> A menu displays.

....

9 Select **Trail/Channel Selection**.

> **Result:**
>
> The Trail/Channel Selection form displays.

....

10 From the **Trail ID** panel, select a trail.

> **Result:**
>
> The **Channel** panel will alter to reflect the channels available
> through the trail selection.

....

11 From the **Channel** panel, select a channel (or channels depending on
the trail selection) from the list.

....

....

12   Press **OK**.

Result:

The Connectivity tab is populated with your selections.

....

13   Continue to select a digital link and channel for every inter-domain
link to establish connectivity between the two ends of the cicuit/trail.

....

14   Press **OK**.

Result:

The graphical layout form displays with the message, `Do you`
`want to approve, cancel, or modify the order?`.

....

15   Press **OK**.

Result:

A Provisioning In-Progress pop up window displays followed by
a confirmation window.

....

16   Confirm all confirmation windows.

Result:

The circuit/trail is created.

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Display circuit list by type

Purpose   Use this task to display a list of particular circuit types.

Task   Perform the following steps to display a list of particular circuit types.

1   From the Network Map, select **Configuration > Connection > Display > Circuit/Trail List**.

    Result:

    The Circuit/Trail List Query Box form displays.

2   Place a check in the **Free Form** box.

    Result:

    The Free Form field alters.

3   Within the **Free Form** field, enter *.

    Result:

    The **OK** button becomes enabled.

4   From the field's drop-down menu, specify a transmission rate.

5   For **Status**, specify an order status. Your query will show all the circuits that abide by this criteria. For example, if you select **Pending**, only pending circuits will be polled.

6   For **Order Action**, select an order action if desired.

7   Press the **More** button if you wish to apply additional search criteria.

    Result:

    If pressed, the form lengthens to provide additional selections.

....

8 Click **OK**.

Result:

The Circuit/Trail List form displays and lists all existing circuits that fit the search criteria.

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Modify circuit order transmission parameters

....

Purpose   Use this task to modify circuit order transmission parameters.

> **Important!** Modifying transmissions can only be done for in-effect circuits only.

Task   Complete the following steps to modify a circuit's order transmission parameters.

....

1   From the Network Map, select a circuit/trail.

....

2   Right click on the circuit/trail.

> **Result:**
>
> The Node menu displays.

....

3   Select **Circuit/Trail List**.

> **Result:**
>
> The Circuit/Trail List form displays.

....

4   Select the CKT/Trail ID corresponding to the circuit/trail you wish to modify.

> **Result:**
>
> The selection becomes highlighted, and the **Actions** menu item becomes enabled.

....

5   Select **Actions > Graphical Layout**.

> **Result:**
>
> The Graphical Layout form displays.

....

6   Select **Actions > Modify > Order Parameters**.

> **Result:**
>
> The Order Parameters form displays.

....

....

7   Modify the circuit's order parameters.

....

8   Select **OK**.

Result:

The circuit's new transmission parameters are saved.

....

9   From the Graphical Layout form, select **Actions > Modify > Transmission Parameters**.

Result:

The Transmission Parameters form displays.

....

10   Modify the circuit's transmission parameters.

....

11   Select **Actions > Update**.

Result:

The circuit's order and transmission parameters are modified.

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                                                                                Issue 1, July 2002

Locate network discrepancies

....

Purpose	This task is used to display improper disconnects or network discrepancies.

Improper disconnects	An improper disconnect occurs when an intra-domain portion of a connection is disconnected or rearranged by that domain's NMS. Since the Network Map does not notify the user of improper disconnects as they occur, this task is used when there is a need to display improper disconnect data.

Task	Complete the following steps to locate and view network discrepancies.

....

1   From the Network Map, select **Configuration > Network Discrepancy > Display > Improper Disconnects**.

> **Result:**
>
> The Improper Disconnects Query Box form displays.

....

2   In the **CKT/Trail ID** field, enter a circuit/trail identification.

....

3   In the adjoining pull-down menu, select a rate.

....

4   If you know the network element you wish to query, enter its ID within the **NE ID** field, otherwise, press the **NE ID** button.

> **Result:**
>
> The Selection Box form displays.

....

5   Using the **Filter** pull-down menu, select the domain you wish to view for network elements.

> **Result:**
>
> The **NE ID** panel lists all the network elements that belong to that domain.

....

....

6   From the **NE ID** panel, select a network element.

        Result:

        The **OK** button becomes enabled.

....

7   Press **OK**.

        Result:

        Your network element selection displays within the **NE ID** field.

....

8   For **Area ID**, select an area.

....

9   Press **OK**.

        Result:

        The Improper Disconnects form displays. If there are any
        improper disconnects or network discrepancies found using the
        query information you entered, the affected circuits/trails will
        display within the window.

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Disconnect a circuit/trail

....

Purpose Use this task to disconnect a circuit/trail.

> **Important!** A virtual disconnect is used to clean up circuit/trail fragments from the database. For example, when circuits are disconnected at the EMS level. With a virtual disconnect, all cross-connects will not be removed from the associated network elements, therefore, a virtual disconnect should only be used when there is a need to remove Navis™ Optical PM - MRP records that do not reflect a true connection.

Before you begin Before you disconnect a circuit/trail, consider the following items:

- Preplan paths, riding on a circuit/trail to be disconnected, must be first disassociated from the service path they are protecting before there is any attempt at canceling them.

- If the circuit/trail to be deleted is part of a broadcast circuit, the circuit that was added last *must* be disconnected first.

- When attempting to disconnect a circuit/trail, note that a backbone circuit/trail cannot be disconnected unless all its tributaries, or other backbones it is feeding, are disconnected first. Users may disconnect backbones and tributaries in the same manner as with any other circuit/trail except for the first circuit/trail that terminates at a customers location containing the backbone.

Task Complete the following steps to disconnect a circuit/trail.
....

1 From the Network Map, select a circuit/trail.
....

2 Right click on the circuit/trail.

> **Result:**
>
> A menu displays.
....

3 Select **Link List**.

> **Result:**
>
> The Out of Area Connection form displays.

....

....

4 Select the CKT/Trail ID corresponding to the circuit/trail you wish to disconnect.

> **Result:**
>
> The selection becomes highlighted, and the **Actions** menu item becomes enabled.

....

5 Select **Actions > Circuit/Trail List**.

> **Result:**
>
> The Circuit/Trail List form displays.

....

6 Select **Actions > Graphical Layout**.

> **Result:**
>
> The Graphical Layout form displays.

....

7 Select the CKT/Trail ID corresponding to the circuit/trail you wish to disconnect.

> **Result:**
>
> The selection becomes highlighted, and the **Actions** menu item becomes enabled.

....

8 Select **Actions > Disconnect > Actual**.

> **Result:**
>
> A Provisioning In-Progress pop up window displays followed by a confirmation window.

....

9 Select **Yes**.

> **Result:**
>
> The circuit/trail is disconnected.

E ND OF S TEPS

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Perform a virtual disconnect

Purpose   Use this task to perform a virtual disconnect on a circuit/trail.

> **Important!** A virtual disconnect should only be used to remove Navis™ Optical PM - MRP records that do not reflect a true connection. Some network elements may have failed to complete cross-connects so the recourse is to perform a virtual disconnect and try to add the circuits again. With a virtual disconnect, all cross-connects will not be removed from the associated network elements.

Task   Complete the following steps to perform a virtual disconnect on a circuit/trail.

1   From the Network Map, select a circuit/trail.

2   Right click on the circuit/trail.

> **Result:**
>
> A menu displays.

3   Select **Link List**.

> **Result:**
>
> The Out of Area Connection form displays.

4   Select the CKT/Trail ID corresponding to the circuit/trail you wish to disconnect.

> **Result:**
>
> The selection becomes highlighted, and the **Actions** menu item becomes enabled.

5   Select **Actions > Circuit/Trail List**.

> **Result:**
>
> The Circuit/Trail List form displays.

....

6   Select the CKT/Trail ID corresponding to the circuit/trail you wish to disconnect.

      Result:

      The selection becomes highlighted, and the **Actions** menu item becomes enabled.

....

7   Select **Actions > Graphical Layout**.

      Result:

      The Graphical Layout form displays.

....

8   Select **Actions > Disconnect > Virtual (DB only)**.

      Result:

      A Provisioning In-Progress pop up window displays followed by a confirmation window.

....

9   Select **Yes**.

      Result:

      A virtual disconnect is performed on the circuit/trail.

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                                                     Issue 1, July 2002

Display client trail list

Purpose   Use this task to display client trail list information.

Task   Perform the following steps to display client trail list information.

1   From the Network Map, select **Configuration > Connection > Display > Client Trail List**.

   Result:

   The Client Trail List Query Box displays.

2   In the **Circuit ID** field, optionally enter a circuit ID.

3   Select a value from the drop down list.

4   In the **Order Number** field, optionally enter an order number.

5

IF	THEN
you want to optionally select client trail types and enter unit/frequency information,	press **More**, complete the information, then proceed to the next step.
you do not want to optionally select client trail types and enter unit/frequency information,	proceed to the next step.

6   Press **OK**.

   Result:

   The Client Trail form displays and lists circuits/trail IDs that fit the search criteria.

   E N D   O F   S T E P S

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Display channel information

Purpose   Use this task to display channel information.

Task   Perform the following steps to display channel information.

1   From the Network Map, select **Configuration > Connection > Display > Channel Information**.

> **Result:**
>
> The Channel Information Query Box displays.

2   In the **Circuit ID** field, optionally enter a circuit ID.

3   Select a value from the drop down list.

4   In the **Order Number** field, optionally enter an order number.

5

IF	THEN
you want to optionally select channel types and enter spare capacity information,	press **More**, complete the information, then proceed to the next step.
you do not want to optionally select channel types and enter spare capacity information,	proceed to the next step.

6   Press **OK**.

> **Result:**
>
> The Channel Information form displays and lists circuits/trail IDs that fit the search criteria.

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Section III: Shared Risk Groups

Overview

Purpose   This section contains provisioning tasks associated with shared risk groups.

Rules   Before you attempt to create a shared risk group, consider the following item:

- A maximum of five shared risk groups can be associated with a single digital link.
- One shared risk group can be used by multiple digital links.
- A shared risk group cannot exceed 83 alphanumeric characters.
- A shared risk group's description cannot exceed 32 alphanumeric characters.
- Shared risk groups are only applicable to digital links, optical links and an OMS.

Contents

Create a shared risk group

Purpose   Use this task to create a shared risk group.

Task   Complete the following steps to create a shared risk group.

1   On the Network Map, select **Configuration > Shared Risk Group > Add**.

    Result:

    The Add Shared Risk Group form displays.

2   In the **SRG ID** field, enter a unique identification for the shared risk group.

    Important! The entered SRG ID must be an integer value from 0 to 65535.

3   In the **Description** field, provide a description of the shared risk group so as to distinguish it from other shared risk groups.

4   Click **OK**.

    Result:

    The shared risk group is created.

E N D   O F   S T E P S

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Display a list of shared risk groups

Purpose   Use this task to display a list of existing shared risk groups.

Task   Complete the following steps to display a list of existing shared risk groups.

1   From the Network Map, select **Configuration > Shared Risk Group > Display List**.

> **Result:**
>
> The Shared Risk Group Display List Query Box displays.

2   In the **SRG ID** field, enter a shared risk group (or enter ***** to list all shared risk groups).

3   Press **OK**.

> **Result:**
>
> The Shared Risk Group Display List form displays a list of all the existing shared risk groups.

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Display shared risk groups associated with a digital link

Purpose   Use this task to display shared risk groups associated with a digital link.

Task   Complete the following steps to display shared risk groups associated with a digital link.

....

1   From the Network Map, select **Configuration > Connection > Display > Circuit/Trail List**.

>   **Result:**

>   The Circuit/Trail Query Box form displays.

....

2   In the **Order Status** field, specify an order status.

....

3   In the **Ckt/Trail ID** field, select a rate.

....

4   Press **OK**.

>   **Result:**

>   The Circuit Trail List form displays.

....

5   From the list, select a circuit/trail identification.

>   **Result:**

>   The selected identification is highlighted.

....

6   Select **Actions > Shared Risk Group Associations/Display**.

>   **Result:**

>   A window displays showing all shared risk groups associated with the digital link.

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Display the digital links associated with a shared risk group

Purpose   Use this task to display the digital links associated with a shared risk group.

Task   Complete the following steps to display the digital links associated with a shared risk group.

1   From the Network Map, select **Configuration > Shared Risk Group > Display List**.

Result:

The Shared Risk Group Display List Query Box displays.

2   In the **SRG ID** field, enter a shared risk group.

3   Press **OK**.

Result:

The Shared Risk Group Display List form displays and lists shared risk groups according to the query information that was specified.

4   From the list, select a shared risk group.

Result:

The selection is highlighted.

5   Select **Actions > Shared Risk Group-Links Associations List**.

Result:

The Shared Risk Group-Links Associations List form displays and displays all the digital links associated with the specified shared risk group.

E ND   OF   S TEPS

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Associate a shared risk group with a digital link

Purpose   Perform the following steps to associate a shared risk group with a digital link.

Task   Complete the following steps to associate a shared risk group with a digital link.

1   From the Network Map, select **Configuration > Connection > Display > Circuit/Trail List**.

    Result:

    The Circuit/Trail Query Box form displays.

2   In the **Order Status** field, specify an order status.

3   In the **Ckt/Trail ID** field, select a rate.

4   Press **OK**.

    Result:

    The Circuit/Trail List form displays.

5   From the list, select a circuit/trail identification.

    Result:

    The selected identification is highlighted.

6   Select **Actions > Shared Risk Group Associations/Display**.

    Result:

    A form displays all shared risk groups associated with the digital link.

7   Using the window's arrow icons, associate (or disassociate) shared risk groups with a digital link.

8   Select **Apply**.

Result:

The shared risk group is associated (or disassociated) with the
digital link.

E ND   OF   S TEPS

Modify a shared risk group

Purpose   Use this task to modify a shared risk group.

Task   Complete the following steps to modify a shared risk group.

1   From the Network Map, select **Configuration > Shared Risk Group > Display/Modify List**.

Result:

The Shared Risk Group Display List Query Box form displays.

2   In the **SRG ID** field, enter an existing shared risk group. If you enter nothing, you will get a complete list of existing shared risk groups.

3   Press **OK**.

Result:

The Shared Risk Group Display List form displays.

4   In the **SRG ID** field, select a shared risk group.

5   Select **Actions > Update**.

Result:

The Shared Risk Group Update form displays.

6   In the **New SRG ID** and **New Description** fields, enter new information for the shared risk group.

7   Click **OK**.

Result:

The shared risk group is modified.

E N D   O F   S T E P S

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Delete a shared risk group

Purpose   Use this task to delete a shared risk group.

Task   Complete the following steps to delete a shared risk group.

1   From the Network Map, select **Configuration > Shared Risk Group > Display/Modify List**.

   Result:

   The Shared Risk Group Display List Query Box form displays.

2   In the **SRG ID** field, enter the number of an existing shared risk group. If you enter nothing, you will get a complete list of existing shared risk groups.

3   Press **OK**.

   Result:

   The Shared Risk Group Display List form displays and lists shared risk groups according to the query information specified within the previous window.

4   From the list, select a shared risk group.

   Result:

   The selection is highlighted.

5   Select **Actions > Delete**.

6   From the Network Map, select **File > Query Again**.

   Result:

   The shared risk group is deleted.

   E ND OF S TEPS

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Section IV: Merge Circuits

Overview

Purpose This section contains a merge circuit task, which permits users to create a new circuit/trail by merging two or more circuits/trails that have equivalent rates. The process supports the merging of in-effect, inter-domain circuits/trails.

In order for a merge to occur, all inter- and intra-domain circuits/trails must be in the **In Effect** state.

Contents

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Merge Circuits IDs

....

Purpose   Use this task to merge several circuits into one circuit/trail.

Before you begin   Be sure that circuits to be merged are:

- adjacent to one another or are connected by a channel.

- in the In-Effect state and their order action must be In-Effect, Add, or Rearrange.

Circuit merge process is only valid on trails with no circuits riding on them. The circuits to be merged should not have any pending or In-Effect circuits. The original circuits must be of the same rate and their channel assignment must be the same. Note that digital links cannot be merged.

Circuit merge is not supported for one-way or broadcast circuits; it is only available for a two-way circuit/trail.

Task   Complete the following steps to merge circuit/trail IDs.
....

1   From the Network Map, select **Configuration > Merge > <circuit_level>**.

> **Result:**
>
> The Merge Circuits form displays.

....

2   In the **CKT/Trail ID** field, enter a circuit/trail identification.

....

3   In the Service Path area of the form, click the **A Location** button.

> **Result:**
>
> The Selection form displays.

....

4   Select a location from the list then click **OK**.

> **Result:**
>
> The selected location displays in the **A Location** field.

....

....

5   Click the **A Port** button.

>   **Result:**

>   The Selection form displays.

....

6   Select a port and press **OK**.

>   **Result:**

>   The selected port displays within the Essential tab as the **A Port**.

....

7   Repeat Steps 5 and 6 to add the **Z port** (of course, exchange any instances of **A port** with **Z port**).

>   **Result:**

>   The selected port displays within the Essential tab as the **Z port**.

....

8   Click the **A Protect Loc** button.

>   **Result:**

>   A form displays.

....

9   Select the protecting location press **OK**.

>   **Result:**

>   The selected location displays within the Essential tab as the **A Protect Loc**.

....

10   Repeat Steps 8 and 9 to add the **Z Protect Loc** (of course, exchange any instances of **A Protect Loc** with **Z Protect Loc**).

>   **Result:**

>   The selected port displays within the Essential tab as the **Z Protect Loc**.

....

11   Optional. Press the **Display Graphical Layout** button to display the layout for approval.

....

....

12   Optional. Select the **Protection Type** from the drop down list.

....

13   Click **OK** to apply selections.

Result:

A new circuit/trail is created from the merged circuits.

If a new circuit/trail is not created and one or more of the requests fail to lower level management system, the Navis™ Optical PM - MRP will display a message indicating that the merge update of the Navis™ Optical PM - MRP circuit ID failed for the Navis™ Optical NMS circuit ID in Navis™ Optical NMS. The merge will complete, but **setUserLabel** will fail. In this case, the user will have to modify the circuit ID locally in the appropriate network management system through modify order parameters.

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Section V: Virtual Concatenation Groups

Overview

Purpose This section contains tasks associated withVCGs.

Definition Virtual concatenation is a standards compliant inverse multiplexing protocol that creates a virtual concatenated SDH entity (called VCn-Xv) that is transported by VC-As across the SDH network. The created VCns are standards compliant. Additional VCns can be added, however it will be service affecting.

VCGs which are supported by that protocol are not provisionable withNavis™ Optical PM - MRP therefore, the user is responsible for creating VCGs at the DMS level.

The member of the group gets designated from the Navis™ Optical PM - MRP-level, for example, there may be a group of five VC12s. A group may also contain up to seven VC4s for Navis™ Optical EMS network elements or up to four VC4s for ITM-SC network elements.

Processing Order The VCG must first be created in theNavis™ Optical NMS. Next, the VC4 is set up in Navis™ Optical PM - MRP. Both tasks are included in this section.

Contents

Add a virtual concatenation group in Navis™ Optical NMS

Purpose   Use this task to add a VCG to the Navis™ Optical NMS Network Map.

> **Important!** This task must first be performed first before the user sets up the VC4 using the next task.

Task   Perform the following steps to add a VCG to Navis™ Optical NMS Network Map.

....

1   From the Network Map, select **Configuration > Virtual Concatenation Group > Add**.

> **Result:**
>
> The Add VCG form displays.

....

2   In the **VCG Name** field, enter a VCG name (maximum of 83 alphanumeric characters).

....

3   Specify either **Single-Ended** or **Dual-Ended**.

> **Result:**
>
> If **Single-Ended** is selected, either the A or Z field will disappear.

....

4   Press the **A Location** button.

> **Result:**
>
> The Selection box appears.

....

5   Select a network element.

....

6   Press **OK**.

> **Result:**
>
> The A Location field will contain the specified network element, and the A Port button becomes active.

....

....

7   Press the **A Port** button.

>   **Result:**
>
>   The Selection box appears.

....

8   Select an unused port.

>   **Result:**
>
>   The port becomes highlighted.

....

9   Press **OK**.

>   **Result:**
>
>   The A Port field contains the specified network element.

....

10 Repeat Step 4 through Step 9 to specify the **Z location** and **Z Port**.

>   **Result:**
>
>   The Z Location and Z Port fields specify a network element and
>   port.

....

11 Specify the options within the **VCG Capacity** panel.

....

12 Specify the **Required Capacity**.

....

13 Select the **LCAS Flag** if applicable (this option must be supported by
the network elements selected as the A and Z Location). Refer to
Chapter 4: Provisioning Concepts of the ***Navis*™ *Optical Network
Management System (NMS) Provisioning Guide*** for details regarding
the Link Capacity Adjustment System (LCAS).

....

14 Press **OK**.

>   **Result:**
>
>   The VCG is created.

....

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Note: If the **Graphical Layout** option is checked, the Graphical Layout screen will appear. Press **Approve** to dismiss the screen.

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Provision VCG-related Trails

Purpose Use this task to provision VCG-related trails in Navis™ Optical PM - MRP.

Before you begin Before using this task, you must first create a VCG in Navis™ Optical NMS. See "Add a virtual concatenation group in Navis™ Optical NMS" (4-55) for details.

Task Perform the following steps to provision VCG-related trails.

1   On the user-defined submap, select two network elements that have been provisioned as a VCG on a DMS, then select **Configuration > Connection > Add > VC4**.

   Result:

   The user-defined submap becomes the Provisioning Profile form.

2   Under the **Essential** tab, enter a circuit ID for **CKT/Trail ID**.

3   Press the **A port** button.

   Result:

   The Port Selection form displays.

4   Under the **Physical Ports** column, scroll the list and select a row corresponding to the information provided in the "Add a virtual concatenation group in Navis™ Optical NMS" (4-55) task.

   Important! The entry should have an asterisk in the first column.

   Result:

   The row is highlighted with the selected port information.

5   In the **High Rate of Logical Ports** column, scroll the list and select a row containing an unused port.

   Result:

   The row is highlighted with the selected port information.

....

6 Press **OK**.

> **Result:**

> The Port Selection form closes and the selected port information displays in the **A port** fields.

....

7 On the Provisioning Profile form, press the **Z port** button to display the Port Selection form, then repeat Step 4 through Step 6 to specify the Z port information.

> **Result:**

> The Port Selection form closes and the selected port information displays in the **Z port** fields.

....

8 On the Provisioning Profile form, uncheck the **InfraStructure VC4** check box.

> **Important!** By default, this tab's **Infrastructure VC4** box is checked, which indicates that structure should be applied. In this task, be sure to uncheck the box to indicate that no structure should not be applied.

....

9 Under the **Parameters** tab, verify that **Order Action** is set to **Add** then complete the remaining Parameters tab fields.

....

10 Press **OK**.

> **Result:**

> The graphical layout form displays a view of the new connections at the outer right and left and right sides of the layout. The message, `Do you want to approve, cancel, or modify the order?` displays at the bottom of the form.

....

11 Press **OK**.

> **Result:**

> A Provisioning In-Progress pop up window briefly displays, followed by a confirmation window.

....

12   Confirm all confirmation windows that display.

Result:

The new link connecting the two domains displays on the user-defined submap

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Section VI: Display Graphical Layout

Overview

Purpose The graphical layout form displays automatically in several provisioning tasks when the **Display Graphical Layout Implementation** button is selected on the Provisioning Profile form. It may also display upon request from the Network Map and by selecting it from the **Action** menu of the Client Trail List, Improper Disconnects, and Assigned Ports List forms.

The following task describes how to display the Graphical Layout form from the Network Map.

Contents

Display Graphical Layout

Purpose   Use this task to display the graphical layout form.

Task   Complete the following steps to display a specific graphical layout from the Network Map.

1   From the Network Map, select **Configuration > Connection > Display > Graphical Layout**.

   Result:

   The Graphical Layout Query Box displays.

2   Complete the **CKT/Trail ID** or **Order #** field and then press **OK**.

   Result:

   The Graphical Layout form displays the requested layout.

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5   Provisioning Concepts

Overview

Purpose   This chapter provides a reference for conceptual information related to provisioning with Navis™ Optical PM - MRP.

Contents

How to find conceptual information about provisioning with Navis™ Optical PM - MRP	5-2

How to find conceptual information about provisioning with Navis™ Optical PM - MRP

Reference   For conceptual material about provisioning circuits, facilities, paths, network elements, and subnets with Navis™ Optical PM - MRP, refer to Chapter 4 of the *Navis™ Optical NMS Provisioning Guide*.

Exceptions   The provisioning concepts for Navis™ Optical PM - MRP and Navis™ Optical NMS are similar however several exceptions exist. For example, circuit/trails are specified using the free-format naming convention only; the M.1400 naming convention is not supported. Note also that Navis™ Optical PM - MRP does not support:

- broadcast circuits or one-way circuits
- the Clone feature
- Service Domain Partitioning or Geographic Domain Partitioning
- a geographic redundancy hardware configuration
- a local redundancy hardware configuration
- subnets
- black boxes
- tandem connection monitoring
- fault management
- performance monitoring
- optical (topological) intra-domain link provisioning
- modifying a path from protected to unprotected (or vice versa)

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6   Digital Transmission Rates

Overview

Purpose   This chapter contains digital link transmission rates and the interconnections of the circuits and digital links supported by Navis™ Optical PM - MRP.

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Supported Digital Transmission Rates

Overview

Purpose   The following lists the digital link and transmission rates supported by Navis™ Optical PM - MRP. Refer to the appropriate NMS documentation for information about the transmission rates supported by the lower level management systems.

Contents

Supported Digital Links

Overview The following lists the digital links supported by Navis™ Optical PM - MRP.

Digital Links

Table 6-1 **Supported Digital Links**

Designation	Description	User Label	Transmission Rate Mb/s	Notes
STM-64	Digital Link	64S	9,953.28	
STM-16	Digital Link	16S	2,488.32	
STM-4	Digital Link	4S	622.0	
STM-1	Digital Link	1S	155.52	

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Supported Circuit Transmission Rates

Overview   The following lists circuits and transmission rates supported by Navis™ Optical PM - MRP.

Circuit Transmission Rates

Table 6-2   Supported Circuit Transmission Rates

Designation	Description	User Label	Transmission Rate Mb/s	Notes
VC-4	Path	VC4S	150.336	
VC-3	Path	VC3S	48.960	
VC-12	Path	VC12S	2.240	
VC4-64c	Path	VC4-64c	9621.504	
VC4-16c	Path	VC4-16c	2405.376	
VC4-4c	Path	VC4-4c	601.344	
AU3	Path	AU3S	48.960	
VC-2	Path	VC2S	6.312	
VC11-TU	Path	TU12-VC11S	2.240	
CEPT-4	Circuit	1920N	139.264	
CEPT-3	Circuit	480N	34.368	
CEPT-1	Circuit	30N	2.048	

7 Network Element Port Addresses

Overview

Purpose This chapter describes the concepts associated with port addresses as they relate to Navis™ Optical PM - MRP.

Contents

Network element port addresses	7-2

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Network element port addresses

Where to find For a complete listing of Lucent network element port addresses, refer to Chapter 5 of the *Navis*™ *Optical NMS Provisioning Guide*.

For a complete listing of non-Lucent network element port addresses, refer to the vendor's documentation.

Important Note Navis™ Optical PM - MRP does not support black boxes.

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Appendix A: Navis™ Optical PM - MRP Network Elements Supported by Navis™ Optical PM - MRP through Alcatel 1354RM

Navis™ Optical PM - MRP network elements

Purpose   This appendix lists network elements supported by Navis™ Optical PM - MRP through Alcatel 1354RM. To view a list of network elements managed through ITM-SC and Navis™ Optical NMS, see the *Navis™ Optical Network Management System (NMS) Provisioning Guide*.

Navis™ Optical PM - MRP network elements   The products listed within the following table are network elements supported by Navis™ Optical PM - MRP through Alcatel 1354RM.

Table A-1   Network elements supported by Navis™ Optical PM - MRP through Alcatel 1354RM

Network Element	Navis™ Optical NMS Model
1640fox	AL_1640_FOX
1641sm	AL_1641_SM
1641sx	AL_1641_SX
1650smC	AL_1650_SMC
1651sm	AL_1651_SM
1655sr	AL_1655_STM4_REGEN
1666sr	AL_1666_STM16_REGEN
1660sm	AL_1660_SM
1664sm	AL_1664_SM

Table A-1   Network elements supported by Navis™ Optical PM - MRP through Alcatel 1354RM   (continued)

1664sx	AL_1664_SX
1670sm	AL_1670_SM
1674sx	AL_1674_SX
1686wm-or	AL_1686_WM_REGEN
1686wm-lr	AL_1686_WM_REGEN
1686wm-lt	AL_1686_WM
1640wm-lr	AL_1640_WM_REGEN
1640wm-lt	AL_1640_WM
UHM	AL_UHM
UHMC	AL_UHMC
UHR	AL_UHR_REGEN
UHRC	AL_UHRC_REGEN
1696	AL_1696
1540PO	AL_1540_PO

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