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Integrated Transport Management SubNetwork Controller (ITM SNC)

User Guide

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ITM SNC User Reference Manual

System Introduction

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Background

Introduction
Integrated Transport Management SubNetwork Controller (ITM SNC) is an element management system that supports various Synchronous Optical Network (SONET) Network Elements (NEs) such as DDM-2000 OC-3, FT-2000 OC-48, SLC-2000®, and OLS. SONET standards permit a reliable, flexible, high-speed, self-healing state-of-the-art transmission medium. While SONET is the answer to transmission needs, ITM SNC is the answer to the corresponding operations needs to efficiently manage those NEs

ITM SNC Features
The following list shows some of the ways ITM SNC accomplishes this (see the *System Features* section of this chapter for more details about specific features provided by ITM SNC):

- ITM SNC provides centralized, secure, remote administration of SONET subnetworks. From a single work center, an ITM SNC user can remotely manage SONET NEs. The Lucent Technologies patented Dynamic Network Operations (DNO) process automatically gathers network configuration information from the NEs, providing accurate, hands-off population of the ITM SNC database, and ensuring that the ITM SNC management functions operate using the actual network configuration.

- It provides fault, performance, configuration, and security management functions via a Graphical User Interface (GUI).

- It supports such Operations Interworking (OI) features as northbound and southbound operations system (OS)/NE interfaces with ITM SNC acting as the Transaction Language 1 Gateway Network Element (TL1 GNE), an Intra-Office Local Area Network (IAO-LAN) interface as an alternate higher speed communications path to NEs, and Software Management functions for NE version software.

- It is able to support communication multiplexing or concentration, to provide network security, and to record all database changes.

- It provides a TL1 cut-through capability, allowing the user to access an NE through a native command set.

ITM SNC Operations
ITM SNC operates as an enhanced graphical tool and as a general configuration management aid. It provides NE, port, cross-connection, and path provisioning, as well as flow-through from provisioning OSs to NEs. ITM SNC also provides Fault Management through sub-network alarm and event preprocessing prior to sending fault information to a network surveillance system such as the Network Monitoring and Analysis-Facility (NMA-F).

Objectives   This chapter provides background and introductory information about ITM SNC. After learning the material in this chapter, the user should be able to do the following:

- List the features available on the ITM SNC system and briefly describe the purpose of each.

- Understand the basic concepts of ITM SNC Hardware Architecture and the components therein.

- Understand the basic concepts of ITM SNC Software Architecture and the main components therein.

System Features

Fault Management Fault Management monitors alarms and conditions in the subnetwork. ITM SNC receives autonomous alarm messages from NEs when alarm states are set or cleared. These alarm messages are processed and made available to the user, through the GUI, or to other network surveillance systems, such as ITM NM. ITM SNC supports the following Fault Management tasks:

- Alarm status indication on the network map -for equipment, facility failures, and updates
- Hierarchical alarm status indication at the NE, bay, shelf, and circuit pack levels
- Textual alarm summary report
- Alarm provisioning at the NE level (via TL1 cut-through)
- Alarm provisioning at the EMS level
- Alarm resynchronization
- Autonomous alarm handling
- Alarm correlation
- Alarm aging

Related information

See the 200 series in the *User Tasks Manual* and Chapter 3, Fault Management in the *User Reference Manual* for instructions and information about Fault Management.

Performance Management ITM SNC collects Performance Monitoring (PM) data from NEs that have PM data collection activated. It stores collected PM data for a retention period set by the user (up to 45 days). ITM SNC allows the user to view unprocessed PM data, or the data can be exported to an off-line system for more sophisticated analysis and reporting purposes.

Related information

See the 400 series in the *User Tasks Manual* and Chapter 5, Performance Management in the *User Reference Manual* for instructions and information about Performance Management.

Configuration Management

The ITM SNC DNO feature retrieves the internal configurations of NEs and, for Lucent Technologies NEs, external connectivity relationships. This feature enables ITM SNC to discover, without manual intervention, the topology of subnetworks consisting of Lucent Technologies NEs.

ITM SNC provides flow-through provisioning between a network provisioning system, such as Operations System for Intelligent Network Elements (OPS/INE), and NEs. The GUI supports the following Configuration Management tasks:

Network Configuration Management

- Network Element/trail discovery/update/display
- Aggregate management/display

NE Configuration Management

- Equipage discovery/update/display
- Equipment provisioning and pre-provisioning
- Cross-connection provisioning/display
- Manual path provisioning

Related information

See the 300 series in the *User Tasks Manual* and Chapter 4, Configuration Management in the *User Reference Manual* for instructions and information about Configuration Management.

Security Management

All users are required to have a login and password to communicate with ITM SNC. Users are assigned by the system administrator to what NEs they can use (Command Groups) and what actions they can perform (Target Groups). So Command and Target Groups can be set up according to the type of task the users are performing, such as maintenance, provisioning, or monitoring.

Release 8.0 includes two kinds of security management:

- EMS security management
    — defines EMS users (userid and password)
    — partitions the network into user-defined Target Groups
    — defines Command Groups
    — assigns EMS user to Target Groups and Command Groups
- NE security management
    — provides services to manage NE userid and password

See the Table of Contents and the Task Index for where to find more details on logic, password, Command Group, and Target Group administration.

Related information

See the 500 series in the *User Tasks Manual* and Chapter 6, Security Management in the *User Reference Manual* for instructions and information about Security Management.

Log Management

Log Management provides services to various system modules, including:

- Writing log messages to database tables
- Retrieving log messages from database tables

These log messages are helpful for keeping track of information regarding system performance and actions. The information can be filtered to suit the user's purposes.

Related information

See the 700 series of tasks in the *User Tasks Manual* and Chapter 8, System Logs in the *User Reference Manual* for more instructions and information about Log Management.

Enhanced User Interface

The Release 8.0 Graphical User Interface (GUI) has been greatly enhanced for user-friendliness and usability. Based on Java, the new design provides platform independence, enhanced system performance, and numerous improvements in screen designs, navigational capabilities, and operations process flows.

Related information

See the 100 series of tasks in the *User Tasks Manual* and Chapter 2, The ITM SNC Graphical User Interface in the *User Reference Manual* for more instructions and information about the User Interface.

Cut-Through Capability

In order for the user to execute NE TL1 commands that may not be supported explicitly, a cut-through capability is available. ITM SNC allows the user access only to the NEs and associated commands defined by the Target and Command Groups to which the user is assigned.

Related information

See tasks 300 through 302 in the *User Tasks Manual* for instructions on how to perform, build, and broadcast TL1 cut-through commands.

System Administration

System Administration of ITM SNC is done through GUI windows and UNIX commands. Key administrative functions include system backup and restore, system start-up and shutdown, definition of user access to NEs and commands, and configuration of data communications and the network model.

Related information

See the 600 series of tasks in the *User Tasks Manual* and Chapter 7, Administration in the *User Reference Manual* for instructions and information about System Administration.

Year 2000 Compliance

ITM SNC has been designed to comply with the Year 2000 initiative to ensure correct date presentation and date/time calculation processing for events that occur in the year 2000 and beyond, including data that is received by ITM SNC from the supported NEs.

Hardware Architecture

Overview

ITM SNC hardware architecture consists of three main components:

- HP 9000/800 series server platform and associated peripherals (console, terminals, and printer)

- HP 9000/700 series high-end family workstation

- Windows NT PCs as workstations

⇒ **NOTE:**
For workstations, the HP-VUE display manager is recommended. However, for display managers that are compatible with HP-UX Release 10.x or later, such as the Common Desktop Environment (CDE), or X-terminals running XDM, make sure that the "Allow Parent on Top" option is selected on the workstation's Style Manager to avoid incorrect display of GUI windows on top of the parent GUI display window.

The HP 9000/800 series platform is the main hardware platform on which most application software is executed. This is referred to as the HOST. The HP 700 series mid-range family workstation is used for running the GUI software, and is referred to as the WS. The Packet-Switched Network (PSN) supports the data communications framework between the NEs and the HOST.

Host Platform

The HOST is an HP 9000/800 series server running HP-UX version 10.20. The configuration of the HOST is based on the number of equivalent NEs supported by ITM SNC. The following aspects of the computer will vary based on the number of NEs supported:

- Model of the computer

- Memory

- Disk drives

- SCSI

- X.25 circuit packs

In addition to this list, ITM SNC is always configured with LAN Circuit Pack and Asynchronous Port Circuit Pack (possibly more than one, depending on the number of local ASCII terminals).

The Local Printer is connected to the HOST, and is where the application prints alarms and user-requested reports.

The Local Terminals are ASCII terminals or terminal emulators connected to the HOST. These terminals are used at the local site by users to enter TL1 commands to be sent to the NEs. The responses from the NEs are then displayed on these terminals. This facility allows local users centralized access to NEs.

The Remote Terminals are ASCII terminals or terminal emulators that are located remotely and connected via a network to the HOST. These terminals are used by users for remote access to the TL1 interface on the HOST. The terminals may be off the FEP Remote (using its Packet Assembly/Disassembly [PAD] capability) to take advantage of it already being remote over X.25. As in the case of Local Terminals, users enter TL1 commands to be sent to the NEs. Responses from the NEs are then displayed on these terminals. This facility allows remote users centralized access to NEs.

The following table shows the HOST hardware configurations and the number of NEs supported for each configuration.

Table 1-1.   Host Server Hardware Configuration

HP Server Model	Hardware Configuration				
	# of CPUs	RAM (MB)	Disk (GB)	X.25 ports	LAN
K580	4	1152	54GB	16	2
K580	2	640	45GB	16	2
K360	1	384	27GB	8	2
K460	4	1152	54GB	16	2
K460	2	640	45GB	16	2
K260	1	384	27GB	8	2
K220	1	384	27GB	8	2

System Console

ITM SNC console is connected to the host and is used by a system administrator to enter HP-UX commands. HP-UX and application output is sent to the system console as well.

Local Printer

The printer, which is connected to the host, prints files saved from system applications. This is optional for your system.

System GUI PC   The system PC is a Pentium-based IBM-compatible PC running MS-WIN 95. The GUI Client runs on the GUI PC, and transaction requests are issued by the GUI Client to the GUI Server running on the HOST. The minimal configuration of the GUI PC is shown in the following table.

Table 1-**2.**   **GUI PC Minimal Hardware Configuration**

Processor	Pentium/Pentium II
Processor Speed	300 MHz (400 MHz preferred)
L2 Cache	512 KB
RAM	64 MB
Hard Disk	4 GB
CD-ROM Speed	8X
Floppy Drive	3.5"
Mouse	2-button Mouse
LAN	10 BaseT
Video RAM	4 MB
Operating System	WindowsNT
Monitor Viewable Image	19"
Monitor Resolution	1,024 x 768

Remote Printers   The host system configuration can support up to four remote parallel printers. These printers print autonomous messages in real time. The host communicates with a remote printer via a Transmission Control Protocol/Internet Protocol (TCP/IP) address over an 802.3 LAN. The protocol conversion from TCP/IP packets to parallel output is performed by a Lantronix® print server. The IP address is associated with the Lantronix print server, which is dedicated to a given parallel printer.

Software Architecture

Major Subsystems   Release 8.0 software architecture can be divided into the following major subsystems:

- Configuration Management

- Fault Management

- NE Event Handler (NEH)

- EMS Security Management

- Northbound Management Interface

    — X.25 and TCP/IP protocol layer (CS_NorthBound)

    — OSI and TCP/IP protocol layer

    — TL1 Handler

- Southbound Management Interface

    — X.25-based protocol layer

    — OSI-based protocol layer

    — TL1 Manager

    — Connection Manager

    — Gateway process

- Performance Management

- Software Management

- Log Management

- Operation, Administration, and Maintenance

    — TL1-based NE data backup/restore

    — FTAM-based NE data backup/restore

    — Log and trace

    — Scheduler

- JAVA-based GUI

ITM SNC software contains the following components:

NE Event Handler

The main functions of the NE Event Handler (NEH) are the following:

- Receive non-alarm autonomous messages.

- Distribute the received messages to the user.

- Log by invoking the Log Manager.

The NE Event Handler process is a passive distributor of non-alarm autonomous messages emitted by the NEs. It registers with Southbound for database change messages from TL1 NEs and with Q3 gateway for CMISE NEs. The messages received from CS_SB2 are TL1 message strings as received from the NE, while the CMISE notifications are in MFA structures.

Security Management

Security management is performed on ITM SNC by the system Security server. These services support all MFA subsystems.

Communication Software Launcher

The Communication Software Launcher (CSL) is used as a central access point for all Lucent Technologies communication software products, including this system. In relation to this system, CSL performs the following:

- Administer users. This includes the ability to add/modify/delete a user (login and password only). CSL uses the client programs provided by ITM SNC to perform these operations. Any system-specific security administration, such as Target/Command Groups, is administered locally via the GUI.

- Provide the ability to launch the GUI whenever needed.

- Provide the ability to kill the GUI whenever needed.

Southbound

The Element Management System Southbound interface contains the required functionality to connect to the NEs, to manage these connections, and to forward and receive the messages between the NEs and the MFA, for all supported communication protocols.

Connection Manager Process

The Connection Manager (CM) process centralizes the functions of sending, receiving, routing, and processing the connections needed for responses and autonomous messages going in, and coming from, the CMISE and TL1 Southbound subsystems. CM handles the following functions:

- At start-up, load external configurable parameters from a configuration file.

- Create and terminate associations to all NEs.

- Perform association requests in a staggered manner to minimize the impact of the connection processes on the network.

- Implement association recovery mechanisms.

- Receive connection-related indication messages from TL1 and CMISE Southbound subsystems, update association status in memory, and forward notifications to MFA.

- Handle create/modify/delete NEs, store and forward related information.

- Subscribe to notification for NE type incorrect, and send notification to MFA as necessary.

TL1 Southbound

TL1 Southbound is supported by the TL1-Manager process, which is responsible for command/response handling.

Log Management Log Management provides logging, browsing, and purging services of other modules in ITM SNC, in order to keep track of information regarding system performance and actions. Log Management consists of three modules:

- Logger—provides one-way services to log messages into a system database.

- Log Browser—provides services for the GUI to display logged messages.

- Log Purger—purges old log messages from a database or temporal log files generated by system modules. Retention periods are settable.

The ITM SNC Graphical User Interface

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Contents

Background

Introduction   The ITM SNC Graphical User Interface (GUI) is a Java-based, multilevel windowing environment that provides fault, provisioning, configuration, and security management functions and allows you to graphically monitor the status of the network. The ITM SNC GUI is designed to be an intuitive, consistent, easy-to-use interface. Status bar messages and windows keep you informed of the outcome of an operation. The GUI offers point-and-click, menu-driven operation, as well as a cut-through interface to issue TL1 commands to connected NEs. Several types of online help are available to assist you in performing any task.

The GUI runs on graphical workstations or PCs. Once a GUI session is started, the GUI server can support multiple platform-independent GUI client connections simultaneously.

Objectives   This chapter provides background and introductory information about the ITM SNC GUI. After learning the information in this chapter, the user should be able to do the following:

- Identify the mouse buttons and know how to use them to perform various GUI functions.

- Obtain and understand their user ID and password, and be able to log into the ITM SNC GUI.

- Identify, understand, and use the different parts of the ITM SNC Map window, including the main menu bar, the toolbar, the alarm directional button, the subnetwork explorer, and the Map pane.

- Recognize on the Map window the difference between network elements, aggregates, the Host, trails, and managed/non-managed devices.

- Display and use the ITM SNC system help documentation.

- Use GUI lists and tables.

Related tasks   For related tasks, see the series 100 (Using the GUI) tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Using the Mouse

Introduction   The mouse is used to move a pointer around the screen. It has three buttons that allow you to select items on the display.

Diagram   The following diagram shows the different mouse buttons, as configured for a right-handed person. To reconfigure the mouse buttons for a left-handed person, consult the mouse and workstation documentation. The mouse for your workstation or PC may only be equipped with two buttons, so consult the hardware documentation.

select button   adjust button   menu button
                       (Not used for
                        the system)
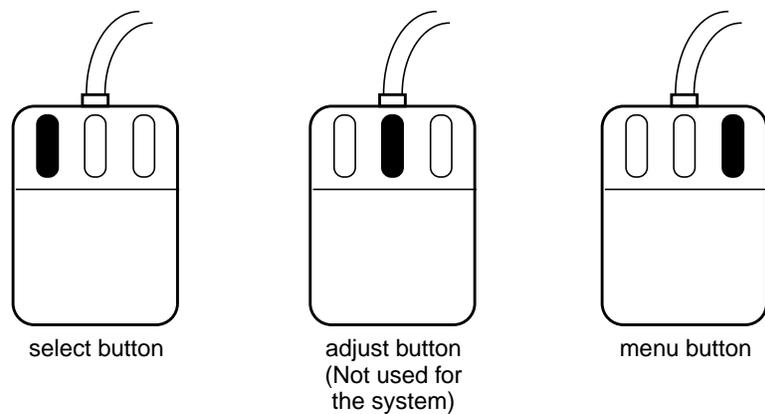
Figure 2-1.   Mouse Buttons

Select Mouse Button   The select mouse button, which is the left-most button on the mouse, is used to select an item in ITM SNC. The terms "click" and "select" are used interchangeably throughout the ITM SNC documentation. Both terms represent the following operations:

- Activating a button, such as OK, Cancel, or Help

- Activating a menu, such as a pull-down menu on the menu bar

- Selecting an item from a menu

- Selecting an NE/aggregate symbol on the Map window

- Selecting an item from a scroll list

- Moving window focus to a text field to type an entry in the field

To do a click or select operation, position the mouse pointer over the desired list item, NE/aggregate icon, button, field, or menu, and double click the select mouse button.

Menu Mouse Button

The menu mouse button, which is the right-most button on the mouse, is used to bring up (activate) a pop-up menu.

To activate a pop-up menu, position the mouse pointer over the object (like an NE or aggregate icon on the Map pane or Subnetwork Explorer), and single-click the menu mouse button.

Keyboard Shortcuts

Selecting Sub-Menu Functions Using the Keyboard

The main menu bar functions on the Map window in ITM SNC are usually selected by using the mouse pointer and mouse menu button. However, each sub-menu function has an associated key combination to quickly access it.

To select a menu item using your keyboard instead of the mouse, press the ⌨Ctrl key and the appropriate letter simultaneously. The ⌨Ctrl key sequence is indicated after each function in the sub-menu display.

Example: Selecting a Sub-Menu Function

To select the Alarm Summary window, which is a Fault sub-menu function off the main menu bar, type the ⌨Ctrl and "s" keys simultaneously.

Arrow Keys

The up/down or right/left arrow keys on your keyboard can be used to move to the desired item in the menu or sub-menu. The menu/sub-menu item is highlighted. To access the function, press the ⌨Enter or ⌨Return key.

Manipulating Fields and Text

Entering Text

The following guidelines explain how to enter text in windows that contain text fields:

- Press the ⌨Tab key to enter text that you have typed in a field. Pressing the ⌨Tab key in a text field accepts the data in the text field and moves the cursor focus to the next field that accepts input. If the cursor is positioned in the last enterable field on the window, pressing the ⌨Tab key moves the cursor to the first text field on the window.

- Use the ⌨Tab key for field-to-field navigation within a window.

- Use the ⌨Backspace key to delete text field input.

- You can cut and paste text between text fields and/or text areas using the standard cut and paste hot keys for Microsoft Windows and HP-Vue.

Logging Into ITM SNC

Introduction   ITM SNC functions and runs on a host machine. To access the system, you must start an "instance" (or session) of the GUI on the ITM SNC host machine.

> ⟹ **NOTE:**
> To start up the ITM SNC GUI, the mouse for your workstation/PC must be connected first.

To start up an instance of the GUI on your workstation/PC, click on the desktop or menu bar icon representing the ITM SNC application. When you click on this icon, a command is sent to the ITM SNC host machine to start up the application.

Click on the same icon/menu item to start up another instance and log into the same host. Click on a separate icon/menu item to start up a GUI instance and log into a different host.

> ⚠ **CAUTION:**
> *Once a GUI instance is established for a given host, it in not recommended to run a second GUI instance from the same host.*

The ITM SNC Login window is then displayed for logging into ITM SNC.

To log into ITM SNC, you must enter a valid user ID (login) and password that has been supplied to you by your ITM SNC system administrator.

Related Information

See T 100, Start Up ITM SNC for specific instructions on how to log into ITM SNC.

Valid User ID   A valid User ID (login) is 1-10 alphanumeric characters in any combination. Special characters are not allowed.

Valid Password   A valid password is 6-10 characters. A password must include at least one alpha character, at least one numeric character, and at least one special character.

Alarm Notifications Window

Once you have logged in and the GUI is running, the Alarm Notifications window is displayed. The Alarm Notifications window displays a running tally of the number of Critical, Major, Minor, and Communication alarms on the monitored network. The number displayed below the box for each alarm severity increases by one whenever a new alarm of that severity occurs. You can click on any of the severity type boxes, except for Communications alarms, to display the Alarm List window, filtered for that severity type. Once displayed, the Alarm Notifications window remains open during the GUI session. When a new alarm is received by ITM SNC, the Alarm Notifications window is brought to the forefront of the GUI display to signal the arrival of the new alarm.GUI Application Not Running

If the ITM SNC host is successfully contacted, but the application and/or GUI server is not functioning on the host, a pop-up message window is displayed, indicating that the ITM SNC application is not currently running on the host machine.

Multiple GUI Instances

If the ITM SNC host machine is successfully contacted, and the application is running, but no more GUI instances can be started by the GUI server, a pop-up warning message window is displayed, informing you that no more GUIs can be connected to the host machine, and to retry later.

Session Time-out

When you do not use a GUI session for 15 minutes (or another time interval specified by the system administrator), a pop-up window is displayed, stating that the GUI session will time-out in 60 seconds and asking if you want to exit ITM SNC at this time. If you choose Yes or make no choice, you are automatically logged out of ITM SNC. If you choose No, the GUI session keeps running and the session time-out clock is reset.

Logging Out of ITM SNC

When you log out of ITM SNC, all open windows associated with the current session are closed and the GUI client/server sessions are terminated.

If you have made changes during the GUI session to certain settings, such as user-specified preferences for the GUI or NE positions, a pop-up window is displayed, asking if you want to save the settings. Choose Yes if you want to save the settings or No if you do not want to save them.

Related Information

See T 101, Log Out of the System for specific instructions on how to log out of ITM SNC.

The ITM SNC Map Window

Introduction   After you have logged into ITM SNC, the Map window is displayed. This window provides access to all of the ITM SNC functions and features.

The Map Window   The following figure shows the ITM SNC Map window.
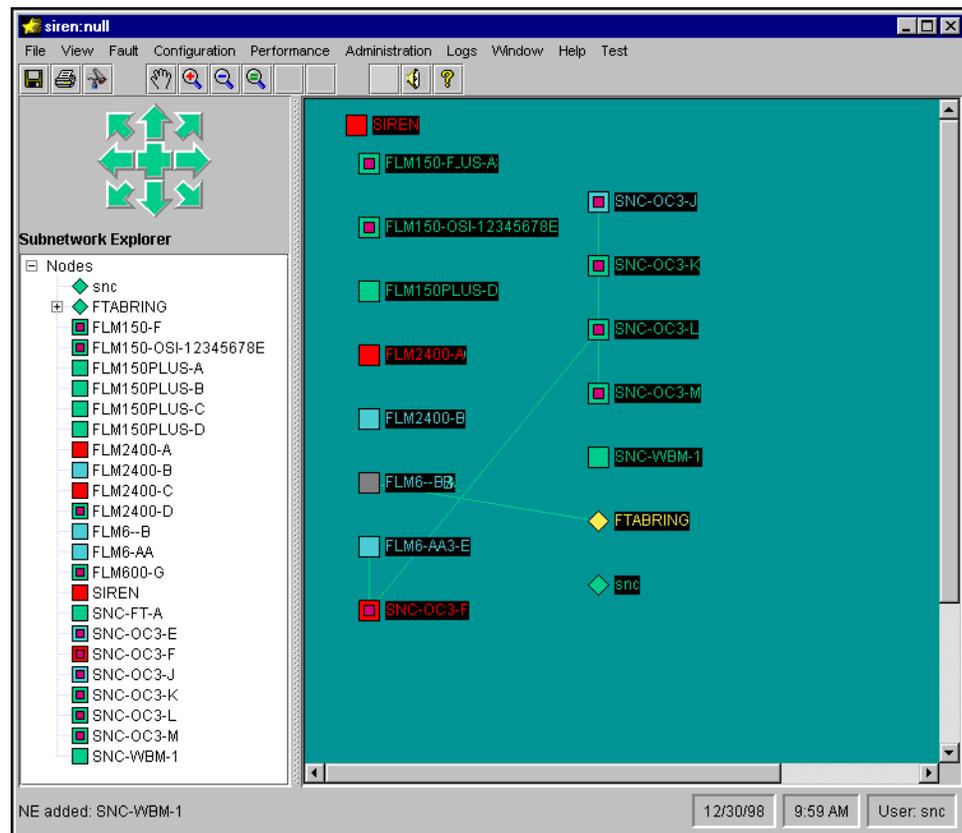
Figure 2-2.   The Map Window

Parts of the Map Window   The Map window is divided into several different but interrelated areas. It consists of:

■ A main menu bar— located just below the Map window label, it provides access to all the main ITM SNC functions. The main functions are summarized in The Map Window Menu.

■ A toolbar— a series of buttons just below the main menu bar that control the Map view and provide a shortcut way of accessing some of the ITM SNC functions. For more details, see the Map Window Toolbar section.

■ A status bar—a text bar at the bottom of the window that displays messages related to system activity, the current date/time, and the User ID of the user currently logged in.

■ An Alarm Directional button—an icon used to indicate that an alarm exists in some portion of the Map that is currently not visible.

■ The Subnetwork Explorer—an explorer tree that is used to show a textual list of the aggregates and NEs in a subnetwork, along with the subnetwork's hierarchy. It also shows which aggregates are currently expanded.

■ The Map pane—the portion of the Map window that provides a graphical representation of the network, displaying the NEs, aggregates, and trails between them.

There are three buttons in the upper-right hand corner, in the label portion of the Map window. These buttons are, from left to right:

■ the window minimize button

■ the window restore button

■ the window close button

The Map Window Menu

All of the main ITM SNC functions are accessed through the main menu bar on the Map window. When you select a main functional menu (for example, Configuration), this displays an associated drop-down menu, which lists a series of related options for you to select.

The following summarizes each of the main functional menu categories:

■ **File**—this menu provides access to a set of options for saving, restoring, and copying user preferences, constructing a TL1 Macro Builder File, printing the network Map, and logging out of ITM SNC.

■ **View**—this menu provides access to a set of options for setting Alarm Severity and Alarm Indications, for viewing the Trail Alarm List, for clearing the Map window status line, for viewing the Alarm Tally window, for zooming in/out of the Map view, and for setting user preferences.

■ **Fault**—this menu provides access to the set of Fault Management options for monitoring alarms and conditions in the network.

■ **Configuration**—this menu provides access to the set of Configuration Management options for viewing and/or modifying Network Element, port, and line parameters.

■ **Performance**—this menu provides access to the set of options for collecting and viewing Performance Monitoring (PM) data.

■ **Administration—**this menu provides access to the set of options for Security Management and Network Element administration.

■ **Logs**—this menu provides access to the set of options for viewing logs generated by ITM SNC that track network and EMS performance and activity.

■ **Help**—this menu provides access to the set of online Help options.

Map Window Toolbar

These series of buttons allow you to control the Map view and provide a quick way to access many of the frequently used GUI functions. The toolbar, from left to right, provides a:

— Save Preferences button—more details about this function are provided in T 104, Save Preferences/Map Positions.

— Print Map button—reserved for future use.

— Map Preferences button—more details about this function are provided in T 103, Modify User Preferences.

— Map Pan button—this button is used to enable or disable use of the Map Pan feature to reposition the Map view. Single-click on this toolbar button to enable manual "panning" or maneuvering of the Map view in the Map pane. Single-click this toolbar button again to disable Map panning.

— Zoom In button—to zoom into a portion of the Map pane display, position the mouse pointer over this button and single-click the mouse select button.

— Zoom Out button—to display an enlarged view of the portion of the Map pane display, position the mouse pointer over this button and single-click the mouse select button.

— Zoom Reset button—to reset the Map pane view, position the mouse pointer over this button and single-click the mouse select button.

— Add an Aggregate button—more details about this function are provided in T 612, Add an Aggregate.

— Clear Status Bar button—more details about this function are provided in Clearing Status Messages in this chapter.

— Alarm Severity button—single-click on this button to access the Fault category of the Map Preferences option, that controls the severity level of alarms displayed on the Map window. More details about this function are provided in T 103, Modify User Preferences.

— Audible Alarms button—more details about this function are provided in Audible Alarms in this chapter.

— Help button—more details about this function are provided in Help in this chapter.

To access a toolbar function, position the mouse pointer over the button and single-click the mouse select button.

Alarm Directional Button

A monitored network can be larger than can be viewed on the Map pane at any one time and alarms can occur on network objects that are not currently being displayed. The Alarm Directional button, which is located in the left-hand portion of the Map window, above the Subnetwork Explorer, shows the relative location and highest severity alarm of the area not visible. When an alarm exists, an arrow point is lit with the color of the alarm level, showing the direction to go on the Map pane to view the Map item in an alarm state.

The Subnetwork Explorer

The Subnetwork Explorer, located in the left-hand portion of the Map window, is a tree diagram that shows the content and hierarchical relationship of aggregates and NEs in the portion of the network currently being viewed on the Map pane.

If part of the Explorer view is obscured, use the scroll bars below and to the right of the Explorer to obtain a more complete view of the NE/aggregate display.

Element Labels

NEs and aggregates are labeled by their Target Identifier (TID), by default. The label format can be changed through the Preferences option from the View menu on the Map window menu bar.

Selecting an Item

To select an item on the Subnetwork Explorer, position the mouse pointer on the item and click the mouse select button. The selected item is highlighted.

Expanding/Collapsing an Item

There are two ways of expanding or collapsing an item (such as an aggregate) on the Subnetwork Explorer:

1. A select mouse button click on the plus ("+") or minus ("-") sign causes the branch associated with the item to expand ("+") or collapse ("-").

2. A double-click on any item selects it and causes any branch associated with the item to expand (if it is not already expanded) or collapse (if it is already expanded).

Pop-up Menus

A pop-up menu of ITM SNC functions for the NE or aggregate can be accessed by positioning the mouse pointer and clicking the menu mouse button.

Map Pane Display

Any change on the Subnetwork Explorer, such as expansion or contraction of an aggregate, causes a corresponding change in the network display on the Map pane.

The Map Pane

The Map pane displays a graphical representation of the network automatically when you log into ITM SNC and the Map window is brought up.

⇒ **NOTE:**
The system defaults for different characteristics of the Map pane display, such as NE symbol sizes, alarm colors, and NE/aggregate labels, can be changed through the Preferences option on the View menu. See Map Preferences later in this chapter for more information on changing characteristics of the Map pane display.

Network Elements

Each square on the Map pane represents an NE in your Target Group.

Aggregates

The diamond-shaped symbols on the Map pane represent aggregates. Aggregates are collections of NEs that do not necessarily correspond to any physical connectivity or other NE attributes. An aggregate can consist of a group of related NEs, such as a subnetwork, or a group of co-located NEs that are not necessarily in the same subnetwork. An aggregate can be moved under another parent aggregate on the Map pane or Subnetwork Explorer by selecting it and then dragging it to the parent aggregate symbol.

Non-Managed Devices

A non-managed device is an NE or other telecommunications entity that is part of the network of NEs that communicate with ITM SNC but are not managed by the system. These NE types are treated as "non-managed devices" and appear on the Map pane display as circles about the same size as the squares that represent managed NEs.

Non-managed devices that are discovered are added to the ITM SNC database to complete the network map and to avoid retries by ITM SNC to log into a non-managed device.

Certain non-managed devices can only be manually added using the Add an NE window on the GUI, specifying it as a non-managed device. You can also change the NE type to a non-managed device through the Modify an NE window. Once a non-managed device has been added, ITM SNC does not attempt to log into it.

EMS Host Icon

The Map window pane contains one triangle-shaped icon, labeled with the EMS host name, that displays the highest severity alarm present on the host. Although this icon looks similar to the NE symbols, it cannot be included in an aggregate or have trails connected to it. (Trails are physical facilities between NEs or aggregates.)

The EMS Alarm Icon receives alarms from various application processes and monitors the communication links between the EMS host and the NEs. It indicates, for example, whether a file system has exceeded capacity, whether there are remote printer problems, or whether the UNIX message queues are getting full. The icon is shown with the machine name (or its alias) of the host that is running the EMS application.

Like NEs and aggregates, colors are used on the EMS alarm icon to show the current state of the application or its communications links. The default colors are the same as for NEs (see the Alarms section in this chapter). The icon shows the current highest severity alarm for the application. Alarm clearing methods used for NEs and aggregates also apply to the EMS application alarms.

Trails

The lines that run between NEs and/or aggregates represent trails. Trails are physical links between NEs or aggregates.

Alarms

The color of a map item symbol or trail indicates the level of the most severe active alarm. The default alarm colors for the Map pane display are:

Alarm Color	Alarm Severity Level
Red	Critical
Yellow	Major
Cyan	Minor
Gray	Throttled
Green	No Active Alarms
Magenta	Loss of Communications

The center of an NE symbol may show a different color than the border of an NE/ aggregate symbol. In this way, the symbol is used to show more than one alarm type at a time. When more than one alarm type exists, the center of an NE/ aggregate symbol shows the highest severity alarm and the border shows the next highest severity alarm color, unless there is an NE to EMS communication alarm. Communication alarms are always top priority and always color the center of the NE symbol. The highest severity non-communication alarm color is shown in the border. The throttled alarm color (gray) is always shown in the center of the symbol, with the last known severity alarm color in the border. The alarm throttling color is not displayed until the alarm throttling threshold is passed.

Alarm display colors can be modified through the Preferences option of the View menu on the Map window main menu bar. For more details, see T 103, Modify User Preferences.

A flashing (blinking) NE or aggregate symbol indicates that there are one or more unacknowledged alarms against that NE or aggregate. See the Alarm Acknowledgement section in Chapter 3 of this document for more details about alarm acknowledgement/unacknowledgement.

Audible Alarms

A speaker-shaped symbol in the middle of the toolbar on the Map window indicates whether the Audible Alarm feature is enabled or disabled. This symbol has a slash through it if the Audible Alarm feature is disabled. To enable the Audible Alarms feature, click on the symbol. The slash is removed from the symbol. To disable the Audible Alarm feature, click on the symbol again. A slash appears on the speaker-shaped symbol.

When the Audible Alarm feature is enabled, an audible sound is triggered each time a new alarm occurs on the network. Once triggered, the audible alarm will sound for a short time and then repeat until the alarm is cleared or it is silenced through the GUI. The sound characteristics of the audible alarm correspond to the most severe prevailing alarm condition (Critical, Major, Minor). The alarm sound interval can be changed by the ITM SNC system administrator. See the Audible Alarms section in Chapter 3 of this document for more details about the Audible Alarms feature.

Selecting NEs and Aggregates

To select a single NE or aggregate on the Map pane, position the mouse pointer over the NE or aggregate icon and click the select mouse button.

To select a group of NEs or aggregates on the Map pane:

1. Position the mouse pointer over a portion of the background adjacent to the items to be selected.

2. Click the mouse select button and drag the mouse pointer. As you drag the mouse pointer, an outlined box appears over the selected area.

3. Drag the mouse pointer over the NE(s)/aggregate(s) to be selected, enclosing them in the selection box. As items in the Map pane are selected, they change color. Release the mouse select button. The items are selected.

   To deselect a selected item in the Map pane, position the mouse pointer over the item and single-click the mouse select button. To deselect a group of items, position the mouse pointer within the boxed region and single-click the mouse select button. Any item in the box that is already selected becomes deselected.

Pop-Up Menus

A pop-up menu of ITM SNC functions for the NE or aggregate can be accessed by positioning the mouse pointer on the Map pane icon and clicking the menu mouse button.

Moving NEs and Aggregates

To move a single NE or aggregate on the Map pane:

1. Position the mouse pointer over the icon you want to move.

2. Press and hold the select mouse button.

3. Drag the icon to the new position.

4. Release the select mouse button.

To move a group of NEs or aggregates on the Map pane:

1. Select a group of NEs or aggregates by positioning the mouse pointer in an area of the background adjacent to the items, clicking the select mouse button and dragging the mouse pointer (a faint dashed box appears) to surround the items, and release the mouse select button.

2. Position the mouse pointer over one of the chosen icons. Press and hold the select mouse button.

3. Drag the icons to the new position.

4. Release the select mouse button.

Zooming the Map View

The GUI allows you to zoom into (enlarge) a portion of the network on the Map pane to focus on a few NEs or aggregates, or zoom out of the Map pane to show more of the network. The Zoom functions are available through the View menu on the Map window main menu bar.

See T 100, Start Up ITM SNC for specific instructions on zooming the Map view.

Clearing Status Messages

Status messages that are displayed in the status bar on the Map window can be cleared at any time.

To clear the status bar message display, select **View** from the main menu bar on the Map window and then select **Clear Status Line** from the View menu. The message area in the status bar is cleared. The Status line can also be cleared by using the Clear Status Bar button on the Map window toolbar.

Map Preferences

There are system defaults for how Map items are displayed. ITM SNC allows you to change certain characteristics of the Map pane display, such as NE size, NE labels, and alarm colors, to suit your own needs. The appearance of Map items on the Map pane can be changed through the Preferences option on the View menu. Preferences are stored on a per-user basis.

The Map Preferences window can be accessed through the View options menu on the main menu bar of the Map window or by clicking the Map Preferences button on the Map window toolbar.

T 103, Modify User Preferences explains how to change user preferences for the Map window display.

The Preferences window has four categories:

Nodes & Lines	Allows you to choose NE size and thickness of trail lines between NEs
Labels	Allows you to choose the size, content, and alignment of Map item labels
Colors	Allows you to choose colors associated with alarms and cross-connections
Fault	Allows you to set preferences associated with how alarms are displayed in the Map and Alarm Tally windows

Saving and Restoring User Preferences

Your chosen preferences for the Map pane display can be saved or restored for each time you log into ITM SNC and bring up the Map window.

T 104, Save Preferences/Map Positions explains how to save user preferences. T 105, Restore Preferences/Map Positions explains how to restore previously saved user preferences.

Copying User Preferences

Map display preferences can be copied from another user.

T 106, Copy Preferences/Map Positions describes how to copy user preferences and/or Map positions from another user.

Restoring Defaults for the Map Display

System defaults for the Map window display can be restored from the View Preferences window by clicking the Get Default button in the window and then applying them to the current GUI session or saving them. See T 103, Modify User Preferences for complete instructions on setting user preferences for the Map display.

Related Information

T 103, Modify User Preferences provides instructions on how to view and modify user preferences for the Map window.

Saving the Map View

ITM SNC allows you to save the positions of NEs and aggregates on the Map pane and/or user preferences for characteristics of the Map display, such as node size, labels, line size, and alarm colors. You can also restore previously saved settings or copy settings from another user. Map positions and preferences are saved on a per-user basis.

T 104, Save Preferences/Map Positions describes how to save user preferences and/or Map positions.

⇒ **NOTE:**
  User preferences can also be saved directly from the Preferences window by clicking the Save button in the window. See T 103, Modify User Preferences for complete instructions on setting user preferences for the Map display.

T 105, Restore Preferences/Map Positions describes how to restore previously saved user preferences and/or Map positions.

Help

ITM SNC provides various types of online information to assist you in using the system's functions and features. The types of help available are:

- Window help
- Online documentation
- Product information

Window Help

Window help provides specific information about the window's purpose or function. A window help screen also provides hyperlinks to the various levels of reference help available, where you can obtain help by selecting a topic, scan an index of tasks that can be performed using ITM SNC, or do a keyword search for the information or topic.

Window help is accessed by clicking the Help button on any functional window in ITM SNC.

Online Documentation

A complete version of the *User Guide* is available to view online through Adobe Acrobat Reader.

The online version of the *User Guide* is accessed by selecting **Help** from the main menu bar on the Map window, selecting **Online Documentation** from the Help sub-menu, and then choosing the document to be viewed online.

Product Information

General information about ITM SNC, including the full product name, copyright information, the product release number, and other related information is available at any time from a pop-up window that is accessed by selecting **Help** from the main menu bar on the Map window and then selecting **About the EMS** from the Help sub-menu.

To close the Product Information window, click the OK button.

Network Element Explorer

Introduction   The Network Element Explorer is a tool displayed on the Port Provisioning, Cross-Connections, and Equipment Configuration windows that provides a graphical, step-down, hierarchical view of the equipment to be provisioned. The Network Element Explorer consists of a tree diagram that shows the configurable hardware components that comprise the Network Element, and the relationship between each hardware component.

Using the Network Element Explorer   The purpose of the Network Element Explorer is to view and then provision the desired hardware component.

Equipment Hierarchy   The following simple diagram shows the possible equipment levels that can be displayed and configured on the Network Element Explorer.

TID

    Lineup

       Bay

          Shelf

            Slot

              Circuit Pack

                Port

                  Port protection group

                  Tributary
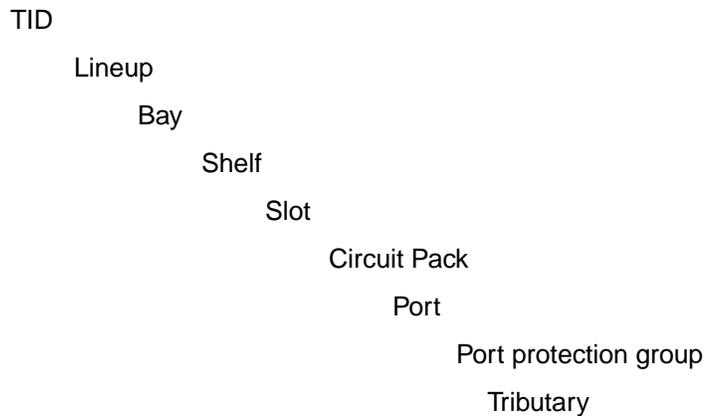
Figure 2-3.   Equipment Hierarchy on Network Element Explorer

The content and relationship of equipment shown on the Network Element Explorer varies by NE type. Not every NE contains every level of the hierarchy. Generally, access to a shelf provides access to circuit packs that exist on the shelf. Ports exist on circuit packs, which are placed in slots. Slots are in shelves, shelves are in bays, and bays are in NEs.

Selecting an Item   To select an equipment component on the Network Element Explorer, position the mouse pointer on the equipment component and click the mouse select button. The selected item is highlighted.

Expanding/ Collapsing an Equipment Component Level   There are two ways of expanding or collapsing an equipment component level on the Network Element Explorer:

1. A select mouse button click on the plus ("+") or minus ("-") sign causes the branch associated with the component level to expand ("+") or collapse ("-").

2. A double-click on any equipment level selects it and expands to show the component parts. For example, if you double-click on a shelf in the explorer, the diagram expands to show the associated slots, by number.

Equipment View Display   Any change on the Network Element Explorer, such as expansion or collapse of the equipment level, causes a corresponding change on the Equipment View window.

Window Buttons

Types of Window Buttons

All of the windows in ITM SNC from which you perform a function have standard buttons that work the same way regardless of the function.

The following table lists the standard window buttons and their functions on windows.

Table 2-1.   Standard Window Buttons

Button	Function
OK	Accepts input on the window, validates the input, initiates the requested operation, and closes the window.
Apply	Accepts input on the window, validates the input, initiates the requested operation, but leaves the window open.
Cancel	Cancels the operation and dismisses the window. Any insertions or changes made during the use of the window are not saved.
Help	Accesses online help for information about a particular window, function, feature, or task.
Close	Closes the window without performing an operation.

Greyed-Out Buttons

If a button is greyed out (dimmed) on a window, it means that a function is not available. In some cases, an item has to be selected or specified on the window before the dimmed button is activated.

Exclusive Choice Buttons

Exclusive choice buttons in ITM SNC let you choose one item or setting from a list of two or more settings. When you change an exclusive choice setting, the previous setting is automatically deactivated.

Exclusive choice buttons are also called "radio buttons" because they work like car radio preset buttons that let you change stations with the press of a button.

To change an exclusive choice setting, click the mouse select button with the pointer positioned on the button. Your choice is activated when the button is darkened.

**Example:
Exclusive Choice
Buttons**

The following figure shows a window where one of the exclusive choices (radio buttons) has been selected.
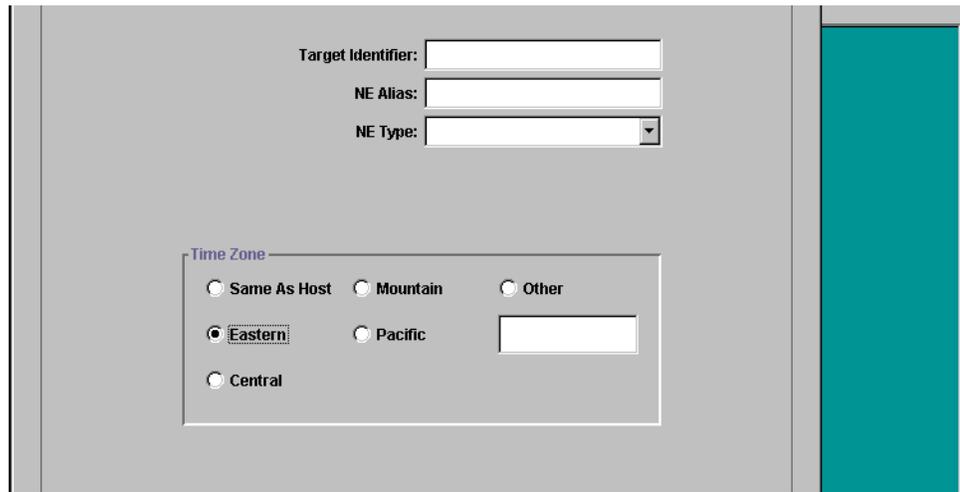
Figure 2-4.   Example of Exclusive Choice Button Selection

Push Buttons

Some of the function windows in ITM SNC have push buttons that are used to transfer one or more items (such as NEs) between lists on the window.

The following table shows each push button label, its name, and its purpose.

Table 2-2. Push Buttons on List Windows

Push Button Label	Push Button Name	Purpose
>	Push Right	When this button is clicked, the selected item is transferred to the list on the right and removed from the list on the left.
>>	Push All Right	When this button is clicked, all items on the corresponding list on the left are transferred to the corresponding list on the right.
<	Push Left	When this button is clicked, the selected item is transferred to the list on the left and removed from the list on the right.
<<	Push All Left	When this button is clicked, all the items on the corresponding list on the right are transferred to the corresponding list on the left.

Example: Push Buttons

The following figure shows a sample window where push buttons are used to transfer items between lists.
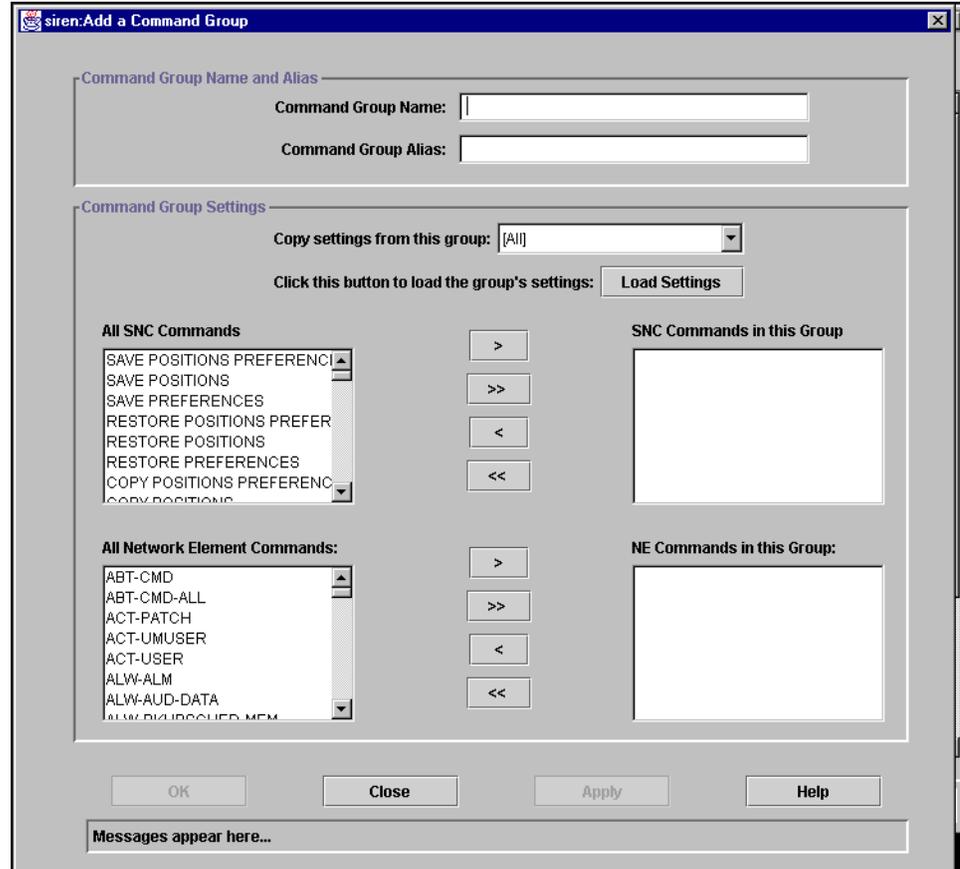
Figure 2-5.   Example of Push Buttons on Window

Using Lists

Introduction

A majority of the ITM SNC functions are performed by picking a function to perform (for example, NE restore) and then selecting the item (such as a specific NE) on which to perform the function, from a list of similar items.

To select an item from a list, position the mouse pointer over the item(s) and click the select mouse button. The selected item(s) is highlighted. On some lists, it may be necessary to double-click the select mouse button to select the item and perform the operation.

ITM SNC provides different methods of locating items on lists to narrow the search to only the item(s) you want. These methods are:

- Scrollable lists

- A filtering/sorting function

- A type ahead field

Scrollable Lists

When a window in ITM SNC cannot display all of the information available to you, the information is presented in a scrollable list. The information that you cannot see is available by paging through the scrollable list.

Example: Scrollable List Window

The following figure shows an example of a scrollable list window in ITM SNC.
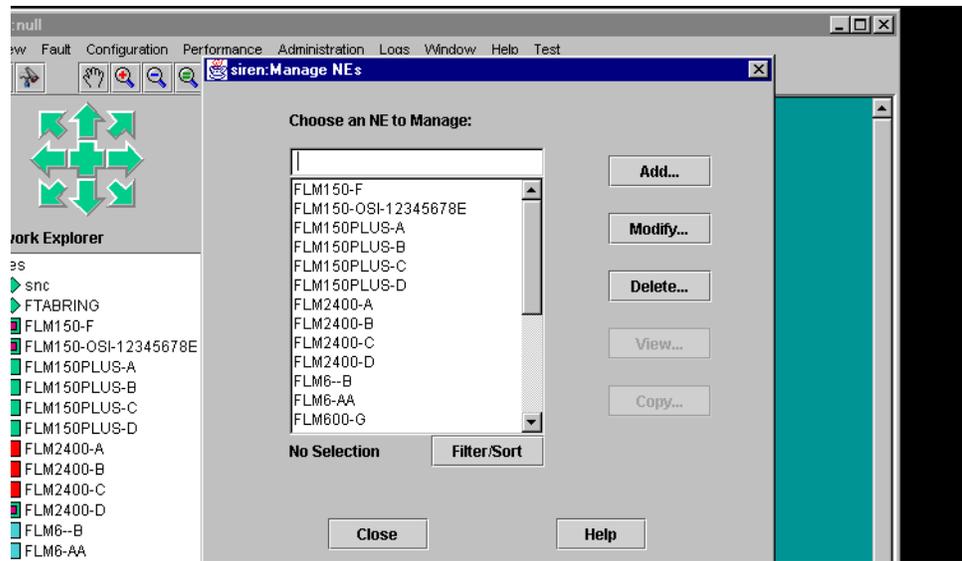
Figure 2-6.   Example of a Scrollable List

Using a Scrollable List   The vertical bar on the right side of the window is the scroll bar. The scroll bar consists of an up-arrow, a down-arrow, and an elevator box between the two arrows. The scroll bar on the window works as follows:

To:	Do this:
Display the next page	Put the mouse pointer under the elevator box and click the mouse select button.
Display the next line	Put the mouse pointer on the down-arrow and click the mouse select button.
Display the previous page	Put the mouse pointer above the elevator box and click the mouse select button.

To:	Do this:
Display the previous line	Put the mouse pointer on the up-arrow and click the mouse select button.
Display the bottom of the list	Put the mouse pointer on the elevator box, hold down the mouse select button, move the mouse downward (dragging the elevator box to the bottom of the scroll bar), and release the mouse select button.
Display the top of the list	Put the mouse pointer on the elevator box, hold down the mouse select button, drag the elevator box to the top of the scroll bar, and release the mouse select button.

You can select a single item from a scrollable list by positioning the mouse pointer over the item and clicking the mouse select button. This causes the item to become highlighted and indicates your selection.

Filtering and Sorting Items

ITM SNC has a filter/sort function to further narrow a list to only the item(s) you want. This function allows you to:

- Narrow a list by filtering out all items on the list that do not match all or part of the filename, NE/aggregate name, TID, or alias you supply.

- Sort a list by placing the items in ascending or descending order.

ITM SNC allows you to filter and/or sort the list. Many of the scrollable list windows in ITM SNC provide this function.

Example: Filter/ Sort Function

The following figure shows an example of a scrollable list window with the filter/ sort function.
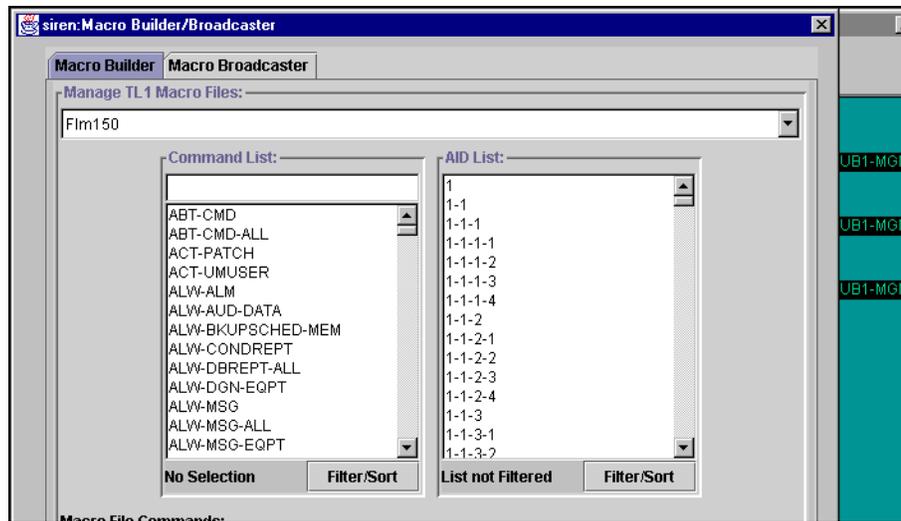
Figure 2-**7.** **Example of Scrollable List Window with Filter/Sort Function**

When you click the Filter/Sort button on a list window, a Filter and Sort Options window is displayed to allow you to filter and/or sort the list according to the criteria you specify.

**Filter/Sort
Window**

The following figure shows a sample Filter and Sort Options window.
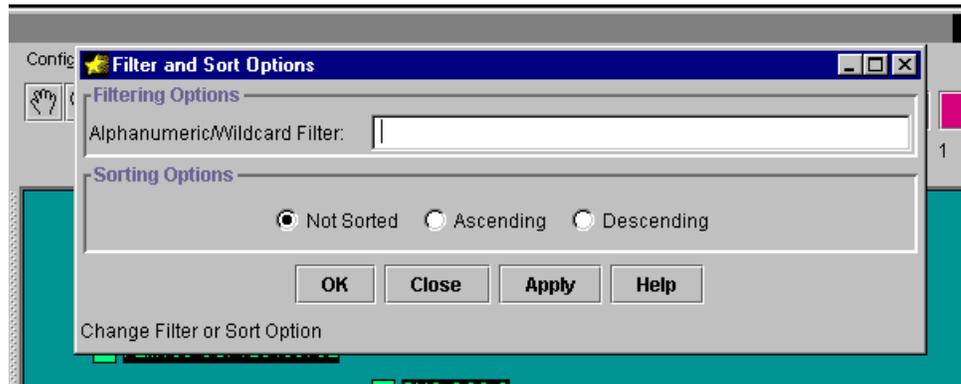
Figure 2-**8.** **Example of Filter/Sort Window**

You would fill in the following fields as needed:

■   Alphanumeric/Wildcard Filter—This is a text field for entering all or part of the name/label to narrow the list to only those items that match these criteria. An asterisk (*) can be used as a wildcard character to match one or more characters in the name or label. Use the (Backspace) key to erase what you have entered in this field.

■   Sorting Option buttons—These exclusive choice buttons are used to determine the sort order of the list. Click on the Ascending button to display the list in ascending order. Click on the Descending button to display the list in descending order. Click on the Not Sorted button to leave the list as it is. Lists are displayed in ascending order, by default.

■   OK—After making your filtering/sorting choices, click on the OK button to apply your criteria to the list and close the Filter/Sort window.

■   Close—Click on this button to close the window without applying any filtering/sort criteria to the list.

■   Apply—After making your filtering/sorting choices, click the Apply button to apply your criteria to the list and leave the Filter and Sort Options window open.

■   Help—Click on the Help button to obtain online help for the Filter and Sort Options window.

Type Ahead Field   Many of the list windows have a "type ahead" field. This is a text field which is usually located above the first item in the list. As you start to type the item name or label in this field, the system automatically selects an item from the list that matches what you have typed. An asterisk (*) can be used in the type ahead field as a wildcard character to match one or more characters of the item name or label. You can also enter the entire name of the item in the type ahead field to expedite the search and selection of an item on the list.

If you select an item from the list, the name of the item appears in the type ahead field.

The status bar on the list window indicates whether the list has also been filtered.

Example: Type Ahead List

The following figure shows an example of a list where the type ahead field has been used to expedite the search for an item on the list.
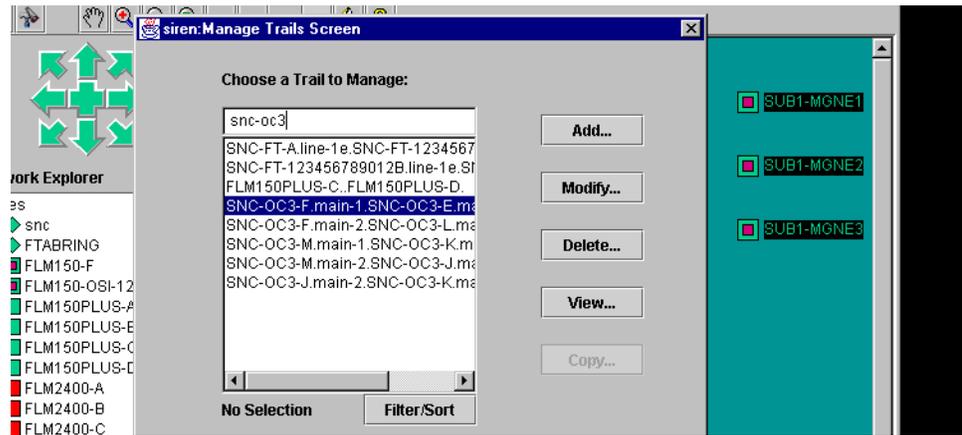
Figure 2-9.   Example of Type Ahead List

Sorting Tables

Introduction   Some of the data that ITM SNC retrieves from its managed NEs, such as alarm data, is displayed in multi-column tables. Data is displayed in table format on many windows, including the:

- Alarm Summary

- Trail Alarm Summary

- Alarm List

- Trail Alarm List

- Scheduled Activity Lists

ITM SNC allows you to sort and display data displayed in tables in the exact order that you need it.

Moving and Dragging Table Columns   ITM SNC allows you to click/select on a table column header, and then physically drag the column to a different position in the table, while holding the mouse select button.

Example: Sorting a Table   The following figure shows a sample Alarm Summary window where you may want to change the order of the alarm summary data.

siren:null					
View Fault Configuration Logs Help					

NE/Aggregate Alarm Summary

TID		Critical	Major	Minor
SIREN		1	57	0
FLM2400-A		12	0	0
FLM2400-B		3	0	0
FLM2400-C		12	0	1
FLM2400-D		0	0	0
SUB1-MGNE1		0	0	0
FLM6--B		0	0	1
SUB1-MGNE2		0	0	0
SUB1-MGNE3		0	0	0

Trail Alarm Summary

Trail		Critical	Major	Minor

Figure 2-10.   Example of Alarm Summary Window

The default order for data on the Alarm Summary window to be displayed is by Critical, Major, and Minor alarms. To change the sort order in which alarm data is

displayed on this type of window, you would click on one of the column headers or select the Sort option on the View sub-menu for the Alarm Summary window.

Either action brings up a Sort window. The following figure shows an example of the Sort window.

Example: Sort Window

Figure 2-**11.   Example of Sort Window**

The Sort window allows you to select three categories from the table list on which to sort. Each category consists of a drop-down list that contains all of the column names (in column order) from the table list on which to sort, and two exclusive choice radio buttons, labeled Ascending and Descending.

To sort a table, choose a column name from the "First sort by" drop-down list. The item you select becomes the primary sort key for the table list. Then, click the Ascending radio button next to the first drop-down list to sort the table by this item in ascending order or click the Descending radio button to sort by this item in descending order. Ascending order is the default.

To further sort the table data, choose an item from the first **Then Sort By** drop-down list and then the second **Then Sort By** drop-down list. Choose **none** from

the drop-down list to indicate no sort at this level. For each level, choose whether to sort the item in Ascending or Descending order. Ascending order is the default.

Related Tasks   For related tasks, see T 201, Access the Alarm Summary; T 202, Access the Alarm List; and T 207, Display Trail Information in the *User Tasks Manual.*

Fault Management

3

Contents

Background

Introduction
Fault Management monitors alarms and conditions in the subnetwork. Users can access Fault Management functions from the Main Menu, or by accessing the pop-up menu on an NE or Aggregate icon in the Map window, or on the items listed in tables or other screens. Some important Fault Management features include the alarm summary and alarm list, viewing autonomous alarms as they are received, alarm throttling, and visible alarm indicators.

Objectives
This chapter provides background and introductory information about Fault Management available for use with ITM SNC. After learning the information in this chapter, the user should be able to do the following:

- Use the Alarm Tallies window to identify the number and type of alarms currently in the subnetwork.

- Display the Alarm Summary, Alarm List, and Alarm Details windows to identify various information about current alarms.

- Initiate resynchronization of alarms.

- Limit the amount of autonomous messages that are to be monitored for an NE using the alarm throttling feature.

- Administer audible alarms.

Related tasks
For related tasks, see the 200 series tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Available Features

Introduction   ITM SNC receives autonomous alarm messages from Network Elements (NEs) when alarm states are set or cleared. These alarm messages are processed and made available to the user through the GUI. Following is a complete list of Fault Management features, all of which are available to the user via the GUI:

- Alarm Tallies
- Alarm Summary
- Alarm List
- Alarm Indication and Acknowledgement
- Alarm Details
- Trail Alarms
- Alarm Resynchronization
- Alarm Throttling
- Audible Alarms
- Alarm Browser
- Alarm Filtering
- Intelligent Alarm Filtering

In addition to the above alarm windows and reports, the Map window indicates which NEs and aggregates have alarms and their severity level (see Chapter 2, The ITM SNC Graphical User Interface for more information about color-coded NE alarm severity indicators on the Map window). Also, a system alarm icon indicates the alarm status of the host. Furthermore, the Map window indicates which NEs have unacknowledged alarms (by flashing those nodes), and which NEs have alarm throttling enabled (with the color gray).

Alarm Tallies   Another way ITM SNC keeps you informed about current alarms is via the Alarm Notification window. This window contains information on the type and number of current alarms in the subnetwork. It always remains open on your workstation screen, coming to the front each time another alarm is tallied.

The Alarm Notification window contains four buttons labeled Critical, Major, Minor, and SNC Communications, corresponding to the four types of alarms that may appear. Below each of these buttons is a number that indicates the current number of alarms of that severity.

To see more information about Critical, Major, or Minor alarms, just point to the desired severity button on the Alarm Notification window and click. ITM SNC then displays the Alarm List window, filtered by the severity type of the clicked button.

For instructions on how to use the Alarm List window, see T 202, Access the Alarm List.

Alarm Summary

The Alarm Summary feature provides a single-line overview of alarm information for each node and trail in an aggregate. This information is provided via the Alarm Summary window on the GUI. This window lists the NEs in your Target Group and displays the number of Critical, Major, and Minor alarms for each NE. The alarms can be listed by severity or TID. Instructions for displaying and using the Alarm Summary window can be found in T 201, Access the Alarm Summary.

Alarm List

The Alarm List contains a line of various information about each active alarm in an NE. The user can sort the list by alarm severity and age, age alone, condition, date/time logged, and acknowledged vs. unacknowledged. The user can also acknowledge or unacknowledge the alarms listed here. Instructions for accessing and using the Alarm List can be found in T 202, Access the Alarm List.

Alarm Indication and Acknowledgement

The alarm indicator feature graphically indicates the arrival of new alarms by flashing the impacted nodes and aggregates. If there are one or more alarms against an NE and alarm indication is enabled, that node will flash (in the color of the highest severity alarm). Likewise, if there are one of more alarms against one or more NEs in an aggregate and alarm indication is enabled, that aggregate will flash. (When all the alarms against an NE or aggregate are acknowledged it no longer flashes.) Users should acknowledge alarms for which they are responsible. (ITM SNC tags the acknowledgement so that other users will not attempt to troubleshoot the same problem.) For instructions on acknowledging and unacknowledging alarms, see T 203, Acknowledge/Unacknowledge Alarms; T 204, Acknowledge/Unacknowledge Alarm Groups; T 205, Acknowledge/ Unacknowledge All Alarms; and T 206, Acknowledge/Unacknowledge All Alarms for an NE.

Alarm Details

Alarm Details are available to the user via the Alarm List window. This window contains a line of information about each active alarm in an NE or aggregate. Before acknowledging an alarm, it is a good practice to display it on the Alarm List window to check the details and make sure you want to acknowledge it. You can then perform the acknowledgement right from the Alarm List window. For instructions on using the Alarm List window to display alarm details, see T 202, Access the Alarm List Trail Alarms

Trails are physical facilities between NEs (see Chapter 7, Administration for more information about trails.) ITM SNC monitors all existing trails for alarm conditions.

⟹ **NOTE:**
NEs can only automatically discover and report to SNC trails over which there is an active Data Communications channel (DCC). Users can, however, add trails between any pair of termination points on NEs.

Information about trail alarms that have occurred can be displayed on one of two different screens, depending on the type of information desired:

■ Trail Alarm Summary Window—this lists a count of critical, major, and minor alarms for the AIDs that terminate the trail between two NEs.

■ Trail Alarm List—this contains a line of information about each active alarm for the trails between two NEs. This information includes alarm severity, occurrence date/time, condition, and date/time logged.

For instructions on displaying and listing these two screens see T 207, Display Trail Information.

Alarm Resynchronization

Alarm Resynchronization provides the ability for ITM SNC to update its alarm list, autonomous message log, and command/response log from network elements in the subnetwork whenever any outage of NE communications occurs. ITM SNC automatically resynchronizes alarms whenever the communications status with an NE changes from "down" to "up." In addition, users can initiate resynchronization of alarms on demand, as described in T 210, Resynchronize Alarms.

⟹ **NOTE:**
Before resynchronizing alarms for an NE, the user should disable the automatic/manual alarm throttling control for the NE. Alarm resynchronization does not work unless the NE is in an unthrottled state.

The alarm resynchronization process does not clear the existing GUI display and alarm tally/list displays during the resynchronization process, but rather retains the existing alarms until the resynchronization is completed. ITM SNC can distinguish between:

■ standard alarms that already exist in the GUI and alarm/tally list displays,

■ new alarms, and

■ alarms that are cleared by the NE between resynchronizations.

This allows ITM SNC to incrementally update the GUI display and alarm tally/list to accurately indicate the subnetwork status to the user.

Alarm Throttling   The Alarm Throttling feature enables you to limit the amount of autonomous messages and Critical autonomous messages that should be monitored for an NE.

An alarm throttle level between zero and 3,600 per hour can be specified in the Add or Modify an NE window. The recommended initial level is 100 messages per hour (and this is the default). If an NE has been enabled for alarm throttling and the number of alarms in the NE exceeds the set level, the NE is automatically put on throttled, or partial, alarm monitoring. Once ITM SNC automatically throttles an NE's alarms, it continues to do so until a system reboot or a manual change is made through the Alarm Monitoring menu in the GUI.

The Alarm Throttling feature is useful during events, such as an initial network turn-up (or maintenance activity), where large numbers of messages are generated by an NE. Throttling alarm only allows alarms of a Critical priority to be displayed on the GUI, sent upstream to the Operations Systems (OSs), or retrieved via alarm queries. (Non-maintenance-related messages are not affected by alarm throttling and continue to be logged in the normal manner.)

See T 208, Monitor Alarms for instructions on using the GUI to toggle manually between a full set of messages and a throttled set of messages through the Alarm Monitoring menu. For instructions on how to view throttled alarm statistics, see T 209, View Throttled Alarm Statistics.

Audible Alarms

The audible alarm provides an alternative way to alert the user to existing alarms. The following list provides an overview of audible alarm specifications:

- Audible alarms are generated at each system interface screen.

- To eliminate possible confusion, the characteristics of the audible alarm (that is, sound, duration, and interval between sounds) is common to all users of the host.

- Individual user interface users can enable or disable the audible alarm feature for their respective system user interface screens.

- The Map window contains the audible alarm symbol near the upper middle of the screen. The symbol is a speaker if the audible alarm is enabled, or a speaker with a slash through it if disabled.

- When the audible alarm is enabled, an audible alarm is initiated at the onset of each new alarm, with sound characteristics that correspond to the severity level of the most severe alarm.

- Audible alarms last for a short duration and are repeated after a set time interval, until quieted by the user.

The audible alarm sounds are initially loaded with system default settings. These settings can be adjusted by the system administrator. For instructions on how to use audible alarms, see T 211, Enable/Disable Audible Alarms and T 212, Quiet the Audible Alarm.

Alarm Browser

The Alarm Browser lets you view alarms and clear messages for the NEs in your Target Group as they occur. Specifically, it captures *alarm*, *event*, and *clear* messages that are forwarded to network surveillance OSSs for NEs in your Target Group and displays them in the Browsing Alarm Audit Log window on your workstation screen. For how to activate the Alarm Browser, see T 200, Activate the Alarm Browser.

Alarm Filtering

Alarm filtering is the selective removal of alarm messages from being forwarded to the GUI. Alarm filtering can be applied to reduce the number of alarms forwarded to the GUI caused by intermittent failure, or to filter symptomatic alarms associated with a reported signal failure, such as those that occur during a fiber cut.

Types of Alarm Filtering

ITM SNC uses three basic methods to reduce the number of alarms to be displayed:

- Aging—waiting for a pre-set time period to eliminate alarms that are caused by temporary failures (and are cleared within a time period shorter than the aging interval)

- Event-per-Time (EPT) Filtering—EPT, which is primarily an alarm reduction technique, filters PM Threshold Crossing Alerts (TCAs). To forward all TCAs, set the EPT count to zero. To filter all TCAs, set the EPT count to two occurrences, and set the EPT time to something less than 15 minutes. Because PM reports are generated approximately every 15 minutes, no TCAs are forwarded.

- Intelligent Alarm Filtering—correlating symptomatic alarms with a primary (or directly reported) alarm based on a specific set of filtering rules. This is also referred to as Intelligent Alarm Filtering (IAF). See Intelligent Alarm Filtering in this chapter for more details.

Adjusting Aging and EPT Filtering Parameters

ITM SNC provides several adjustable parameters for processing, collecting, and filtering alarm and event messages. These messages are grouped into three categories, as shown in the following table:

Table 3-1.   Alarm and Event Categories

Message Type	TL1 Name	Condition Status
Alarm	REPT-ALM, REPT-ALM-ENV	NEs send a clear message when the condition no longer exists.
Standing condition	REPT- EVT	NEs send a clear message when the condition no longer exists.
Transient condition	REPT-EVT	NEs do not send a clear message because the event does not change an NE's condition for an extended period of time.

The ITM SNC Fault Management parameters are adjustable for each type of supported NE. The following parameters for alarm aging and EPT filtering can be adjusted.

- **Age Time**—This parameter is the number of seconds that an alarm or standing event is held while waiting for a clear message. Enabling this filter suppresses repeated alarm/clear message pairs, such as those that are generated by intermittent failures.

    Alarms and standing events that do not clear within the specified time are forwarded to the Map window and other windows that list alarm information, such as the Alarm Summary and Alarm List windows. Messages that do not clear within the specified aging time are also forwarded to a network surveillance system, such as NMA-F.

    Held alarms do not appear on the alarm windows and are not forwarded to a network surveillance system. These alarm messages are, however, available through the ITM SNC Logs.

    The default value for all NE types and Probable Causes is 0 seconds (that is, aging is "disabled"). The maximum value is 3600 seconds.

- **Event-Per-Time (EPT) Count**—This parameter is the number of occurrences of a transient event that must be generated within the specified EPT Time before the event is flagged in the ITM SNC alarm/event log and passed to the network surveillance system. (**Note:** There are windows where events are displayed other than looking at a log.) The events that are counted must have matching condition codes, TIDs, and AIDs. The default count for all NE types and Probable Causes is 0. The maximum count is 3600.

- **EPT Time**—This parameter is the number of seconds that ITM SNC maintains an EPT count parameter for a recurring transient event. The default value for all NE types and Probable Causes is 0 seconds. The maximum value is 3600 seconds.

The above alarm filtering parameters are maintained in a UNIX file that the ITM SNC system administrator can edit (see Adjusting Fault Management Parameters in this chapter).

Intelligent Alarm Filtering

Intelligent Alarm Filtering (IAF) is the filtering of symptomatic alarms that were detected elsewhere (either upstream or downstream of the actual failure) and are associated with a directly reported failure condition.

IAF is applied only to alarms that have previously been "pre-filtered" through the aging method or redundant alarms for the same AID, to ensure that only persistent alarms are considered.

Directly Reported Failure Conditions

The types of directly reported failure conditions to which IAF can be applied are:

- Facility Failures

    — Loss of Signal (LOS)

    — Loss of Frame (LOF)

    — Loss of Pointer (LOP)

- Equipment Failures

Symptomatic Alarms

The types of symptomatic alarms that can be filtered out when correlated to a directly reported failure condition are:

- Alarm Indication Signals (AIS)

- Remote Failure Indications (RFI)

Alarm Filtering Rules

The following alarm filtering rules apply to each part of the network that comprises the "correlation domain." The "correlation domain" is a group of optically interconnected SONET NEs, regardless of whether they also have DCC connectivity, that are being monitored by ITM SNC.

1. All incoming alarms into ITM SNC are logged, whether they are filtered out or not.

2. All collected symptomatic alarms are filtered through IAF if the following conditions are met:

    a. ITM SNC receives a Directly Reported Failure alarm, of the type noted in Directly Reported Failure Conditions in this chapter, from an NE that belongs to the "correlation domain."

    b. There is at least one directly detected facility alarm of the same signal level or higher in the "correlation domain."

The exceptions to these filtering rules are:

1. When IAF is disabled. The alarm originates from an NE with low-speed tributaries dropped from the NE that is connected to a private network, and administrators want to be advised that there is a loss of signal on their tributaries. In this case, IAF for such NEs can be disabled through the GUI or via an external system.

2. Symptomatic alarms on ports and their channels that terminate links connected to NEs outside the "correlation domain" are **not** suppressed.

The IAF Process

When IAF is enabled, alarms are held for a defined alarm correlation period. At the end of the correlation period, alarms are suppressed if they can be accounted for by a directly reported event.

An initial correlation timer (Initial Correlation Period) is started upon receipt of the first reported alarm, during which ITM SNC collects symptomatic alarms for alarm correlation.

If no directly detected alarm is received during the pre-defined Alert Interval, ITM SNC notifies users that alarm correlation is in progress.

At the end of a Quiet Time Period, which is also user-defined, if no alarms are received that need to be correlated to the initial directly reported alarm, the alarm correlation period is considered to be completed. If a symptomatic alarm is received during the Quiet Time Period, the process is restarted and the "quiet time" counter is reset.

The alarm correlation period is also ended if it exceeds the Maximum Correlation Period, which is also user-defined.

The Alarm Correlation Timers that are used for IAF can be set through the GUI. See T 214, Set Intelligent Alarm Filtering for instructions on how to set up the Alarm Correlation Timers. These timers can also be changed in an editable file by the system administrator at install time or when the application is running (see Adjusting Fault Management Parameters in this chapter).

Directly detected facility alarms, such as an LOS during the correlation period, are reported without any delay. If a symptomatic alarm/event such as an AIS is due to a directly reported failure that is **not** detected by ITM SNC, the AIS is **not** filtered.

⇒ **NOTE:**
> IAF Alarms retrieved from NEs during alarm resynchronization are subject to alarm correlation.

Enabling/Disabling IAF

IAF is enabled, by default, during initial system installation and can be disabled for the system application and for each monitored NE. IAF can be disabled for selected NEs through the GUI. IAF can be enabled or disabled for the system application by the system administrator by changing certain environment parameters in a UNIX file (see Adjusting Fault Management Parameters in this chapter). Fault management parameter changes should only be made by the system administrator.

Related Information

T 214, Set Intelligent Alarm Filtering describes how to set up IAF for an NE and how to disable IAF for an NE. It also explains how to set up the Alarm Correlation Timers that are used for IAF.

Adjusting Fault Management Parameters

The parameter settings for alarm filtering are maintained in an editable UNIX file under */snc/etc/FM_rc*. The following table shows the environment variables for the filtering parameters, their default values, and their allowed values.

Table 3-2.   Alarm Filtering Environment Parameters

Parameter	Environment Variable	Allowed Value	Default Value
ITM SNC application IAF flag (used for IAF setting at install time before bringing up system)	SNC_FM_DEF_IAF_FLAG	1=enabled 0=disabled	0 (disabled)
NE level IAF Flag	SNC_FM_DEF_NE_IAF_FLAG	1=enabled 0=disabled	0 (disabled)
IAF Flag	SNC_FM_IAF_FLAG	1=enabled 0=disabled	0 (disabled)
Aging Filtering flag (to turn filtering by aging method on/off)	SNC_FM_AGING_FLAG	1=enabled 0=disabled	1 (enabled)
Alert Interval (timer for IAF)	SNC_FM_DEF_ALERT_INTERVAL	0 to 60 seconds	60 seconds
Initial Correlation Period (timer for IAF)	SNC_FM_INITIAL_INTERVAL	60 to <900 seconds	300 seconds
Quiet Time Period (timer for IAF)	SNC_FM_DEF_QUIET_INTERVAL	0 to 300 seconds	60 seconds
Maximum Correlation Period (timer for IAF)	SNC_FM_DEF_MAX_INTERVAL	>60 to 3600 seconds	900 seconds
Age Time	SNC_FM_DEF_AGE_TIME	0 to 3600 seconds	10 seconds

Parameter	Environment Variable	Allowed Value	Default Value
EPT Flag	SNC_FM_EPT_FLAG	1=enabled 2=disabled	0 (disabled)
EPT Count	—	0 to 3600	0 seconds
EPT Time	SNC_FM_DEF_STAT_TIME	0 to 3600 seconds	0 seconds
AID Correlation Flag	SNC_FM_AID_CORRELATION	1=enabled 0=disabled	1 (enabled)
AID Correlation Period	SNC_FM_DEF_CORR_TIME		0 seconds
Auto Throttle Flag	SNC_FM_AUTO_THROTTLE_ FLAG	1=enabled 0=disabled	1 (enabled)
Manual Throttle Flag	SNC_FM_MANUAL_THROTTLE_ FLAG	1=enabled 0=disabled	0 (disabled)
Status Time	SNC_DEF_STAT_TIME	0 to 3600 seconds	3600 seconds
Throttle Level	SNC_FM_DEF_THROTTLE_LEVEL		100 seconds

The ITM SNC application level IAF flag parameter can only be changed when the application is off-line. The NE level IAF flag parameter can be changed when the application is on-line but the change is not made immediately.

Configuration Management

4

Contents

Background

Introduction   Network Elements (NEs) of all types allow the user to modify information about system, port, and equipment parameters. ITM SNC supports this functionality through a series of windows that allow the user to see the current configuration information and to modify that information.

ITM SNC has a Dynamic Network Operations (DNO) feature that retrieves the internal configurations of NEs and, for Lucent Technologies NEs, external connectivity relationships. This feature enables ITM SNC to discover the topology of subnetworks consisting of Lucent Technologies NEs. (Currently only manual DNO is available, but automatic DNO will be available soon in a succeeding release.)

ITM SNC provides flow-through provisioning between a network provisioning system, such as Operations System for Intelligent Network Elements (OPS/INE), and NEs. The GUI supports the following configuration management tasks:

- NE and subnetwork discovery
- NE parameter provisioning
- NE port parameter provisioning
- Cross-connection provisioning
- NE equipment inventory
- Inter-NE trail management
- Multiple GNE configuration
- TL1 command macro building and broadcasting
- Administrative scheduling
- Software management of Lucent NEs
- Equipment provisioning
- Protection provisioning

Objectives

This chapter provides background and introductory information about Configuration Management in ITM SNC. It includes available features and references to specific task-related instructions. After learning the information in this chapter, the user should be able to do the following:

- Initiate a TL1 cut-through session, build TL1 commands using the TL1 macro builder, and broadcast TL1 commands using the TL1 broadcast window.

- Provision NE ports, equipment, cross-connections, and protection groups.

- Define paths between NEs.

- Initiate DNO.

- Establish the correct date and time via the date/time synchronization and Spring ahead/Fall back features.

Related tasks

For related tasks, see the 300 series (Configuration Management) of tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Cut-Through

In order for the user to execute NE native commands that may not be supported explicitly by a particular release of ITM SNC, a cut-through capability has been developed. In addition, with the command builder and broadcaster, TL1 cut-through gives the user powerful capabilities. See T 300, Perform Cut-Through Commands; T 301, Build TL1 Commands; and T 302, Broadcast TL1 Commands for instructions on performing TL1 functions. (Please note that ITM SNC allows the user access only to the NEs and associated commands defined by the Target and Command Groups for which the user is validated.)

> **NOTE:**
> Instructions about actual TL1 commands are beyond the scope of this user documentation (which focuses on the GUI and its administration), but see your Lucent Technologies account representative for operations guides that contain complete information about all TL1 commands.

Initiating an NE Cut-Through Session

The NE Cut-Through window allows you to access and communicate with an NE, using the TL1 command set. You can submit TL1 cut-through commands to the NE directly. (For specific NE command information, see the appropriate NE documentation.)

> **NOTE:**
> Commands such as *rlogin* and *act-user* are disabled, but they are not needed because SNC is already logged into the NEs.

Related information

See T 300, Perform Cut-Through Commands for how to initiate and perform cut-through.

Building TL1 Commands

The TL1 macro builder allows you to create a TL1 command file to assist in performing maintenance and provisioning activities on one or more NEs (such as download of standard configuration), without having to manually enter a set of TL1 command strings. This feature both reduces the amount of manual entry needed to create TL1 command strings and allows for the reuse, at a later time, of the commands built on the same NE or other NEs of the same type.

Related information

See T 301, Build TL1 Commands for how to build TL1 commands.

Broadcasting TL1 Commands to NEs

The broadcasting TL1 commands feature allows you to perform maintenance and provisioning activities (such as download of standard configuration) on one or more NEs, utilizing the TL1 command files created by the TL1 macro builder feature, and broadcasting those files to multiple NEs of the same type. This feature saves you time by performing similar tasks on multiple NEs in one step, and by reducing the manual entry required in the creation of TL1 command strings.

Related information

See T 302, Broadcast TL1 Commands for how to broadcast TL1 commands.

Port Provisioning

Introduction

The Lucent Technologies DDM-2000 NEs can change the state of ports without issuing a *rept-dbchg* message. ITM SNC therefore cannot detect these changes. To ensure that you receive an accurate list of available AIDs when selecting ports to provision, first do a manual DNO (see T 321, Manually Initiate DNO) for the NE(s) that you plan to provision.

The list of available tributary AIDs on the port provisioning windows is also affected by whether the AIDs are cross-connected. Tributary AIDs that are not cross-connected do not appear in the list of available AIDs.

> **⇒ NOTE:**
> When cross-connections are added or deleted, the AID list in the port provisioning window is not updated automatically. To ensure that the AID list information is accurate, perform a manual DNO (see T 321, Manually Initiate DNO) on the NEs that have had cross-connections added or deleted prior to any port provisioning.

For port parameters that must be set consistently across several AIDs, these AIDs are displayed as "all" or "fn-a-all." By choosing one of these AIDS, you are setting the parameter for every AID that falls under that selection. For example, if you choose fn-a-all, it includes fn-a-1 and fn-a-2.

Port Configuration Discovery

There is generally a fixed relationship between circuit packs and their number and type of ports. Upon discovery of an NE, for ports of a fixed type, ITM SNC may automatically retrieve an NE's current set of ports and their type, or it may automatically retrieve an NE's current equipment and derive the set of ports and their type. (This is the automatic discovery portion of DNO.) Deriving the port information from the equipment is the preferred method. Regardless of the method of obtaining the information, ITM SNC maintains the ports and their type in its configuration management database.

For NEs managed via TL1, obtaining the port information directly from the NE is done via TL1 RTRV-*rr* commands (where *rr* represents the various port types). For NEs managed using CMISE, the NE's current port configuration is obtained via CMISE M-GET commands. The responses to these commands include the NE's current ports and their attributes.

Port Configuration Provisioning

ITM SNC provides a GUI-based function to enable you to select an NE and port or tributary, and view the current values of that port's or tributary's attributes.

Related information

For instructions on provisioning ports, see T 305, Provision NE Ports.

Equipment Configuration

Introduction   Different NE types are of varying complexity and configurability, ranging from single-shelf NEs at a single location to multi-bay and multi-shelf NEs that are flexible in their arrangements and may be distributed between rooms and floors of a central office or even distributed across central office locations and remote sites. The equipment window gives a set of hierarchically arranged equipment views. The shelf view is the lowest level view. There may also be a system view and a bay/line-up view, depending on how large and complex the NE is. The severity of the most severe alarm on a circuit pack is indicated by a color-coded area near the top of the circuit pack.

For this release, the Equipment Configuration window contains greatly improved functionality. Users can now browse deeper into the NE equipment hierarchy than was previously possible, and perform provisioning operations on provisionable components within the NE. The window also provides improved navigational conventions by supplying a hierarchical arrangement of the graphical representations of the equipment.

⇛ **NOTE:**
  If ITM SNC does not recognize a circuit pack on the requested shelf, the window shows that slot filled with unknown equipment. Circuit packs are not recognized when the vendor firmware is nonstandard or when the board is a new release that is not supported yet. If you see unknown equipment on the Equipment Configuration window, contact your system administrator or next level of support and report the unknown equipment.

Equipment Discovery and Inventory Maintenance   Upon discovery of an NE, ITM SNC automatically retrieves a network element's current equipment configuration and maintains this information in its database. This is the automatic discovery portion of DNO. An NE's equipment includes any item that it is able to report; for example, bays, shelves, and circuit packs. For network elements managed via TL1, the network element's current equipment configuration is obtained through TL1 RTRV-EQPT commands. For network elements managed using CMISE, the network element's current equipment is obtained through CMISE M-GET commands.

Equipment Graphical Display   To graphically depict the varying NE types effectively, ITM SNC decomposes them into different numbers of hierarchically arranged graphical displays. For example, with a single-shelf system only a single display at the shelf level is needed, and this shelf-level display is also a system-level display. On the other hand, another system may be composed of multiple bays containing multiple shelves, with the

bays arranged into multiple aisles. To effectively depict the this requires several levels of display: system (one or more line-ups), line-ups (one or more adjacent bays, with each bay containing one to three shelves), and shelves (each containing many circuit packs).

Equipment Provisioning

Older generation NE types have little or no configurability of their equipment entities (their bays, shelves, slots, or circuit packs). New generations of NEs, however, can be expected to have an increasing capacity for configurability in this area. ITM SNC supports equipment provisioning as needed for each NE type.

Some of the attributes reported on some equipment are provisionable. In addition, the equipment allows users to manually create new bays, shelves, and circuit packs. This system therefore has establish and remove functions that apply to bays, shelves, and circuit packs; and attribute modification functions for shelves, slots, and circuit packs. New bays and shelves are created by specifying and provisioning new bay and shelf IDs. New circuit packs are created by associating a circuit pack type and/or circuit pack qualifier with a circuit pack slot. New bays are also implicitly created by creating new shelves with Shelf IDs that imply a bay that does not currently exist. For example, if a shelf with ID 10-1 is added and there is not currently a bay with the Bay ID 1 in ITM SNC, that bay is automatically created and reported by the NE.

Related information

For instructions on viewing NE equipment configurations, see T 306, Provision NE Equipment Information (Display Equipment Provisioning Information).

Cross-Connections

Introduction

ITM SNC provides a graphical means of viewing and provisioning NE cross-connections via the Cross-Connection window. This window is designed to display connection termination points and cross-connections for a selected NE. This section provides information about cross-connection functionality and the Cross-Connection window.

Cross-Connection Functionality

ITM SNC provides the following major functions associated with the provisioning of cross-connections:

- Perform DNO on discovering an NE.

- Discover cross-connections as part of DNO.

- Include cross-connections as part of the system database.

- Provision cross-connections on demand from the GUI.

- Display status of cross-connections on the GUI.

- List cross-connections, including input and output tributaries, topology of the cross-connection, and the presence or absence of reservations.

- Modify cross-connections on demand from the GUI.

- Delete cross-connections on demand from the GUI.

- Update the database upon receiving autonomous database messages from the NE on addition, deletion, and modification of cross-connections.

- Log all requests/responses and autonomous database update messages.

- Provide user access from the GUI.

The Cross-Connection Window

The Cross-Connection window provides the user access to all cross-connection features. It contains an interface tailored to the large, modern cross-connection fabrics now supported by ITM SNC. The window (see T 310, Display the NE Cross-Connection Window for instructions on displaying the Cross-Connection window) consists of a menu bar, a toolbar, a status bar, a subnetwork explorer, and a main view. The main view area is further broken down into four port areas. This window is used for all cross-connection operations, including viewing, adding, modifying, and deleting cross-connections.

Toolbar

The Cross-Connection window contains a toolbar (at the upper left) that contains a series of buttons used for initiating different types of cross-connections.

After the cross-connection buttons, the next button in the toolbar is used to delete an existing cross-connection. (It is disabled until the user chooses a cross-connection that can be deleted.)

The next button is used to initiate a cross-connection modification. (It is disabled until the user chooses a cross-connection that can be modified. Note that for some NE types cross-connections cannot be modified.)

The next button is used for the show/hide mode. Click this button to show a cross-connection - click it again to hide the cross-connection.

The next button is for the Cancel function. Click this button when you have started a cross-connection and want to terminate the operation. (This button is disabled until you select a cross-connection type.)

The next button is for Toggle View. Click this button to change the number of port areas displayed in the view panel. Initially the view is set to Toggle to Eight, which shows eight port areas (and the contents of the pop-up menus in the explorer accommodate all eight ports). When you click the Toggle View button, the view changes to Toggle to Four, which shows four port areas (and the contents of the pop-up menus in the explorer accommodate four ports).

Status Bar

The status bar, at the bottom of the Cross-Connections window, provides the following information to the user:

■ The source and destination AID and the cross-connection type of a selected cross-connection in the cross-connection view area. (If more than one cross-connection is being displayed, the status bar uses the word *multiple*.)

■ The cumulative information about a cross-connection being added, as it is selected by the user.

■ Information about the status of add/delete/modify operations that have been requested.

Displaying Ports

Ports are displayed on the Cross-Connection window between the arrow buttons surrounding the main view area. (See T 311, Display Ports on the NE Cross-Connect Window for instructions on displaying ports in the main view area of the Cross-Connection window.) Top and Bottom port areas appear between the left and right arrow buttons, while Left and Right port areas appear between the up and down arrow buttons. You can click the up/down/left/right arrow buttons to change the view to the circuit pack or port group immediately preceding (up/left) or following (down/right) the currently displayed one. (Any circuit packs/port groups that are invalid in a port area in the cross-connection view are skipped over when you use the arrow buttons.)

Circuit packs and port groups always expand into one of the following *building blocks*.

- STS-1—contains only a single STS-1 worth of signal, with no access to lower-rate cross-connections

- STS-1/VT1.5—contains a single STS-1 worth of signal, with access to the corresponding 28 VT1.5s that reside within.

- STS-3—contains only a single STS-3 worth of signal, with no access to lower-rate cross-connections.

- STS-3/STS-1—this building block contains an STS-3 and allows access to the corresponding STS-1s that are accessible through that STS-3.

- STS-12/STS-3—this building block contains an STS-12 worth of signal, and allows access to both the STS-12 and the corresponding STS-3s. No access to the STS-1s is available.

- STS-12/STS-3/STS-1—this building block is the same as the previous, except access to the corresponding STS-1s is allowed.

- Any port group on a SLC-2000 DLC expands into a DS-0 building block.

Any building block that contains multiple layers has each layer of the building block as mutually exclusive to the layers above and below it. This means that if the building block is an STS-1/VT1.5, then the existence of a VT1.5 cross-connection makes the STS-1 unavailable, and any STS-1 cross-connection makes *all* of the VT1.5s unavailable.

Furthermore, in the STS-12/STS-3/STS-1 building block, an STS-12 cross-connection disables all STS-3 and STS-1 ports. An STS-3 cross-connection disables the STS-12 and the three STS-1s that are part of the cross-connected STS-3. Any STS-1 cross-connection disables the entire STS-12 and the single STS-3 of which the STS-1 is a part.

Cross-Connection Topologies

Cross-connection topologies supported by ITM SNC include the following:

- One-way point-to-point cross-connection

- Two-way point-to-point cross-connection

- Multicast cross-connection

- Path-switching and dual ring interworking cross-connections

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Deleting Cross-Connections

There are three scenarios where a request to delete a cross-connection will be *denied*:

1. A request to remove redlined cross-connections.

2. A request to remove a cross-connection from a tributary used in a loopback cross-connection.

3. A request to remove a cross-connection from a tributary used in a test access connection.

Related information

See T 316, Delete NE Cross-Connections—Graphical and T 317, Delete an NE Cross-Connection—Textual for instructions on deleting cross-connections.

Modifying Cross-Connections

ITM SNC allows you to modify various cross-connection information, including the source TID, destination TID, and circuit audit number.

Related information

See T 318, Modify NE Cross-Connections—Graphical and T 319, Modify NE Cross-Connections—Textual for instructions on modifying cross-connections.

Protection Groups

Introduction   Protection group management can include both equipment and port protection groups. For this release, however, only port protection is available. There are several types of protection strategies, including:

- 1x1 or 1+1 protection (where a service entity and a protection entity serve as a pair, with only one of them active at any given time)

- 1xN protection (where a single protection entity is shared by multiple service entities)

- 1,1 protection (where both entities are normally active, and either one is able to assume the functions of both in the event of a failure)

- 4-fiber BLSR protection

- UPSR protection

- unprotected entities (i.e., 0x1 protection)

Facility protection, and especially ring forms of protection, need to be coordinated at the network level. For example, all nodes and ports in a 4-fiber BLSR ring must be provisioned for 4-fiber BLSR protection consistent with the requirements for a 4-fiber BLSR ring. Thus, some forms of protection provisioning are most powerfully provided through management at the network level, while other forms (such as equipment protection provisioning) are true element level functions. For the next generation of network element types (which have configurable protection groups), ITM SNC will set up and manage ring protection groups on a network protection basis.

Different NE types support varying degrees of configurability in how their equipment can support protection groups. These can range from completely fixed protection based on equipage and physical location (a circuit pack in slot 2 is the protection circuit pack for a circuit pack in slot 1) to completely flexible protection where entities can be flexibly assigned to protection groups, the type of protection provided by the protection group is configurable, and the role of each entity in the protection group is provisionable (for service vs. protection).

Protection Group Discovery

ITM SNC discovers and manages ring (network) protection groups - these are the provisionable subnetworks over which the automatic path features operate. These network protection groups are the actual network protection groups that exist in the network.

To simplify the management view of the network, ITM SNC keeps only a single view of network protection groups. Because ITM SNC already maintains the actual network groups for rings, it keeps that view as its single network protection group view. With the addition of protection group management on ITM SNC, two additional capabilities are added to ITM SNC's provisionable subnetworks to manage them as provisionable network protection groups:

- Provide a user-visible and user-modifiable name to the protection group.

- Maintain the association of NE protection groups to the network protection group.

Provisioned network protection groups are identified by Ring ID, which is the only user-visible identifier for the protection group.

Path Management

Introduction   The path feature lets you define paths between NEs by grouping cross-connections together under a common user-specified name. This feature gives you control over the NEs in a path, the order of the NEs in which the path travels, and the types of cross-connections created or selected on the NEs in the path.

Cross-connections in paths are provisioned manually. Manual provisioning gives you complete control to individually specify each cross-connection at each NE that is part of the path. (An upcoming release will also include auto path provisioning.)

Path Creation   Creating a path follows these two key steps:

- Identify that you want to create a path and assign it a name.

- Select an NE from the ring that will contain the path.

See T 331, Add a User Path (Manual) for more instructions on adding a path manually.

In addition to adding paths, ITM SNC allows you to perform the following path management tasks. See the adjacent tasks for further instructions.

- View a path (see T 332, View User Paths)

- Copy a path (see T 333, Copy User Paths)

- Modify a path (see T 334, Display Path Modifications)

- Delete a path (see T 335, Delete User Paths)

⟹ **NOTE:**
Before creating paths, you should be familiar with the procedures outlined in the user/service manuals for your NE equipment. The procedures in the documentation are not a substitute for the skill and understanding of the process involved with creating paths in NEs. Neither this manual nor the system itself provides the test procedures necessary to verify the proper functioning of a newly-created path. You must implement the procedures from the appropriate user/service manuals.

Path Types

This system supports the following two basic path types:

- **Point-to-point path,** which cannot exceed two entry/exit points on a ring. The entry/exit points may be either simple add/drops at a single NE or Dual-Ring Interworking (DRI) connections involving two NEs. In this system, a ring is defined as any set of NEs that enables a closed path. The path may traverse multiple provisionable subnetworks (core rings and extensions). 0x1 cross-connections to ring extensions do not count toward the maximum of two entry/exit points in a protected path. DRI paths can be one-sided (also known as three-node interworking) or two-sided (also known as four-node interworking). DRI paths are a form of providing protected paths between rings.

- **Point-to-multipoint path,** which must contain an entry point and at least two exit points on a ring.

ITM SNC combines these two path types with the rate, directionality, and protection parameters to support various paths, including:

- Two-way point-to-point protected paths on path switched rings

- Two-way point-to-point unprotected paths on path-switched rings

- One-way and two-way point-to-point protected paths on line-switched rings

- One-way point-to-multipoint unprotected paths on path-switched rings

Dynamic Network Operations

Introduction
The Dynamic Network Operations (DNO) feature performs two major functions in ITM SNC:

- Subnetwork discovery
- Database synchronization

Subnetwork Discovery
The DNO feature retrieves the internal configurations of NEs, and for Lucent Technologies NEs, external connectivity relationships. This allows ITM SNC to automatically discover all NEs in a subnetwork as well as the trails between Lucent Technologies NEs where available. As a result, the subnetwork topology (NEs and trails) is automatically displayed on the Map window as soon as it is discovered.

When the subnetwork discovery aspect of DNO is executed on a per-NE basis, the neighbors of the target NE are also discovered.

Database Synchronization
The DNO feature synchronizes the system database with current configuration data from the NEs. The information that DNO gather from NEs includes:

- NE parameters
- NE equipment inventory
- NE port parameters
- NE port protection groups
- NE cross-connections

As part of subnetwork discovery, ITM SNC retrieves an NE's current equipment configuration and stores this information in the system database. NE equipment data can include bays, shelves, and circuit packs.

For certain NEs, you can select an NE and any single bay or shelf within the NE through the Network Element Explorer on the Manual DNO window, and then invoke DNO to retrieve the NE's current equipment configuration for that bay or shelf to update the system database. This simplifies DNO when bays and shelves are added to an existing NE.

Ways to Initiate DNO

There are three ways that the DNO feature is initiated in ITM SNC:

- Automatically—The DNO subnetwork discovery/database synchronization process is initiated automatically when an NE is discovered or added manually to the ITM SNC database.

- Manually—The DNO subnetwork discovery/database synchronization process is executed for the NE, when you request it. When you request a manual DNO for an aggregate, DNO is executed for all NEs in the aggregate.

- Scheduled—You can schedule DNO to be performed for one or more NEs on a daily, weekly, or monthly basis.

DNO Options

You can invoke DNO to perform automatic subnetwork discovery or database synchronization for one or more of the following: NE parameters, equipment inventory, port parameters, port protection groups, cross-connections. You can also invoke DNO to perform subnetwork discovery and resynchronize the system database for all data types.

Related Tasks

See the following tasks in the *User Tasks Manual*:

- T 321, Manually Initiate DNO

- T 617, Schedule DNO

Software Management

Introduction   The Software Management feature provides a set of functions that automates the process of transferring NE software from Digital Access Tape (DAT) or CD-ROM to the ITM SNC host machine, and downloading, activating, and copying software to NEs. The Software Management functions assist you in doing a generic software upgrade of a given NE type in the network. The Software Management feature also provides backup and restore functions to protect against data loss.

Software Management Functions   The Software Management functions are:

Executables

- NE Software Transfer
- NE Software Download
- NE Software Copy
- NE Software Activate
- NE Software Delete

Data

- NE Software Backup
- NE Software Restore

NE Releases/Types Supported

Software Management functions are supported for the following or later NE types/ releases, as shown in the following table.

Table 4-1.   NE Types Supported for Software Management Function

NE Type(s)	NE Release(s)
DDM-2000 OC-3 and SLC-2000 ARM Shelf	13.0
DDM-2000 OC-12	7.0
DDM-2000 FiberReach	3.0
FT-2000 ADR	8.1

⟹ **NOTE:**
NEs must be connected via OSI or TCP/IP to EMS.

Ways to Perform Software Management Functions

Some of the Software Management functions can be performed either on-demand or scheduled to be performed at a certain time or on a periodic schedule (backup is on a periodic schedule). As with other scheduled activities, you can specify the time/date and the number of times to retry a failed or incomplete Software Management activity, as well as the time interval between attempts.

The following table indicates how the various Software Management functions can be performed.

Table 4-2.   Methods of Performing Software Management Functions

Software Management Function	On-Demand	Scheduled
NE Software Transfer	✓	
NE Software Download	✓	✓
NE Software Copy	✓	✓
NE Software Activate	✓	✓

Software Management Function	On-Demand	Scheduled
NE Software Delete	✓	
NE Software Backup	✓	✓
NE Software Restore	✓	

Related Information

NE Software Transfer

The Software Transfer function allows you to transfer (import) an NE software from a removable storage medium (DAT or CD-ROM) onto the ITM SNC host machine's file system for eventual downloading to an NE.

Viewing Descriptive Information for an NE Software Release

Prior to transferring a new software release or after the software transfer, ITM SNC provides a function for viewing descriptive information for all software releases that are currently maintained on the ITM SNC host machine for a given NE type.

Maximum Number of Software Releases on ITM SNC Host

The maximum number of software releases for a given NE type than can reside on the ITM SNC host machine varies with the host type.

The following table shows the maximum number of NE software release copies by host type.

Table 4-**3.**   **Maximum Number of NE Software Copies by Host Type**

Host Type	Number of NE Software Release Copies Per NE Type
K580	3
K460	3
K380	3

If the host limit is exceeded, and you attempt to transfer a new software release, ITM SNC informs you of this and instructs you to delete at least one of the existing software releases. You can use the NE Software Delete function to do this. See T 326, Delete NE Software for instructions on how to delete NE software from ITM SNC.

Related Information

T 322, Transfer NE Software describes how to use the NE Software Transfer function.

NE Software Download

The Software Download function allows you to download a specific software release from the ITM SNC host to a specified NE. Software downloads are done by specifying the NE type and the software release to download. Software downloads are performed by ITM SNC via an IAO-LAN interface using NE-specific file transfer protocol.

Software Downloads for FiberReach NEs

When a software download is performed for a FiberReach NE, the older software is immediately replaced by the new software and the NE automatically resets, therefore not requiring a Software Activate. However, this also results in loss of communications with the FiberReach NE. It is recommended that when software has to be downloaded to all the FiberReach NEs in a ring, the order should be from the NE furthest from the ITM SNC host to the NE closest to the ITM SNC host. If the NE loses DCC connectivity, the software has to be downloaded on site from the CIT.

Verifying Software Downloads

When a software download is performed, ITM SNC checks if the release identified for the download is older than or the same version currently running on the NE, or if it is a release that is not supported by ITM SNC. If any of these conditions occur, ITM SNC informs you of this, and asks if you want to proceed with the software download anyway. You have the option of continuing with the software download or cancelling it. ITM SNC informs you of the status of the download. If the software download fails for some reason, ITM SNC issues an error message.

Related Information

T 323, Download Software Release to the NE describes how to use the Software Download function.

NE Software Copy

The Software Copy function allows you to copy software from a Lucent Technologies NE to one or more Lucent Technologies NEs of the same type.

Simultaneous NE Software Copies

The number of simultaneous NE-to-NE software copies (scheduled or on-demand) that can be performed depends on the ITM SNC host type. The following table summarizes the maximum number of simultaneous software copies that can be performed by host type.

Table 4-4.   Simultaneous Software Copies Allowed by Host Type

Host	NE-to-NE Software Copies per NE	NE-to-NE Software Copies (DDM-2000, FiberReach)
K460	15	1
K360	15	1
K580	15	1

Verifying Software Copies

When a software copy is performed, ITM SNC checks if the release identified for the copy is older than or the same version currently running on the destination NE(s). If either of these conditions occur, ITM SNC informs you of this, and asks if you want to proceed with the software copy anyway. You have the option of continuing with the software copy or cancelling it. ITM SNC informs you of the status of the copy. If the software copy fails for some reason, ITM SNC issues an error message.

Related Information

T 324, Copy Software from NE to NE describes how to use the Software Copy function.

NE Software Activate

The Software Activate function allows you to activate a specific software release on an NE. When new software is downloaded to an NE, it is placed in "standby" until it is activated; it then replaces the old software.

Simultaneous NE Software Activations

The number of simultaneous software activations (scheduled or on-demand) that can be performed depends on the host type. The following table summarizes the maximum number of simultaneous software activations that can be performed by host type.

Table 4-5.   Simultaneous Software Activations Allowed by Host Type

Host	NE Software Activations
K460	512
K360	128
K580	512

Software Activation for FiberReach NEs

The Software Activate function cannot be performed for FiberReach NEs, because the software is automatically activated when it is downloaded or copied to this NE type.

Verifying Software Activations

When a software activation is performed, ITM SNC checks if the software being activated is the same as the current version, older than the current version, or is currently not supported by ITM SNC. If either of these conditions exist, ITM SNC informs you of this, and asks if you want to continue with the software activation anyway. You have the option of continuing with the software activation or cancelling it. After a software activation request, ITM SNC loses the connection to the NE. If, after re-establishing the connection, ITM SNC determines that the software activation has failed for some reason, ITM SNC issues an error message.

Related Information

T 325, Activate NE Software describes how to use the Software Activate function.

NE Software Delete

The Software Delete function allows you to delete a specific software release for an NE type.

When software is deleted from ITM SNC, it is not recoverable. The only way to get the software back into ITM SNC is to reload it from a tape on CD-ROM. ITM SNC informs you of this prior to actually deleting the software. You have the option of continuing with the software deletion anyway or cancelling the deletion.

Related Information

T 326, Delete NE Software describes how to use the Software Delete function.

NE Data Backup

The NE Software Backup feature lets you perform an on-demand backup of an NE's provisioning data. The provisioning data includes port parameters and cross-connections. There are two types of backups that can be performed:

- Regular Backups
- Intelligent Backups

⟹ **NOTE:**
In Release 8.0, the user simply selects backup. ITM SNC always does the intelligent backup check, and proceeds accordingly.

Regular Backups

If the Regular Backup option is selected, all of the NE's current configuration data is backed up to a date/time stamped file.

Intelligent Backups

To avoid unnecessary redundant backups of NE data that has not changed since the last backup, ITM SNC checks the selected NE to make sure a backup is necessary. If there is no change in the NE's configuration status since the last backup, a backup is not necessary and you are informed of this and given a choice of performing the backup anyway or cancelling it. If you choose to do a backup anyway, a regular backup is performed.

Storage of Backup Data

NE backup data is stored in flat ASCII files with header information, including the NE type, software release, NE's TID, equipment/slot information, the ID of the user performing the backup, date/time of the backup, and the system release that created the backup.

Simultaneous Backups

The number of simultaneous NE backups (either on-demand or scheduled) that can be performed depends on the ITM SNC host type. The following table indicates the number of simultaneous backups that can be performed by host type.

Table 4-6.   Simultaneous NE Backups Allowed by Host Type

Host	NE Simultaneous Backups
K580	6
K460	6
K260	4
K360	4

If you attempt to perform more than the maximum number of simultaneous backups than can be performed for the ITM SNC host type, the new backup is not accepted and ITM SNC informs you that no more backups can be performed at the current time.

Alarms Present During Backups

If an on-demand NE backup is requested on an NE with alarms present, you are informed of this and given a choice of proceeding with the backup anyway or cancelling it.

Shelf Parameter Data for LCT NEs

The Shelf Parameter for LCT NEs, which defines the quantity of in-service shelves in an LCT and is set through the NE Provisioning window, is not part of the LCT NE's database. Therefore, it is **not** backed up and restored as part of the NE backup and restore processes. It is a system parameter and should be backed up as part of ITM SNC database backup. (This parameter *does* determine the number of LCT shelves to which ITM SNC backs up and restores data.)

Verify NE Backups

ITM SNC keeps you informed about the status of the NE backup in progress. If the backup fails for some reason, ITM SNC informs you of the problem via a pop-up message window.

Related Information

describes how to use the NE Backup function.

NE Data Restore   The NE Restore function allows you to restore NE data that was backed up using the NE Backup function.

When a backup or restore is in progress, ITM SNC prevents the execution of any command that may change the settings of NE parameters until the backup or restore is completed.

When a restore is requested, ITM SNC compares the NE type, software release, and equipment of the NE with the data in the selected backup file. If the NE type or software release does not match, a message is issued and you are given the option of continuing with the restore anyway.

Types of NE Restorals

There are two types of NE restorals that can be performed:

- Regular Restore
- Intelligent Restore

Regular Restore

A Regular Restore restores all backup data from the selected NE file, including parameters set to the default settings.

Intelligent Restore

If you select the Intelligent Restore option, ITM SNC compares each parameter setting from the backup file against its default value. If the current setting matches the default value, that parameter is excluded from the restore. If all parameters on a given command issued during the restore request match the defaults, that command is skipped during the restore process. Only parameters that do not currently match the default settings are set, thus reducing the amount of time it takes to restore the NE to the backup data.

Restoring NE Backup Data

The files that are created by the NE Backup function are accessible through the NE Restore function. ITM SNC stores up to seven files for each NE. When seven backup files exist and another backup file is created, the oldest backup file is removed.

Verifying NE Restorals

ITM SNC keeps you informed about the status of the NE restoral in progress. If the restoral fails for some reason, ITM SNC informs you of the problem via a pop-up message window.

Related Information

T 328, Restore NE Data describes how to use the NE Restore function.

Date/Time Synchronization

Introduction
Periods of time when an NE is out of service, as during a software upgrade, can cause the NE's date/time setting to be out of sync with the ITM SNC host and the other NEs in the network. Lack of date/time synchronization can create problems in determining the order in which alarms occurred on the network.

The date/time synchronization feature allows you to establish the correct time and date of the ITM SNC host's internal clock and to synchronize each NE's date/time setting with the ITM SNC host. This ensures correct date/time settings for the NE and accurate time reporting.

NE Time Zone
As part of the date/time synchronization feature, ITM SNC can take into account whether the NE is located in a different time zone from the ITM SNC ITM SNC host.

Standard Time and Daylight Savings Time
You can use the Spring Forward/Fall Back option to have ITM SNC automatically make time adjustments for Daylight Savings Time (Spring Forward) and Standard Time (Fall Back) when doing date/time synchronization for an NE, a group of NEs, an aggregate, or all NEs under system control, 20 NEs at a time or more, depending on system load. The Spring Forward/Fall Back option can be enabled or disabled, as needed. This option is enabled, by default. If the option is disabled for an NE, the NE's time is always set to standard time.

> **NOTE:**
> The Spring Forward/Fall Back option should be set by the system administrator.

Related Information

T 330, Enable/Disable Fall Back and Spring Forward in the *User Tasks Manual* explains how to set the Spring Forward/Fall Back option.

Ways to Perform Date/Time Synchronization
NE Date/time synchronization can be performed in three ways:

- Scheduled—NE date/time synchronization can be scheduled to be performed on a daily, weekly, or monthly basis. A scheduled date/time synchronization will only be done if the time difference between the NE and the ITM SNC host is more than 15 seconds.

■ Automatically—You can have ITM SNC automatically perform date/time synchronization on an NE when it is manually added or autodiscovered by ITM SNC, or when communications between the NE and the ITM SNC host are lost and then regained. Automatic date/time synchronization will be performed on an NE only if the time difference between the NE and system host is more than 15 seconds. Automatic date/time synchronization can be enabled or disabled; the default is enabled.

⟹ **NOTE:**
Automatic date/time synchronization should be enabled/disabled by the ITM SNC system administrator or a user with a privileged login.

■ Manually—Date/time synchronization can be performed on demand for an NE, a group of NEs, an aggregate, or all NEs under system control, up to 20 NEs at a time or more, depending on system load.

Related Information

T 615, Enable/Disable Automatic Date/Time Synchronization describes how to enable/disable automatic date/time synchronization.

T 329, Set NE Date/Time Synchronization describes how to manually initiate date/time synchronization.

Performance Management

5

Contents

Background

Introduction   The Performance Management features of the system allows users to collect Performance Monitoring (PM) data from certain NE types, as well as PM threshold information. Users can specify the NEs from which PM data is collected. The collected PM data can be viewed online through the GUI or exported to external systems for analysis and report generation.

Objectives   This chapter provides background and introductory information about Performance Management functions in the ITM SNC system. It includes available features and references to specific task-related instructions. After learning the information in this chapter, the user should be able to do the following:

- Enable the Performance Management feature for PM data collection.

- Administer the storing of PM data.

- View PM data.

- Generate PM data reports.

- Administer PM parameters.

Related tasks   For related tasks, see the series 400 (Performance Management) tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Related information   For related information, see Chapter 3, Fault Management.

Performance Management

Introduction

The Performance Management feature allows the system to retrieve, store, and export Performance Monitoring (PM) data from OLS 40G NEs and FT-2000 Large Capacity Terminals (LCTs) through GUI functions. This feature, which is enabled or disabled through the GUI, allows you to initiate performance monitoring of managed NEs. PM data can be collected from none, some, or all OLS 40G and FT-2000 LCT NEs in the network. This feature allows you to specify, on a per-NE basis, the type(s) of interfaces from which to collect PM data for analysis. PM data can be turned on or off for each NE. PM data can be collected in 15-minute and/or 1-day time intervals. PM data can be viewed online through the GUI or exported to an external reports system for more sophisticated reports and analysis.

The system also supports remote administration of performance parameters and thresholds through the Cut-Through feature. Performance exceptions are logged from the NEs on Threshold Crossing Alerts (TCAs), each time the administered threshold for these events is exceeded.

Enabling the PM Feature

The PM feature must be globally enabled before PM data can be collected from NEs. If the PM feature is not enabled globally, PM data cannot be collected even if PM data collection is turned on for an NE.

When the PM feature is globally enabled, the system periodically polls each NE that has PM data collection enabled by sending one or more RTRV-PM-RR TL1 commands to the NE.

Related Task

T 400, Enable/Disable the PM Feature describes how to globally enable or disable the PM feature through the GUI.

PM Data Collection

PM data collection can be enabled or disabled for an NE. You can also select the type of PM data to be collected (15-minute, 1-day, or both) for each port type on the NE, or disable PM data collection for a port type.

NEs are normally polled every two hours. Data polling is done by the system in such a way as to avoid overwhelming the network with PM data traffic.

Loss of Communications

If connectivity is lost to an NE during PM data polling, upon re-establishing the connection, the system resumes data collection, and polls for the oldest PM data

not yet collected, based on the value of the *OLDEST_TO_POLL* variable stored in the *pm_global* file, which can be changed by the system administrator.

For example, if the value of the *OLDEST_TO_POLL* variable is set to four hours and connectivity between an NE and the system is lost for three hours, the system resumes polling for PM data that is up to four hours old if it has not already been collected.

Related Task

T 401, Enable/Disable PM Data Collection describes how to enable or disable PM data collection for one or more port (data) types on an NE.

Storing PM Data   The system stores collected PM data in flat, compressed UNIX files. Each file is associated with a single NE and contains either 15-minute or 1-day PM data.

PM data can be stored in the system for 1 to 45 days. The default retention period for 15-minute data is 2 days. The default retention period for 1-day data is 45 days. The data retention period for both 15-minute and 1-day PM data can be specified through the Global PM Management option on the GUI.

PM files are kept for the set retention period, unless the files have to be overwritten due to insufficient data storage space. The system automatically deletes any PM data file when it is older than the retention period or there is a lack of storage space. If there is a lack of data storage space, the system deletes PM data files, starting with the oldest file first, until the storage problem is resolved.

Related Task

T 400, Enable/Disable the PM Feature explains how to specify the data retention period for either time interval.

Viewing PM Data   The system allows you to view the flat, compressed UNIX files that contain the PM data retrieved from NEs. The data consists of the TL1 responses gathered in 15-minute or 1-day intervals.

Related Task

T 402, View PM Data describes how to view PM data online through the GUI.

Collecting PM Threshold Information

The system also collects PM threshold information once a day from the OLS 40G and FT-2000 LCT NEs that have the PM feature activated by sending one TL1 command (for OLS 40G NEs) or a series of TL1 commands (for FT-2000 LCT NEs) to collect threshold data.

Threshold values for PM data are set via TL1 commands. The PM feature must be globally enabled to collect PM threshold information.

Generating PM Data Reports

PM data collected by the system over a two-day period can be automatically downloaded by Lucent Technologies' Integrated Transport Management Dynamic Network Analyzer (ITM-DNA), an external PC-based system which can produce various types of user-defined reports. PM data that is older than two days can be retrieved on demand by ITM-DNA. ITM-DNA downloads the PM data files using File Transfer Protocol (FTP), decompresses the files, and parses the TL1 responses. The downloaded PM data that is stored in the ITM-DNA database can be used to generate reports in a variety of formats, including tabular reports, line graphs, and bar graphs.

Types of PM Data

The system can be set up to collect PM data from OLS 40G and LCT interfaces. Refer to the respective NE hardware documentation for details about the types of PM data that can be generated.

Tracking PM Files

The system maintains a database table that keeps track of each PM data file collected over the last two days. This table is periodically accessed by ITM-DNA to determine the latest PM data to download for reporting purposes.

The system deletes an entry in this database table when it is older than two days.

If an NE is deleted, the system automatically removes any associated PM data and entries in this table.

Administering PM Parameters

Some of the parameters that are used by the system to manage the PM feature, such as the data retention period or the age of the data collected during polling, can be manually changed by the system administrator by editing the value of the corresponding variable in the *pm_global* file, which is found under */snc/config/pm*.

The following table shows the PM variables that can be edited, with their default values.

Table 5-**1.** **PM Feature Variables**

Variable	Description	Default Value
PM_COLLECT_STATUS	The current global setting of the PM feature. Value is On or Off.	Off
RETENTION_FOR_PM	The global data retention period for 15-minute PM data (days).	2
RETENTION_FOR_DAY	The global data retention period for 1-day PM data (days).	45
POLL_SESS_FREQ	The frequency that the system polls the NEs for PM data in a session (minutes).	120
OLDEST_TO_POLL	The age of the oldest PM data that can be collected by the system from the NEs (hours).	4
MAX_FILE_TO_POLL	The maximum number of PM data reports for which the system can poll NEs in one session.	20
TOTAL_FILE_SYSTEM	The total number of system host machines for which PM data is being collected.	1
PM_FILE_SYSTEM_0	The directory that is currently defined for PM data collection.	*/reports/pm*

Remote Administration of Parameters and Thresholds

The system supports the remote administration of performance parameters and thresholds on NEs, such as TCAs. NEs are provisioned with default values for these parameters and thresholds. These default values can be changed by issuing the applicable TL1 commands using the Cut-Through feature. The performance parameters are also part of the NE backup files.

Exception Reporting

The system provides exceptions by logging TCAs received from the NEs. TCAs, in the form of report events, are generated every time an administered performance threshold is exceeded in the NE. In addition, the system EPT Threshold capability flags the TCA rate when it exceeds the system threshold.

TCAs and alarms are stored in the system database and are available for online queries for a user-settable duration (up to 45 days). Within this period, users can query the entire network or a single NE for a date/time range. This information is available in the database and can be saved to tape or disk for later retrieval.

Security Management

6

Contents

Background

Introduction The Security Management features of the system allow administrative control over user access to managed NEs and the functions that a user can perform. There are also functions for administering user and NE passwords.

Objectives This chapter provides background and introductory information about Security Management functions in the ITM SNC system. It includes available features and references to specific task-related instructions.

Related tasks For related tasks, see the series 500 (Security Management) tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Related information For related information, see Chapter 7, Administration.

Password Administration

Introduction   The ITM SNC GUI provides functions for administering user passwords and NE passwords.

Changing an EMS User's Password   The Change Password function is the only Administration function that is available to the ITM SNC application user. An ITM SNC user password can be changed at any time. The system verifies that the old password entered matches the one stored in its database for the user.

An ITM SNC user's login, however, can only be changed by the ITM SNC administrator. See Users under Network Security in this chapter for additional information about changing ITM SNC user logins.

Related Task

T 500, Change Your User Password describes how to change a user's password.

Global Password Administration   NEs have default login/passwords that are defined at the manufacturer prior to shipment. The NE login/password is required by the ITM SNC user to gain access to the NE. The system GUI allows you to modify an individual NE's primary and backup password through the Add/Modify an NE window or via Cut-Through mode. However, if the network has a large number of NEs, this can be a very time-consuming process.

The Global Password Administration feature, which is available through the GUI, allows you to change the primary and/or backup passwords for a number of NEs at the same time. This feature allows global password change for:

- Individual NEs (by TID)

- All NEs

- NEs by type

- Aggregate (collection of NEs)

Changes to the primary and/or backup NE passwords are sent to the selected NE(s) and the local ITM SNC database is automatically updated with the password information.

The global password update process can be aborted at any time while the Global Password Administration window is open.

Only one person can use the Global Password Administration feature at a time.

Related Task

T 501, Globally_Administer_NE__Passwords describes how to use the Global Password Administration feature for changing NE passwords.

Network Security

Introduction   The ITM SNC system provides network security by allowing an administrator to define users, the extent of their access to NEs in the network, and capability of performing certain functions and commands through the system.

Levels of access are defined by:

- User/password administration and NE/command access
- Command Groups
- Target Groups

Users   A user is identified by a login and password and provided access to the functions and features of the system as defined by the administrator.

The ITM SNC administrator can create, delete, and modify users (by user login) and their access permissions. Before any user can access the system, the user must be assigned a login and appropriate Target Group and Command Group access permissions.

The administrator can also copy the login group settings, Command Group, and Target Group settings from an existing user to a newly defined one.

Changing a User's Login

To change a user's login, the system administrator must first delete the user and then re-enter the user in the system with a new login.

Related Tasks

T 502, Add a User describes how to add a user's login/password and define NE/command access permissions.

T 503, Modify a User describes how to change a user login's settings and access permissions.

T 504, Delete a User describes how to delete a user login from the system.

Command Groups   A Command Group, also known as a user class, is a collection of EMS and NE commands that a specified user is allowed to enter through the system GUI. Each user is assigned to one and only one Command Group.

The system has two pre-defined Command Groups:

- All Commands—set up for the ITM SNC system administrator

- None—set up with no commands

The ITM SNC administrator can add, modify, or delete Command Groups. Additional Command Groups can be defined as needed by the administrator.

The administrator can also copy the contents of an existing Command Group to a newly defined one.

Related Tasks

T 505, Add a Command Group describes how to add a Command Group.

T 506, Modify a Command Group describes how to change a Command Group once it has been created.

T 507, Delete a Command Group describes how to delete a Command Group from the system.

Target Groups

A Target Group is a collection of NEs that a user can access. Together with Command Groups, they define user permissions and provide network security. Each user is assigned to one and only one Target Group.

The system has two pre-defined Target Groups:

- All Targets—provides access to all NEs in the network

- None—denies access to any NEs

The ITM SNC administrator can add, modify, or delete Target Groups. Additional Target Groups can be defined as needed by the administrator.

The administrator can also copy the contents of an existing Target Group to a newly defined one.

Related Tasks

T 508, Add a Target Group describes how to add a Target Group.

T 509, Modify a Target Group describes how to change a Target Group once it has been created.

T 510, Delete a Target Group describes how to delete a Target Group from the system.

Administration

7

Contents

Background

Introduction   Certain functions in the ITM SNC system should be performed by the ITM SNC system administrator. These administration activities include:

- Setting up the network model and ITM SNC GUI Map window to reflect the physical network

- Automatic date/time synchronization of the ITM SNC host with its managed network elements

- Monitoring the status of processes in ITM SNC

- Scheduling certain administrative and maintenance activities for ITM SNC

Objectives   This chapter provides background and introductory information about Administration functions in the ITM SNC system. It includes available features and references to specific task-related instructions.

Related tasks   For related tasks, see the series 700 (Administration) tasks in the *User Tasks Manual* or look up individual tasks in the Task Index.

Related information   For related information, see Chapter 6, Security Management.

Network Element Administration

Introduction   The ITM SNC system administrator inputs subnetwork and network element information so the GUI Map window reflects the physical network. With this information, the ITM SNC application constructs a network model, which is its working view of the physical network.

Subnetworks

A subnetwork is a group of interconnecting and interrelated network elements. The most common connotation is a SONET subnetwork, in which the network elements have Data Communications Channel (DCC) connectivity.

The Network Model

Creating a network model allows the Element Management System (EMS) to communicate with the network and each of its components. When network elements are configured through the ITM SNC configuration windows, the network model is assembled dynamically by the ITM SNC Dynamic Network Operations (DNO) feature.

Network Elements   A network element (NE) is the basic telecommunications entity managed by ITM SNC. An NE is a grouping of physical equipment that provides communications services over a network. An NE is both a node in a larger network of NEs and is a complex network system itself. The software in an NE must manage both the physical (equipment) components of the NE and the network system provided by the NE.

NEs can be added, modified, or deleted through the ITM SNC GUI. When any NE changes to the network are made, DNO must be run to update the ITM SNC database.

Types of NEs   Network elements vary by size, equipage, function, communications protocol supported, signalling/transmission rates, interoperability, number and types of physical/electrical interfaces (ports), and cross-connection capabilities.

The NEs supported by ITM SNC include:

- Lucent Technologies DDM-2000
- Lucent Technologies DDM-2000 FiberReach
- Lucent Technologies FT-2000 Add/Drop Ring (ADR)
- Lucent Technologies FT-2000 Large Capacity Terminal (LCT)

■ Lucent Technologies Optical Line System (OLS) 40G

■ Lucent Technologies SLC-2000

■ Fujitsu FLM 6, FLM 150/150+, FLM 600, FLM 2400

Data Communications Interfaces

The ITM SNC communication interface is partitioned into two parts: one that connects with NEs (southbound) and one that connects with external OSs (northbound). The southbound interface supports TCP/IP over OSI, X.25, and OSI-based connections to NEs. The northbound communication provides external OS to NEs communications over an Intra-Office Local Area Network (IAO-LAN) environment, via ITM SNC. Northbound communications support X.25 and TCP/IP connectivity as well as asynchronous interfaces.

Northbound Communications

The X.25/Transaction Language One (TL1)-based interface to external OSs provides bi-directional communication of messages from maintenance and surveillance OSs to/from ITM SNC to the NEs. When the southbound interface is IAO-LAN based, ITM SNC functions as a Gateway Network Element (GNE). The EMS parses messages received from external OSs, extracts the TIDs and passes them together with the message objects to the IAO-LAN. The TID Address Resolution Protocol (TARP) function of the IAO-LAN translates the TID into the NE's Network Services Access Point (NSAP) address, and routes the message to the appropriate NE. Conversely, ITM SNC routes command/response and autonomous messages from NEs to external OSs.

For the customer who has or has plans to implement the Telecommunication Management Network (TMN) architecture, ITM SNC fulfills the role of an EMS, performing the element management functions for the SONET NEs. ITM SNC also provides standard northbound interfaces to network management systems, such as Lucent Technologies' Integrated Transport Management Network Module (ITM NM). ITM SNC supports a Secure Asynchronous Alarm Interface (SAAI) northbound interface to service management systems, such as Lucent Technologies' Integrated Transport Management Customer Network Controller (ITM CNC), and a northbound TL1 interface to external customer provisioning and surveillance operations systems (OSs).

Southbound Communications

ITM SNC supports concurrent X.25 and OSI-based communications with NEs. Depending on the NE types, the communications can be either X.25 or over an OSI/LAN, but not at the same time, to the same subnetwork.

The choice of using an OSI-based instead of an X.25 Packet Switched Network (PSN) for EMS-to-NE communications depends on the NE type and release. The OSI option is available for the following NE releases (or later):

- Lucent Technologies FT-2000 Release 8.0

- Lucent Technologies DDM-2000 OC-3 Release 13.0

- Lucent Technologies DDM-2000 OC-12 Release 7.0

- Lucent Technologies DDM-2000 FiberReach Wideband Shelf (WBS) Release 3.0

X.25-Based Communications

ITM SNC supports both X.25 direct and X.25 network connections to NEs. While direct X.25 connectivity is supported, ITM SNC to NE communications are generally done through an NE in a subnetwork serving as the Gateway Network Element (GNE), over an X.25 Packet Switched Network (PSN). The customer chooses the type of link concentration equipment which forms the X.25 PSN necessary for communications with the GNEs. ITM SNC supports a TL1 over X.25 southbound interface that uses an assigned GNE to provide the protocol conversion from TL1 over an X.25 short stack to encapsulated TL1 over the 7-layer OSI stack using the SONET DCC.

Gateway Network Element

A Gateway Network Element (GNE) is an NE that acts as the "gateway" or intermediary node for establishing communications between ITM SNC and the other NEs in a subnetwork. The GNE has X.25-based communications with the ITM SNC host. When a message is received from the ITM SNC host, the GNE sets up OSI associations with its associated NEs and forwards the addressed message to the intended NE. The GNE is also used by ITM SNC to autodiscover all NEs in the OSI-based subnetwork with DCC connectivity.

User-Definable Virtual Circuits

When you add a GNE using ITM SNC, or delete an NE and re-add it back into the ITM SNC host database as a GNE, you can select up to three supported three X.25 virtual circuits (VCs) for communications between the host machine and the GNEs.

Each of the VC connections may be set up as a permanent virtual circuit (PVC) or switched virtual circuit (SVC). You can also specify the purpose of each VC. The recommended configuration is two VCs—one for autonomous messages and one for command/response messages.

When the choice is to use three VCs, a separate VC can be configured for:

- command/response messages

- autonomous maintenance messages and alarm messages

- autonomous database change messages and provisioning commands/ responses

Either or both the autonomous maintenance message and autonomous database change/provisioning functions may share the command/response VC.

Cost-effective SVCs (instead of PVCs) can be configured for non-critical command/response functions.

The GNE maps its OSI associations to each of the subtending NEs so that they use the same VCs for the same functions as are used for the GNE. For example, if one VC is used form command/response messages to the GNE and another VC is used for autonomous messages from the GNE, those same VCs are used for messages to and from the NEs.

X.25 Subnetwork Discovery

When a GNE is added to the database and DNO is performed on the GNE, ITM SNC sends a TL1 RTRV-NEIGHBOR command (or its NE--based equivalent) to the GNE to discover any NEs that are connected to the GNE. If the GNE reports connections to any NEs that are not currently in the ITM SNC database, ITM SNC adds the NEs under *that* GNE and queries the newly discovered NEs recursively until all NEs with DCC connectivity are discovered to complete the network topology.

Any NEs that are not disovered through the DNO process or non-Lucent Technologies NEs must be manually added to the ITM SNC database to complete the network model.

Non-Managed Devices

NEs that are not managed by ITM SNC are treated as "non-managed devices" and are added during the autodiscovery process to complete the network model and to avoid repeated attempts by ITM SNC to log into these NEs.

Dual GNEs

ITM SNC can support a second, optional physical connection to a subnetwork for added reliability. For each subnetwork of NEs, an ITM SNC administrator can add multiple GNEs and then identify a GNE association, consisting of a primary and secondary GNE pair of compatible GNEs, which operate in an active/standby arrangement. The secondary GNE takes over communications with the EMS host if there is a loss of communications with the primary GNE. ITM SNC monitors the status of its X.25 links and virtual circuit connections to each GNE. ITM SNC automatically transfers communications to the standby GNE whenever an X.25 link to the active GNE is down.

The ITM SNC administrator can also manually switch the active and standby GNEs.

GNE Association Management

The ITM SNC administrator can add or delete GNE associations as needed. The administrator can also manually swap the primary GNE and secondary GNE in the association.

Deletion of GNE Associations

The ITM SNC administrator can remove the association (relationship) between GNEs. To delete either GNE in a GNE association, the administrator must delete the association first. When a GNE association is deleted, the RNEs in the subnetwork remain connected to the currently active GNE.

Related Tasks

T 609, Add a GNE Association describes how to add a GNE association.

T 610, Switch Primary/Secondary GNEs describes how to switch the active and standby status of the GNEs in an association.

T 611, Delete a GNE Association describes how to delete a GNE association.

Multiple Active GNEs

ITM SNC also supports multiple active GNEs (or multiple primary/secondary GNE associations) to avoid potential data traffic congestion in large X.25-based subnetworks with up to 256 NEs. Functions in the ITM SNC GUI allow an administrator to manually add multiple GNEs to a subnetwork and then manually reassign the NEs in the subnetwork to GNEs for load balancing. A GUI function alllows an administrator to display the GNE/RNE relationships and move RNEs between GNEs of a subnetwork to redistribute the data traffic load.

Related Tasks

T 605, Add a Subnetwork Name/Alias describes how to create a subnetwork name and alias. Once a subnetwork has been created, you can assign one or more GNEs to it.

T 606, Modify a Subnetwork Alias describes how to change a subnetwork's alias.

T 607, Delete a Subnetwork Name/Alias describes how to delete a subnetwork name and alias.

T 608, Associate Remote Network Elements with Gateway Network Elements describes how to view GNE/RNE associations and how to reassign RNEs to a another GNE in the same subnetwork.

**OSI-Based
Communications**

The EMS IAO-LAN interface provides an OSI standard, higher-speed communcations path to NEs. It enables the reduction of performance bottlenecks by providing faster communications between the EMS and NEs, and also allows functions such as remote software download. The OSI/LAN interface provides up to three high bandwidth communication paths, or OSI associations, to NEs. This communication model is based on the standard 7 layer OSI stack reference model.

For increased system availability, the EMS supports IAO-LAN redundancy. The EMS is connected to a subnetwork of NEs via two separate IAO-LAN connections/hubs. Both connections are active. In the event that one IAO-LAN connection fails, the EMS detects the failure and automatically switches to the other connection.

ITM SNC as TL1 GNE

When the soutbound interface between ITM SNC and the TL1 NEs is a direct IAO-LAN connection to the subnetwork, the EMS functions as a TL1 GNE for northbound OSs. All managed NEs in the same subnetwork may communicate with the EMS via the direct IAO-LAN connection or via DCC connections to the "point of attachment" NEs that are directly connected to ITM SNC.

As a TL1 GNE, the ITM SNC performs the following southbound functions:

- Establishes and manages OSI associations (connections) to NEs

- TID-to-NSAP translation by using TARP protocol

- TL1 message encapsulation

➡ **NOTE:**
The TL1 GNE function does not apply to NEs using CMISE application services.

OSI-Connected NEs and Subnetwork Discovery

When any NE with a direct OSI/LAN connection to ITM SNC is manually added to the EMS database, it can be used as the "seed NE" through which the EMS can automatically discover NEs in the subnetwork to complete the network model. When the NE is added and DNO is executed, ITM SNC issues a RTRV-MAP-NEIGHBOR command (or its NE equivalent) to the NE and discovers all Lucent Technologies NEs and other devices connected to the network. The EMS obtains the NE type from the device; in some cases, the device may be a router or similar equipment not managed by the EMS.

Any NEs that are not disovered through the DNO process or non-Lucent Technologies NEs must be manually added to the ITM SNC database to complete the network model.

ITM SNC can send messages to NEs that are not part of the same network as the "seed NE" by virtue of the TARP method of broadcasting messages and routing tables that are contained in each NE.

Non-Managed Devices

NEs that are not managed by ITM SNC are treated as "non-managed devices" and are added during the autodiscovery process to complete the network model and to avoid repeated attempts by ITM SNC to log into these NEs.

NE Application Services

NEs are managed by ITM SNC through the issue and receipt of alarm, provisioning, and autonomous event messages in the form of TL1 commands.

X.25/TL1 Messages

For X.25/TL1-based communications, southbound TL1 command/responses from the EMS to the NEs are handled by the TL1 Manager.

The Connection Manager Process

The Connection Manager (CM) process centralizes the functions of sending, receiving, and routing messages, and managing the connections needed for responses and autonomous messages going in, and coming from, the CMISE and TL1 Southbound subsystems.

Adding NEs

The following table shows the information that must be identified before adding an NE to the EMS, by communication type.

Table 7-1.   Required Information for Adding an NE

X.25-Connected NE	GNE (X.25)	OSI- Connected NE
TID	TID	TID
NE Type	NE Type	NE Type
Valid NE login/ password	Valid NE login/ password	Valid NE login/ password
Valid backup NE login/password	Valid backup NE login/password	Valid backup NE login/password

X.25-Connected NE	GNE (X.25)	OSI- Connected NE
TID of GNE	X.25 Interface (PSN port)	Number and Type of OSI Associations
	Virtual circuit information (PVCs, SVCs, PVC Logical channel numbers, SVC X.121 address)	NSAP Address

Running DNO and Manually Adding NEs

DNO must be run to update the ITM SNC database with complete information about a newly added NE. When manually adding an NE, ITM SNC prompts if you want to perform DNO on the newly added NE to update the database. You can run DNO immediately, initiate DNO manually, or schedule DNO to be performed at a later time, to update the database for the added NE.

If you are adding a GNE and are using the Multiple GNE feature, you should not run DNO until all GNEs have been added for the subnetwork.

Adding an X.25 GNE

When you are adding a GNE, you must select a subnetwork to which the NE will be associated. The first NE that you add for a subnetwork must be the GNE.

Related Tasks

T 600, Add a Network Element—X.25 Communications describes how to add an X.25-connected NE.

T 601, Add a Network Element—OSI Communications describes how to add an NE that communicates with the EMS over an OSI/LAN.

T 602, Add a Gateway Network Element describes how to add a GNE for X.25-connected NEs.

T 605, Add a Subnetwork Name/Alias describes how to define a subnetwork alias.

T 321, Manually Initiate DNO describes how to manually initiate DNO.

T 617, Schedule DNO describes how to schedule DNO for an item.

Modifying NEs   Some of an existing NE's parameters can be modified in the ITM SNC database. The following table shows which fields can be modified, by NE communications type.

Table 7-2.   Modify NE Fields

X.25-Connected NE	GNE (X.25)	OSI-Connected NE
Alias	Alias	Alias
NE Type	NE Type	NE Type
NE logins/ passwords	NE logins/password	NE logins/ passwords
Time Zone	Time Zone	Time Zone
Alarm Throttling options	Alarm Throttling options	Alarm Throttling options
GNE	Subnetwork	OSI associations, association types
	X.25 interface	
	PVC,SVC settings	NSAP address (except for Reserved and SEL fields)

Secondary GNE in a GNE Association

If an X.25-connected NE is defined as a secondary GNE in a GNE association, you must first delete the GNE association before modifying the following communication fields:

- Choose X.25 Interface
- Number of Virtual Circuits
- Virtual Circuit Fields
- SVC X.121 Address

Related Task

T 624, Modify a Network Element describes how to modify an NE.

Deleting NEs

An NE should be deleted only when it is to be physically removed from the network. To "hide" an NE from a group of users, you can remove the NE from the users' Target groups. Removing an NE from a Target group causes the NE to be removed from the Map window, Alarm Summary window, and other windows that are used by the Target group users, but the NE remains in the ITM SNC database and is accessible to other Target groups.

To delete a GNE in an X.25-connected network, you must first delete all of the RNEs that communicate with ITM SNC through the GNE. You must also delete a GNE association before you can delete either GNE in the pair.

Related Task

T 625, Delete a Network Element describes how to delete an NE.

Automatic Date/ Time Synchronization

The NE date/time synchronization feature sets up the NE's date/time to match the date/time of the EMS host. The ITM SNC system administrator, or a user with a privileged login, can enable or disable the Automatic Date/Time Synchronization feature. When this feature is enabled, the system performs date/time synchronization automatically when:

- An NE is added to the network or an NE is autodiscovered by the EMS for the first time
- Re-establishing communications with the NE after the communications link is down

Automatic date/time synchronization changes the date/time on the NE only if the time difference between the NE and ITM SNC is more than 15 seconds.

This feature can be enabled or disabled through the GUI. It is enabled, by default.

Related Task

T 615, Enable/Disable Automatic Date/Time Synchronization describes how to enable/disable automatic date/time synchronization.

Aggregates

An aggregate is a collection of related NEs that is user-defined as needed to streamline system monitoring and other management functions. Aggregate definition allows a large number of NEs to be concisely displayed and monitored on the Map window's graphical representation of the network. Aggregates can "own" or contain other aggregates.

Aggregates can be displayed on the Map pane display and can be expanded on the Map window pane or Subnetwork Explorer whenever necessary to display all

of its members. You can generate aggregate-specific alarm summaries, alarm logs, and command/response logs.

Aggregate Management

Aggregates can be added, modified, or deleted. To create an aggregate, you assign a name and an alias to the aggregate and then add NEs or other aggregates to the newly created one, using functions on the ITM SNC GUI.

Aggregate Alarms

The color shown in the center of an aggregate icon displayed on the Map window pane or Subnetwork Explorer indicates the highest severity alarm of a member NE or aggregate. If any member NE has the Alarm Throttling feature enabled, and the number of alarms has passed the Alarm Throttling level, then the color in the the icon reflects the level of alarms being throttled, with the last known highest severity alarm color shown in the aggregates's border.

Related Tasks

T 612, Add an Aggregate describes how to add an aggregate and how to add or change the members of the aggregate.

T 613, Modify an Aggregate describes hot to change an aggregate's name or alias.

T 614, Delete an Aggregate describes how to delete an aggregate and reassign its members to another aggregate.

Trails

Trails are physical links between NEs or aggregates. They are represented graphically on the Map window pane display of the network as solid lines between the NE/aggregate symbols.

Autodiscovery of Trails

Most optical trails between identical Lucent Technologies NEs are configured automatically by the DNO feature and autodiscovered when the network topology is displayed on the Map window after DNO is run. Creation of the network model - identifying the NEs, deriving the trails between them, and retrieving the internal configuration information - is performed automatically by ITM SNC through communication with the NEs.

User-Defined Trails

If the DNO process does not automatically discover trails between NEs, the trails must be manually entered through the GUI. User trails can be manually added between any two trail termination points (TTPs) on any type of NE. Generally,

there are many more TTPs on all NE types than those for which trails are automatically discovered.

Deletion of Trails

Autodiscovered trials cannot be deleted manually. Autodiscovered trails are deleted automatically if the link is physically disconnected in the network. User-defined trails have to be manually deleted through the GUI. However, if an NE at one end of a user-defined trail is deleted, the trail is removed from the Map window display but remains in the ITM SNC database. In this case, the trail should be deleted; otherwise, the related NE information may still appear on the View Trail List window.

Trail Alarms

Trails can generate alarms. When Access Identifiers (AIDs) for equipment in the NE are provided by ITM SNC or selected when a trail is manually added, the EMS receives alarms from the trail. Trail alarm data is available through the Trail Alarm Summary window and the Trail Alarm List.

Related Tasks

T 603, Add a Trail describes how to manually add a trail.

T 604, Delete a Trail describes how to manually delete a trail.

Scheduling Tasks

Introduction Many of the administrative functions that are performed on-demand can also be scheduled to be done periodically, and/or a specific time through the GUI.

Activities That Can Be Scheduled The following tasks can be scheduled:

- DNO
- NE Software Download
- NE Software Activate
- NE Software Copy
- NE Date/Time Synchronization
- NE Backup

Scheduling Methods Tasks can be scheduled to be performed:

- On a one-time basis
- Periodically (daily, weekly, monthly, one every x months)

The NE Software Download, NE Software Copy, and Software Activate functions are scheduled to be done on a one-time basis. The DNO, NE Date/Time Synchronization, and NE Backup Functions are scheduled to be done periodically.

Retrying Scheduled Tasks The Scheduler software allows you to specify the number of times to automatically retry a scheduled task that did not complete or failed due to loss of communications with the NE or some other reason.

You can also specify the timer interval between retries. The retry interval timer starts on receipt of the failure response by the scheduled task server for the task type. The system attempts to complete the failed scheduled task the number of specified times.

Each failed scheduled task is logged in a task-specific error log in the *$SCHLOG* directory.

Scheduling Simultaneous Tasks

The number of tasks that can be scheduled simultaneously depends on the task type and the ITM SNC host server size.

If the number of tasks that you schedule to be performed in the same timeframe exceeds the maximum number allowed, ITM SNC informs you of the next available timeslot for scheduling the task. The system calculates the next available timeslot based on the number of tasks already scheduled and the process duration of each task type. The process duration can vary with the NE type for which the task is being performed. For example, a DNO for most NE types takes approximately 30 minutes. Depending on the size and equipage of an NE, however, a DNO can take up to 180 minutes.

Modifying and Deleting Scheduled Tasks

You can also modify and delete scheduled tasks. However, if a scheduled task is already in progress, you cannot modify it.

For scheduled software downloads and DNOs, if you attempt to delete a task that is already in progress, a warning message is issued, asking if you want to continue with the deletion. If you indicate that you want to delete the in progress job, the job is terminated and is removed from the scheduled list.

⚠ **CAUTION:**
 Deleting scheduled DNO requests can result in database discrepancies between the EMS database and the network configuration. Interruption of a software download already in progress can result in NE software problems.

Related Information

For specific information on scheduling tasks, refer to the following tasks in the *User Tasks Manual*:

- T 616, Schedule NE Date/Time Synchronization
- T 617, Schedule DNO
- T 618, Schedule NE Data Backup
- T 619, Schedule NE Software Download
- T 620, Schedule NE Software Copy
- T 621, Schedule NE Software Activation
- T 622, Modify a Scheduled Task
- T 623, Delete a Scheduled Task

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System Logs

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Contents

Background

Introduction   ITM SNC keeps track of certain information regarding system performance and actions. This information is stored in logs, and may be filtered and viewed by the user. The process of collecting, storing, and displaying this information is called Log Management. The following logs are maintained:

- **Network Alarm/Event Log**—This log stores a history of all the alarms and events received from the network elements as a result of unexpected behaviors by an NE.

- **Network Notifications Log**—This log stores notifications from NEs on database changes, protection switching, and other NE-related activities.

- **Network Command/Response Log**—This log stores all commands and responses, except retrieval commands and responses (for example, RTRV-rr) that are originated from and received by ITM SNC. The user ID information and user interface information (GUI, cut-through, X.25, TCP/IP, or dial-up) are also logged.

- **EMS Alarm Log**—This log stores alarms originated by system on all system hardware and/or software-related unexpected behaviors detected by ITM SNC itself.

Log Management provides the following four functions:

- **Logging**—logs messages and data into the system database or a flat file.

- **Browsing**—provides GUI functionality for the user to browse the messages and data.

- **Filtering**—filters log data to provide only desired data.

- **Purging**—purges old log messages from the system database or temporal log files generated by system modules.

Related tasks   For related tasks, see the 700 series of tasks in the *User Tasks Manual*, or look up log entries in the on-line index.

System Logs

Introduction

This section provides information about each of the system logs and how they gather information. See the 700 series of tasks in the *User Tasks Manual* for instructions on how to display and use each of the system logs.

Network Alarm/ Event Log

Use the Network Alarm/Event Log to view, save, and print important alarm and event information. ITM SNC logs and stores various alarms and non-alarm events as listed in the appropriate NE documentation.

The user can filter the Network Alarm/Event Log on certain parameters, including start date/time, end date/time, TID, aggregate, EPT, alarm/event type, and severity. The maximum number of days for which alarm/event data can be displayed is 45.

Related information

See T 700, Display and Use the Network Alarm/Event Log for instructions on using the Network Alarm/Event Log.

Network Notifications Log

ITM SNC logs the following notifications/events in the Network Notifications Log:

- The completion (or noncompletion) of an automatic database backup (from primary NVM to secondary).

- Any change in the system database.

- The autonomous removal from service of an administrative or data link.

- Automatic and manual (user-initiated) equipment protection switches, synchronization mode switches, and system timing reference switches.

The user can filter the Network Notification Log on certain parameters, including start date/time, end date/time, TID, aggregate, and notification type. The maximum number of days for which network notification data can be displayed is 45.

Related information

See T 701, Display and Use the Network Notifications Log for instructions on using the Network Notifications Log.

**Network
Command/
Response Log**

All commands that are formulated by internal subsystems as a result of a user operation from the GUI are logged to the Command/Response Log. (The one exception is retrieval commands, which are left out for performance reasons.) ITM SNC provides a user interface parameter for each logged command from all interface types. The possible values for the parameter are GUI, cut-through, X.25, TCP/IP, and dial-up.

The system administrator is allowed access to all commands/responses, while users are able to view self-originated commands and responses. The commands are displayed in the order they were received by ITM SNC, each command followed by its response. (If a command did not receive a response, the display indicates this with the entry "time out.")

The user can filter the Network Command/Response Log on certain parameters, including start date/time, end date/time, TID, and aggregate. The system administrator can filter on these same parameters, plus two more - command interface and user login ID. The maximum number of days for which network command/response data can be displayed is seven.

Related information

See T 702, Display and Use the Network Command/Response Log for instructions on displaying and using the Network Command/Response Log.

EMS Alarm Log

ITM SNC logs the following system failures to the EMS Alarm Log:

- 802.3 LAN interface failure
- Disk I/O failure
- X.25 link failure
- X.25 server process failure
- Informix EDR agent failure
- File system filling to over 85%
- File system full (over 97%)
- Database space filling to over 85%
- Database space full (over 97%)

The following table shows the system failure information logged by ITM SNC to the EMS Alarm Log.

Table 8-**1.   System Failure Information in EMS Alarm Log**

Parameter	Values	Description
Alarm/Event Type	Alarm	for alarms only
Alarm ID	1 - 999999	SNC assigned alarm identification number
Date of Occurrence	MM-DD (month-day)	date of occurrence
Time of Occurrence	HH:MM:SS (hours:minutes:seconds)	time of occurrence
Category	Equipment/ Processing Error	category
Alarm Issue Point	<=20 characters	LAN/Disk IO/X.25/ File System/ Database
Effect on Service	NSA	effect on service
Severity	CR/MJ/CL	severity
Probable Cause	Text String (see SNC alarm list)	condition type
Description	Text String (see SNC alarm list)	description of the failure conditions

The user can filter the EMS Alarm Log on the start date/time and end date/time parameters. The maximum number of days for which alarm log data can be displayed is 45.

Related information

See for instructions on displaying and using the EMS Alarm Log.

Part 2

ITM SNC User Tasks Manual

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Task Series 100

Using the GUI

Start Up ITM SNC

100

Background

When to use

Use this procedure to log into the ITM SNC Graphical User Interface (GUI).

Before you begin

Before you begin this task for the first time, you must have obtained a user ID and initial password from your system administrator.

Related information

For related information, see T 101, Log Out of the System.

Instructions

Task   Complete the following steps to start up and log into ITM SNC.

Step	Action
1	Start an instance of the GUI. This displays the Login window.
2	Type in your User ID (which you must initially obtain from your system administrator).
3	Press the Tab key and type your password (initially obtained from your system administrator) into the Password field.
4	Click the Login button. The system verifies your user ID and password before displaying the Map window. **Stop! End of Task.**

Log Out of the System

101

Background

When to use

Use this procedure to log out of the graphical user interface.

Before you begin

Before you begin this task, make sure any processes you have been performing on the system have finished running (otherwise, results of these processes may be uncertain).

Related information

For related information, see T 100, Start Up ITM SNC.

Instructions

Task

Complete the following steps to log out of the system.

Step	Action
1	Select **File** from the main menu bar on the Map window.
2	Select **Exit** from the File menu. The GUI session is terminated. **Stop! End of Task.**

Zoom the Map View

102

Background

When to use   Use this procedure to zoom in or zoom out on the Map window.

Before you begin   Before you begin this task, display the Map window.

Related information   For related information, see T 100, Start Up ITM SNC.

Instructions

Task   Complete the following steps to zoom the Map window view.

Step	Action
1	Select **View** from the main menu bar on the Map window. This displays a pull-down menu.
2	■ To make the Map panel show fewer Map items in the same size space, single click on Zoom In on the pull-down menu. ■ To make the Map panel show *more* in the same size space, single click on Zoom Out on the pull-down menu.
3	To reset the Zoom level to zero (which is the default), single click on Zoom Reset on the pull-down menu. **Stop! End of Task.**

Modify User Preferences

103

Background

When to use
Use this procedure to change the characteristics of the Map window display, such as NE (node) size, NE labels, trail lines, and alarm color display.

Before you begin
Before you begin this task, view the Map pane display to see the current characteristics of the Map view before changing any of them. Be aware that preferences are saved on a per-user basis.

To perform this task, access the Map window.

Related information
For related information, see T 104, Save Preferences/Map Positions; T 105, Restore Preferences/Map Positions; T 106, Copy Preferences/Map Positions; and Chapter 2, The ITM SNC Graphical User Interface.

Instructions

Task   Complete the following steps to modify user preferences.

Step	Action	
1	Select **View** from the main menu bar on the Map window. The View menu is displayed.	
2	Select **Preferences** from the View menu. The View Preferences window is displayed.	
3	TO CHANGE THE...	SELECT THE TAB...
	■ NE size or thickness of trail lines between NEs	■ Nodes & Lines
	■ Size, content, or alignment of map item labels	■ Labels
	■ Colors associated with alarms and/or cross-connections	■ Colors
	■ Alarm severity level displayed in the Map and Alarm Tally windows	■ Fault
4	When the selected panel of options is displayed on the View Preferences window, change the display characteristics as needed.	
5	Click one of the following buttons to adjust your preference settings: ■ Save—saves the changes made to user preferences to be applied each time the Map window is brought up ■ Restore—resets the values in the current panel to the saved values for this user ■ Get Defaults—retrieves and displays the system defaults for the preferences category, overriding the displayed settings	
6	Click the Apply button to apply the changes to the Map window display or click the OK button to apply the changes to the Map window display and close the View Preferences window. **Stop! End of Task.**	

Save Preferences/Map Positions

104

Background

When to use

Use this procedure to save user preferences for the Map pane display and/or positions of map items on the Map pane display for the next time you log onto the system and access the Map window.

Before you begin

Before you begin this task, you should use the Preferences option to select the appearance or position of map items on the display or accept the system defaults.

To perform this task, access the Map window.

Related information

For related information, see Chapter 2, The ITM SNC Graphical User Interface.

Instructions

Task   Complete the following steps to save user preferences and/or Map item positions.

Step	Action	
1	Select **File** from the main menu bar on the Map window. The File menu is displayed.	
2	Select **Save** from the File menu. A sub-menu is displayed.	
3	TO SAVE... ■ User preferences ■ Map item positions ■ User preferences and Map item positions	CHOOSE... ■ Preferences ■ Positions ■ Both
4	A message is displayed in the status bar area, indicating that your selections have been saved. **Stop! End of Task.**	

Restore Preferences/Map Positions

105

Background

When to use   Use this procedure to restore previously saved user preferences for the Map pane display and/or Map item positions.

Before you begin   Before you begin this task, access the Map window.

Related information   For related information, see Chapter 2, The ITM SNC Graphical User Interface.

Instructions

Task Complete the following steps to restore user preferences and/or Map item positions.

Step	Action	
1	Select **File** from the main menu bar on the Map window. The File menu is displayed.	
2	Select **Restore** from the File menu. A sub-menu is displayed.	
3	TO RESTORE... ■ User preferences ■ Map item positions ■ User preferences and Map item positions	CHOOSE... ■ Preferences ■ Positions ■ Both
4	A message is displayed in the status bar area, indicating that the previous settings have been restored. **Stop! End of Task.**	

Copy Preferences/Map Positions

106

Background

When to use

Use this procedure to copy the user preferences and/or Map item positions saved by another user.

Before you begin

Before you begin this task, be aware that Map item positions can only be copied from a user who shares the same Target Group of NEs.

To perform this task, access the Map window.

Related information

For related information, see Chapter 2, The ITM SNC Graphical User Interface.

Instructions

Task   Complete the following steps to copy another user's preferences and/or Map item positions.

Step	Action	Action	Reference
5	Select **File** from the main menu bar on the Map window. The File menu is displayed.		
6	Select **Copy** from the File menu. A sub-menu is displayed.		
7	TO COPY A USER'S... ■ Preferences ■ Map item positions ■ Preferences and Map item positions	CHOOSE... ■ Preferences ■ Positions ■ Both	
8	The Choose a User window is displayed.		
9	Choose a user and click the OK button. If you are copying Map item positions, the new positions are applied to your Map pane display once a user is chosen. If you are copying another user's preferences, the View Preferences window is displayed. Make any changes as necessary to the other user's preferences before applying them. When you are finished making necessary changes, click the OK button. **Stop! End of Task.**		T 103, Modify User Preferences

Task Series 200

Fault
Management

Activate the Alarm Browser

200

Background

When to use

Use this procedure to activate the alarm browser. This allows you to capture alarm, event, and clear messages that are forwarded to network surveillance OSs for NEs in your Target Group, and displays them in the Log Browse window on your workstation screen.

Related information

For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to activate the alarm browser.

Step	Action
1	Select **Fault** from the main menu bar on the Map window. This displays a pull-down menu.
2	From the pull-down menu, select **Alarm Browser**. This displays the Log Browser window.
3	To save the output from this window to a file, do the following, ■ Click on **File** on the main menu bar on the Map window and then select **Save As**. The Enter Text window appears. ■ Type a file name in the Field Name field and press the Tab key. ⇒ **NOTE:** This file is saved in your home directory and may be accessed by opening an xterm window while still logged in. You can save the file in another directory by supplying a path with the file name. The xterm window supports UNIX functions, such as **ls**, so the user can search the directory by file name. The output is displayed in the same xterm window and can be manipulated with standard UNIX text processing tools to implement searches and print reports.
4	When you are finished viewing the log information, access the **File** pull-down menu from the menu bar and select **Close**. **Stop! End of Task.**

Access the Alarm Summary

201

Background

When to use

Use this procedure to access the alarm summary window, which contains NE/aggregate alarm summary information, as well as Trail Alarm summary information. This summary information includes the number of Critical, Major, and Minor alarms for each NE and trail.

Related information

For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to access the Alarm Summary.

Step	Action
1	Select **Fault** from the main menu bar on the Map window. This displays a sub-menu.
2	From the sub-menu, select **Alarm Summary**. This displays the Alarm Summary window.
	The Alarm Summary window contains two sections - the NE/Aggregate Alarm Summary table and the Trail Alarm Summary table.
	NE/Aggregate Alarm Summary Table — Each line in this table provides, for the listed TID, a color code indicating the highest severity alarm for the NE/aggregate, as well as a count of the Critical, Major, and Minor alarms for the NE/aggregate.
	For the NEs listed, you can initiate cut-throughs; resynchronize alarms; provision the NE; and display alarm and command/response logs, equipment shelves, and alarm lists. To access these tasks, point to an NE's summary line with the mouse and click the menu mouse button. A pop-up menu appears, from which you can select the desired operation.
	Trail Alarm Summary Table — This table lists a count of Critical, Major, and Minor alarms for the AIDs that terminate the trail between two NEs. A color code indicates the highest severity alarm for the trail.
	Stop! End of Task.

Access the Alarm List

202

Background

When to use
Use this procedure to access the alarm list, which contains a line of information about each active alarm in an NE or aggregate. You can sort the list by alarm severity and age, age alone, condition, data/time logged, or acknowledged vs. unacknowledged. You can also use the list to acknowledge and unacknowledge alarms (see Related information below).

Related information
For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to access the alarm list.

Step	Action
1	Position the mouse pointer over the NE or aggregate for which you want a list of alarms and press the menu mouse button. A sub-menu appears.
2	Select **Alarm List** from the sub-menu. The Alarm List window is displayed. Each row on the window represents an alarm in the selected NE. The default sort order is occurrence date and time. You can change the sort order by clicking on the column head of the desired sort. (The Alarm List window can also be displayed from the Alarm Summary window by pointing to an NE with the mouse, clicking the menu mouse button, and selecting Alarm List from the sub-menu.) The Alarm List window provides the following data for each alarm for the selected NE:

    ■   Color—a color code associated with the alarm severity

    ■   Alarm ID—an identifying code for the alarm

    ■   Severity—Critical, Major, or Minor

    ■   SA/NSA—whether the problem is service affecting (SA) or not (NSA).

    ■   Occurrence Date—the date the alarm occurred

    ■   Occurrence Time—the time the alarm occurred

    ■   Condition—a code that indicates the type of failure or status condition

    ■   Log Date—the date the alarm was logged by the EMS

    ■   Log Time—the time the alarm was logged by the EMS

    ■   AID—the Access Identifier, or address, of the equipment component or facility. If this is part of an SLC NBS (Narrow Band Shelf), an asterisk (*) appears.

    ■   Ack—the user ID of the user that acknowledged the alarm.

⇒ **NOTE:**
To display an alarm in TL1 message format, use the mouse button to point to the alarm listing that you want to display, and double click the select mouse button. This displays the Alarm Text window, containing the alarm in TL1 message format.

Stop! End of Task.

Acknowledge/Unacknowledge Alarms

203

Background

When to use

Use this procedure to acknowledge or unacknowledge single alarms, one at a time.

Before you begin

Before you begin this task, determine the alarm(s) to be acknowledged or unacknowledged.

Related information

For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to acknowledge or unacknowledge single alarms, one at a time.

Step	Action
1	Display the Alarm List window (see T 202, Access the Alarm List).
2	Left click on the row representing the alarm you want to acknowledge or unacknowledge.
3	Select Fault from the menu bar near the top of the Alarm List window. This displays a sub-menu.
4	Select **Acknowledge Selected** or **Unacknowledge Selected** from the displayed sub-menu, as appropriate. (If you wish to acknowledge or unacknowledge *all* the alarms in the list, select **Acknowledge All in List** or **Unacknowledge All in List**, as appropriate.) ⇒ **NOTE:** If an alarm is not yet acknowledged, there is no entry in the Ack field on that line. If it is already acknowledged, the Ack field contains the acknowledger's userid. **Stop! End of Task.**

Acknowledge/Unacknowledge Alarm Groups

204

Background

When to use   Use this procedure to select and then acknowledge or unacknowledge a group of alarms.

Before you begin   Before you begin this task, determine the alarms to be acknowledged or unacknowledged.

Related information   For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to select and then acknowledge or unacknowledge a group of alarms.

Step	Action
1	Display the Alarm List window (see <u>T 202, Access the Alarm List</u>).
2	Using the mouse, select each row that contains an alarm you want to include in the group to be acknowledged or unacknowledged. To select multiple continuous rows, hold the Shift key down and drag the mouse pointer over the desired lines. To select multiple non-continuous lines, hold the Control key down and right click each line to be included. (Unacknowledged alarms contain no entry on their rows in the **Ack** column. Acknowledged alarms contain, in the **Ack** column, the login ID of the person who acknowledged the alarm.) Select as many rows of acknowledged or unacknowledged alarms as desired.
3	Select **Fault** from the menu bar at the top of the Alarm List window. This displays a sub-menu.
4	Choose **Acknowledge Selected** or **Unacknowledge Selected**, as appropriate. (Or to acknowledge or unacknowledge *all* alarms in the list [without having to choose individual alarms], select **Acknowledge All in List** or **Unacknowledge All in List**, as appropriate.) **Stop! End of Task.**

Acknowledge/Unacknowledge All Alarms

205

Background

When to use

Use this procedure to acknowledge all unacknowledged alarms on the Alarm List window or to unacknowledge all acknowledged alarms on the Alarm List window.

Before you begin

Before you begin this task, you should make certain that you do want to acknowledge or unacknowledge these alarms.

Related information

For related information, see Chapter 3, Fault Management in the *User Reference Manual* and T 202, Access the Alarm List in the *User Tasks Manual*.

Instructions

Task   Complete the following steps to acknowledge or unacknowledge all alarms.

Step	Action
1	Display the Alarm List window (see T 202, Access the Alarm List).
2	Select **Fault** from the menu bar at the top of the Alarm List window. This displays a sub-menu.
3	From the sub-menu, choose **Acknowledge All in List** (to acknowledge all unacknowledged alarms in the Alarm List window) or **Unacknowledge All in List** (to unacknowledge all acknowledged alarms in the Alarm List window), as appropriate. (Unacknowledged alarms contain no entry in the Ack field on their rows. Acknowledged alarms contain, in the Ack field, the userid of the alarm acknowledger.) **Stop! End of Task.**

Acknowledge/Unacknowledge All Alarms for an NE

206

Background

When to use   Use this procedure to acknowledge or unacknowledge all alarms for a selected NE or aggregate.

Before you begin   Before you begin this task, you should make certain that you do want to acknowledge or unacknowledge these alarms.

Related information   For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to acknowledge or unacknowledge all alarms for a
selected NE or aggregate.

Step	Action
1	On the Map window, use the mouse to select the NE or aggregate for which you want to acknowledge all unacknowledged alarms or unacknowledge all acknowledged alarms.
2	Select **Fault** from the main menu bar at the top of the Map window. This displays a sub-menu.
3	Select **Alarm Acknowledgement** from the displayed sub-menu. This displays another sub-menu containing the choices **Acknowledge** and **Unacknowledge**.
4	From the displayed sub-menu, select **Acknowledge** to acknowledge all unacknowledged alarms for the selected NE, or **Unacknowledge** to unacknowledge all acknowledged alarms for the selected NE. **Stop! End of Task.**

Display Trail Information

207

Background

When to use   Use this procedure to display trail information.

Before you begin   Before you begin this task, determine the trail for which you wish to display trail information.

Related information   For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task

Complete the following steps to display trail information.

Step	Action
1	On the Map window, right click on the trail for which you wish to display trail information. This displays a sub-menu.
2	On the displayed sub-menu, click on the type of trail information you want to display. (Future releases of the system will contain more types of trail information.) **Stop! End of Task.**

Monitor Alarms

208

Background

When to use
Use this procedure to limit the amount of autonomous messages and Critical autonomous messages that should be monitored for an NE. See the Related Information below for more information about alarm monitoring.

Before you begin
Before you begin this task, determine what type of alarm monitoring you want to accomplish.

Related information
For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to monitor alarms.

Step	Action
3	Select **Fault** from the main menu bar. This displays a sub-menu.
4	Select **Alarm Monitoring** from the sub-menu. This displays another sub-menu.
5	Select one of the following sub-menu options: ■ **All Messages**—This message allows all autonomous messages to be accepted from the NE. ■ **Throttled**—This option allows only Critical messages to be accepted from the NE, even if the alarm throttle level set in the Administer NE menu has not been reached or if automatic alarm throttling is displayed. Selecting either of the above options displays the Choose an NE window.
6	Double click on the TID of the NE for which you want to change the alarm monitoring status and then click the OK button. (Alarm monitoring status of the NE is displayed on the Map: if **Throttled** is selected, the NE icon changes back and forth from grey to the color of the highest severity alarm; but if **All Messages** is selected, the NE icon displays only the color of the highest severity alarm.) **Stop! End of Task.**

View Throttled Alarm Statistics

209

Background

When to use   Use this procedure to view throttled alarm statistics for an NE.

Before you begin   Before you begin this task, determine the NE for which you want to view the
throttled alarm statistics.

**Related
information**   For related information, see Chapter 3, Fault Management in the *User Reference
Manual*.

Instructions

Task   Complete the following steps to view throttled alarm statistics for NEs.

Step	Action
1	Select **Fault** from the main menu bar on the Map window. This displays a sub-menu.
2	Select **Alarm Monitoring** from the displayed sub-menu. This displays another sub-menu.
3	Select **Statistics** from the displayed sub-menu. This displays the Choose an NE window.
4	Select an NE from the Choose an NE window. The selected throttling statistics are displayed. **Stop! End of Task.**

Resynchronize Alarms

210

Background

When to use

Whenever any outage of NE communications occurs, use this procedure to update the alarm list, autonomous message log, and command/response log from the network elements in the subnetwork. The system automatically resynchronizes alarms whenever the communications status with an NE changes from *down* to *up*, but this procedure allows you to perform this function any other time, as desired.

> **NOTE:**
> Before resynchronizing alarms for an NE, the user should disable the automatic/manual alarm throttling control for the NE. Alarm resynchronization does not work unless the NE is in an unthrottled state.

The alarm resynchronization process does not clear the existing GUI display and alarm tally/list during the resynchronization process, but rather retains the existing alarms until the resynchronization is complete. The system can distinguish between:

- standard alarms that already exist in the GUI and alarm/tally list displays

- new alarms, and

- alarms that are cleared by the NE between resynchronizations.

This allows the system to incrementally update the GUI display and alarm tally/list to accurately indicate the subnetwork status to the user.

Related information   For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to resynchronize alarms on demand.

Step	Action
1	Position the mouse pointer over the NE that you want to resynchronize and click the menu mouse button. A sub-menu appears.
2	Select **Resynchronize Alarms** from the sub-menu. The system resynchronizes the alarms. **Stop! End of Task.**

Enable/Disable Audible Alarms

211

Background

When to use   Use this procedure to enable and disable the audible alarm feature.

Before you begin   Before you begin this task, be sure that you do want to change the current status of the audible alarm feature.

Related information   For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to enable or disable the audible alarm feature.

Step	Action
1	On the Map window, select **Fault** from the main menu bar. This displays a sub-menu.
2	Select **Audible Alarms** from the displayed sub-menu. This displays another sub-menu. ■ If the audible alarm feature is currently enabled, a mark appears next to the Audible menu item on the displayed sub-menu. If desired, click on Audible to disable audible alarms. ■ If the audible alarm feature is currently disabled, the mark does *not* appear next to the Audible menu item on the displayed sub-menu. If desired, click on Audible to enable audible alarms. **Stop! End of Task.**

Quiet the Audible Alarm

212

Background

When to use
Use this procedure to quiet the audible alarm when it is sounding. When the audible alarm is enabled and an alarm occurs, it sounds for a short duration (about five seconds) and repeats every minute. Each time the audible alarm sounds, the sound corresponds to the highest level alarm received. Once the user quiets the alarm, it does not sound again until another alarm is received.

Before you begin
Before you begin this task, be sure that you do want to quiet the audible alarm and that you have noted the latest alarms.

Related information
For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to quiet the audible alarm.

Step	Action
1	On the Map window, select **Fault** from the main menu bar. This displays a sub-menu.
2	Select **Audible Alarms** from the displayed sub-menu. This displays another sub-menu.
3	Select **Quiet Current Alarms** from the displayed sub-menu. The system quiets the current alarms. (The alarms still need to be acknowledged.) **Stop! End of Task.**

Enable/Disable the Alarm Indicator

213

Background

When to use

Use this procedure to enable or disable the system's alarm indicator function. Disabling the alarm indicator causes nodes and aggregates not to flash when alarms are received. Enabling alarm indicators turns this function back on.

> ➡ **NOTE:**
> Remember that disabling the alarm indicator function stops alarmed nodes and aggregates from flashing, but it does *not* acknowledge alarms.

Before you begin

Before you begin this task, make sure you do want to enable or disable the alarm indicator function, as appropriate.

Related information

For related information, see Chapter 3, Fault Management in the *User Reference Manual*.

Instructions

Task

Complete the following steps to enable or disable the alarm indicator function for all NEs.

Step	Action
1	On the Map window, select **View** from the main menu bar. This displays a sub-menu.
2	Select **Alarm Indications** from the displayed sub-menu. This displays another sub-menu.
3	On the displayed sub-menu, there will be a bullet mark next to either **All Enabled** or **All Disabled**. The one with the bullet is the current state. You can change the state by clicking with your mouse pointer. For example, if the bullet is currently next to **All Enabled** and you want to disable the alarm indicator function, click **All Disabled**. The system moves the bullet and makes the change to the feature. **Stop! End of Task.**

Set Intelligent Alarm Filtering

214

Background

When to use

Use this procedure to set up Intelligent Alarm Filtering (IAF) for an NE. IAF is the filtering of symptomatic alarms and events that are associated with a directly reported root-cause or alarm, or the filtering of multiple alarms/events reported from the same NE source. This procedure is used to specify for which NEs IAF should be *disabled*, since the system filters, by default, symptomatic alarms that correlate to a reported equipment alarm or same-level facility alarm by an NE.

Before you begin

Before you begin this task, the system administrator can adjust certain tunable parameters that define how alarms are processed, collected, and filtered for IAF.

To perform this task, access the Map window.

Related information

For related information, see Chapter 3, Fault Management.

Instructions

Task   Complete the following steps to set up alarm correlation timers for IAF and to disable IAF for selected NEs.

Step	Action	Reference
1	Set up the Alarm Correlation Timers for Intelligent Alarm Filtering.	SE 214-1
2	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.	
3	Select **Intelligent Alarm Filtering** from the Administration menu. The Intelligent Alarm Filtering sub-menu is displayed.	
4	Select **Disable by TID** from the Intelligent Alarm Filtering sub-menu. The Disabling IAF for NEs window is displayed.	
5	Select the NE(s) and transfer it to the NEs with Disabled IAF list, using the push buttons. NEs can be transferred back and forth between the Enabled IAF and Disabled IAF lists, using the push buttons, as needed.	
6	Click the OK button. ITM SNC enables/disables IAF for the NEs, as specified. **Stop! End of Task.**	

SE 214-1: Set Up Alarm Correlation Timers for IAF

Procedure

Perform the steps below to set up Alarm Correlation Timers for Intelligent Alarm Filtering.

1. Select **Administration** from the Map window main menu bar. The Administration menu is displayed.

2. Select **Intelligent Alarm Filtering** from the Administration menu. A sub-menu is displayed.

3. Select **Correlation Timers** from the sub-menu. The IAF Correlation Timers window is displayed.

4. Enter values for the following correlation timer fields:

   ■ Alert Interval— The time period, in minutes, from the start of an alarm correlation process until the point that ITM SNC notifies users that alarm correlation is in progress. The default value is one minute.

   ■ Initial Correlation Period—The time period, in minutes, started upon receipt of the first directly reported alarm during which ITM SNC collects symptomatic alarms and events for alarm correlation, plus at least one Quiet Time Period. The default value is five minutes.

   ■ Quiet Time Period—The time period, in minutes, used to check whether any new alarms that need to be correlated have been received. The default value is 1 minute. The maximum Quiet Time Period is 15 minutes.

   ■ Maximum Correlation Period—The time period, in minutes, that defines the maximum time allotted for alarm correlation. The Maximum Correlation Period is equal to the Initial Correlation Period, plus one or more Quiet Periods. The correlation process is terminated when no new alarms are received during the Quiet Time Period or the Maximum Correlation Period expires. The Maximum Correlation Period must be greater than or equal to the Initial Correlation Period, plus at least one Quiet Time Period. The default value is 15 minutes.

5. Click the Apply button to apply the settings or click the OK button to apply the settings and close the window.

Task Series 300

Configuration Management

Perform Cut-Through Commands

300

Background

When to use

Use this procedure to initiate a TL1 cut-through session from the Map window and perform enhanced cut-through commands via the Cut-Through window.

Before you begin

Before you begin this task, you must have already displayed the Map window and determined the NE for which you want to initiate a cut-through session.

Related information

For related information, see the following:

- [T 301, Build TL1 Commands](#)
- [T 302, Broadcast TL1 Commands](#)
- [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to initiate and perform cut-through.

Step	Action
1	Position the mouse pointer over the NE to which a cut-through is required and press the menu mouse button. A pop-up menu appears.
2	Select Cut-Through from the pop-up menu. The Cut-Through window and the Cut-Through Output window are displayed. (If the NE is unavailable for any reason, a message identifying the cause of the error is displayed in a pop-up window.)
3	At the Cut-Through window, type the appropriate TL1 command into the Cut Through Command field. If desired, select from the displayed Command and AID lists (using double clicks) to save typing time. See your NE documentation for detailed command information. (You can select the Clear Command Area button any time to clear the Cut Through Command field and start over.)
4	After completing your entry in the Cut-Through Command field, select the Send Command Now button. The command is echoed to the Cut-Through Output window and the command output appears there. **Stop! End of Task.**

Build TL1 Commands

301

Background

When to use
Use this procedure to create a TL1 command file to assist in performing maintenance and provisioning activities on one or more NEs (such as download of standard configuration), without having to manually enter a set of TL1 command strings. This feature both reduces the amount of manual entry needed to create TL1 command strings and allows for the reuse, at a later time, of the commands built on the same NE or other NEs of the same type.

Before you begin
Before you begin this task, you must have already determined the TL1 commands you wish to build.

Related information
For related information, see the following:

- T 300, Perform Cut-Through Commands
- T 302, Broadcast TL1 Commands
- Chapter 4, Configuration Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to build TL1 commands.

Step	Action
1	On the Map window, select **File** from the main menu bar. This displays a pull-down menu.
2	Select **TL1 Macro Scripts** from the displayed pull-down menu. This displays a sub-menu.
3	Select **TL1 Macro Builder** from the displayed sub-menu. This displays the Macro Builder/Broadcaster window. Select the Macro Builder tab if it is not already selected.
4	TL1 command files can only be built for one NE type at a time, so first specify the NE type by clicking the down arrow adjacent to the NE Type field (directly below the Manage TL1 Macro Files heading) and select an NE.
5	Next type the appropriate TL1 command(s) into the Macro File Commands area at the lower left of the window. Press the Return key between commands, typing each new command on the next available line in the Macro File Commands area. If desired, select from the displayed Command List and AID List, and click the Put Into Command Area button, to save typing time. See your NE documentation for detailed TL1 command information.
	Continued on next page

Step	Action (Contd)
6	When you have completed your macro file commands, select Save/Save As. This displays the Save As window.
7	In the Save As window, save the contents of the Macro File Command lines as a new macro file (by typing the new macro file name into the Save As field) or to an existing macro file name, overwriting the contents of the file (by selecting one from the displayed list). Don't forget to use the radio buttons to indicate whether the file should be **Accessible by all** or **Accessible by owner only**.
8	The following list shows how to use remaining items on the TL1 Macro Builder window: ■ Clear Command(s)—click this button to clear the current entries in the Macro File Command area. ■ Owner—displays the macro file owner's login ID. ■ File Properties—indicates whether the displayed macro file is Accessible By All or Accessible by Owner Only. This value can be changed (by owners) via the Save As screen, which is displayed by clicking the Save/Save As button. ■ Put Into Command Area—select this button to put the contents of the selected macro file into the command line text area. ■ View Macro—use this button to view the contents of the selected macro file. ■ Delete Macro—click this button to delete the selected macro file (for owners only). **Stop! End of Task.**

Broadcast TL1 Commands

302

Background

When to use
The broadcast TL1 commands feature allows you to perform maintenance and provisioning activities (such as download of standard configuration) on one or more NEs, utilizing the TL1 command files created by the TL1 macro builder feature, and broadcasting those files to multiple NEs of the same type. This feature saves you time by performing similar tasks on multiple NEs in one step, and by reducing the manual entry required in the creation of TL1 command strings.

Before you begin
Before you begin this task, you must have already determined the TL1 commands you wish to broadcast, or know the name of the TL1 macro file you are going to use.

Related information
For related information, see the following:

■ T 300, Perform Cut-Through Commands

■ T 301, Build TL1 Commands

■ Chapter 4, Configuration Management in the *User Reference Manual*

Instructions

Task

Complete the following steps to build TL1 commands.

Step	Action
1	On the Map window, select **File** from the main menu bar. This displays a pull-down menu.
2	Select **TL1 Macro Scripts** from the displayed pull-down menu. This displays a sub-menu.
3	Select **TL1 Macro Builder** from the displayed sub-menu. This displays the Macro Builder/Broadcaster window. Select the Macro Broadcaster tab if it is not already selected.
4	Specify the NE type for the broadcast; select All NEs, NEs by Type, or NEs by TID from the **Where to Broadcast** to block at the top middle of the Broadcaster window. Specify the parameters of the broadcast further by highlighting NEs in the Available Network Elements list (on the left side of the window) and clicking the single right arrow (**>**) to move them to the Chosen Network Elements list (on the right side). *The NEs placed in the Chosen Network Elements list on the right will be the ones to receive the broadcast.* (You can use the double arrows to move all current choices between the two lists.)
5	Next type the name of the macro file (to be broadcast to the NEs selected in the Chosen Network Element list) into the field in the Macro File to Broadcast block (or simply select a macro file from the displayed list by double clicking on it).
6	Select the Broadcast Macro button to ask the system to perform the broadcast. The following list shows how to use the remaining buttons on the Broadcaster window: ■ View Macro - use this button to view the macro file, which you may want to do before executing it. ■ Abort Macro - use this button to stop the execution of the TL1 commands at any time while the broadcast window is active. The system displays an abort confirmation window. Once you confirm, the system stops sending out the next command in the macro file to the NE(s) currently being broadcast to. ■ Close - click this button any time before clicking the Broadcast Macro button to remove the Broadcast window from your screen and ignore current entries. **Stop! End of Task.**

Display the Provisioning Window

303

Background

When to use

Use this procedure to display the Provisioning window. The Provisioning window is the main system window used to modify information about system, port, and equipment parameters.

Related information

For related information, see Chapter 4, Configuration Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to display the Provisioning window, in order to perform network element, port, and line provisioning.

Step	Action
1	From the main menu bar on the Map window, select **Configuration**. This displays a sub-menu.
2	Select **Provision** from the displayed sub-menu. This displays the Choose an NE window.
3	Use the mouse to select an NE on the Choose an NE window. (Double click on the desired NE and then click the OK button.) This displays the Provisioning window. **Stop! End of Task.** ⇒ **NOTE:** The Provisioning window can be displayed in similar fashion from the Alarm Summary, Equipment View, and Cross-Connection windows.

Provision System Parameters

304

Background

When to use

Use this procedure to display the windows used to provision NE system parameters.

Before you begin

Before you begin this task, determine specifically what type of system provisioning you want to accomplish.

Related information

For related information, see Chapter 4, Configuration Management in the *User Reference Manual*.

Instructions

Task

Complete the following steps to display the windows used to provision system parameters.

Step	Action
1	Display the Provisioning window as described in <u>T 303, Display the Provisioning Window</u>.
2	Use the mouse to select the TID from the left side of the Provisioning View window. Then click the Provision button. This displays the system parameters (for your selection) in the Provisioning area of the window. (Parameters that have no value reported for them, and which therefore do not apply to the current operation, are not shown in the provisioning panel.)
3	Make your provisioning changes in the Provisioning section of the window using the available fields and your selected values. You can click the Retrieve button any time to reset the values to their database values, or click Apply to enter your changes. When you change a value, an asterisk appears next to the value to indicate a change has been made. **Stop! End of Task.**

Provision NE Ports

305

Background

When to use

Use this procedure to display the windows used to provision NE ports.

Before you begin

Before you begin this task, determine specifically what type of port provisioning you want to accomplish.

Related information

For related information, see [Chapter 4, Configuration Management](#) in the *User Reference Manual*.

Instructions

Task   Complete the following steps to display the windows used to provision port parameters.

Step	Action
1	Display the Provisioning window as described in T 303, Display the Provisioning Window.
2	Expand the explorer tree if it has not already been expanded.
3	Use the mouse to select the port from the left side of the Provisioning View window. (Click on the plus [+] signs to display available circuit packs.) Then click the Provision button. This displays the port attributes (for your selection) in the Provisioning area of the window. Use the tabs to go to the specific port attribute to provision.
4	Make your provisioning changes in the Provisioning section of the window. You can click the Retrieve button to reset the values to their original values, or click Apply to enter your changes. When you change a value, an asterisk appears next to the value to indicate a change has been made. **Stop! End of Task.**

Provision NE Equipment Information

306

Background

When to use   Use this procedure to display and provision NE equipment parameters on the Provisioning window.

Related information   For related information, see Chapter 4, Configuration Management in the *User Reference Manual.*

Instructions

Task   Complete the following steps to display and provision equipment parameters.

Step	Action
1	From the main menu bar on the Map window, select **Configuration**. This displays a sub-menu.
2	Select **Provision** from the displayed sub-menu. This displays the Choose an NE window.
3	Use the mouse to select an NE on the Choose an NE window. (Double click the desired NE and then click the OK button.) This displays the Provisioning window.
4	In the Network Element Explorer part of the Provisioning View window, select the equipment for which you want to provision parameters. Click the plus (+) sign to display circuit packs. Select a slot number. Click the Provision button. Make the required changes in the Provisioning part of the window. Click the Apply button. Your changes are entered. When you have completed all your provisioning, click the Close button to remove the Provisioning window from your screen. **Stop! End of Task.**

View NE Equipment

307

Background

When to use

Use this procedure to display and view NE equipment on the Equipment Configuration window.

Before you begin

Before you begin this task, determine the equipment you want to view.

Related information

For related information, see the following:

- T 308, View NE Equipment Details
- Chapter 4, Configuration Management in the *User Reference Manual*

Instructions

Task

Complete the following steps to display and view various NE equipment components on the Equipment Configuration window.

Step	Action
1	Select **Configuration** from the main menu bar on the Map window. This displays a sub-menu.
2	Select **Equipment** from the displayed sub-menu. This displays the Choose an NE window.
3	In the Choose an NE window, double click on the NE for which you want to display equipment information. Then click OK. This displays the Equipment Configuration window, containing equipment information for the selected NE.
	The Equipment View window allows you to view and/or "drill down" through a network element to view its various constituent parts via the graphical representation (the network element view panel), or to select a component (shelf, bay, circuit pack) for viewing via the hierarchical representation (the network explorer panel). In addition, you can access certain features via a pop-up menu that is available in both panels.
	Following are the navigational conventions to use to view equipment information for the selected NE.
	View Panel *Single Left Click*—selects the component both here and in the explorer. *Double Left Click*—shows the contents of the component in the view panel, and indicates that it is selected. Shows the component as selected in the explorer and its subtending components (if there are any). *Single Right Click*—indicates that the component is selected, and shows the pop-up menu.
	Explorer List Item *Single Left Click*—selects the explorer component and the view component. If the component selected has contents, it shows the content in the view panel. Does not show/hide subtending explorer components. *Double Left Click*—same as single left click on explorer list item, but does show/hide subtending components in the explorer. *Single Right Click*—indicates that the component is selected, and shows the pop-up menu.
	Explorer plus or minus sign *Single Left Click*—shows/hides subtending components.

View NE Equipment Details

308

Background

When to use   Use this procedure to view details of a single component inside an NE.

Before you begin Before you begin this task, determine the NE for which you want to display
equipment details.

**Related
information**   For related information, see the following:

■   [T 307, View NE Equipment](#)

■   [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to display NE equipment details.

Step	Action
4	In the NE Explorer part of the Equipment View window, right click on the component for which you want to display equipment details. (See Related information earlier in this task for instructions on displaying the Equipment View window.)
5	On the sub-menu displayed when you right clicked in Step 2 above, select **Equipment Details**. This displays the Equipment Details window, containing the requested information. **Stop! End of Task.**

View NE Equipment Lists

309

Background

When to use

Use this procedure to access the list of a given component's subtending equipment. When you request an equipment item from either the drop-down or pop-up menu, SNC provides a list of equipment for the selected item and its subtending equipment. The lists can be saved and printed.

Before you begin

Before you begin this task, determine the equipment for which you want to display equipment lists.

Related information

For related information, see the following:

■ T 307, View NE Equipment

■ Chapter 4, Configuration Management in the *User Reference Manual*

Instructions

Task   Complete the following steps to view NE equipment lists.

Step	Action
1	Select a component in the NE explorer part of the Equipment View Window. (See Related information earlier in this task for instructions on displaying the Equipment View.)
2	Select **View** from the menu bar. This displays the View menu.
3	Select **Equipment List** from the View menu. This displays the equipment list for the selected component. The list contains information about the NE equipment, at the level you requested. The information is textual and listed in name/value pairs. **Stop! End of Task.**

Display the NE Cross-Connection Window

310

Background

When to use   Use this procedure to display the NE cross-connection window. This window provides access to all NE cross-connection features.

Before you begin   Before you begin this task, determine the cross-connection types you want to work with.

Related information   For related information, see the following:

- [T 312, View NE Cross-Connections—Textual](#)
- [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to display the cross-connection window and gain access to all cross-connection features.

Step	Action
1	Select **Configuration** from the main menu bar on the Map window. This displays a sub-menu.
2	Select **Cross-Connection** from the displayed sub-menu. This displays the Choose an NE window.
3	Choose the NE you want to work with by double-clicking on it in the Choose an NE window and then clicking the OK button. This displays the Cross-Connection window. The Cross-Connection window consists of a menu bar, a toolbar, a status bar, a subnetwork explorer, and a main view. The main view area is further broken down into four port areas. This window is used for all cross-connection operations, including viewing, adding, modifying, and deleting. These operations are all described in separate tasks. **Stop! End of Task.**

Display Ports on the NE Cross-Connect Window

311

Background

When to use

Use this procedure to display port information on the NE Cross-Connect window.

Before you begin

Before you begin this task, determine the ports to be displayed and display the Cross-Connect window.

Related information

For related information, see the following:

■ [T 310, Display the NE Cross-Connection Window](#)

■ [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task

Complete the following steps to display port information in the Cross-Connect window.

Step	Action		Reference
1	Display the Cross-Connect window.		Task 314
2	USING EXPLORER TREE...	USING MAIN VIEW...	
	a. Expand an item in the explorer tree (using the mouse) and locate the circuit pack or port group that contains the tributaries/ports to display in the main view area.	Use the left/right and up/down buttons in the main view area to move the display one circuit pack or group. Choose the appropriate arrow to change the view.	Chapter 4. in the *User Reference Manual*
	b. Right click to see the pop-up menu and select a port area from the menu. The circuit pack or port group is expanded to display the tributaries/ports.	⟹ **NOTE:** See the reference referred to for much more information about ports.	
	Stop! End of Task.		

View NE Cross-Connections—Textual

312

Background

When to use   Use this procedure to view a textual version list of existing cross-connections.

Before you begin   Before you begin this task, display the Cross-Connection window.

**Related
information**   For related information, see the following:

■ T 310, Display the NE Cross-Connection Window

■ Chapter 4, Configuration Management in the *User Reference Manual*

Instructions

Task   Complete the following steps to display a textual version list of existing cross-connections.

Step	Action
1	Display the Cross-Connection window as described in <u>T 310, Display the NE Cross-Connection Window</u>.
2	In the explorer area of the Cross-Connection window, use your mouse to select the system, a bay, a shelf, a circuit pack, or a port group.
3	Select **View** the main menu at the top of the Cross-Connection window. This displays a sub-menu.
4	Select **List Cross-Connections** from the displayed sub-menu. This displays the Cross-Connection List window. Some general information about this window follows: ■ This list shows all the cross-connections and reservations in the selected element. ■ Headers displayed above each list differ from NE to NE, but the first three headers are always Source AID (From), Destination AID (To), and Cross-Connection Type. ■ BWM NE cross-connections also contain two additional headers - Source Protection Switch Status and Destination Protection Switching Status. If there is a protection switch active on the line it will appear here in one or both of these columns. ■ An asterisk at the beginning of a BWM row indicates that the row contains information about a reservation.
5	If desired, select another element from the explorer area of the Cross-Connections window to change the information in the Cross-Connection List window for the new selection. Also if desired, select a row in the list and then click the Delete or Modify button to display the windows used to delete and modify cross-connections, respectively.

Add a Single NE
Cross-Connection

313

Background

When to use

Use this procedure to add new NE cross-connections.

Before you begin

Before you begin this task, determine the NE and the elements for which you want to add cross-connections.

Related information

For related information, see [Chapter 4, Configuration Management](#) in the *User Reference Manual*.

Instructions

Task   Complete the following steps to add a single new cross-connection.

Step	Action
1	Display the ports for which you want to add a cross-connection, as described in <u>T 311, Display Ports on the NE Cross-Connect Window</u>.
2	Single click on a high-speed line or low-speed address at the appropriate signal rate for the new cross-connection. Whenever a port that has availability for cross-connections is selected, the system enables the cross-connection type buttons in the toolbar (at the upper left of the Cross-Connection window) which represent types that can use the selected port. If there is no availability in the selected port, then the cross-connection type buttons remain disabled.
3	Choose the range button, if a range is to be created (for BWM only). When you select the Range button, all tributaries in the circuit pack are automatically selected by the system.
4	Choose a cross-connection type by clicking the appropriate button on the toolbar. The X button in the toolbar is enabled, and all of the cross-connection type buttons except the one you chose are disabled. The system also disables all displayed ports that cannot be used as a destination for the chosen cross-connection, and for the source AID already chosen.
5	Choose the destination port AID(s) for the cross-connection. Once all ports have been selected (the type of cross-connection indicates how many ports are allowed), the system may display the Additional Cross-Connection Information window, asking for some additional information.
6	Enter any additional information as appropriate in the Additional Cross-Connection window.
7	The system displays the Cross-Connection Confirmation window. Click the Yes button to send the new cross-connection command to the NE. **Stop! End of Task.**

Add an NE Cross-Connection Range

314

Background

When to use

Use this procedure to add a new range of NE cross-connections.

Before you begin

Before you begin this task, determine the NE and the elements for which you want to add cross-connections.

Related information

For related information, see Chapter 4, Configuration Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to add a new range of cross-connections.

Step	Action
1	Display the ports for which you want to add a cross-connection, as described in <u>T 311, Display Ports on the NE Cross-Connect Window</u>.
2	Single click on a high-speed line or low-speed address at the appropriate signal rate for the new cross-connection.
3	Select the range button. All tributaries in the circuit pack are then selected automatically.
4	Choose the button at the upper left of the Cross-Connections window that represents the type of cross-connection to be created. The button choices from left to right include: ■ Oneway ■ Twoway ■ Twoway DRI DC ■ Oneway DRI/Oneway SS ■ DRIS ■ DRIP ■ Locked ■ Video Source ■ Video Link
5	Select the remaining endpoint(s) of the cross-connection and provide additional information if requested by the system.
6	The system displays the Cross-Connection Confirmation window. Click the Yes button to send the new cross-connection command to the NE. **Stop! End of Task.**

Add an NE Multi-Cast Cross-Connection

315

Background

When to use   Use this procedure to add a new multi-cast cross-connection. This is accomplished via the Add a Multi-Cast Cross-Connection window, which allows you to choose the number of destination AIDs for a multi-cast cross-connection.

Before you begin   Before you begin this task, determine the NE and the elements for which you want to add a multi-cast cross-connection.

Related information   For related information, see Chapter 4, Configuration Management in the *User Reference Manual*.

Instructions

Task   Complete the following steps to add a new multi-cast cross-connection.

Step	Action
1	Display the ports for which you want to add a multi-cast cross-connection, as described in T 311, Display Ports on the NE Cross-Connect Window.
2	Single click on a high-speed line or low-speed address at the appropriate signal rate for the new multi-cast cross-connection.
3	Choose the multi-cast button, which is the right-most of the cross-connection type buttons at the upper left of the Cross-Connections window. This displays the Add a Multi-Cast Cross-Connection window.
4	In the Total Number of Destinations in this NE field on the Add a Multi-Cast Cross-Connection window, enter the number of drops to be included in the cross-connection.
5	In the main view area of the Cross-Connections window, click on each port/tributary that is to be a drop for the new multi-cast cross-connection. Notice that as each drop is specified, it is added to the Chosen Destinations area of the Add a Multi-Cast Cross-Connection window. (If necessary, you can remove a previously selected AID from the Chosen Destinations area by selecting it with the mouse and then clicking the nearby Remove AID button.) After you have specified the last drop, click the Done button.
6	After you complete the Add a Multi-Cast Cross-Connection window and click the Done button, the system asks you to specify additional information for the cross-connection, if any is needed. Specifically, for the purposes of a multi-cast cross-connection, a destination TID must be present for each and every destination that you specified. To get this information the system displays the Additional Cross-Connection Information window. Type the additional requested information into this window and click OK.
7	The system displays the Cross-Connection Confirmation window. Click the Yes button to send the new cross-connection command to the NE. **Stop! End of Task.**

Delete NE Cross-Connections— Graphical

316

Background

When to use

Use this procedure to delete a selected cross-connection using the graphical representation.

Before you begin

Before you begin this task, you must determine the cross-connection to be deleted and display it.

Related information

For related information, see the following:

■ [T 317, Delete an NE Cross-Connection—Textual](#)

■ [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task Complete the following steps to delete a cross-connection.

Step	Action
1	T 310, Display the NE Cross-Connection Window.
2	T 311, Display Ports on the NE Cross-Connect Window.
3	On the Cross-Connection window, click on an AID that represents a cross-connection you wish to delete. This displays the line that represents the cross-connection.
4	Position the mouse pointer over the line that represents the cross-connection to be deleted and click to select it.
5	Press the Delete key. The system displays a confirmation window. ⇒ **NOTE:** If you attempt to delete a cross-connection that can be deleted as a two-way cross-connection, the system displays the Multiple Leg Cross-Connection Deletion window. You can use this window to indicate *either* that you want to delete both cross-connections *or* that you want to delete just one of the two (and which one). Also, the following three scenarios will cause a cross-connection deletion request to be *denied*: ■ A request to remove a red-lined cross-connection. ■ A request to remove a cross-connection from a tributary used in a loop-back cross-connection. ■ A request to remove a cross-connection from a tributary used in a test access connection.
6	Select Yes in the confirmation window to delete the cross-connection. **Stop! End of Task.**

Delete an NE Cross-Connection— Textual

317

Background

When to use

Use this procedure to delete a selected cross-connection using the Cross-Connections List window, which lists the cross-connections textually rather than graphically.

Before you begin

Before you begin this task, you must determine the cross-connection to be deleted and display it as described in T 312, View NE Cross-Connections—Textual.

Related information

For related information, see the following:

■ T 316, Delete NE Cross-Connections—Graphical

■ Chapter 4, Configuration Management in the *User Reference Manual*

Instructions

Task   Complete the following steps to delete a cross-connection textually.

Step	Action
1	Display cross-connections on the Cross-Connection List window, as described in the task <u>T 312, View NE Cross-Connections—Textual</u>.
2	Use your mouse to select the cross-connection to be deleted.
3	Press the Delete key or click the Delete button. The system displays a confirmation window. ⇒ **NOTE:** The following three scenarios will cause a cross-connection deletion request to be *denied*: ■ A request to remove a red-lined cross-connection. ■ A request to remove a cross-connection from a tributary used in a loop-back cross-connection. ■ A request to remove a cross-connection from a tributary used in a test access connection.
4	If you are certain you want to delete the cross-connection indicated for deletion in the cross-connection window, click the Yes button. The system deletes the indicated cross-connection. ⇒ **NOTE:** Upon successful deletion of a cross-connection, all reference to that cross-connection, in any window in the GUI, is removed. **Stop! End of Task.**

Modify NE Cross-Connections— Graphical

318

Background

When to use   Use this procedure to modify cross-connections graphically via the Cross-Connections window.

Before you begin   Before you begin this task, determine the cross-connection you need to modify and the modification you need to make.

Related information   For related information, see

- [T 319, Modify NE Cross-Connections—Textual](#)
- [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to modify cross-connections graphically via the Cross-Connections window.

Step	Action
1	Display the Cross-Connections window and ports in the Main View area, as described in <u>T 312, View NE Cross-Connections—Textual</u>.
2	Show cross-connection lines as described in <u>T 320, Show/Hide NE Cross-Connection Lines</u>.
3	Position the mouse pointer over the line that represents the cross-connection to be modified.
4	Select **Configuration** from the menu bar. This displays a sub-menu.
5	Select **Cross-Connections** from the displayed sub-menu. This displays another sub-menu.
6	Select **Modify** from the displayed sub-menu. This displays the Additional Cross-Connection Information window, with the current information for the selected cross-connection.
7	Type the required changes into the displayed window and click the Done button. This displays the Cross-Connection Confirmation window.
8	Make sure you have entered the desired changes and then click the Yes button. The system modifies the selected cross-connection per the entered changes. **Stop! End of Task.**

Modify NE Cross-Connections—Textual

319

Background

When to use   Use this procedure to modify cross-connections textually via the Cross-Connections List window.

Before you begin   Before you begin this task, determine the cross-connection you need to modify and the modification you need to make.

Related information   For related information, see the following:

■ [T 318, Modify NE Cross-Connections—Graphical](#)

■ [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to modify cross-connections textually via the Cross-Connections List window.

Step	Action
1	Display the Cross-Connections List window as described in T 312, View NE Cross-Connections—Textual.
2	Choose a cross-connection to modify and select **Modify**. This displays the Additional Cross-Connection Information window, with the current information for the selected cross-connection.
3	Type the required changes into the displayed window and click the Done button. This displays the Cross-Connection Confirmation window.
4	Make sure you have entered the desired changes and then click the Yes button. The system modifies the selected cross-connection per the entered changes. **Stop! End of Task.**

Show/Hide NE Cross-Connection Lines

320

Background

When to use   Use this procedure to show or hide the cross-connection lines that graphically represent cross-connections on the Cross-Connections window.

Before you begin   Before you begin this task, determine whether you want to show or hide cross-connection lines.

Related information   For related information, see the following:

■ [T 310, Display the NE Cross-Connection Window](#)

■ [Chapter 4, Configuration Management](#) in the *User Reference Manual*

Instructions

Task   Complete the following steps to show or hide cross-connection lines on the Cross-Connections Window.

Step	Action		Reference
1	Display the Cross-Connections window.		T 310, Display the NE Cross-Connection Window
2	TO SHOW/HIDE ALL LINES…	TO SHOW/HIDE A SINGLE LINE…	
	Either click the show/hide button on the toolbar or select **View** from the menu bar and then **Show Cross Connection Lines** from the sub-menu. ⇒ **NOTE:** If cross-connection lines were showing they will now be hidden, and vice versa. **Stop! End of Task.**	a. Display ports as described in T 311, Display Ports on the NE Cross-Connect Window. b. Click on an AID representation (building block) that indicates that it contains a cross-connection. The desired cross-connection line is displayed.	

Manually Initiate DNO

321

Background

When to use

Use this procedure to manually initiate DNO for one or more NEs or an aggregate. You can specify that all information be included in the DNO update, or just port, cross-connection, port protection group, subnetwork, NE parameters, or equipment information.

Before you begin

Before you begin this task, you must be logged into ITM SNC.

Related information

For related information, see T 101, Log Out of the System and the Dynamic Network Operations section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to manually initiate DNO.

Step	Action	
1	IF … ■ you are performing DNO on a single NE, group of NEs, or aggregate	THEN … ■ select one or more NEs or an aggregate.
2	Access the DNO function (as appropriate) through: ■ The Map window Configuration menu—select **DNO** from the Configuration menu on the main menu bar of the Map window. The Choose an NE/Aggregate window is displayed. Double click on the NE(s)/aggregate(s) for which you want to perform DNO. Click the OK button. ■ The NE's or aggregate's pop-up menu—position the mouse cursor over the NE/aggregate icon on the Map pane or Subnetwork Explorer, and click the menu (right) mouse button. A pop-up menu is displayed. Select **DNO** from the pop-up menu. ■ The Equipment View window (for the chosen NE/aggregate)—Select **Configuration** from the main menu. A sub-menu is displayed. Select **DNO** from the sub-menu. ■ The Cross-Connection window (for the chosen NE/aggregate)—select **Configuration** from the main menu. A sub-menu is displayed. Select **DNO** from the sub-menu. The Manual DNO window is displayed. ⇒ **NOTE:** If the DNO channel is down, a message is displayed in the status bar of the window, indicating that you cannot perform a DNO at this time. Click the Close button to close the window.	
	Continued on next page	

Step	Action (Contd)	
3	IF ARE INITIATING DNO FOR… all configuration data	THEN … click on the radio button labeled "All Information" . ⇒ **NOTE:** If you choose "All Information" for a bay or shelf, ITM SNC performs DNO for ports, port protection groups, cross-connections, and equipment.
	you are initiating DNO for a selected data type	click on the radio button labeled "Only the following..." and choose one of the following data types: ■ Port Parameters ■ Cross-Connections ■ Port Protection Group ■ NE Parameters ■ Equipment ■ Subnetwork ⇒ **NOTE:** When you perform DNO the first time on an NE, the system does database synchronization on all data types, even if you choose only one data type. If you are performing DNO on a bay or shelf, the Subnetwork and NE Parameters choices are disabled.

Step	Action (Contd)
4	Click the Apply button to initiate DNO and select the next data type for update, or click the OK button to initiate DNO and close the window.
	The DNO process is started.
	⇒ **NOTE:** To obtain DNO status for an NE before or after initiating DNO, click on the GetStatus button.
	When the DNO is completed, a message is displayed on the window's status bar, indicating whether the DNO is successful or if there are any errors.
	If DNO cannot be performed for the selected NE(s), the system issues a message.
	If you choose to perform DNO on all NEs in your Target Group, a pop-up window is displayed, informing you that the DNO process may take a long time and affect system performance. You can choose to perform DNO or stop the process. Choose **Yes** to peform DNO anyway or **No** to stop the DNO process.
	Stop! End of Task.

Transfer NE Software

322

Background

When to use
Use this procedure to transfer an NE software release from a Digital Access Tape (DAT) or CD-ROM onto the ITM SNC host for eventual downloading to an NE.

Before you begin
Before you begin this task, the DAT must be physically loaded (if the file source is tape) or the CD-ROM must be physically loaded and the file system mounted on the ITM SNC host (if the file source is CD-ROM). If you are transferring the NE software from CD-ROM, a special setup procedure must be performed for the ITM SNC host prior to doing the transfer; this procedure is explained as part of the task.

To perform this task, access the Map window.

Related information
For related information, see the *Operations, Administration, and Maintenance Guide* and the Software Management section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to transfer NE software to ITM SNC.

Step	Action		Reference
1	IF YOU ARE TRANSFERRING NE SOFTWARE FROM...	THEN....	
	■ CD-ROM	■ a special setup procedure must be performed by the ITM SNC administrator once prior to the NE software transfer.	SE 322-1
	■ DAT	■ skip to Step 2.	
2	Before transferring a software release, you may want to see what software releases are already stored in ITM SNC for the NE type.		SE 322-2
3	Select **Configuration** from the main menu bar on the Map window. The Configuration menu is displayed.		
4	Select **Software Management** from the Configuration menu. The Software Management menu is displayed.		
5	Select **Import Software to the EMS** from the Software Management menu. The NE Type Selection for NE Software Transfer window is displayed.		
6	Choose CD Drive or Tape for the media to search for the software release.		
	Continued on next page		

Step	Action (Contd)	Reference
7	Select the NE type from the NE Type list.	
8	Click the OK button. The system begins a search for the software release on the tape or CD-ROM. If the search is successful, a pop-up confirmation window is displayed, indicating that the software release was found on the tape or CD-ROM and asks if you want to continue with the transfer.	
9	Click the OK button to start the software transfer. **Stop! End of Task.**	

SE 322-1: Setting Up the ITM SNC Host for Transferring NE Software from CD-ROM

Procedure
Before NE software can be transferred from CD-ROM onto the ITM SNC host machine, the ITM SNC system administrator must do the following once while configuring the ITM SNC host or installing the host software:

1. Log into the ITM SNC host machine as *root* and create the directory */dev/cdrom*.

2. As *root*, use the following command to find the hardware path to the CD-ROM drive:

   ioscan -fn -C disk

   A response similar to the following is displayed:

   disk   45 10/8.6.0   sdisk   CLAIMED   DEVICE   SEAGATE ST34371W
   /dev/dsk/c3t6d0   /dev/rdsk/c3t6d0

   > disk   46 10/8.8.0   sdisk   CLAIMED   DEVICE   SEAGATE   T39173WC
   /dev/dsk/c3t8d0   /dev/rdsk/c3t8d0

   > disk   30 10/12/5.2.0 sdisk   CLAIMED   DEVICE   TOSHIBA CD-ROM XM-5701TA
   /dev/dsk/c4t2d0   /dev/rdsk/c4t2d0

3. Locate the output line that contains the hardware path to the CD-ROM drive.

   In the sample output shown in Step 2, the third line of the sample output indicates that the hardware path to the CD-ROM drive is:
   /dev/dsk/c4t2d0

4. Do a symbolic link between the above hardware path and */dev/cdrom* using the following command as *root*:

   ln -s */dev/dsk/c4tt2d0 /dev/cdrom*

The file system for the CD-ROM drive will now be automatically mounted each time the CD-ROM is physically loaded into the drive.

SE 322-2: View NE Software

Procedure

Perform the steps below to see what software releases are already stored in ITM SNC for an NE type.

5. Select **Configuration** from the Map window main menu. The Configuration menu is displayed.

6. Select **Software Management** from the Configuration menu. The Software Management menu is displayed.

7. Select **View Software Release Descriptive Information** from the Software Management menu. The Select NE type window is displayed.

8. Select the NE type from the NE Type list and click the OK button, or just double-click on the NE type on the list.

   The Software Descriptive Files window is displayed. This window displays a description of all the software releases stored in ITM SNC for the selected NE type.

Download Software Release to the NE

323

Background

When to use

Use this procedure to download a selected executable software release to a specific NE.

Before you begin

Before you begin this task, you must first access the Map window. The software release to be downloaded to the NE must be transferred to ITM SNC from CD or tape. You may want to see what software releases are available on the ITM SNC host before downloading software for an NE. Refer to T 322, Transfer NE Software for related information on how to view NE software that is stored on the EMS host for an NE type.

Related information

For related information, see the Software Management section of Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to download software to an NE.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	The Configuration menu is displayed.
2	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.
		Continued on next page

Step	Action (Contd)	Result
3	Select **Download Software to NE** from the Software Management menu.	The Choose an NE window is displayed.
4	Double-click on the NE to select it and click the OK button.	The *Software Download to NE* window is displayed. If downloadable software is not available, the system informs you with an error message.
5	Select a software release from the Releases Available list and click the Apply button. ⟹ **NOTE:** You can abort the software download at this point, if necessary, by clicking the Abort button. A pop-up window is displayed, asking if you really want to abort the download. Choose Yes to abort the download or No to continue it. **Stop! End of Task.**	The system verifies that the software release is not the same or older than the version currently running on the NE. If either of these conditions is true, a pop-up information window is displayed, asking if you want to continue with the software download. Choose: ■ Yes to perform the software download anyway **OR** ■ No to cancel the software download If you choose Yes, a second pop-up message window is displayed, informing you that the download may take a certain amount of time and asks if you want to proceed with the software download. Choose: ■ Yes to continue with the software download **OR** ■ No to cancel the software download The software download is initiated. The status bar shows the software download is in progress and percentage completed.

Copy Software from NE to NE

324

Background

When to use

Use this procedure to copy executable software from an NE to one or more NEs.

Before you begin

Before you begin this task, the software to be copied must first be downloaded to the Network Element from which the copy will be made.

To perform this task, access the Map window.

Related information

For related information, see T 323, Download Software Release to the NE and the following section:

- Software Management

Instructions

Task   Complete the following steps to copy software from a selected NE to one or more NEs.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	The Configuration menu is displayed.
2	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.
3	Select **NE to NE Software Copy** from the Software Management menu.	The Software Copy from NE to NE(s) window is displayed.
4	Double-click on the NE and software release number that is the source of the software copy, from the Source NE scroll list. You can limit the list by typing characters in the type ahead field or the Filter/ Sort fields.	The List of Available NE(s) displays the TID(s) of NEs, of the same type, to which software can be copied.
		Continued on next page

Step	Action (Contd)	Result
5	Select the NE(s) and software release number that the software will be copied to from the Available NE(s) list and move the selected item(s) to the Chosen NE(s) list, using the push buttons. You can also double-click on the selected NE to automatically move it to the Chosen NE(s) list.	
		Continued on next page

Step	Action (Contd)	Result
6	Click the OK button.	The software copy is started. The system verifies that the software being copied is supported by the system and that it is a newer versionthen the copy currently running.
	IF … There is a problem with the software release selected for copy	THEN … A pop-up window is displayed, asking if you want to proceed with the copy. Choose: ■ Yes to perform the software copy anyway **OR** ■ No to cancel the software copy If you choose Yes, a second pop-up message is displayed, informing you that the software copy process may take a long time and asks if you want to continue with the software copy. Choose: ■ Yes to continue with the software copy **OR** ■ No to cancel the software copy The software copy is initiated.
	Stop! End of Task.	

Activate NE Software

325

Background

When to use

Use this procedure to check the currently active and standby executable software releases on an NE and to activate the standby release. You can select more than one NE at a time for software activation.

Before you begin

Before you begin this task, the software to be activated must first be downloaded to the NE.

To perform this task, access the Map window.

Related information

For related information, see T 323, Download Software Release to the NE and the following section:

■   Software Management

Instructions

Task   Complete the following steps to activate the standby release of NE software.

Step	Action	Result	Reference
1	Choose one or more NEs on the Map window **OR** choose no NEs at this point.		SE 325-1
2	Select **Configuration** from the main menu bar on the Map window.	The Configuration menu is displayed.	
3	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.	
			Continued on next page

Step	Action (Contd)	Result	Reference
4	Select **Activate NE Software** from the Software Management menu.	If no NEs were chosen in Step 1, the Choose an NE window is displayed. Choose one or more NEs for software activation and click the OK button. The Activate NE Software window is displayed, showing the NE(s) selected for software activation, the currently active release and the standby release for each NE.	
5	Select the NE for standby software activation. ⇒ **NOTE:** To remove a network element from the list of network elements in the table, select it and click the Remove from List button.		
6	Click the OK button. IF … There is a problem with the software release selected for activation **Stop! End of Task.**	The software activation(s) is initiated. THEN … A pop-up window is displayed, asking if you want to proceed with the activation(s). Choose: ■ Yes to perform the software activation(s) anyway **OR** ■ No to cancel the software activation(s)	

SE 325-1: Selecting NEs and Aggregates on the Map Window

To select a single NE or aggregate on the Map pane, position the mouse pointer over the NE or aggregate icon and click the mouse select button.

To select a group of NEs or aggregates on the Map pane:

1. Position the mouse pointer over a portion of the background adjacent to the items to be selected.

2. Click the mouse select button and drag the mouse pointer. As you drag the mouse pointer, an outlined box appears over the selected area.

3. Drag the mouse pointer over the NE(s)/aggregate(s) to be selected, enclosing them in the selection box. As items in the Map pane are selected, they change color. Release the mouse select button. The items are selected.

    To deselect a selected item in the Map pane, position the mouse pointer over the item and single-click the mouse select button. To deselect a group of items, position the mouse pointer within the boxed region and single-click the mouse select button. Any item in the box that is already selected becomes deselected.

Delete NE Software

326

Background

When to use   Use this procedure to delete a specific executable software release for an NE type from ITM SNC.

Before you begin   Before you begin this task, access the Map window. The software to be deleted must be transferred to the ITM SNC from CD-ROM or tape.

Related information   For related information, see the Software Management section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to delete a specifc software release for the NE type.

Step	Action	Result
1	Select **Configuration** from the main menu.	The Configuration menu is displayed.
2	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.
3	Select **Delete Software From the EMS** from the Software Management menu.	The Delete NE Software from SNC window is displayed.
		Continued on next page

Step	Action (Contd)	Result
4	Select the NE type from the Select NE Type list.	The Delete Software list shows the available software releases for the selected NE type.
5	Select the software release to be deleted from the Delete Software list by double-clicking on it.	
6	Click the Delete button. **Stop! End of Task.**	A confirmation window is displayed, asking if you want to proceed with the deletion. Choose: ■ Yes to perform the software deletion **OR** ■ No to cancel the software deletion ⚠ **WARNING:** *When software is deleted from the system, it is not recoverable. The only way to get the software back into the system is to reload it from a tape. Make sure that you want to delete the software release before choosing Yes.*

Back Up NE Data

327

Background

When to use

Use this procedure to back up an NE's provisioning data. The provisioning data includes port parameters and cross-connections.

Before you begin

Before you begin this task, determine the NE for which you want to perform a backup. Ensure that there are no alarms present on the NE. You must access the Map window to perform this function.

Related information

For related information, see the Software Management section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to perform an NE backup.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	The Configuration menu is displayed.
2	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.
3	Select **Backup** from the Software Management menu.	The Choose an NE window is displayed.
4	Double-click on the desired NE and click the OK button. **Stop! End of Task.**	A pop-up window is displayed, indicating how long the backup process will take and asking if you want to proceed with the backup. Choose: ■ Yes to perform the NE backup **OR** ■ No to cancel the NE backup

Restore NE Data

328

Background

When to use
Use this procedure to restore NE provisioning data from a specified backup file. You can specify the type of provisioning data to be restored. You have the option of performing a Regular Restore or an Intelligent Restore. A Regular Restore restores all backup data from the selected NE file, including the default settings. For an Intelligent Restore, the system compares each parameter setting from the backup file against its default value. If the current setting matches the default value, that parameter is excluded from the restore. If all parameters on a given command issued during the restore request matches the defaults, that command is skipped during the restore process. Only parameters that do not currently have default settings are set, thus reducing the amount of time it takes to restore the NE's backup data.

Before you begin
Before you begin this task, determine the NE to which you want to restore data. You must access the Map window to perform this function.

Related information   For related information, see the Software Management section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to restore an NE's backup data.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	The Configuration menu is displayed.
2	Select **Software Management** from the Configuration menu.	The Software Management menu is displayed.
3	Select **Restore** from the Software Management menu.	A sub-menu is displayed.
4	Select **Regular Restore** or **Intelligent Restore** from the sub-menu.	The Choose an NE window is displayed.
5	Double-click on the desired NE and click the OK button.	
6	Select a backup file for restoral. To look at a description of the backup data contained in the file before restoring it, click the View Descriptive Files button.	
		Continued on next page

Step	Action (Contd)	Result
7	Click the OK button.	The restore process is started. As part of the restore process, the system performs several validation checks, comparing the software release, equipment, and switch settable parameters in the backup file with the current NE values. If there are discrepancies, a pop-up window is displayed with an error message asking if you want to continue with the restore. Choose: ■ Yes to perform the NE restore anyway **OR** ■ No to cancel the NE restore
	IF ... you respond Yes to perform the restore anyway	THEN ... The system continues with the restore. A pop-up message window is displayed, informing you that the restore may take a long time and asking if you want to proceed with the restore. Choose: ■ Yes to perform the NE restore **OR** ■ No to cancel the NE restore
		Continued on next page

Step	Action (Contd)	Result
8	IF ... you respond Yes to perform the restore. **Stop! End of Task.**	THEN ... The restore is initiated. The system informs you of the restore's progress with a status message. When the restore is completed, an information window appears that notifies you of the completion. If the restore fails, an error message is displayed in a pop-up window, indicating the source of the problem.

Set NE Date/Time Synchronization

329

Background

When to use
Use this procedure to manually initiate date/time synchronization for a single NE, a group of NEs, an aggregate, or all NEs under ITM SNC control. If all NEs are selected, 20 NEs at a time or more can be date/time synchronized with the ITM SNC host, depending on load conditions.

Before you begin
Before you begin this task, you must take into account whether the NE(s) being set with the date/time synchronization feature are located in the same or a different time zone as the ITM SNC host. You can also select to have ITM SNC automatically make adjustments for Daylight Savings Time (Spring Forward) and Standard Time (Fall Back) before doing date/time synchronization for the selected NE(s).

Related information
For related information, see T 600, Add a Network Element—X.25 Communications; T 601, Add a Network Element—OSI Communications; T 330, Enable/Disable Fall Back and Spring Forward, and the Date/Time Synchronization section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to manually perform date/time synchronization..

Step	Action		Reference
1	Select one or more NEs/aggregates from the Map window. **OR** Select no NEs/aggregates to perform date/time synchronization on all NEs under ITM SNC control. ⟹ **NOTE:** If all NEs are selected, 20 or more NEs can be handled at a time, depending on system load conditions.		SE 329-1
2	Select **Configuration** from the main menu bar on the Map window. The Configuration menu is displayed.		
3	Select **Date/Time Synchronization** from the Configuration menu. A sub-menu is displayed.		
4	Select **Manual** from the sub-menu. Another sub-menu is displayed.		
5	IFYOU ARE PERFORMING DATE/TIME SYNCHRONIZATION FOR... ■ an NE ■ an aggregate ■ all the NEs in your Target Group	THEN... ■ choose **NE** from the sub-menu. ■ choose **Aggregate** from the sub-menu. ■ choose **All** from the sub-menu.	
6	If you chose **NE** or **Aggregate** in the previous step, and have not already selected the NE/aggregate, the Choose an NE/Aggregate window is displayed. If you have already chosen the NE(s)/aggregate(s), skip to Step 8.		

Step	Action (Contd)	Reference
7	Select the NE(s) on which to perform date/time synchronization and click the OK button.	
8	The Manual Date/Time Synchronization window is displayed.	
9	Click the OK button to initiate date/time synchronization for the listed NEs. Date/Time synchronization is initiated. A pop-up window is displayed, showing the status of the date/time synchronization. **Stop! End of Task.**	

SE 329-1: Selecting NEs and Aggregates on the Map Pane

Procedure   To select a single NE or aggregate on the Map pane, position the mouse pointer over the NE or aggregate icon and click the select mouse button.

To select a group of NEs or aggregates on the Map pane.

1. Position the mouse pointer over a portion of the background adjacent to the items to be selected.

2. Click the mouse select button and drag the mouse pointer. As you drag the mouse pointer, an outlined box appears over the selected area.

3. Drag the mouse pointer over the NE(s)/aggregate(s) to be selected, enclosing them in the selection box. As items in the Map pane are selected, they change color. Release the mouse select button. The items are selected.

To deselect a selected item in the Map pane, position the mouse pointer over the itme and single-click the mouse select button. To deselect a group of items, position the mouse pointer within the boxed region and single-click the mouse select button. Any item in the box that is already selected becomes deselected.

Enable/Disable Fall Back and Spring Forward

330

Background

When to use

Use this procedure to enable or disable the Spring Forward (Daylight Savings Time) and Fall Back (Standard Time) feature to make automatic time adjustments in date/time synchronization for the selected NE(s)/aggregate(s).

Before you begin

Before you begin this task, access the Map window.

Related information

For related information, see T 329, Set NE Date/Time Synchronization, T 615, Enable/Disable Automatic Date/Time Synchronization, and the Date/Time Synchronization section in Chapter 4, Configuration Management.

Instructions

Task   Complete the following steps to enable or disable the Spring Forward/Fall Back time adjustment feature.

Step	Action			Reference
1	Select one or more NEs/aggregates from the Map window. **OR** Select no NEs/aggregates to use this feature for all NEs in your Target group.			SE 330-1
2	Select **Configuration** from the main menu bar on the Map window. The Configuration menu is displayed.			
3	Select **Spring/Fall Change** from the Configuration menu. A sub-menu is displayed.			
4	IF YOU ARE CHANGING THE SPRING FORWARD/FALL BACK FEATURE FOR...	AND.....	THEN...	
	one or more NEs	you have not already selected the NE(s)	select **NE** from the sub-menu.	
	one or more aggregates	you have not already selected the aggregate(s)	select **Aggregate** from the sub-menu.	
	all NEs/aggregates in your Target Group	you have not selected any NE(s)/ aggregate(s)	select **All** from the sub-menu.	
5	If you have not yet selected the NE(s)/aggregate(s), the Choose an NE/Aggregate window is displayed. Select the NE(s)/aggregate(s) on which to use the Spring Forward/ Fall Back feature and click the OK button. If you have already selected the NE(s)/aggregate(s), skip to Step 6.			
	Continued on next page			

Step	Action (Contd)		Reference
6	The Fall Back and Spring Forward Status window is displayed.		
7	IF ... ■ you want to enable the Spring Forward/Fall Back feature for the selected NEs ■ you want to disable the Spring Forward/Fall Back feature for the selected NEs	THEN ... ■ Click the "Enable FB/SF for above NEs" button. ■ Click the "Disable FB/SF for above NEs" button.	
8	Click the OK button to activate your choices. ⇨ **NOTE:** If Daylight Savings Time is already in effect for an NE, and you disable Spring Forward/Fall Back for an NE, requiring a date/time synchronization, a pop-up window is displayed, asking if you want to automatically initiate date/time synchronization for the NE(s). Choose Yes to initiate automatic date/time synchronization for the NE or No to skip date/time synchronization for the NE. **Stop! End of Task.**		

SE 330-1: Selecting NEs and Aggregates on the Map Pane

Procedure

To select a single NE or aggregate on the Map pane, position the mouse pointer over the NE or aggregate icon and click the select mouse button.

To select a group of NEs or aggregates on the Map pane.

1. Position the mouse pointer over a portion of the background adjacent to the items to be selected.

2. Click the mouse select button and drag the mouse pointer. As you drag the mouse pointer, an outlined box appears over the selected area.

3. Drag the mouse pointer over the NE(s)/aggregate(s) to be selected, enclosing them in the selection box. As items in the Map pane are selected, they change color. Release the mouse select button. The items are selected.

To deselect a selected item in the Map pane, position the mouse pointer over the itme and single-click the mouse select button. To deselect a group of items, position the mouse pointer within the boxed region and single-click the mouse select button. Any item in the box that is already selected becomes deselected.

Add a User Path (Manual)

331

Background

When to use Use this procedure to enter the name of a new path, and a CAC and CIC for the path.

Before you begin Before you begin this task, you must determine the path to be added.

Related information For related information, see Add a Path (Auto) - available in a coming release.

Instructions

Task

Complete the following steps to manually add a user path.

Step	Action	Result
1	Select **Configuration** from the menu bar on the Map window.	This displays a sub-menu.
2	Select **Path Management** from the sub-menu.	This displays the Path Manager window.
3	Click the Add button in the Path Manager window.	This displays the Add a Path window.
4	Type the new path name, CAC, and CIC into the three fields provided near the top of the window.	
5	Access the pop-up menu for an NE to be in the path (by right clicking on the NE on the Map window).	This displays the pop-up menu.
6	Select Add to Path from the displayed pop-up menu.	This displays a sub-menu.
7	Select Manual from the displayed sub-menu.	This displays the Cross-Connection View window.
8	*S*pecify an existing cross-connection for the path or create a new cross-connection for the path.	The system displays a confirmation window.
9	Confirm the cross-connection by clicking the appropriate button.	The system returns to the Add to Path window.
10	Click the OK button to complete the operation. **Stop! End of Task.**	

View User Paths

332

Background

When to use   Use this procedure to display the network elements and cross-connections in a path, as well as information about its existence in a network element. (In addition, viewing a path causes all network elements and trails that are part of that path to be highlighted in the Map window.)

Before you begin   Before you begin this task, determine the path to be viewed.

Related information For related information, see T 331, Add a User Path (Manual).

Instructions

Task   Complete the following steps to view a path.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	This displays a sub-menu.
2	Select **Path Management** from the sub-menu.	This displays the Manage Paths window.
3	On the Manage Paths window, select the path to be viewed by double-clicking on it.	
4	Click the View button. **Stop! End of Task.**	This displays the View a Path window. For the selected path, this window displays: ■ The NE to which the cross-connection belongs ■ The source (From) and destination (To) of the cross-connection ■ The rate ■ The cross-connection type ■ Whether the cross-connection exists on the NE

Copy User Paths

333

Background

When to use   Use this procedure to copy all information about a path to a new name, CAC, and
CID.

Before you begin   Before you begin this task, determine the path to be copied and the name to be
given the new path.

Related information   For related information, see T 332, View User Paths.

Instructions

Task
Complete the following steps to copy a path.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	This displays a sub-menu.
2	Select **Path Management** from the sub-menu.	This displays the Manage Paths window.
3	Select a path from the Manage Paths window by double clicking on it.	
4	Click the Copy button.	This displays the Copy a Path window.
5	Into the lower Path Name and Information portion of the Copy a Path window, type the new path name, CAC, and CIC to be copied from the existing path displayed in the upper Path Name and Information portion of the window.	
6	Click the OK button to copy the path. **Stop! End of Task.**	The system copies the selected path into the entered path name, CAC, and CIC.

Display Path Modifications

334

Background

When to use   Use this procedure to display path modifications prior to the execution of any delete or add path operation.

Before you begin   Before you begin this task, determine the changes needed and make sure you will be changing the correct path.

Related information   For related information, see T 332, View User Paths.

Instructions

Task   Complete the following steps to modify a path.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	This displays a sub-menu.
2	Select **Path Management** from the sub-menu.	This displays the Manage Paths window.
3	Select a path from the Manage Paths window by double-clicking on it.	
4	Click the Modify button. **Stop! End of Task.**	This displays the Modify Path window, with the requested information.

Delete User Paths

335

Background

When to use   Use this procedure to delete a path, and to administer the deletion of each cross-connection in the path either individually or as a whole.

Before you begin   Before you begin this task, determine the path to be deleted.

Related information   For related information, see T 332, View User Paths.

Instructions

Task   Complete the following steps to delete a path.

Step	Action	Result
1	Select **Configuration** from the main menu bar on the Map window.	This displays a sub-menu.
2	Select **Path Management** from the sub-menu.	This displays the Manage Paths window.
3	Select a path from the Manage Paths window (by double clicking on it) and click the Delete button.	This displays the Question Dialog box asking if you really want to perform the Delete.
4	Click Yes in the Question Dialog box.	This displays the Delete a Path window.
5	To delete only the path name, CAC, and CIC associated with the selected path (but not the actual cross-connections in the path), click on the OK button. (To delete the path *and* the associated cross-connections, go to Step 6 below.)	Only the information associated with the selected path is deleted (the cross-connections are not).
6	To delete the path information *and* the NE's cross-connections associated with the path, first click on the **Delete all cross connections in the path** box and *then* click the OK button. ⇛ **NOTE:** The user can also selectively delete the NE's cross-connections by toggling between Yes/No in the **Delete all cross connections in the path** box on an individual row in the table using the menu mouse button. **Stop! End of Task.**	The selected path information and the associated cross-connections are all deleted. ⇛ **NOTE:** If you attempt to delete Dual Ring Interworking (DRI) cross-connections as part of a path deletion, the system displays a warning message telling you to proceed with extreme caution because the cross-connection may be carrying critical service. After careful consideration, you can click OK to proceed with the delete, or click cancel to cancel the delete.

Task Series 400

Performance Management

Enable/Disable the PM Feature

400

Background

When to use

Use this procedure to globally enable or disable the Performance Monitoring (PM) data collection feature for FT-2000 LCT and OLS 40G NEs. When the PM data collection feature is turned on, ITM SNC periodically collects PM data from each NE that has PM data collection activated. When the PM feature is globally disabled, PM data is not collected from any NE.

Before you begin

Before you begin this task, access the Map window.

Related information

For related information, see Chapter 5, Performance Management.

Instructions

Task   Complete the following steps to globally enable or disable the PM feature.

Step	Action	
1	Select **Performance** from the main menu bar on the Map window. The Performance menu is displayed.	
2	Select **Global PM Management** from the Performance menu. The Global PM Data Administration window is displayed.	
3	IF … you want to enable the PM feature	THEN … click on the Collect PM Data box to place a check there and select the retention period for 15-minute and 1-day PM data reports. To select the retention period, move the slider bar for each report type to the left or right. You can set the retention period from 1 to 45 days for each report type. The number displayed to the right of each slider bar shows the setting selected.
	you want to disable the PM feature	click on the Collect PM Data box to remove the check or leave the box blank.
4	Click the OK button to activate your choices. **Stop! End of Task.**	

Enable/Disable PM Data Collection

401

Background

When to use Use this procedure to enable or disable PM data collection for the specified NE and, if PM data collection is enabled, select the PM reporting interval.

Before you begin Before you begin this task, you must globally enable the PM feature.

Related information For related information, see Chapter 5, Performance Management.

Instructions

Task

Complete the following steps to enable collection of the selected PM data types or disable PM data collection for the NE.

Step	Action	
1	Select **Performance** from the main menu bar on the Map window. The Performance menu is displayed.	
2	Select **NE PM Management** from the Performance menu. The Choose an NE window is displayed.	
3	Select an NE and click the OK button. The NE PM Data Administration window is displayed.	
4	IF ... ■ you want to collect PM data for the selected PM data type in 15-minute intervals ■ you want to collect PM data for the selected PM data type in 1-day intervals ■ you want to collect both 15-minute and daily PM data for the PM data type ■ collect no PM data (disable PM data collection for the NE)	THEN ... ■ check the 15 Minute Reports box ■ check the Daily Reports box ■ check both boxes ■ click both boxes to remove the checks, or leave both boxes blank
5	IF ... ■ you want to collect PM data from all data types ■ you want to collect PM data from one or more types	THEN ... ■ select the All Types radio button ■ click on the "Only the following types" radio button and then check the data types for PM data
6	Click the Apply button to activate your choices. **Stop! End of Task.**	

View PM Data

402

Background

When to use   Use this procedure to view the flat, compressed UNIX files that contain the PM data retrieved from NEs. The data consists of TL1 responses gathered in 15-minute or 1-day intervals.

Before you begin   Before you begin this task, the PM feature must be globally enabled and the selected NE must have PM data collection activated for one or more PM data types.

Related information   For related information, see Chapter 5, Performance Management.

Instructions

Task   Complete the following steps to view PM data for a specified NE.

Step	Action
1	Select **Performance** from the main menu bar on the Map window. The Performance menu is displayed.
2	Select **View PM Data** from the Performance menu. The Choose an NE window is displayed.
3	Select an NE and click the OK button. The Select a File to View PM Data window is displayed. **OR** Select an NE on the Map or Subnetwork Explorer, right-click on the NE to bring up a pop-up menu, select **Performance** from the pop-up menu, and select **View PM Data** to display the Select a File to View PM Data window.
4	Choose the type of PM data that you want to view by clicking on the 15 Minute Report or Daily Report radio buttons. The selected category of files is shown in the scroll bar list. You can further narrow the listing by using the Type Ahead List field and/or F/S (Filter/Sort) function key.
5	Select the timeframe of the data files by using the Start Date & Time and End Date & Time spinner fields. ⇒ **NOTE:** If you configured the data retention period on the Global PM Data Administration window for less than 30 days, you can only view the data files that fall within the selected data retention period.
6	Select the PM Data file from the list.
7	Click the OK button. A window is displayed, showing the selected PM data. **Stop! End of Task.**

Task Series 500

Security Management

Change Your User Password

500

Background

When to use   Use this procedure to change your user password.

Instructions

Task   Complete the following steps to change your user password.

Step	Action
1	Select **Administration** from the main menu of the Map window. This displays a sub-menu.
2	Choose **Security** from the displayed sub-menu. This displays another sub-menu.
3	Choose **Change Password** from the Security menu. This displays the Change Password window.
4	Type your current password into the Old Password field.
5	Type your desired new password into the New Password field.
6	Type the same desired new password into the Confirm New Password field.
7	Select the OK button to enter the password change into the system. **Stop! End of Task.**

Globally Administer NE Passwords

501

Background

When to use

Use this procedure to change the primary and/or secondary passwords for selected NE(s)/aggregate(s).

Before you begin

Before you begin this task, you must be logged into the system. The NE(s) or aggregate(s) for which you are changing passwords must already exist in the system. Be aware that if you are changing passwords for 20 or more NEs at a time, this may degrade system performance. Only one user can use the Global Administer Password function at a time.

To perform this task, access the Map window.

Related information

For related information, see T 624, Modify a Network Element Chapter 6, Security Management.

Instructions

Task   Complete the following steps to change the primary and/or secondary passwords for the selected NE(s)/aggregate(s).

Step	Action	
1	Select one or more NEs and/or aggregates on the Map window pane or subnetwork explorer, if you know for which NEs you want to perform this function. **OR** Select no NEs and/or aggregates at this point.	
2	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.	
3	Select **Security** from the Administration menu. The Security sub-menu is displayed.	
4	Select **Global Password Administration** from the Security sub-menu. The Global Password Administration window is displayed.	
5	TO CHANGE THE PASSWORD FOR...	CLICK THE...
	■ one or more NEs	■ Show NEs radio button.
	■ one or more aggregates	■ Show Aggregates radio button.
	■ NE(s) and/or aggregate(s)	■ Show NEs and Show Aggregates radio buttons.
	■ a specific NE type	■ List by Type radio button.
6	Select the NE(s) and/or aggregates for which the password(s) will be changed, from the Network Elements/Aggregates list. When you select an NE or aggregate, the item moves from the Network Elements/Aggregates List to the Chosen NEs list. You can use the arrow push buttons to move NEs/aggregates back and forth between the two lists, as needed.	
7	Enter the new Primary Password for the selected NE(s)/aggregate(s) in the Primary Password field.	
8	Re-enter the new Primary Password in the Re-enter Primary Password field.	
	Continued on next page	

Step	Action (Contd)
9	If desired, enter a new Secondary Password in the Secondary Password field.
10	If a new Secondary Password has been entered, re-enter it in the Re-enter Secondary Password field.
11	To abort the password change operation at any time while the Global Password Administration window is open, click the Abort button. To initiate the password change(s), click the Apply button or OK button. ⇒ **NOTE:** If the number of NEs selected is 20 or more, a pop-up message window appears, advising you that the EMS performance may be impacted and asking if you want to continue with the operation. Choose **Y** to continue with the operation or **N** to cancel the operation. A Log Browser window is displayed, showing the status of the operation. This window remains open until you close it. **Stop! End of Task.**

Add a User

502

Background

When to use   Use this procedure to add a user's login and access permissions for the system.

Before you begin   Before you begin this task, you must have at least one Command Group and one Target Group defined.

To perform this task, access the Map window.

Related information   For related information, see <u>T 508, Add a Target Group</u>, <u>T 505, Add a Command Group</u>, and <u>Chapter 6, Security Management</u>.

Instructions

Task   Complete the following steps to add a user login.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **User Provisioning** from the Security sub-menu. The Manage Users window is displayed, showing the current list of user logins.

Step	Action (Contd)
4	Click the Add button. The Add a User window is displayed.
5	Fill in the following fields, as needed: ■ Name—This is the user login field. A user login can be 1-10 alphanumeric characters, in any combination of characters. Uppercase and lowercase letters are allowed. No special characters are allowed. Spaces are not allowed. This field is required. ■ Alias—This is an alternate label for the user. A user alias can be 1-20 alphanumeric characters, in any combination. Uppercase and lowercase letters are allowed. Spaces are allowed. This field is optional. ■ Password—This is the user's password. A user password can be 6-10 characters. The password must contain at least one alpha character, one numeric character, and one special character. This field is required. ■ Confirm Password—This field is to confirm the user's password. If the entry in this field is not identical to the password entered in the Password field, a pop-up window is displayed with a warning message when the OK button is clicked. This field is required. ■ Copy this user's settings—This field is used to copy another user's Login Type, Command Group, and Target Group settings. Click the down arrow to the right of the field to display a list of users. Select a user login from which to apply settings and then click the Load Settings button. This field is optional, and settings can be modified after these fields have been populated. ■ Login Type—This field is used to specify the type of login. The types are: opsine, nmaf, nms, nms.cfg, nms-fit, itm, partition, and other. Click the down arrow to the right of the field to display the choices. Select a login type. This field is required. ■ Command Group—This field is used to specify which Command Group the user can access. Click the down arrow to the right of the field to display a list of choices. The choices are: All Commands, No Commands, or a specific Command Group. Select a Command Group for user access. This field is required. ■ Target Group—This field is used to specify which Target Group the user can access. Click the down arrow to the right of the field to display a list of choices. The choices are: All Targets, No Targets, or a specific Target Group. Select a Target Group for user access.. This field is required. For OPS/INE and NMA logins, the Target Group must be All Targets.

Step	Action (Contd)
6	Click the OK button. The Status Dialog window is displayed, indicating that the user is being added to WaveStar SNMS. **Stop! End of Task.**

Modify a User

503

Background

When to use   Use this procedure to change a user login's attributes. The Login Type, Alias, Password, Command Group, and/or Target Group can be changed.

Before you begin   Before you begin this task, you must create a user login.

To perform this task, access the Map window.

Related information   For related information, see T 502, Add a User and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to modify a user login's attributes.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **User Provisioning** from the Security sub-menu. The Manage Users window is displayed, showing the current list of user logins.
4	Select a user login from the list.
5	Click the Modify button. The Modify User window is displayed.
6	Change the Login Type, Password, Alias, Command Group, and/or Target Group fields as desired.
7	Click the OK button. The Status Dialog window is displayed, indicating that the changes to the user login are being made by the system. **Stop! End of Task.**

Delete a User

504

Background

When to use   Use this procedure to delete a user login from ITM SNC.

Before you begin   Before you begin this task, be aware that TL1 Macro Builder Files created by a user remain in ITM SNC. These files must be removed either by the owner of the files (the user) or the system administrator.

To perform this task, access the Map window.

Related information   For related information, see T 502, Add a User, T 301, Build TL1 Commands, and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to delete a user.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **User Provisioning** from the Security sub-menu. The Manage Users window is displayed.
4	Select the user to be deleted from the list of user logins.
5	Click the Delete button. A pop-up window is displayed, asking if you really want to delete the user.
6	Choose Yes to delete the user. **Stop! End of Task.**

Add a Command Group

505

Background

When to use   Use this procedure to add a Command Group. A Command Group is a set of NE and ITM SNC commands that a user can use. In creating a Command Group, you can copy a set of commands from an existing command group into the new one. Command Groups can also be modified or deleted.

Before you begin   Before you begin this task, access the Map window.

Related information   For related information, see T 506, Modify a Command Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to add a Command Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Command Groups** from the Security sub-menu. The Manage Command Groups window is displayed, showing the current list of Command Groups.
4	Click the Add button. The Add a Command Group window is displayed.
5	Fill in the following fields, as needed: ■ Command Group Name—This is the Command Group name. A Command Group name cannot contain spaces. This field is required. ■ Command Group Alias—This is the Command Group alias (alternate label). This field is required. ⟹ **NOTE:** If you provide an invalid Command Group name or alias, the system informs you with a warning message. ■ Copy settings from this group—This field is used to copy a set of commands from an existing Command Group into the new one. Click the down arrow to the right of the field to display a list of Command Groups. Select a Command Group from which to copy a set of commands and then click the Load Settings button. This field is optional, and the contents of the EMS and NE Command fields can be modified after this information has been copied.
	Continued on next page

Step	Action (Contd)
6	Use the push buttons to move commands from the list of available commands in the EMS Commands scroll list to the SNC Commands In This Group list, as needed.
7	Use the push buttons to move commands from the list of available NE commands in the Network Elements Commands scroll list to the NE Commands In This Group list, as needed.
8	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. The Status Dialog window is displayed, indicating the Command Group is being added to ITM SNC. **Stop! End of Task.**

Modify a Command Group

506

Background

When to use
Use this procedure to change a Command Group once it has been created.

Before you begin
Before you begin this task, be aware that the Command Group name or alias cannot be modified.

To perform this task, access the Map window.

Related information
For related information, see T 505, Add a Command Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to modify a Command Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Command Groups** from the Security sub-menu. The Manage Command Groups window is displayed, showing the current list of Command Groups.
4	Select the Command Group to be modified from the list.
5	Click the Modify button. The Modify Command Group window is displayed.
6	Change the Copy From Group, EMS Command List, or NE Command List as desired.
7	Click the OK button. The Status Dialog window is displayed, indicating that the changes to the Command Group are being made by ITM SNC. **Stop! End of Task.**

Delete a Command Group

507

Background

When to use
Use this procedure to delete a Command Group from ITM SNC.

Before you begin
Before you begin this task, be aware that users for the Command Group being deleted must be reassigned to another Command Group. The reassignment is done as part of this task.

To perform this task, you must first access the Map window.

Related information
For related information, see T 505, Add a Command Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to delete a Command Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Command Groups** from the Security sub-menu. The Manage Command Groups window is displayed, showing the current list of Command Groups.
4	Select the Command Group to be deleted from the list.
5	Click the Delete button. A pop-up window is displayed, asking if you really want to delete the Command Group.
6	Choose Yes to delete the Command Group. The Reassign Users to Command Group window is displayed if any users are assigned to the Command Group.
7	Choose a Command Group from the list to which you want to reassign all users of the Command Group being deleted.
8	Click the OK button. The Command Group is deleted. **Stop! End of Task.**

Add a Target Group

508

Background

When to use

Use this procedure to add a Target Group. A Target Group is a collection of NEs to which a user has access and can execute commands. A user is assigned to one and only one Target Group and can only access the NEs in this group. ITM SNC is initially loaded with two Target Groups: one for all NEs and another with no NEs. Additional Target Groups can be defined as needed by a system administrator or a user with a privileged login. In creating a Target Group, you can copy a set of NEs from an existing Target Group into the new one. Target Groups can also be modified or deleted.

Before you begin

Before you begin this task, access the Map window.

Related information

For related information, see T 509, Modify a Target Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to add a Target Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Target Groups** from the Security sub-menu. The Manage Target Groups window is displayed, showing the current list of Target Groups.
4	Click the Add button. The Add a Target Group window is displayed.
5	Fill in the following fields, as needed: ■ Target Group Name—This is the Target Group name. A Target Group name cannot contain spaces. This field is required. ■ Target Group Alias—This is the Target Group alias (alternate label). This field is required. ⟹ **NOTE:** If you provide an invalid Target Group name or alias, the system informs you with an error message. ■ Copy settings from this group—This field is used to copy a set of NEs from an existing Target Group into the new one. Click the down arrow to the right of the field to display a list of Target Groups. Select a Target Group from which to copy a set of NEs and then click the Load Settings button. This field is optional, and the contents of the Target Group can be modified after this information is copied.
6	Use the push buttons to move NEs from the Network Element list scroll list to the NEs in This Group list, as needed.
7	Click the OK button. The Status Dialog window is displayed, indicating that the Target Group is being added to ITM SNC. **Stop! End of Task.**

Modify a Target Group

509

Background

When to use

Use this procedure to change a Target Group once it has been created.

Before you begin

Before you begin this task, be aware that the Target Group name cannot be modified. Certain Target Groups cannot be modified or deleted; this is indicated on the Target Group Manager window.

To perform this task, access the Map window.

Related information

For related information, see T 508, Add a Target Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to modify a Target Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Target Groups** from the Security sub-menu. The Manage Target Groups window is displayed, showing the current list of Target Groups.
4	Select the Target Group to be modified from the list.
5	Click the Modify button. The Modify Target Group window is displayed.
6	Change the alias, Copy From Group, and/or NEs in This Group fields, as desired.
7	Click the OK button. The Status Dialog window is displayed, indicating that the changes to the Target Group are being made by ITM SNC. **Stop! End of Task.**

Delete a Target Group

510

Background

When to use   Use this procedure to delete a Target Group from ITM SNC.

Before you begin   Before you begin this task, be aware that users of the Target Group to be deleted must first be reassigned to another Target Group. The reassignment is done as part of this task. Certain Target Groups cannot be modified or deleted; this is indicated on the Target Groups Manager window.

                         To perform this task, access the Map window.

**Related
information**   For related information, see T 508, Add a Target Group and Chapter 6, Security Management.

Instructions

Task   Complete the following steps to delete a Target Group.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Security** from the Administration menu. The Security sub-menu is displayed.
3	Select **Target Groups** from the Security sub-menu. The Manage Target Groups window is displayed, showing the current list of Target Groups.
4	Select the Target Group to be deleted from the list.
5	Click the Delete Group button. A pop-up window is displayed, asking if you really want to delete the Target Group.
6	Choose Yes to delete the Target Group. The Reassign Users to Target Group window is displayed if there are any users assigned to the Target Group.
7	Choose a Target Group from the list to which you want to reassign all users of the Target Group being deleted.
8	Click the OK button. The Target Group is deleted. **Stop! End of Task.**

Task Series 600

Administration

Add a Network Element—X.25 Communications

600

Background

When to use

Use this procedure to add an X.25-connected NE. X.25-connected NEs are either directly connected to ITM SNC or use a Gateway Network Element (GNE) for communications with ITM SNC.

Before you begin

Before you begin this task, verify that the NE that you are adding communicates with ITM SNC using X.25 protocol. Before adding an NE, you must have a Target Identifier (TID), a valid NE login/password, and a valid backup NE login/password. The GNE(s) that provides the communications link for this NE in the subnetwork must be added first.

To perform this task, you must first access the Map window.

Related information

For related information, see T 602, Add a Gateway Network Element; T 624, Modify a Network Element; T 625, Delete a Network Element; and Chapter 7, Administration.

Instructions

Task   Complete the following steps to add an X.25-connected NE to ITM SNC.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. A sub-menu is displayed.
3	Select **Network Elements** from the sub-menu. The Manage NEs window is displayed, showing the current list of NEs in your Target Group.
4	Click on the Add button. The Add an NE - General Information panel is displayed. The Add an NE window for X.25-connected NEs is divided into three panels: ■ General NE Information ■ NE Communications Details ■ NE Security There are fields on each panel that are required to add an NE. To access a panel, click the mouse select button on the panel's labeled tab. The General Information panel is displayed initially.
5	Enter the NE's Target Identifier (TID). A TID can be 1-20 alphanumeric characters. Hypens and periods are allowed. This field is required.
6	Enter the NE Alias. An alias can be 1-20 alphanumeric characters. Uppercase and lowercase letters are allowed. Spaces are allowed. This field is optional.
7	Select the NE Type. To do this, click the down arrow to the right of the field to display a drop-down list of choices and select the NE type. This field is required.
	Continued on next page

Step	Action (Contd)
8	Select the NE's time zone by clicking the appropriate radio button. If Other is selected, enter the time difference, in minutes, between the NE time and Greenwich Mean Time (GMT). Specify the time difference, "+" (plus) or "-" (minus), up to five characters. Valid values are -11.0 to 13.00 (the plus "+" is implied). This field is required. If no selection is made, the Time Zone defaults to Same as Host.
9	For the Communicate Via field, click the GNE radio button. This NE is being set up communicate with ITM SNC via a GNE. The default for this NE type is GNE. This field is required.
10	The Enable Automatic Alarm Throttling box is checked, by default. This field is greyed out when you are adding an NE and can only be changed through the Modify NE window.
11	Click on the NE Communications Details tab. The NE Communications Details panel is displayed, showing the current list of GNEs available to provide communications with ITM SNC for the NE being added.
12	Select the GNE for the NE being added. Use the type ahead field and filter/sort function to narrow the listing to the GNE(s) required.
13	Click on the NE Security tab. The NE Security panel is displayed.
14	Enter the primary NE login for the NE being added. The login can be 1-10 characters.
15	Enter the primary NE password for the NE login. An NE password can be 1-10 characters.
16	Re-enter the primary NE password, in the Re-enter Password field, for checking.
17	Enter the backup login for the NE. The backup login can be 1-10 characters.
	Continued on next page

Step	Action (Contd)
18	Enter the backup password for the NE. The backup password can be 1-10 characters.
19	Re-enter the backup password, in the Re-enter Backup Pwd field, for checking.
20	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the NE Security panel of the Add/Modify NE window. The system prompts if you want to run DNO immediately to update the ITM SNC database with complete information about the newly added NE. Choose Yes to run DNO or No to not perform DNO at this time. The Status Dialog window is displayed, indicating that the NE is being added to ITM SNC. **Stop! End of Task.**

Add a Network Element—OSI Communications

601

Background

When to use

Use this procedure to add an NE that communicates with ITM SNC over an OSI/LAN interface. The ITM SNC IAO-LAN interface provides a higher bandwidth communications path to NEs than possible via X.25. ITM SNC establishes and manages OSI associations to NEs. ITM SNC supports the OSI standard seven-layer protocol stack. When ITM SNC communicates with OSI-connected NEs over an IAO-LAN interface, no GNE is needed, but one NE of this type can serve as the point of attachment for ITM SNC to the subnetwork.

Before you begin

Before you begin this task, you should identify the number and types of OSI associations to be used for NE communications with ITM SNC.

:When adding an NE, the following information must be entered:

- Target Identifier (TID)
- NE Type
- Valid NE primary/backup login/password
- Number and Type of OSI Associations

To perform this task, access the Map window.

Related information

For related information, see T 624, Modify a Network Element, T 625, Delete a Network Element and Chapter 7, Administration.

Instructions

Task   Complete the following steps to add an OSI-connected NE to ITM SNC.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. A sub-menu is displayed.
3	Select **Network Elements** from the sub-menu. The Manage NEs window is displayed, showing the current list of NEs in your Target Group.
4	Click on the Add button. The Add an NE - General Information panel is displayed. The Add an NE window for OSI-connected NEs is divided into three panels: 　■　General NE Information 　■　NE Communications Details 　■　NE Security There are fields on each panel that are required to an an NE. To access a panel, click the mouse select button on the panel's labeled tab. The General Information panel is displayed initially.
5	Enter the NE's Target Identifier (TID). A TID can be 1-20 alphanumeric characters. Hyphens and periods are allowed. This field is required.
6	Enter the NE's Alias. An alias can be 1-20 alphanumeric characters. Uppercase and lowercase letters are allowed. Spaces are allowed. This field is optional.
7	Select the NE Type. To do this, click the down arrow to the right of the field to display a drop-down list of choices and select the NE type. This field is required.
8	Select the NE's time zone by clicking the appropriate radio button. If Other is selected, enter the time difference, in minutes, between the NE time and Greenwich Mean Time (GMT). Specify the time difference, "+" (plus) or "-" (minus), up to five characters. Valid values are -11.0 to 13.00 (the plus "+" is implied). This field is required. If no selection is made, the Time Zone defaults to Same as Host.
9	Choose OSI for the Communicate Via field.
10	The Enable Automatic Alarm Throttling box is checked, by default. This field is greyed out when you are adding an NE and can only be changed through the Modify NE window.
	Continued on next page

Step	Action (Contd)
11	Click on the NE Communications Details tab. The Communications Details panel for OSI communications is displayed. Fill in the following fields, as need: ■ Communication Type—These radio button selections are reserved for future use. ■ Number of OSI Associations—Choose the number of OSI associations for the NE type by clicking the corresponding radio button: **1**, **2**, or **3**. The default number is **1**. This field is required. The number of available associations is **3**. ■ Type of OSI Associations—For each OSI association chosen, choose the association type. Only one assocation type can be assigned per association. This field is required. The association types vary by NE type. The default association type is Other1, if only one association is configured.
12	Click on the NE Security tab. The NE Security panel is displayed.
13	Enter the primary NE login for the NE being added. The login can be 1-10 characters.
14	Enter the primary NE password for the NE login. An NE password can be 1-10 characters.
15	Re-enter the primary NE password, in the the Re-enter Password field, for checking.
16	Enter the backup login for the NE. The backup login can be 1-10 characters.
17	Enter the backup password for the NE. The backup password can be 1-10 characters.
18	Re-enter the backup password, in the Re-enter Backup Pwd field, for checking.
19	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the NE Security panel of the Add/Modify NE window. The system prompts if you want to run DNO immediately to update the ITM SNC database with complete information about the newly added NE. Choose Yes to run DNO or No to not perform DNO at this time. The Status Dialog window is displayed, indicating that the NE is being added to ITM SNC. **Stop! End of Task.**

Add a Gateway Network Element

602

Background

When to use   Use this procedure to add a Gateway Network Element (GNE). A GNE is an NE that provides X.25-based communications between ITM SNC, the NEs in a subnetwork, and external OSs. The GNE establishes communication with the ITM SNC host through a synchronous port over a Packet-Switched Network (PSN). To provide support in the event of a communications failure, a GNE is assigned to a subnetwork to allow switchover to another GNE.

Before you begin   Before you begin this task, the following must be established before adding a GNE:

- The GNE's Target Identifier (TID)

- A valid NE login/password, and a valid backup NE login/password

- The synchronous port that the PSN uses for connectivity to the ITM SNC host

- The PVCs and/or SVCs that are being used for command/response messages, autonomous maintenance/alarm messages, and autonomous database change/ provisioning commands/responses

Before adding a GNE, you must first create a subnetwork to which it can be assigned.

To perform this task, access the Map window.

Related information

For related information, see T 605, Add a Subnetwork Name/Alias; T 624, Modify a Network Element; T 625, Delete a Network Element; and Chapter 7, Administration.

Instructions

Task   Complete the following steps to add an X.25-connected GNE.

Step	Action
1	Select **Administration** from the main menu bar on the Map window.
2	Select **Network** from the Administration menu. A sub-menu is displayed.
3	Select **Network Elements** from the sub-menu. The Manage NEs window is displayed, showing the current list of NEs in your Target Group.
4	Click on the Add button. The Add an NE - General Information panel is displayed. The Add an NE window for X.25-connected GNEs is divided into three panels: ■ General NE Information ■ NE Communications Details ■ NE Security There are fields on each panel that are required to add a GNE. To access a panel, click the mouse select button on the panel's labeled tab. The General Information panel is displayed initially.
5	Enter the GNE's Target Identifier (TID). A TID can be 1-20 alphanumeric characters. Hyphens and periods are allowed. This field is required.
6	Enter the GNE's Alias. An alias can be 1-20 alphanumeric characters. Uppercase and lowercase letters are allowed. Spaces are allowed. This field is optional.
7	Select the NE Type. To do this, click the down arrow to the right of the field to display a drop-down list of choices and select the NE type. This field is required.
	Continued on next page

Step	Action (Contd)
8	Select the NE's time zone by clicking the appropriate radio button. If Other is selected, enter the time difference, in minutes, between the NE time and Greenwich Mean Time (GMT). Specify the time difference, "+" (plus) or "-" (minus), up to five characters. Valid values are -11.0 to 13.00 (the plus "+" is implied). This field is required. If no selection is made, the time zone defaults to Same as Host.
9	For the Communicate Via field, click the PSN radio button. As a GNE, this NE is being set up to communicate with ITM SNC and other NEs in the subnetwork via a PSN. This field is required.
10	The Enable Automatic Alarm Throttling box is checked, by default. This field is greyed out when you are adding an NE and can only be changed through the Modify NE window.
11	Click on the NE Communications Details (PSN) tab. The NE Communications Detail panel is displayed. This panel is used to enter information about the GNE's X.25 interface.
12	Click on the down arrow to the right of the Choose an X.25 Interface field to display a list of X.25 port names, and select a port. This field is required.
13	Click on the down arrow to the right of the Choose a Subnetwork field to display a list of subnetworks, and select a subnetwork. This field is required.
14	For NEs discovered under the GNE being added (Discovered Remotes), choose one of the following options (by clicking on that option's radio button): ■ This GNE—the NE login and password entered for this GNE in the NE Security panel will be used to log into the NEs ■ ITM SNC Default for Remote NEs—the system-wide ITM SNC default NE login and password for the NE type of the Remote Terminal (RT) being discovered will be used to log into the NEs. ■ ITM SNC Default for GNE Type—the system-wide ITM SNC default NE login and password for the NE type of the GNE being added will be used to log into the NEs.
	Continued on next page

Step	Action (Contd)	
15	Choose the Number of Virtual Circuits (VCs) for this GNE by clicking the radio button next to the number. The choices are: 1, 2, or 3. Display of the associated VC fields depends on the number of VCs you choose. For example, if you choose 1 VC to be configured, the Command/Response VC field is enabled. The Autonomous Message & Alarms field and Autonomous DB Change/Command Response 2 fields are disabled. If 1 VC is configured, either or both the Autonomous Message and Autonomous Database Change/Provisoning functions may share the Command/Response VC.	
16	For each configured VC, choose whether it is set up as an SVC or a PVC.	
17	IF... any VC is set up as an SVC a VC is set up as a PVC	THEN... enter the X.121 SVC address in the SVC X.121 Address field. Only one X.121 address is used. Valid SVC X.121 Address values are 1-15 digits and must be greater than 1. enter the PVC Logical Channel Number in the related field. Valid PVC logical channel numbers are 1-999.
18	Click on the NE Security tab. The NE Security panel is displayed.	
19	Enter the primary NE login for the GNE being added. The login can be 1-10 characters.	
20	Enter the primary NE password for the GNE login. An NE password can be 1-10 characters.	
21	Re-enter the primary NE password, in the Re-enter Password field, for checking.	
	Continued on next page	

Step	Action (Contd)
22	Enter the backup login for the GNE. The backup login can be 1-10 characters.
23	Enter the backup password for the GNE. The backup password can be 1-10 characters.
24	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the NE Security panel of the Add/ Modify NE window. The system prompts if you want to run DNO immediately to update the ITM SNC database with complete information about the newly added NE. Choose Yes to run DNO or No to not perform DNO at this time. The Status Dialog window is displayed, indicating that the GNE is being added to ITM SNC. **Stop! End of Task.**

Add a Trail

603

Background

When to use

Use this procedure to manually add a trail between two NEs. Trails between identical Lucent Technologies NEs may be autodiscovered by the DNO feature and do not have to be manually added. Manually added trails may also be manually deleted.

Before you begin

Before you begin this task, verify that the NEs at either end of the trail are compatible for the connection and that the AIDs at both ends of the trail are using compatible software releases.

To perform this task, access the Map window.

Related information

For related information, see and .

Instructions

Task   Complete the following steps to manually add a trail.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	The Network sub-menu is displayed.
3	Select **Trails** from the Network sub-menu.	The Trail Manager window is displayed, showing the current list of trails between NEs.
4	Click the Add a New Trail button.	The Add a Trail window is displayed. This window consists of: ■ From TID and To TID scroll lists for both NEs ■ From AID and To AID explorers for both NEs The Trail Termination Point (TTP) for either end of the trail consists of the NE's TID and AID.
5	Select the first NE's TID from the From TID list.	The corresponding AIDs for the first NE's TID are displayed in the From AID explorer.
6	Select the second NE's TID from the To TID list.	The corresponding AIDs for the second NE's TID are displayed in the To AID explorer.
7	Select a valid AID for the first NE's TID from the From AID explorer.	
8	Select a valid AID for the second NE's TID from the To AID explorer.	
9	Click the Apply button to create the trail, or click the OK button to create the trail and close the window. **Stop! End of Task.**	

Delete a Trail

604

Background

When to use

Use this procedure to manually delete a trail between two NEs. Automatically discovered trails are deleted automatically if one of the NEs at either end is deleted.

Before you begin

Before you begin this task, be aware that if you delete a trail, it is removed from the trail list in any open windows, including the Trail Manager window. The deleted trail is also removed from all open Map windows.

To perform this task, access the Map window.

Related information

For related information, see T 603, Add a Trail and Chapter 7, Administration.

Instructions

Task   Complete the following steps to manually delete a trail.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	The Network sub-menu is displayed.
3	Select **Trails** from the Network sub-menu.	The Trail Manager window is displayed, showing the current list of trails between NEs
4	Select a trail to be deleted.	
5	Click the Delete Trail button.	A pop-up window is displayed, asking if you really want to delete the trail.
6	Choose Yes to delete the trail. **Stop! End of Task.**	The Status Dialog window is displayed, indicating that the trail is being deleted.

Add a Subnetwork Name/Alias

605

Background

When to use

Use this procedure to add a subnetwork name and subnetwork alias. Once a subnetwork name and alias is created, you can associate one or more active GNEs with that subnetwork. The Remote Network Elements (RNEs) associated with a GNE become grouped under that subnetwork name/alias. RNEs in a subnetwork can be manually reassigned to another GNE in the same subnetwork.

Before you begin

Before you begin this task, you must add at least one of the network elements that will be part of the subnetwork you are adding. To perform this task, you must first access the Map window.

Related information

For related information, see T 602, Add a Gateway Network Element and Chapter 7, Administration.

Instructions

Task   Complete the following steps to add a subnetwork name and its alias.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	A sub-menu is displayed.
3	Select **Subnetwork** from the sub-menu.	The Subnetwork Manager window is displayed.
4	Click the Add button to add a new subnetwork name/alias.	The Add a Subnetwork window is displayed.
5	Enter the name of the subnetwork, which is the name of one of the member Network Elements, in the Subnetwork Name field.	
6	Enter the name of the subnetwork alias in the Subnetwork Alias field.	
7	Click the Apply button to add the new information to the ITM SNC datebase, or click the OK button to add the new information and close the window. **Stop! End of Task.**	The Status Dialog window is displayed, indicating that the subnetwork name/alias has been added to the system.

Modify a Subnetwork Alias

606

Background

When to use

Use this procedure to change a subnetwork's alias once it has been created.

Before you begin

Before you begin this task, the subnetwork name/alias being modified must exist in ITM SNC.

To perform this task, access the Map window.

Related information

For related information, see T 605, Add a Subnetwork Name/Alias and Chapter 7, Administration.

Instructions

Task   Complete the following steps to change a subnetwork alias.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	A sub-menu is displayed.
3	Select **Subnetwork** from the sub-menu.	The Subnetwork Manager window is displayed.
4	Select the subnetwork name to be modified from the scroll list.	
5	Click the Modify button.	The Add a Subnetwork window is displayed with the current subnetwork name and alias.
6	Change the subnetwork alias name and click the OK button. **Stop! End of Task.**	The Status Dialog window is displayed, indicating that the subnetwork alias change has been made in the system. All references to the subnetwork are updated to reflect the changes made.

Delete a Subnetwork Name/Alias

607

Background

When to use

Use this procedure to delete a subnetwork name and alias from the ITM SNC database.

Before you begin

Before you begin this task, the subnetwork name/alias must exist in the ITM SNC database. The NE(s) assigned to the subnetwork name being deleted must first be reassigned to another subnetwork by modifying the network element, via the Add/Modify a Network Element window.

To perform this task, access the Map window.

Related information

For related information, see T 624, Modify a Network Element and Chapter 7, Administration.

Instructions

Task Complete the following steps to delete a subnetwork name and alias from the ITM SNC database.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	A sub-menu is displayed.
3	Select **Subnetwork** from the sub-menu.	The Subnetwork Manager window is displayed.
4	Select the subnetwork to be deleted.	
5	Click the Delete button. **Stop! End of Task.**	A pop-up message window is displayed, asking if you really want to delete the selected subnetwork. Choose **Yes** to delete the subnetwork. The Status Dialog window is displayed, indicating that the subnetwork name/alias has been deleted. All references to the deleted subnetwork name/alias and subnetwork/NE relationships are updated in ITM SNC.

Associate Remote Network Elements with Gateway Network Elements

608

Background

When to use

Use this procedure to view the Gateway Network Elements (GNEs) in a subnetwork and associated Remote Network Elements (RNEs) and to reassign RNEs to a different GNE in the same subnetwork, as needed.

Before you begin

Before you begin this task, network elements to be reassigned to a different GNE must be initially assigned to a GNE in the subnetwork. The GNEs/RNEs must be given an existing subnetwork name/alias. To perform this task, you must first access the Map window.

Related information

For related information, see T 602, Add a Gateway Network Element, T 605, Add a Subnetwork Name/Alias, and Chapter 7, Administration.

Instructions

Task

Complete the following steps to view a GNE and its associated RNEs in a subnetwork and, if needed, to reassign RNEs to a different GNE in the subnetwork.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	The Network sub-menu is displayed.
3	Select **GNE Associations** from the Network sub-menu.	A sub-menu is displayed.
4	Select **GNE/RNE** from the sub-menu.	The GNE/RNE Association window is displayed. This window is divided into two parts. It consists of: ■ An explorer tree, which shows the names of all subnetworks in your Target Group (unexpanded) ■ A table which displays the TID and type of each RNE
5	To view GNEs in a subnetwork, double-click on a subnetwork name in the explorer tree to select and expand the subnetwork's associations.	
6	To view RNEs associated with a GNE, select the GNE.	The GNE's associated RNEs are displayed in the table.
7	To reassign an RNE from one GNE to another one in the subnetwork, select the RNE.	A pop-up window is displayed, with the message "Associate with...".
		Continued on next page

Step	Action (Contd)	Result
8	Select a GNE under the subnetwork in the explorer tree to reassign the RNE.	The GNE/RNE reassignment is processed. Messages are displayed in the status bar of the window, indicating the progress of the reassignment and when it is completed.
9	Continue making reassignments as needed.	
10	When you are finished, click the Close button to close the window. **Stop! End of Task.**	

Add a GNE Association

609

Background

When to use

Use this procedure to add a GNE association. A GNE association is a pair of GNEs in the same X.25-connected subnetwork that serve, respectively, as the Primary GNE and Secondary GNE for the other NEs in the subnetwork to communicate with ITM SNC. The Primary GNE initially serves as the point of communications for the other NEs in a subnetwork with ITM SNC. The Secondary GNE is the backup GNE should communications with the Primary GNE fail.

Before you begin

Before you begin this task, you must configure both NEs to be GNEs in the same subnetwork. You must also verify that the Secondary GNE does not have a separate set of Remote Network Elements communicating with it.

To perform this task, access the Map window.

Related information

For related information, see T 602, Add a Gateway Network Element and Chapter 7, Administration.

Instructions

Task   Complete the following steps to add a GNE association.

Step	Action	Result
1	Select **Administration** from the main menu bar on the Map window.	The Administration menu is displayed.
2	Select **Network** from the Administration menu.	The Network sub-menu is displayed.
3	Select **GNE Associations** from the Network sub-menu.	A sub-menu is displayed.
4	Select **Primary/Secondary** from the sub-menu.	The Primary/Secondary GNE Associations window is displayed. This window shows the current GNE associations (if any exist). An "X" to the left of a GNE in an association indicates that it is the currently active GNE.
5	Click the Add New Association button.	The Add a Primary/Secondary GNE Association window is displayed.
6	Select the Primary GNE from the Primary GNE scroll list.	The GNE(s) available to serve as the Secondary GNE in the association is displayed in the Secondary GNE scroll list.
7	Select the Secondary GNE from the Secondary GNE scroll list.	
8	Click the Apply button to create the association or click the OK button to create the association and close the Add a Primary/Secondary GNE Association window.	The GNE association is added to the GNE Associations list. The Primary GNE in the newly created association becomes the currently active GNE.
9	Click the Close button to close the Primary/Secondary GNE Association window. **Stop! End of Task.**	

Switch Primary/Secondary GNEs

610

Background

When to use
Use this procedure to switch the active and standby status of the GNEs in an association. When a switch is made, the Secondary GNE becomes the active GNE.

Before you begin
Before you begin this task, be aware that a manual switch of the active and standby GNEs may cause temporary loss of communications with the connected NEs, resulting in generation of alarms and/or loss of alarms.

To perform this task, access the Map window.

Related information
For related information, see T 609, Add a GNE Association, T 210, Resynchronize Alarms, and Chapter 7, Administration.

Instructions

Task

Complete the following steps to manually switch the active and standby GNE in a GNE association.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. The Network sub-menu is displayed.
3	Select **GNE Associations** from the Network sub-menu. A sub-menu is displayed.
4	Select **Primary/Secondary** from the sub-menu. The Primary/Secondary Assocations window is displayed.
5	Select the Primary/Secondary GNE association to be switched. The Status Dialog window is displayed, indicating that the switch is being made. When the switch is made, the "X" moves to the newly active GNE in the association.
6	Click the Close button to close the window. **Stop! End of Task.**

Delete a GNE Association

611

Background

When to use   Use this procedure to delete a GNE association. This procedure is only used to remove the association between two GNEs, not to delete the GNEs from the network. When a GNE association is deleted, NEs in a subnetwork remain connected to the currently active GNE.

Before you begin   Before you begin this task, identify the GNE association to be deleted.

To perform this task, access the Map window.

Related information   For related information, see T 609, Add a GNE Association, T 610, Switch Primary/Secondary GNEs and Chapter 7, Administration.

Instructions

Task   Complete the following steps to delete a GNE association.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. The Network sub-menu is displayed.
3	Select **GNE Associations** from the Network sub-menu. A sub-menu is displayed.
4	Select **Primary/Secondary** from the sub-menu. The Primary/Secondary Association window is displayed.
5	Select the GNE association to be deleted.
6	Click the Delete button. A pop-up window is displayed, asking you really want to delete the GNE association. Choose Yes to delete the GNE association or No to cancel the deletion.
7	Choose Yes to delete the GNE association. The Status Dialog window is displayed, indicating that the association has been deleted.
8	Click the Close button to close the window. **Stop! End of Task.**

Add an Aggregate

612

Background

When to use
Use this procedure to add an aggregate. An aggregate is a collection of related NEs/aggregates that are grouped and named for purposes of streamling network monitoring and resynchronization. A new aggregate is created by providing a unique aggregate name and alias and adding NEs or other aggregates to it.

Before you begin
Before you begin this task, identify which NEs and/or aggregates you want to associate with the aggregate being created.

To perform this task, access the Map window.

Related information
For related information, see Chapter 7, Administration.

Instructions

Task　　　　　　　Complete the following steps to create a new aggregate.

Step	Action	Reference
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.	
2	Select **Aggregates** from the Administation menu. The Aggregates sub-menu is displayed.	
3	Select **Add** from the Aggregates sub-menu. The Add a New Aggregate window is displayed.	
4	Fill in the following fields, as needed: ■　Aggregate Name—This is the aggregate name. The Aggregate name can be 1-20 alphanumeric characters. Dashes and spaces are allowed. This field is required. The Aggregate name must be unique. ■　Aggregate Alias—This is the aggregate alias (alternate label). The Aggregate alias can be 1-20 alphanumeric characters. Dashes and spaces are allowed. This field is optional.	
5	Click the OK button. The new Aggregate is created. **NOTE:** When a new aggregate is created, it is automatically placed into the TOP layer of the Map view. Any NE or aggregate that is placed into the aggregate is removed from the TOP layer. The icon for the new aggregate is displayed in the current Map view and the subnetwork explorer, and is automatically selected.	
6	Add NEs and/or aggregates to the newly created aggregate. **Stop! End of Task.**	SE 612-1

SE 612-1: Add Network Elements/ Aggregates to an Aggregate

Procedure

Perform the steps below to add an NE or aggregate to the parent (owner) aggregate.

1. From the Map window, position the mouse cursor on the aggregate icon on the Map pane or Subnetwork Explorer and single-click the select mouse button to select the icon, if it is not already selected.

2. Select an NE or aggregate (by pointing at it with the mouse cursor and single-clicking on it with the mouse select button).

3. Drag the NE or aggregate icon into the parent (owner) aggregate.

$\Longrightarrow$ **NOTE:**
An NE or aggregate can be moved out of the currrent parent aggregate into the TOP Map view by choosing **Return to Top** in the NE/aggegate's pop-up menu.

Modify an Aggregate

613

Background

When to use

Use this procedure to change an aggregate's name or alias. To change the contents of an aggregate, use SE-01 in T 612, Add an Aggregate.

Before you begin

Before you begin this task, identify the aggregate to be modified. Be aware that the aggregate name for the Top Level Aggregate (TOP), which is the default parent of all member NEs in the network, cannot be changed.

To perform this task, access the Map window.

Related information

For related information, see T 612, Add an Aggregate and Chapter 7, Administration.

Instructions

Task   Complete the following steps to change the aggregate name or alias.

Step	Action
1	Select the aggregate to be modified from the Map window or subnetwork explorer. **OR** Select no aggregates at this point.
2	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
3	Select **Aggregates** from the Administration menu. The Aggregates sub-menu is displayed.
4	Select **Modify Alias** from the Aggregates sub-menu. If no aggregates were chosen from the Map window or Subnetwork Explorer in Step 1, the Choose an NE/Aggregate window is displayed for selection of the aggregate to be modified. Select the aggregate to be modified and click the OK button. The Add a New Aggregate window is displayed with the current aggregate name and/or alias.
5	Change the aggregate name and/or alias, as desired.
6	Click the OK button. The Status Dialog box is displayed, indicating that the changes to the aggregate are being made by ITM SNC. **Stop! End of Task.**

Delete an Aggregate

614

Background

When to use Use this procedure to delete an aggregate from ITM SNC.

Before you begin Before you begin this task, be aware that NEs/aggregates that are members of the aggregate being deleted must be reassigned to another aggregate as part of this task.

To perform this task, access the Map window.

Related information For related information, see T 612, Add an Aggregate and Chapter 7, Administration.

Instructions

Task   Complete the following steps to delete an aggregate.

Step	Action
1	Select the aggregate to be deleted from the Map window or subnetwork explorer and press the Delete key. Skip to Step 6. **OR** Select no aggregates at this point.
2	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
3	Select **Aggregates** from the Administration menu. The Aggregates sub-menu is displayed.
4	Select **Delete** from the Aggregates sub-menu. If you did not choose aggregates in Step 1, the Choose an NE/Aggregate window is displayed. Select the aggregate to be deleted and click the OK button. Otherwise, skip to Step 5.
5	The Reassign Nodes to Aggregate window is displayed.
6	Choose an aggregate from the list to which you want to reassign any member NEs/aggregates. ⟹ **NOTE:** If you are not moving the majority of NEs to a single aggregate, it is recommended that you select the TOP Level Aggregate and modify those aggregates that take the NEs from the deleted aggregate.
7	Click the OK button. The Status Dialog window is displayed, indicating that the aggregate is being deleted. **Stop! End of Task.**

Enable/Disable Automatic Date/Time Synchronization

615

Background

When to use

Use this procedure to enable or disable automatic date/time synchronization. When this feature is enabled, ITM SNC automatically sets each NE's date/time to match the ITM SNC host's date/time on establishing communication with an NE for the first time or if the communications link between the ITM SNC host and the NE is down for more than 15 seconds. Automatic date/time synchronization takes into account whether the NE is set up in a different time zone than the ITM SNC host. ITM SNC also makes adjustments for Daylight Savings Time and Standard Time if the NE has the Fall Back/Spring Forward feature enabled.

Before you begin

Before you begin this task, you must decide if changes to the time zone setting must be made for the NE(s) in the network for date/time synchronization to work properly. You must also check if the Fall Back/Spring Forward feature is enabled (it is enabled, by default). To perform this task, access the Map window.

Related information

For related information, see T 624, Modify a Network Element and Chapter 7, Administration.

Instructions

Task

Complete the following steps to enable or disable automatic date/time synchronization.

Step	Action	
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.	
2	Select **Date/Time Management** from the sub-menu. The Date/Time Management sub-menu is displayed.	
3	Select **Automatic Date/Time Sync** from the Date/Time Management sub-menu. The Automatic Date/Time Sync window is displayed.	
4	IF … you want to enable Automatic Date/Time Synchronization you want to disable Automatic Date/Time Synchronization	THEN … click the Enable button. click the Disable button.
5	Click the OK button. The system processes your choice. When processing is completed, the Status Dialog window is displayed, indicating the change in the automatic date/time synchronization setting. **Stop! End of Task.**	

Schedule NE Date/Time Synchronization

616

Background

When to use

Use this procedure to schedule date/time synchronization for an NE.

Before you begin

Before you begin this task, access the Map window.

Related information

For related information, see <u>T 622, Modify a Scheduled Task</u>, and <u>Chapter 7, Administration</u>.

Instructions

Task   Complete the following steps to schedule date/time synchronization for an NE.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub-menu is displayed.
3	Select **Date/Time Sync** from the sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled date/time synchronizations.
4	Click the Add button. The Add a Scheduled Item for Date/Time Sync window is displayed.
	Continued on next page

Step	Action (Contd)
5	Choose an NE (by TID) from the Choose an NE scroll bar list by double-clicking on the item. Use the type ahead field and/or filter/sort functions to narrow the list, if necessary.
6	Choose the following Scheduling Options, as needed: ■ Daily—click on this radio button if you want the task to be done on a daily basis. ■ Weekly on...—click on this radio button if you want to task to be done on a weekly basis. If you schedule the task to be done weekly, choose the day of the week by using the spinner field list next to this option. ■ Once every...—click on this radio button if you want the task to be done periodically. If you schedule the task to be done periodically, choose the frequency (every x months) and the day of the month it will be done using the spinner field lists next to this option. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—If the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.
7	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**

Schedule DNO

617

Background

When to use　Use this procedure to schedule a Dynamic Network Operations (DNO) database update for an NE.

Before you begin　Before you begin this task, be aware that unless you are scheduling a DNO for all NE data, you can only specify a database update for one data type. The first time that a DNO is scheduled for an NE, the system does database synchronization for all data types, even if you select only one type for database synchronization.

To perform this task, access the Map window.

Related information　For related information, see T 622, Modify a Scheduled Task, T 623, Delete a Scheduled Task, and the following sections:

- Dynamic Network Operations
- Scheduling Tasks

Instructions

Task

Complete the following steps to schedule DNO for an NE.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub-menu is displayed.
3	Select **DNO** from the sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled DNOs.
4	Click the Add button. The Add a Scheduled Item for DNO window is displayed.
5	Choose an NE (by TID) from the Choose an NE scroll bar list by double-clicking on the item. Use the type ahead field and/or filter/sort functions to narrow the list, if necessary.
	Continued on next page

Step	Action (Contd)	
6	TO SCHEDULE A DNO FOR... all data types a specific data type ⟹ **NOTE:** The first time you perform DNO on an NE, all data types are updated, even if you select only one data type.	CLICK... The All radio button under the DNO Type portion of the window. Click the "Only the following..." button and then click one of the following radio buttons: ■ Port Parameters ■ Subnetwork ■ Equipment ■ Cross-Connections ■ NE Parameters ■ Port Protection Groups ⟹ **NOTE:** One or more data type buttons may be disabled for a specific NE type.
7	Choose the following Scheduling Options, as needed: ■ Weekly on...—click on this radio button if you want to task to be done on a weekly basis. If you schedule the task to be done weekly, choose the day of the week by using the spinner field list next to this option. ■ Once every...—click on this radio button if you want the task to be done periodically. If you schedule the task to be done periodically, choose the frequency (every x months) and the day of the month it will be done using the spinner field lists next to this option. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—If the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.	
8	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**	

Schedule NE Data Backup

618

Background

When to use Use this procedure to schedule backup of an NE's provisioning data.

Before you begin To perform this task, access the Map window.

Related information For related information, see T 622, Modify a Scheduled Task, T 623, Delete a Scheduled Task, and the following sections:

- Software Management
- Scheduling Tasks

Instructions

Task   Complete the following steps to schedule an NE software backup.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub-menu is displayed.
3	Select **Software Mgmt** from the sub-menu. The Software Management sub-menu is displayed.
4	Select **Backup** from the Software Management sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled NE backups.
5	Click the Add button. The Add a Scheduled Item for Backup NE Software window is displayed.
6	Choose an NE (by TID) from the Choose an NE scroll bar list by double-clicking on the item. Use the type ahead field and/or filter/sort function to narrow the list, if necessary.
	Continued on next page

Step	Action (Contd)
7	For Backup Type, click the Regular Backup or Intelligent Backup radio button.
8	Choose the following Scheduling Options, as needed: ■ Daily—click on this radio button if you want the task to be done on a daily basis. ■ Weekly on...—click on this radio button if you want to task to be done on a weekly basis. If you schedule the task to be done weekly, choose the day of the week by using the spinner field list next to this option. ■ Once every...—click on this radio button if you want the task to be done periodically. If you schedule the task to be done periodically, choose the frequency (every x months) and the day of the month it will be done using the spinner field lists next to this option. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—If the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.
9	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**

Schedule NE Software Download

619

Background

When to use
Use this procedure to schedule an NE software download.

Before you begin
Before you begin this task, make sure that the software release to be downloaded to the NE has been transferred to the ITM SNC host.

To perform this task, access the Map window.

Related information
For related information, see T 622, Modify a Scheduled Task, T 623, Delete a Scheduled Task, and the following sections:

- Software Management
- Scheduling Tasks

Instructions

Task   Complete the following steps to schedule an NE software download.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub--menu is displayed.
3	Select **Software Mgmt** from the sub-menu. The Software Management sub-menu is displayed.
4	Select **Download Software to NE** from the Software Management sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled NE software downloads.
5	Click the Add button. The Add a Scheduled Item for NE Software Download window is displayed.
6	Choose an NE (by TID) from the Choose an NE scroll bar list by double-clicking on the item. Use the type ahead field and/or filter sort function to narrow the list, if necessary.
7	Click the down arrow next to the Release field to display a drop-down list of available releases and select the release to download. This field is required.
8	Choose the following Scheduling options, as needed: ■ Date—click the up and down arrows on this spinner field to select the schedule date. Choose Today or the date. This field is required. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. This field is required. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—if the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.
9	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**

Schedule NE Software Copy

620

Background

When to use

Use this procedure to schedule an NE software copy from one NE to one or more NEs of the same type.

Before you begin

Before you begin this task, be aware that software copies to multiple DDM-2000 or FiberReach NEs are not permitted.

To perform this task, access the Map window.

Related information

For related information, see T 622, Modify a Scheduled Task, T 623, Delete a Scheduled Task, and the following sections:

- Software Management
- Scheduling Tasks

Instructions

Task

Complete the following steps to schedule an NE software copy to one or more NEs.

Step	Action
1	Select **Administration** from main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub-menu is displayed.
3	Select **Software Mgmt** from the sub-menu. The Software Management sub-menu is displayed.
4	Select **NE to NE Software Copy** from the Software Management sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled NE software copy jobs.
5	Click the Add button. The Add a Scheduled Item for NE Software Copy window is displayed.
6	Choose the TID of the Source NE (the NE to be copied from) from the Source NE list by double-clicking on the item. Use the type ahead field and/or filter/sort function to narrow the list, if necessary.
7	Choose the TID of one or more Destination NEs (to be copied to) from the Destination NE list by double-clicking on the item.
8	Choose the following Scheduling options, as needed: ■ Date—click the up and down arrows on this spinner field to select the schedule date. Choose Today or the date. This field is required. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. This field is required. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—if the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.
9	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**

Schedule NE Software Activation

621

Background

When to use

Use this procedure to schedule activation of an NE's executable software. When new software is downloaded to an NE, it is placed in "standby" until it is activated; it then replaces the old software. Software activations can be scheduled for more than one NE at a time, up to the limit imposed by the ITM SNC host type.

Before you begin

Before you begin this task, make sure that the software to be activated has already been downloaded to the NE.

To perform this task, access the Map window.

Related information

For related information, see T 622, Modify a Scheduled Task, T 623, Delete a Scheduled Task, and the following sections:

- Software Management
- Scheduling Tasks

Instructions

Task   Complete the following steps to schedule software activation for one or more NEs.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. A sub-menu is displayed.
3	Select **Software Mgmt** from the sub-menu. The Software Management sub-menu is displayed.
4	Select **Activate NE Software** from the Software Management sub-menu. The Schedule Manager window is displayed, showing a list of currently scheduled NE software activations.
5	Click the Add button. The Add a Scheduled Item for NE Software Activation window is displayed. The window shows the current active and standby software releases for each NE.
6	Choose one or more NEs (by TID) from the Choose an NE scroll bar list by double-clicking on the item(s).
7	Choose the following Scheduling options, as needed: ■ Date—click the up and down arrows on this spinner field to select the schedule date. Choose Today or the date. This field is required. ■ Schedule Time—click the up and down arrows on this spinner field to select the time of day for the scheduled task. The schedule time is in 24-hour format, in hours:minutes. This field is required. ■ Number of Retries—click the up and down arrows on this spinner field to specify the number of retries for the scheduled task. ■ Retry Interval—if the Number of Retries selected is greater than 1, specify the retry interval, in minutes. Click the up and down arrows on the spinner field to select the time interval.
8	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the window. **Stop! End of Task.**

Modify a Scheduled Task

622

Background

When to use

Use this procedure to change the parameters of a task for any function that can be scheduled (DNO, NE Date/Time Synchronization).

Before you begin

Before you begin this task, be aware that you cannot modify a scheduled task that is already in progress. You cannot modify another user's scheduled tasks unless you are the system administrator or have a privileged login.

To perform this task, access the Map window.

Related information

For related information, see the Series 600 tasks related to scheduling tasks and the following sections:

- Dynamic Network Operations
- Date/Time Synchronization
- Scheduling Tasks

Instructions

Task   Complete the following steps to modify a scheduled task.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. The Schedule sub-menu is displayed.
3	Select the function of the task to be modified (**DNO**, **Date/Time Sync**).. The Scheduler Manager window for the selected function is displayed, showing a list of currently scheduled tasks.
4	Select a task from the list to be modified.
5	Click the Modify button. The appropriate Modify a Scheduled Item window is displayed.
6	Make modifications to the information.
7	Click the Apply button to apply the changes or click the OK button to apply the changes and close the window. **Stop! End of Task.**

Delete a Scheduled Task

623

Background

When to use

Use this procedure to delete a scheduled task for any function that can be scheduled (DNO, NE Date/Time Synchronization).

Before you begin

Before you begin this task, be aware that you cannot delete any scheduled NE software backup or DNO that is already in progress. You cannot delete another user's scheduled tasks unless you are the system administrator or have a privileged login.

To perform this task, access the Map window.

Related information

For related information, see the Series 600 schedulinga-related tasks and Chapter 7, Administration.

Instructions

Task   Complete the following steps to delete a scheduled task.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Schedule** from the Administration menu. The Schedule sub-menu is displayed.
3	Select the function of the task to be deleted. To select one of the Software Management scheduled tasks, choose **Software Mgmt** from the sub-menu, and then select the appropriate Software Management function (**Backup NE Software**, **Download Software to NE**, **NE to NE Software Copy**, **Activate NE Software**). The Scheduler Manager window for the selected function is displayed, showing a list of currently scheduled tasks.
4	Choose the item to be deleted, which is identified by TID, from the list.
5	Click the Delete button. A pop-up message window is displayed, asking if you really want to delete the selected item from the schedule.
6	Choose Yes. A Status Dialog window is displayed, indicating that the selected item is being deleted from the schedule. **Stop! End of Task.**

Modify a Network Element

624

Background

When to use
Use this procedure to modify an NE. This procedure applies to both X.25-connected and OSI-connected NEs.

Before you begin
Before you begin this task, be aware that the TID and Communicate Via fields cannot be modified.

To perform this task, access the Map window.

Related information
For related information, see T 502, Add a User, T 600, Add a Network Element—X.25 Communications; T 601, Add a Network Element—OSI Communications; T 602, Add a Gateway Network Element; and Chapter 7, Administration.

Instructions

Task   Complete the following steps to modify an NE.

Step	Action
1	Select **Administation** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. A sub-menu is displayed.
3	Select **Network Elements** from the sub-menu. The Network Element Manager window is displayed, showing the current list of NEs in your Target Group.
4	Choose the NE to be modified.
5	Click on the Modify NE button. The Add/Modify a Network Element - General Information panel is displayed.
6	Click on the tab of the appropriate panel, and change the NE field(s), as needed.
7	Click the Apply button to activate your choices, or click the OK button to activate your choices and close the Add/Modify a Network Element window. The Status Dialog window is displayed, indicating that the NE is being modified. **Stop! End of Task.**

Delete a Network Element

625

Background

When to use   Use this procedure to delete an NE. This procedures applies to X.25-connected NEs and OSI-connected NEs.

Before you begin   Before you begin this task, make sure that if the NE is assigned to an aggregate, that you remove it from the aggregate before deleting it. If you delete a GNE, you must first delete all of the RNEs that communicate with ITM SNC through the GNE. When an NE is deleted, all information related to that NE is immediately removed from the ITM SNC database. Associated trails may also be deleted. Any trail that is deleted as a result of deleting an NE is also removed from any open window that shows the deleted trail (like the Map window pane and the Trail Manager). To perform this task, access the Map window.

Related information

For related information, see T 600, Add a Network Element—X.25 Communications; T 601, Add a Network Element—OSI Communications; T 602, Add a Gateway Network Element; T 624, Modify a Network Element; and Chapter 7, Administration.

Instructions

Task   Complete the following steps to delete an NE.

Step	Action
1	Select **Administration** from the main menu bar on the Map window. The Administration menu is displayed.
2	Select **Network** from the Administration menu. A sub-menu is displayed.
3	Select **Network Elements** from the sub-menu. The Network Element Manager window is displayed, showing the current list of NEs in your Target Group.
4	Choose the NE to be deleted.
5	Click on the Delete NE button.
6	Click the OK button. A pop-up window is displayed, asking if you really want to delete the chosen NE.
7	Choose Yes. The Status Dialog window is displayed, indicating that the NE is being deleted. **Stop! End of Task.**

Task Series 700

ITM SNC Logs

Display and Use the Network Alarm/ Event Log

700

Background

When to use   Use this procedure to display the Network Alarm/Event Log, and to use this log to view, save, and print important system-compiled alarm and event information.

Related information   For related information, see Chapter 8, System Logs in the *User Reference Manual*.

Instructions

Task   Complete the following steps to use the Network/Alarm Event Log.

Step	Action
1	Select **Logs** from the main menu bar on the Map window. This displays the sub-menu.
	Continued on next page

Step	Action (Contd)
2	Select **Network Alarm/Event** from the displayed sub-menu. This displays the viewing parameters window for the Alarm/Event Log.
3	On the viewing parameters window, select the parameters for which you want to display Alarm/Event Log data: ■ Use the up and down arrows on the **Start Date & Time** and **End Date & Time** spinner fields to adjust the entries in these fields. Network Alarm/Event data will be displayed only for data that falls within the selected parameter values. (If you make no adjustments, the start and end dates default to the current date, the start time defaults to 00:00, and the end time defaults to 15 minutes after the time this window was opened.) ■ To choose to view data related only to selected network elements or only to selected Aggregates, select the **Network Elements** or the **Aggregates** radio button (to the right of **Choose from a list of:**), respectively. If you select the **Network Element** radio button, then a list of NEs appears just below and to the left of the radio button. If you select the **Aggregate** radio button, then a list of aggregates appears instead of NEs. After selecting one of these two radio buttons, you can use the right arrow button (**>**) between the left and right list areas to move selected NEs or aggregates (whichever of the two applies) into the right side "Chosen" list area. The NEs or aggregates you move into this "Chosen" list will be the NEs or aggregates for which later you will be viewing Alarm/Event Log data. ■ Use the **Alarms** and **Events** checkboxes near the lower left of the viewing parameters window to request both alarm and event information or just one of the two. Clicking these checkboxes toggles between placing a check (include this data) and removing the check (do *not* include this data). ■ Select from the **Alarm record options** and/or **Event record options** lists to further specify the type of data you want to display.
4	After you have finished specifying parameters on the viewing parameters window, click the OK button. This closes the window and displays the Log browser window, containing the information that meets your specified parameters. You can use this window to view the log records, print them to a local or specified printer, or save them to a file. **Stop! End of Task.**

Display and Use the Network Notifications Log

701

Background

When to use   Use this procedure to display the Network Notifications Log, and to use this log to view, save, and print important system-compiled network notifications information.

Related information   For related information, see Chapter 8, System Logs in the *User Reference Manual*.

Instructions

Task   Complete the following steps to use the Network Notifications Log.

Step	Action
1	Select **Logs** from the main menu bar on the Map window. This displays a sub-menu.
	Continued on next page

Step	Action (Contd)
2	Select **Network Notifications Log** from the displayed sub-menu. This displays the viewing parameters window for the Network Notifications Log.
3	On the viewing parameters window, select the parameters for which you want to display Network Notifications Log data: ■ Use the up and down arrows on the **Start Date & Time** and **End Date & Time** spinner fields to adjust the entries in these fields. Network Notifications data will be displayed only for data that falls within the selected parameter values. (If you make no adjustments, the start and end dates default to the current date, the start time defaults to 00:00, and the end time defaults to 15 minutes after the time this window was opened.) ■ To choose to view data related only to selected network elements or only to selected Aggregates, select the **Network Elements** or the **Aggregates** radio button (to the right of **Choose from a list of:**), respectively. If you select the **Network Element** radio button, then a list of NEs appears just below and to the left of the radio button. If you select the **Aggregate** radio button, then a list of aggregates appears instead of NEs. After selecting one of these two radio buttons, you can use the right arrow button (**>**) between the left and right list areas to move selected NEs or aggregates (whichever of the two applies) into the right side "Chosen" list area. The NEs or aggregates you move into this "Chosen" list will be the NEs or aggregates for which later you will be viewing Network Notifications Log data. ■ Use the **Show these types of log records:** field near the lower part of the viewing parameters window to further specify the type of data wanted. Click on the down arrow, and then click to select **Database change only**, **Protection switching only**, or **All** network notification records.
4	After you have finished specifying parameters on the viewing parameters window, click the OK button. This closes the window and displays the Log browser window, containing the information that meets your specified parameters. You can use this window to view the log records, print them to a local or specified printer, or save them to a file. **Stop! End of Task.**

Display and Use the Network Command/Response Log

702

Background

When to use   Use this procedure to display the Network Command/Response Log, and to use this log to view, save, and print important system-compiled network command/response information.

Related information   For related information, see Chapter 8, System Logs in the *User Reference Manual*.

Instructions

Task
Complete the following steps to use the Network Command/Response Log.

Step	Action
1	Select **Logs** from the main menu bar on the Map window. This displays a sub-menu.
	Continued on next page

Step	Action (Contd)
2	Select **Network Command/Response** from the displayed sub-menu. This displays the viewing parameters window for the Network Command/Response Log.
3	On the viewing parameters window, select the parameters for which you want to display Network Command/Response Log data: ■ Use the up and down arrows on the **Start Date & Time** and **End Date & Time** spinner fields to adjust the entries in these fields. Network Command/Response data will be displayed only for data that falls within the selected parameter values. (If you make no adjustments, the start and end dates default to the current date, the start time defaults to 00:00, and the end time defaults to 15 minutes after the time this window was opened.) ■ To choose to view data related only to selected network elements or only to selected Aggregates, select the **Network Elements** or the **Aggregates** radio button (to the right of **Choose from a list of:**), respectively. If you select the **Network Element** radio button, then a list of NEs appears just below and to the left of the radio button. If you select the **Aggregate** radio button, then a list of aggregates appears instead of NEs. After selecting one of these two radio buttons, you can use the arrow button (**>**) between the left and right list areas to move selected NEs or aggregates (whichever of the two applies) into the right side "Chosen" list area. The NEs or aggregates you move into this "Chosen" list will be the NEs or aggregates for which later you will be viewing Network Command/Response Log data. ■ If you belong to a command group that allows you to view other user's command/response log records (check with your system administrator), then you can click on the More Options button to display an additional viewing parameters window. Click More Options, and then use this additional window to select the users and log record sources you want to include in your viewing parameters. In both cases, select the desired parameters by clicking on them in the left list, and using the right arrow symbol button (**>**) to move the selections to the "Chosen" list. (The current user's username appears in the "Chosen" list by default.)
4	After you have finished specifying parameters on one or both of the viewing parameters windows, click the OK button. This displays the Log browser window, containing the information that meets your specified parameters. You can use this window to view the log records, print them to a local or specified printer, or save them to a file. **Stop! End of Task.**

Display and Use the EMS Alarm Log

703

Background

When to use

Use this procedure to display the EMS Alarm Log, and to use this log to view, save, and print important system-compiled alarm information.

Related information

For related information, see Chapter 8, System Logs in the *User Reference Manual*.

Instructions

Task   Complete the following steps to use the Alarm Log.

Step	Action
1	Select **Logs** from the main menu bar on the Map window. This displays a sub-menu.
2	Select **Alarms** from the displayed sub-menu. This displays the viewing parameters window for the EMS Alarm Log.
3	On the viewing parameters window, select the time and date parameters for which you want to display EMS Alarm Log data: ■ Use the up and down arrows on the **Start Date & Time** and **End Date & Time** spinner fields to adjust the entries in these fields. Alarm data will be displayed only for data that falls within the selected parameter values. (If you make no adjustments, the start and end dates default to the current date, the start time defaults to 00:00, and the end time defaults to 15 minutes after the time this window was opened.)
4	After you have finished specifying parameters on the viewing parameters window, click the OK button. This closes the window and displays the Log browser window, containing the information that meets your specified parameters. You can use this window to view the log records, print them to a local or specified printer, or save them to a file. **Stop! End of Task.**

Glossary

Glossary

Numerics

0×1 Line Operation
  0×1 means unprotected operation. The connection between network elements has one bidirectional line (no protection line).

1+1 Line Protection
  A protection architecture in which the transmitting equipment transmits a valid signal on both the working and protection lines. The receiving equipment monitors both lines. Based on performance criteria and OS control, the receiving equipment chooses one line as the active line and designates the other as the standby line.

1×N Equipment Protection
  1×N protection pertains to N number of circuit pack/port units protected by one circuit pack or port unit. When a protection switch occurs, the working signals are routed from the failed pack to the protection pack. When the fault clears, the signals revert to the working port unit.

1xN Multi-Cast Cross-Connection
  Consists of N one-way cross-connections from an input tributary to N output tributaries. 1:N Multi-cast (for N>2) is most commonly associated with providing video services.

A

Absent (ABS)
  Used to indicate that a given circuit pack is not installed.

Access Identifier (AID)
  A technical specification for explicitly naming entities (both physical and logical) of an NE using a grammar comprised of ascii text, keywords, and grammar rules.

Active (ACT)
  Used to indicate that a circuit pack or module is in-service and currently providing service functions.

Active Path
  The path that is currently carrying the service in a circuit that is protected at the path level.

Add∕Drop Multiplexer (ADM)
  The term for a synchronous network element capable of combining signals of different rates and having those signals added to or dropped from the stream.

Aggregate
    A user-defined grouping of NEs. It most commonly consists of NEs located in a central office (CO) and the subnetworks to which they belong.

Alarm
    Visible or audible signal indicating that an equipment failure or significant event/condition has occurred.

Alarm Correlation
    The search for a directly-reported alarm that can account for a given symptomatic condition.

Alarm Cut-Off (ACO)
    A button on the user panel used to silence audible alarms.

Alarm Cut-Off and Test (ACO/TST)
    The name of a pushbutton on the user panel used to silence audible alarms.

Alarm Indication Signal (AIS)
    A code transmitted downstream in a digital network that indicates that an upstream failure has been detected and alarmed if the upstream alarm has not been suppressed.

Alarm Severity
    An attribute defining the priority of the alarm message. The way alarms are processed depends on the severity.

Alarm Suppression
    Selective removal of alarm messages from being forwarded to the GUI or to network management layer OSs.

Alarm Throttling
    A feature that automatically or manually suppresses autonomous messages that are not priority alarms.

Alternate Mark Inversion (AMI)
    A line code that employs a ternary signal to convert binary digits, in which successive binary ones are represented by signal elements that are normally of alternative positive and negative polarity but equal in amplitude and in which binary zeros are represented by signal elements that have zero amplitude.

American Standard Code for Information Interchange (ASCII)
    A standard 7-bit code that represents letters, numbers, punctuation marks, and special characters in the interchange of data among computing and communications equipment.

Association
    A logical connection between manager and agent through which management information can be exchanged.

Asynchronous
    The essential characteristic of time-scales or signals such that their corresponding significant instants do not necessarily occur at the same average rate.

Asynchronous Transfer Mode (ATM)
   A high-speed transmission technology characterized by high bandwidth and low delay. It utilizes a packet switching and multiplexing technique which allocates bandwidth on demand.

Attribute
   Alarm indication level: critical, major, minor, or no alarm.

Autolock
   Action taken by the system in the event of circuit pack failure/trouble. System switches to protection and prevents a return to the working circuit pack even if the trouble clears. Multiple protection switches on a circuit pack during a short period of time cause the system to autolock the pack.

Automatic (AUTO)
   One possible state of a port or slot. When a port is in the AUTO state and a good signal is detected, the port automatically enters the IS (in-service) state. When a slot is in the AUTO state and a circuit pack is detected, the slot automatically enters the EQ (equipped) state.

Automatic Protection Switch
   A protection switch that occurs automatically in response to an automatically detected fault condition.

Autonomous Message
   A message transmitted from the controlled Network Element to the ITM-SC which was not a response to an ITM-SC originated command.

B

Backup
   The backup and restoration features provide the capability to recover from loss of NE data because of such factors as human error, power failure, NE design flaws, and software bugs.

Bandwidth
   The difference in Hz between the highest and lowest frequencies in a transmission channel. The data rate that can be carried by a given communications circuit.

Baud Rate
   Transmission rate of data (bits per second) on a network link.

Bidirectional Line
   A transmission path consisting of two fibers that handle traffic in both the transmit and receive directions.

Bidirectional Line-Switched Ring (BLSR)
   A bidirectional ring in which protection switching is accomplished by switching working traffic into protection time slots in the line going in the opposite direction around the ring.

Bidirectional Ring
    A ring in which both directions of traffic between any two nodes travel through the same network elements (although in opposite directions).

Bidirectional Switch
    Protection switching performed in both the transmit and receive directions.

Bipolar 3-Zero Substitution (B3ZS)
    A line coding technique that replaces three consecutive zeros with a bit sequence having special characteristics accomplishing two objectives: First, this bit sequence accommodates the ones density requirements for digital T3 carrier; Second, the sequence is recognizable at the destination (due to deliberate bipolar violations) and is removed to produce the original signal.

Bipolar 8-Zero Substitution (B8ZS)
    A line coding technique that replaces eight consecutive zeros with a bit sequence having special characteristics accomplishing two objectives: First, this bit sequence accommodates the ones density requirements for digital T1 carrier; Second, the sequence is recognizable at the destination (due to deliberate bipolar violations) and is removed to produce the original signal.

Bit
    The smallest unit of information in a computer, with a value of either 0 or 1.

Bit Error Rate (BER)
    The ratio of error bits received to the total number of bits transmitted.

Bit Error Rate Threshold
    The point at which an alarm is issued for bit errors.

Bit Interleaved Parity-N(BIP-N)
    A method of error monitoring over a specified number of bits (BIP-3 or BIP-8).

Blank (BLK)
    The status of a circuit pack slot that contains a bus extender (blank) circuit pack.

Board Controller Local Area Network (BCLAN)
    The internal local area network that provides communications between the line and board controllers on the circuit packs associated with a high-speed line.

Bridge Cross-Connection
    The setting up of a cross-connection leg with the same input tributary as that of an existing cross-connection leg. Thus, forming a 1:2 bridge from an input tributary to two output tributaries.

Broadband Communications
    Voice, data, and/or video communications at greater than 2 Mb/s rates.

Building Integrated Timing Supply (BITS)
    A single clock that provides all the DS1 and/or composite clock timing reference to all other clocks in that building.

Byte
  Refers to a group of eight consecutive binary digits.

C

C-Bit
  A framing format used for DS3 signals produced by multiplexing 28 DS1s into a DS3. This format provides for enhanced performance monitoring of both near-end and far-end entities.

Cell Relay
  Fixed length cells. For example, ATM with 53 octets.

Central Office (CO)
  A building where common carriers terminate customer circuits.

Channel
  A sub-unit of transmission capacity within a defined higher level of transmission capacity.

Channel State Provisioning
  A feature that allows a user to suppress reporting of alarms and events during provisioning by supporting multiple states (automatic, in-service, and not monitored) for VT1.5 and STS-1 channels.

Circuit
  A set of transmission channels through one or more network elements that provides transmission of signals between two points, to support a single communications path.

Clear Channel (CC)
  A digital circuit where no framing or control bits are required, thus making the full bandwidth available for communications.

Closed Ring Network
  A network formed of a ring-shaped configuration of network elements. Each network element connects to two others, one on each side.

Coding Violation (CV)
  A performance monitoring parameter indicating bipolar violations of the signal have occurred.

Collocated
  System elements that are located in the same location.

Command Group
  An administrator-defined group that defines commands to which a user has access.

Concatenation
  A procedure whereby multiple virtual containers are associated one with each other resulting in a combined capacity that can be used as a single container across which bit sequence integrity is maintained.

Consultative Committee for the International Telephone and Telegraph (CCITT)
International Telephone and Telegraph Consultative Committee — An international advisory committee under United Nations' sponsorship that has composed and recommended for adoption worldwide standards for international communications. Recently changed to the International Telecommunications Union Telecommunications Standards Sector (ITU-TSS).

Co-Resident
A hardware configuration where two applications can be active at the same time independently on the same hardware and software platform without interfering with each others functioning.

Correlation
A process where related hard failure alarms are identified.

Craft Interface Terminal (CIT)
The user interface terminal used by craft personnel to communicate with a network element.

Critical (CR)
Alarm that indicates a severe, service-affecting condition.

Cross-Connection
Path-level connections between input and output tributaries or specific ports within a single NE. Cross-connections are made in a consistent way even though there are various types of ports and various types of port protection. Cross-Connections are reconfigurable interconnections between tributaries of transmission interfaces.

Crosstalk
An unwanted signal introduced into one transmission line from another.

Current Value
The value currently assigned to a provisionable parameter.

Cut-Through
A capability that allows a user to utilize a network element's native command set (CIT or TL1 as appropriate) to communicate with network elements in the ITM SNC domain.

D

Data
A collection of system parameters and their associated values.

Database Administrator
A user who administers the database of the application.

Data Communications Channel (DCC)
The embedded overhead communications channel in the synchronous line, used for end-to-end communications and maintenance. The DCC carries alarm, control, and status information between network elements in a synchronous network.

Data Communications Equipment (DCE)
    The equipment that provides signal conversion and coding between the data terminating equipment (DTE) and the line. The DCE may be separate equipment or an integral part of the DTE or of intermediate equipment. A DCE may perform other functions usually performed at the network end of the line.

Data Terminating Equipment (DTE)
    The equipment that originates data for transmission and accepts transmitted data.

DDM-1000
    Lucent Technologies' Dual DS3 Multiplexer — A digital multiplexer that multiplexes DS1, DS1C, or DS2 signals into a DS3 signal or a 90 Mb/s or 180 Mb/s optical signal.

DDM-2000
    Lucent Technologies SONET-ready network multiplexer that can function as a lightwave terminal. It is designed primarily for loop feeder and interoffice applications that work in existing asynchronous as well as the emerging SONET networks. Multiplexers that multiplex DS1, DS3, or EC-1 inputs into EC-1, OC-1, OC-3, or OC-12 outputs.

Default
    An operation or value that the system or application assumes, unless a user makes an explicit choice.

Default Provisioning
    The parameter values that are preprogrammed as shipped from the factory.

Defect
    A limited interruption of the ability of an item to perform a required function. It may or may not lead to maintenance action depending on the results of additional analysis.

Demultiplexer
    A device that splits a combined signal into individual signals at the receiver end of transmission.

Demultiplexing
    A process applied to a multiplexed signal for recovering signals combined within it and for restoring the distinct individual channels of these signals.

Dense Wavelength Division Multiplexing (DWDM)
    Transmitting two or more signals of different wavelengths simultaneously over a single fiber.

Deprovisioning
    The inverse order of provisioning. To manually remove/delete a parameter that has (or parameters that have) previously been provisioned.

Digital Cross-Connect Panel (DSX)
    A panel designed to interconnect equipment that operates at a designated rate. For example, a DSX-3 interconnects equipment operating at the DS3 rate.

Digital Multiplexer
    Equipment that combines by time-division multiplexing several digital signals into a single composite digital signal.

Digital Signal Levels 0, 1, 3 (DS0, DS1, DS3)
An ANSI-defined signal or service level corresponding to the following: DS0 is 64 Kb/s, DS1 is 1.544 Mb/s (equivalent to T1), and DS3 is 44.736 Mb/s (equivalent to 28 T1 channels or T3).

Directory Service Network Element (DSNE)
A designated network element that is responsible for administering a database that maps network element names (TIDs) to addresses [NSAPs (network service access points)] in an OSI subnetwork. There can be one DSNE per ring. A DSNE can also be a GNE.

Dispersion
Time-broadening of a transmitted light pulse.

Dispersion Shifted Optical Fiber
1330/1550 nm minimum dispersion wavelength.

Divergence
When there is unequal amplification of incoming wavelengths, the result is a power divergence between wavelengths.

Doping
The addition of impurities to a substance in order to attain desired properties.

Downstream
At or towards the destination of the considered transmission stream, for example, looking in the same direction of transmission.

Drop and Continue
A circuit configuration that provides redundant signal appearances at the outputs of two network elements in a ring. Can be used for Dual Ring Interworking (DRI) and for video distribution applications.

Drop-Down Menu
A menu that is displayed from a menu bar.

DS1 Signal
Signal with a data rate of 1.544 Mb/s.

DS3 Format
Specifies the line format of a DS3 interface port, such as M13 or C-bit parity.

DS3 Idle Signal
A signal that can be applied to any output port that is not cross-connected to an input port. This signal lets downstream network elements know that the facility is operating normally even though it is not sending a normal DS3 signal.

DS3 Signal
A logical or electrical B3ZS signal with a data rate of 44.736 Mb/s.

DSX-1, 2, 3
Digital cross-connect used to interconnect equipment, provide patch capability, and provide test access at the DS1, DS2, or DS3 level.

Dual Ring Interworking (DRI)
A topology in which two rings are interconnected at two nodes on each ring and operate so that inter-ring traffic is not lost in the event of a node or link failure at an interconnecting point.

E

Electrical Carrier, Level 1 (EC-1)
An electrical interface signal at the SONET rate of STS-1.

Electromagnetic Compatibility (EMC)
A measure of equipment tolerance to external electromagnetic fields.

Electromagnetic Interference (EMI)
High-energy, electrically induced magnetic fields that cause data corruption in cables passing through the fields.

Electronic Industries Association (EIA)
A trade association of the electronic industry that establishes electrical and functional standards.

Electrostatic Discharge (ESD)
Static electrical energy potentially harmful to circuit packs and humans.

Entity
A specific piece of hardware (usually a circuit pack, slot, or module) that has been assigned a name recognized by the system.

Entity Identifier
The name used by the system to refer to a circuit pack, memory device, or communications link.

Equipped (EQ)
Status of a circuit pack or interface module that is in the system database and physically in the frame, but not yet provisioned.

Erbium
A soft rare earth element used in metallurgy and nuclear research.

Erbium Doped Fiber Amplifier (EDFA)
An amplifier that performs by having a light signal pass through a section of erbium-doped fiber and using the laser pump diode to amplify the signal.

Errored Seconds (ES)
A performance monitoring parameter. ES "type A" is a second with exactly one error; ES "type B" is a second with more than one and less than the number of errors in a severely errored second for the given signal. ES by itself means the sum of the type A and type B ESs.

Establish
    A user initiated command, at the WaveStar CIT, to create an entity and its associated attributes in the
    absence of certain hardware.

Event
    A significant change. Events in controlled Network Elements include signal failures, equipment failures,
    signals exceeding thresholds, and protection switch activity. When an event occurs in a controlled
    Network Element, the controlled Network Element will generate an alarm or status message and send
    it to the management system.

Event Driven
    A required characteristic of network element software system: NEs are reactive systems, primarily
    viewed as systems that wait for and then handle events. Events are provided by the external interface
    packages, the hardware resource packages, and also by the software itself.

Externally Timed
    An operating condition of a clock in which it is locked to an external reference and is using time
    constants that are altered to quickly bring the local oscillator's frequency into approximate agreement
    with the synchronization reference frequency.

Extra traffic
    Unprotected traffic that is carried over protection channels when their capacity is not used for the
    protection of working traffic.

F

Facility
    A one- or two-way circuit that carries a transmission signal.

Failures in Time (FIT)
    Circuit pack failure rates per 10^9 hours as calculated using the method described in *Reliability
    Prediction Procedure for Electronic Equipment*, BellCore Method I, Issue 5, September 1995.

Far End (FE)
    Any other network element in a maintenance subnetwork other than the one the user is at or working
    on. Also called remote.

Far-End Block Error (FEBE)
    An indication returned to the transmitting node that an errored block has been detected at the receiving
    node. A block is a specified grouping of bits.

Far-End Receive Failure (FERF)
    An indication returned to a transmitting Network Element that the receiving Network Element has
    detected an incoming section failure. Also known as RDI.

Fault
    Term used when a circuit pack has a hard (not temporary) fault and cannot perform its normal function.

Fault Management
Collecting, processing, and forwarding of autonomous messages from network elements.

Fiber Distributed Data Interface (FDDI)
Fiber interface that connects computers and distributes data among them.

Flash EPROM
A technology that combines the nonvolatility of EPROM with the in-circuit reprogrammability of EEPROM (electrically-erasable PROM).

Folded Rings
Folded (collapsed) rings are rings without fiber diversity. The terminology derives from the image of folding a ring into a linear segment.

Forced
Term used when a circuit pack (either working or protection) has been locked into a service-providing state by user command.

Frame
The smallest block of digital data being transmitted.

Frame Relay (FR)
A form of packet switching that relies on high-quality phone lines to minimize errors. It is very good at handling high-speed, bursty data over wide area networks. The frames are variable lengths and error checking is done at the end points.

Framework
An assembly of equipment units capable of housing shelves, such as a bay framework.

Free Running
An operating condition of a clock in which its local oscillator is not locked to an internal synchronization reference and is using no storage techniques to sustain its accuracy.

FT-2000 ADR
Lucent Technologies' OC-48 rate Add/Drop Rings lightwave Terminal for 2-fiber BLSRs. It is designed primarily for interoffice applications. It supports adds, drop, and through connections for DS3/EC-1, OC-3, IS-3, and OC-12.

G

Gateway Network Element (GNE)
A network element that passes information between other network elements and management systems through a data communication network.

Gateway Network Element (GNE)
A Network Element that provides a means of communication between an OS and remote Network Elements over the SONET DCC.

In a primary/secondary GNE pair:

The active GNE is the GNE (primary or secondary) that is currently serving as the GNE for the subnetwork.

The primary GNE is the first GNE associated with a subnetwork that initially serves as the GNE for the subnetwork.

The secondary GNE is the second GNE that is associated with the primary GNE for a subnetwork, and can take over communications in the event there is a failure in the communications via the primary GNE.

The standby GNE is the GNE (primary or secondary) that is currently serving as the backup GNE for the subnetwork in the event there is a failure in communications via the active GNE.

H

Hard Failure
An unrecoverable nonsymptomatic (primary) failure that causes signal impairment or interferes with critical network functions, such as DCC operation.

High Level Data Link Control (HDLC)
OSI reference model datalink layer protocol.

Holdover
An operating condition of a clock in which its local oscillator is not locked to an external reference but is using storage techniques to maintain its accuracy with respect to the last known frequency comparison with a synchronization reference.

Host
The host is an HP 9000/800 series platform running HP-UX.

Hot Standby
A circuit pack ready for fast, automatic placement into operation to replace an active circuit pack. It has the same signal as the service going through it, so that choice is all that is required.

Human Machine Language (MML)
A standard language developed by the ITU for describing the interaction between humans and dumb terminals.

I

Idle
:   An output port not cross-connected to an input port.

Idle Code
:   A signal transmitted downstream automatically from an idle output port. It can also be transmitted downstream by a manual command from a cross-connected output port.

Insert
:   To physically insert a circuit pack into a slot, thus causing a system initiated restoral of an entity into service and/or creation of an entity and associated attributes.

In-Service (IS)
:   A memory administrative state for ports. IS refers to a port that is fully monitored and alarmed.

Integrated Transport Management Network Module (ITM NM)
:   Lucent Technologies' integrated network management system that provides a broad end-to-end view of the SONET network.

Integrated Transport Management SubNetwork Controller (ITM SNC)
:   Lucent Technologies' SONET element management layer system that provides fault, configuration, and security functions through the use of a GUI.

Intelligent Alarm Filtering
:   The filtering of symptomatic alarms and events that are associated with a reported root-cause or symptomatic condition.

Interconnect Signal-3 (IS-3)
:   The logical equivalent to an OC-3 signal that uses a proprietary interface that allows short-range operation at a lower cost than an OC-3.

Interface Capacity
:   The total number of STS-1 equivalents (bidirectional) tributaries in all transmission interfaces with which a given transmission interface shelf can be equipped at one time. The interface capacity varies with equipage.

InterLATA
:   Circuits that cross outside the LATA and to an interexchange carrier.

IntraLATA
:   Circuits with both end-points within the LATA.

J

Jitter
   Short term variations of amplitude and frequency components of a digital signal from their ideal position in time.

L

Lead Time
   The time interval between placement of a product order and receipt of the product.

Lightguide Build-Out (LBO)
   An attenuating (signal-reducing) element used to keep an optical output signal strength within desired limits.

Line
   A transmission medium, together with the associated equipment, required to provide the means of transporting information between two consecutive network elements. One network element originates the line signal; the other terminates it.

Line Build Out (LBO)
   An equalizer network that guarantees the proper signal level and shape at the DSX panel.

Line Controller Local Area Network (LCLAN)
   The internal local area network that provides communications between the controlled circuit packs.

Line Protection
   The optical interfaces can be protected by line protection. Line protection switching protects against failures of line facilities, including the interfaces at both ends of a line, the optical fibers, and any equipment between the two ends. Line protection includes protection of equipment failures.

Line Timing
   Refers to a network element that derives its timing from an incoming OC-N signal.

Link
   The mapping between in-ports and out-ports. It specifies how components are connected to one another.

Literal Character
   A letter, digit, or symbol that is entered in a command. The first hyphen in UNIT-{1-64} is a literal character; the braces and the second hyphen are not literal characters.

Local Area Network (LAN)
A communications network that covers a limited geographic area, is privately owned and user administered, is mostly used for internal transfer of information within a business, is normally contained within a single building or adjacent group of buildings, and transmits data at a very rapid speed.

Location
An identifier for a specific circuit pack, interface module, interface port, or communications link.

Lockout of Protection
The WaveStar CIT command that prevents the system from switching traffic to the protection line from a working line. If the protection line is active when a "Lockout of Protection" is entered – this command causes the working line to be selected. The protection line is then locked from any Automatic, Manual, or Forced protection switches.

Lockout State
The Lockout State shall be defined for each working or protection circuit pack. The two permitted states are: None – meaning no lockout is set for the circuit pack, set meaning the circuit pack has been locked out. The values (None & Set) shall be taken independently for each working or protection circuit pack.

Loopback
Type of diagnostic test used to compare an original transmitted signal with the resulting received signal. A loopback is established when the received optical or electrical external transmission signal is sent from a port or tributary input directly back toward the output.

Loop Timing
A special case of line timing. It applies to network elements that have only one OC-N/STM-N interface. For example, terminating nodes in a linear network are loop timed.

Loss Budget
Loss (in dB) of optical power due to the span transmission medium (includes fiber loss and splice losses).

Loss of Frame (LOF)
A failure to synchronize to an incoming signal.

Loss of Pointer (LOP)
A failure to extract good data from a signal payload.

Loss of Signal (LOS)
The complete absence of an incoming signal.

M

M23-Format
A standard framing format used for DS3 signals produced by multiplexing 28 DS1s into a DS3 (sometimes referred to as M13 format, without C-bit parity).

Major
Indicates a service-affecting failure, main or unit controller failure, or power supply failure.

Maintenance Condition
An equipment state in which some normal service functions are suspended, either because of a problem or to perform special functions (copy memory) that can not be performed while normal service is being provided.

Manual Switch State
A protection group shall enter the Manual Switch State upon the initiation and successful completion of the Manual Switch command. The protection group leaves the Manual Switch state by means of the Clear or Forced Switch commands. While in the Manual Switch state the system may switch the active unit automatically if required for protection switching.

Mapping
The logical association of one set of values, such as addresses on one network, with quantities or values of another set, such as devices or addresses on another network.

Mediation Device (MD)
Allows for exchange of management information between Operations System and Network Elements.

Mid-Span Meet
The capability to interface between two lightwave network elements of different vendors. This applies to high-speed optical interfaces.

Minor (MN)
Indicates a non-service-affecting failure of equipment or facility.

Miscellaneous Discrete Interface
Allows an operations system to control and monitor equipment collocated within a set of input and output contact closures.

Multiplexer
A device (circuit pack) that combines two or more transmission signals into a combined signal on a shared medium.

Multiplexing
The process of combining multiple signals into a larger signal at the transmitter by a multiplexer. The large signal is then split into the original smaller signals at the receiver by a demultiplexer.

N

Network Element (NE)
A node in a telecommunication network that supports network transport services and is directly manageable by a management system.

Network Monitoring and Analysis (NMA)
   An operations system designed by Bellcore which is used to monitor network facilities.

Network Service Access Point (NSAP) Address
   Network Service Access Point Address (used in the OSI network layer 3). An automatically assigned number that uniquely identifies a Network Element for the purposes of routing DCC messages.

Node
   A network element in a ring or, more generally, in any type of network. In a network element supporting interfaces to more than one ring, node refers to an interface that is in a particular ring. Node is also defined as all equipment that is controlled by one system controller. A node is not always directly manageable by a management system.

Non-Preemptible Protection Access (NPPA)
   Non-preemptible protection access increases the available span capacity for traffic which does not require protection by a ring, but which cannot be preempted.

Non-Revertive Switching
   In non-revertive switching, an active and stand-by line exist on the network. When a protection switch occurs, the standby line is selected to support traffic, thereby becoming the active line. The original active line then becomes the stand-by line. This status remains in effect even when the fault clears. That is, there is no automatic switch back to the original status.

Non-Volatile Memory (NVM)
   Memory that retains its stored data after power has been removed. An example of NVM would be a hard disk.

No Request State
   This is the routine-operation quiet state in which no external command activities are occurring.

Not Monitored (NMON)
   A provisioning state for equipment that is not monitored or alarmed.

O

Open Ring Network
   A network formed of a linear chain-shaped configuration of network elements. Each network element connects to two others, one on each side, except for two network elements at the ends which are connected on only one side. A closed ring can be formed by adding a connection between the two end nodes.

Open Systems Interconnection (OSI)
   Referring to the OSI reference model, a logical structure for network operations standardized by the International Standards Organization (ISO).

Operations Interface
Any interface providing you with information on the system behavior or control. These include the equipment LEDs, user panel, WaveStar CIT, office alarms, and all telemetry interfaces.

Operations Interworking (OI)
The capability to access, operate, provision, and administer remote systems through craft interface access from any site in a SONET network or from a centralized operations system.

Operations System (OS)
A central computer-based system used to provide operations, administration, and maintenance functions.

Operations System for Intelligent Network Elements (OPS/INE)
A Bellcore configuration management operations system.

Operator
A user of the system with operator-level user privileges.

Optical Carrier N (OC-N)
An optical carrier signal at the SONET rate of N, where n equals 1, 3, 12, 48, or 192. The basic rate of an OC-1 signal is 51.84 Mb/s, equivalent to an STS-1, with other values of N direct multiples of this basic rate.

Optical Channel
A OC-N wavelength within an optical line signal. Multiple channels, differing by 1.5μ in wavelength, are multiplexed into one signal.

Optical Demultiplexer Unit (ODU)
A circuit pack responsible for receiving the optical line signal and separating it into the original number of OC-N/STM-Nsignals.

Optical Line Signal
A multiplexed optical signal containing multiple wavelengths or channels.

Optical Multiplexer Unit (OMU)
A circuit pack responsible for combining multiple signals into one signal. The combined signal is called the Optical Line Signal.

Optical Translator (OT)
A system feature used in conjunction with WaveStar OLS that concatenates multiple OLS terminals, regenerates signals in the 1.3 and 1.5 μ ranges, prevents wavelength blocking via wavelength interchange, provides wavelength add/drop (WAD) capabilities, and establishes open interfaces with multi-vendor signal compatibility.

Optical Translator Port Module (OTPM)
A circuit pack that can electrically regenerate incoming OC-12/STM-4 and OC-3/STM-1 signals into specific outgoing signals of the same type.

Optical Translator Unit (OTU)
  A circuit pack that can electrically regenerate incoming OC-N/STM-N signals (1.3 or 1.5 µ ranges) into specific outgoing signals of the same type.

Orderwire (OW)
  A dedicated voice-grade line for communications between maintenance and repair personnel.

Original Value Provisioning
  Preprogramming of a system's original values at the factory. These values can be overridden using local or remote provisioning.

Outage
  A disruption of service that lasts for more than 1 second.

Out-of-Service
  The circuit pack is not providing its normal service function (removed from either the working or protection state) either because of a system problem or because the pack has been removed from service.

P

Packet Assembler∕Disassembler (PAD)
  An interface between a device and an X.25 packet-switched network. The PAD converts the protocol used by the device and the X.25 protocol used by the network, allowing terminals to exchange data with other packet mode terminals and hosts.

Packet-Switched Network (PSN)
  An X.25 network that transmits groups of bits as a unit through the network. Packets usually include data and control information such as addressing, identification, and error-control fields.

Parameter
  A variable that is given a value for a specified application. A constant, variable, or expression that is used to pass values between components.

Parity Check
  Tests whether the number of ones (or zeros) in an array of binary bits is odd or even; used to determine that the received signal is the same as the transmitted signal.

Pass-Through
  Paths that are cross-connected directly across an intermediate node in a network.

Path
  A logical connection between the point at which a standard frame format for the signal at the given rate is assembled, and the point at which the standard frame format for the signal is disassembled.

Path Overhead (POH)
   Informational bytes assigned to, and transported with the payload until the payload is demultiplexed. It provides for integrity of communication between the point of assembly of a virtual container and its point of disassembly.

Path Terminating Equipment
   Network elements in which the path overhead is terminated.

Performance Monitoring (PM)
   Measures the quality of service and identifies degrading or marginally operating systems (before an alarm would be generated).

Peripheral Control and Timing Facility Interface (PCTFI)
   A proprietary physical link interface supporting the transport of 21×2 Mb/s signals.

Platform
   A family of equipment and software configurations designed to support a particular application.

Plesiochronous Network
   A network that contains multiple subnetworks, each internally synchronous and all operating at the same nominal frequency, but whose timing may be slightly different at any particular instant.

Polarization Mode Dispersion (PMD)
   Output pulse broadening due to random coupling of the two polarization modes in an optical fiber.

Port (also called Line)
   The physical interface, consisting of both an input and output, where an electrical or optical transmission interface is connected to the system and may be used to carry traffic between network elements. The words "port" and "line" may often be used synonymously. "Port" emphasizes the physical interface, and "line" emphasizes the interconnection. Either may be used to identify the signal being carried.

Port State Provisioning
   A feature that allows a user to suppress alarm reporting and performance monitoring during provisioning by supporting multiple states (automatic, in-service, and not monitored) for low-speed ports.

Preprovisioning
   The process by which the user specifies parameter values for an entity in advance of some of the equipment being present. These parameters are maintained only in NVM. These modifications are initiated locally or remotely by either a CIT or an OS. Preprovisioning provides for the decoupling of manual intervention tasks (for example, install circuit packs) from those tasks associated with configuring the node to provide services (for example, specifying the entities to be cross-connected).

Proactive Maintenance
   Refers to the process of detecting degrading conditions not severe enough to initiate protection switching or alarming, but indicative of an impending signal fail or signal degrade defect.

Protection
    Extra capacity (channels, circuit packs) in transmission equipment that is not intended to be used for service, but rather to serve as backup against equipment failures.

Protection Access
    To provision traffic to be carried by protection tributaries when the port tributaries are not being used to carry the protected working traffic.

Protection Group Configuration
    The members of a group and their roles, for example, working protection, line number, etc.

Protection Path
    One of two signals entering a path selector used for path protection switching or dual ring interworking. The other is the working path. The designations working and protection are provisioned by the user, whereas the terms active path and standby path indicate the current protection state.

Protection State
    When the working unit is currently considered active by the system and that it is carrying traffic. The "active unit state" specifically refers to the receive direction of operation — since protection switching is unidirectional.

Provisioned (PROV)
    Indicating that a circuit pack is ready to perform its intended function. A provisioned circuit pack can be active (ACT), in-service (IS), standby (STBY), provisioned out-of-service (POS), or out-of-service (OOS).

Provisioning
    The modification of certain programmable parameters that define how the node functions with various installed entities. These modifications are initiated locally or remotely by either a CIT or an OS. They may arrive at the node via the IAOLAN, CIT port, or any DCC channel. The provisioned data is maintained in NVM and/or hardware registers.

Q

Quad Optical Translator Unit (QOTU)
    A unit that provides functions similar to an Optical Translator Unit (OTU), except that an QOTU provides the equivalent functionality of four OTUs in a package that is only twice the size of an OTU.

R

Reactive Maintenance
    Refers to detecting defects/failures and clearing them.

Receive-Direction
The direction towards the Network Element.

Regeneration
The process of reconstructing a digital signal to eliminate the effects of noise and distortion.

Reliability
The ability of a software system performing its required functions under stated conditions for a stated period of time. The probability for an equipment to fulfill its function. Some of the ways in which reliability is measured are: MTBF (Mean Time Between Failures) expressed in hours; Availability = (MTBF)/(MTBF+MTTR)(%) [where MTTR = mean time to restore]; outage in minutes per year; failures per hour; percentage of failures per 1,000 hours.

Remote Defect Indication (RDI)
An indication returned to a transmitting terminal that the receiving terminal has detected an incoming section failure. [Previously called far-end-receive failure (FERF).]

Remote Failure Indication (RFI)
A signal that alerts upstream STS-1 path terminating equipment that a downstream failure has been alarmed along the STS-1 path. This action prevents multiple alarms from being activated for the same failure and ensures that a technician is dispatched to correct the failure. (Previously called yellow signals.)

Remote Network Element
Any Network Element that is connected to the referenced Network Element through either an electrical or optical link. It may be the adjacent node on a ring, or N nodes away from the reference. It also may be at the same physical location but is usually at another (remote) site.

Return to Zero
A code form having two information states (termed zero and one) and having a third state or an at-rest condition to which the signal returns during each period.

Revertive
A protection switching mode in which, after a protection switch occurs, the equipment returns to the nominal configuration (that is, the working equipment is active, and the protection equipment is standby) after any failure conditions that caused a protection switch to occur, clear, or after any external switch commands are reset. (See "Non-Revertive.")

Revertive Switching
In revertive switching, there is a working and protection high-speed line, circuit pack, etc. When a protection switch occurs, the protection line, circuit pack, etc. is selected. When the fault clears, service "reverts" to the working line.

Ring
A configuration of nodes comprised of network elements connected in a circular fashion. Under normal conditions, each node is interconnected with its neighbor and includes capacity for transmission in either direction between adjacent nodes. Path switched rings use a head-end bridge and tail-end switch. Line switched rings actively reroute traffic over the protection capacity.

Router

An interface between two networks. While routers are like bridges, they work differently. Routers provide more functionality than bridges. For example, they can find the best route between any two networks, even if there are several different networks in between. Routers also provide network management capabilities such as load balancing, partitioning of the network, and trouble-shooting.

S

Section

The portion of a transmission facility, including terminating points, between a terminal network element and a line-terminating network element, or two line-terminating network elements.

Section Layer

The second of the four levels in a standard SONET signal, used to transport an STS frame across a physical medium. This layer uses the photonic layer to form the physical transport.

Self-Healing

A network's ability to automatically recover from the failure of one or more of its components.

Server

Computer in a computer network that performs dedicated main tasks which generally require sufficient performance.

Serving Area

A user-defined grouping of Network Elements. It most commonly consists of Network Elements located in a central office (CO) and the subnetworks to which they belong.

Severely Errored Seconds (SES)

This performance monitoring parameter is a second in which a signal failure occurs, or more than a preset amount of coding violations (dependent on the type of signal) occurs.

Service

The operational mode of a physical entity that indicates that the entity is providing service. This designation will change with each switch action.

Signal-to-Noise Ratio (SNR)

The relative strength of signal compared to noise.

Signal Rate

An attribute that defines the bit-rate and format of the signal. The signal rate is defined by the STS-N path-level signal bit-rate and format including the presence or absence of concatenation.

Single-Ended Operations

Provides operations support from a single location to remote Network Elements in the same SONET subnetwork. With this capability you can perform operations, administration, maintenance, and provisioning on a centralized basis. The remote Network Elements can be those that are specified for the current release.

Single-Mode Fiber (SM)

An 8-μ diameter low-loss, long-span optical fiber typically operating at either 1310 nm, 1550 nm, or both.

Site Address

The unique address for a Network Element.

Slot

A physical position in a shelf designed for holding a circuit pack and connecting it to the backplane. This term is also used loosely to refer to the collection of ports or tributaries connected to a physical circuit pack placed in a slot.

Software Backup

The process of saving an image of the current network element's databases, which are contained in its NVM, to a remote location. The remote location could be the WaveStar CIT or an OS.

Software Download

The process of transferring a generic (full or partial) or provisioned database from a remote entity to the target network element's memory. The remote entity may be the WaveStar CIT or an OS. The download procedure uses bulk transfer to move an uninterpreted binary file into the network element.

Software ID

Number that provides the software version information for the system.

Span

An uninterrupted bidirectional fiber section between two network elements.

Span Growth

A type of growth in which one wavelength is added to all lines before the next wavelength is added.

Squelch Map

This map contains information for each cross-connection in a ring and indicates the source and destination nodes for the low-speed circuit that is part of the cross-connection. This information is used to prevent traffic misconnection in rings with isolated nodes or segments.

Standby

The circuit pack is in service but is not providing service functions. It is ready to be used to replace a similar circuit pack either by protection or by duplex switching.

Standby Path

One of two signals entering a constituent path selector, the standby path is the path not currently being selected.

State

The state of a circuit pack indicates whether it is defective or normal (ready for normal use).

Status

The indication of a short-term change in the system.

STS-1E

Now referred to as EC-1. A signal typically carried by coaxial cables from one equipment location to another. The term EC-1 refers to the organization and data rate of the signal and also to the voltage template the signal must conform to and the impedances for which the voltage template is valid.

STS-1

The basic building block logical signal in the SONET standard with a data rate of 51.84 Mb/s.

Subnetwork

A group of interconnected/interrelated Network Elements. The most common connotation is a synchronous network in which the Network Elements have data communications channel (DCC) connectivity.

Supervisory Signal

An optical signal originating with the telemetry circuit pack that is used to communicate maintenance information.

Suppression

A process where service-affecting alarms that have been identified as an "effect" are not displayed to a user.

Symptomatic Alarm

An alarm that is not indicative of an actual failure itself, but rather of a secondary manifestation.

Synchronization Messaging

Synchronization messaging is used to communicate the quality of network timing, internal timing status, and timing states throughout a subnetwork.

Synchronous

The essential characteristic of time scales or signals such that their corresponding significant instances occur at precisely the same average rate, generally traceable to a single Stratum-1 source.

Synchronous Digital Hierarchy (SDH)

A hierarchical set of digital transport structures, standardized for the transport of suitable adapted payloads over transmission networks.

Synchronous Network

The synchronization of transmission systems with synchronous payloads to a master (network) clock that can be traced to a reference clock.

Synchronous Optical Network (SONET)

The North American standard for the rates and formats that defines optical signals and their constituents.

Synchronous Payload

Payloads that can be derived from a network transmission signal by removing integral numbers of bits from every frame. Therefore, no variable bit-stuffing rate adjustments are required to fit the payload in the transmission signal.

Synchronous Payload Envelope (SPE)
> The combined payload and path overhead of an STS-1, STS-3c, STS-12c or STS-48c signal.

Synchronous Transport Signal (STS, STS-N)
> The basic logical building block signal for SONET with a rate of 51.84 Mb/s for an STS-1 signal and a rate of N times 51.84 Mb/s for an STS-N signal.

Synchronous Transport Signal, Level N, Concatenated (STS-Nc)
> A concatenated SONET payload signal at the STS-N rate, where N equals 3, 12, or 48. For example, an STS-3c signal is constructed by concatenating three STS-1 signals into a signal that uses a single path overhead, rather than three.

T

T1
> A carrier system that transmits at the rate of 1.544 Mb/s (a DS1 signal).

T2
> A carrier system that transmits at the rate of 6.312 Mbps (a DS2 signal).

T3
> A carrier system that transmits at the rate of 44.736 Mbps (a DS3 signal).

Target Group
> An administrator-defined group that defines to which Network Elements a user has access.

Target Identifier (TID)
> A provisionable parameter that is used to identify a particular Network Element within a network. It is a character string of up 20 characters where the characters are letters, digits, or hyphens (-).

Telemetry Feed-Through
> Operations capability for 4-fiber applications which allows the DCC to go from one OLS End Terminal (one subnetwork) through to the other collocated end terminal (separate subnetwork), thereby extending the OLS operations domain.

Through (or Continue) Cross-Connection
> A cross-connection within a ring, where the input and output tributaries have the same tributary number but are in lines opposite each other.

Threshold-Crossing Alert (TCA)
> A message type sent from a Network Element that indicates that a certain performance monitoring parameter has exceeded a specified threshold.

Through Timing
> Refers to a network element that derives its transmit timing in the east direction from a received line signal in the east direction and its transmit timing in the west direction from a received line signal in the west direction.

Time Division Multiplexing (TDM)
   A technique for transmitting a number of separate data, voice, and/or video signals simultaneously over one communications medium by interleaving a portion of each signal one after another.

Time Slot Assignment (TSA)
   A capability that allows any tributary in a ring to be cross-connected to any tributary in any lower-rate, non-ring interface or to the same-numbered tributary in the opposite side of the ring.

Time Slot Interchange (TSI)
   The ability of the user to assign cross-connections between any tributaries of any lines within a Network Element. Three types of TSI can be defined: Hairpin TSI, Interring TSI (between rings), and Intraring TSI (within rings).

Transaction Language One (TL1)
   A machine-to-machine communications language that is a subset of ITU's human-machine language.

Transmit-Direction
   The direction outwards from the Network Element.

Tributary
   A path-level unit of bandwidth within a port, or the constituent signal(s) being carried in this unit of bandwidth, for example, an STS-1 tributary within an OC-N port.

True Wave™ Optical Fiber
   Lucent Technologies' fiber generally called non-zero dispersion-shift fiber, with a controlled amount of chromatic dispersion designed for amplified systems in the 1550/1310 nm range.

Two-Way Point-to-Point Cross-Connection
   A two-legged interconnection, that supports two-way transmission, between two and only two tributaries.

Two-Way Roll
   The operation which moves a two-way cross-connection between tributary i and tributary j to a two-way cross-connection between the same tributary i and a new tributary k with a single user command.

U

Unavailable Seconds (UAS)
   In performance monitoring, the count of seconds in which a signal is declared failed or in which 10 consecutively severely errored seconds (SES) occurred, until the time when 10 consecutive non-SES occur.

Upstream
   At or towards the source of the considered transmission stream, for example, looking in the opposite direction of transmission.

User Privilege
    Permissions a user must perform on the computer system on which the system software runs.

User-to-Network Interface (UNI)
    The specifications for the procedures and protocols between a user and the Asynchronous Transfer Mode (ATM) network.

V

Value
    A number, text string, or other menu selection associated with a parameter.

Variable
    An item of data named by an identifier. Each variable has a type, such as int or Object, and a scope.

Violation Monitor and Removal (VMR)
    A provisionable mode for DS3 output that causes parity violations to be monitored and corrected before the DS3 signal is B3ZS encoded.

Virtual
    Refers to artificial objects created by a computer to help the system control shared resources.

Virtual Circuit
    A logical connection through a data communication (for example, X.25) network.

Virtual Tributary (VT)
    A structure designed for transport and switching of sub-STS-1 payloads. There are currently four sizes: VT1.5 (1.728 Mb/s), VT2 (2.304 Mb/s), VT3 (3.456 Mb/s), and VT6 (6.912 Mb/s).

Virtual Tributary Group (VT-G)
    A 9-row by 12-column structure (108 bytes) that carries one or more VTs of the same size. Seven VT groups (756 bytes) are byte interleaved with the VT-organized synchronous payload envelope.

Voice Frequency (VF) Circuit
    A 64 kilobit per second digitized signal.

Volatile Memory
    Type of memory that is lost if electrical power is interrupted.

VT1.5 Tributary
    A SONET logical signal with a data rate of 1.728 Mbps. In the 9-row structure of the STS-1 SPE, a VT1.5 occupies three columns. VT-structured STS-1 SPEs are divided into seven VT groups. Each VT group occupies twelve columns of the 9-row structure and, for VT1.5s, contains four VTs per group.

W

Wait-to-Restore (WTR)

Applies to revertive switching operation. The protection group enters the WTR state when all Equipment Fail (EF) conditions are cleared, but the system has not yet reverted back to its working line. The protection group remains in the WTR state until the Wait-to-Restore timer completes the WTR time interval.

Wait to Restore Time (WRT)

Corresponds to the time to wait before switching back after a failure has cleared, in a revertive protection scheme. This can be between 0 and 15 minutes, in increments of one minute.

Wavelength Add/Drop (WAD)

The process of adding and dropping wavelengths to provide more efficient transmission.

Wavelength Division Multiplexing (WDM)

A means of increasing the information-carrying capacity of an optical fiber by simultaneously transmitting signals at different wavelengths.

Wavelength Interchange

The ability to change the wavelength associated with an OC-N signal into another wavelength.

WaveStar™ Optical Line System

Lucent Technologies' lightwave transmission system. Utilizing DWDM technology, the system combines multiple signals of different wavelengths, transmits the resulting signal over a single fiber, and then demultiplexes the signal at the receive end.

Wide Area Network (WAN)

A communication network that uses common-carrier provided lines and covers an extended geographical area.

Wideband Communications

Voice, data, and/or video communication at digital rates from 64 kb/s to 2 Mb/s.

Working

Label attached to a physical entity. In case of revertive switching the working line or unit is the entity that is carrying service under normal operation. In case of nonrevertive switching the label has no particular meaning.

Working State

The working unit is currently considered active by the system and that it is carrying traffic.

X

X.25 Interface∕Protocol
The ITU packet-switched interface standard for terminal access that specifies three protocol layers: physical, link, and packet for connection to a packet-switched data network.

X-Terminal
Workstation that can support an X-Windows interface.

Z

Zero Code Suppression
A technique used to reduce the number of consecutive zeros in a line-coded signal (B3ZS, B8ZS).

Abbreviations and Acronyms

A

ABN
Abnormal (condition)

ABS
Absent

AC
Alternating Current

ACO
Alarm Cut-Off

ACT
Active

ADM
Add/Drop Multiplexer

ADR
Add/Drop Ring

AGNE
Alarm Gateway Network Element

AID
Access Identifier

AIS
Alarm Indication Signal

AITS
Acknowledged Information Transfer Service: Confirmed mode of operation of the LAPD protocol.

AMI
Alternate Mark Inversion

ANSI
American National Standards Institute

APD
Avalanche PhotoDiode

APS
Automatic Protection Switch

AS&C
  Alarm, Status, and Control

APSD
  Automatic Power Shutdown

ASCII
  American Standard Code for Information Interchange

ASN.1
  Abstract Syntax Notation 1

ATM
  Asynchronous Transfer Mode

AUTO
  Automatic

AVAIL
  Available

B

B3ZS
  Bipolar 3-Zero Substitution

B8ZS
  Bipolar 8-Zero Substitution

BCLAN
  Board Controller Local Area Network

BDFB
  Battery Distribution and Fuse Bay

BER
  Bit Error Rate

BITS
  Building Integrated Timing Supply

BLK
  Blank

BLSR
  Bidirectional Line-Switched Ring

BOC
   Bell Operating Company

C

CAC
   Circuit Access Code

CCITT
   Comité Consultatif International Télégrafique & Téléphonique

CCT
   Cross-Connection Type

CDRH
   Center for Devices and Radiological Health

CEPT
   Conférence Européenne des Administrations des Postes et des Télécommunications

CID
   Circuit Identifier

CIT or CIT-PC
   Craft Interface Terminal

CL
   Clear

CLEI
   Common Language Equipment Identifier

CLLI
   Common Language Location Identifier

CM
   Communications Module

CMIP
   Common Management Information Protocol. OSI standard protocol for OAM&P information exchange.

CMISE
   Common Management Information Service Element

CO
   Central Office

COV
  Central Office Video

CP
  Circuit Pack

CPE
  Customer Premises Equipment

CR
  Critical (alarm)

CSMA∕CD
  Carrier Sense Multiple Access with Collision Detection

CS&O
  Lucent Technologies Customer Support and Operations

CSU
  Channel Service Unit

CTIP
  Customer Training and Information Products

CTS
  Customer Technical Support within Lucent Technologies

CV
  Coding Violation

D

DACS∕DCS
  Digital Access Cross-Connect System

dB
  Decibels

DC
  Direct Current

DCC
  Data Communications Channel

DCE
  Data Communications Equipment

DCN
Data Communications Network

DPLL
Digital Phase Locked Loop

DRI
Dual Ring Interworking

DRAM
Dynamic Random Access Memory

DRIP
Dual Ring Interworking on Protection

DS0, DS1, DS3
Digital Signal Levels 0, 1, 3

DS-N
Digital Signal, Level N

DS-NE
Directory Service Network Element

DSX
Digital Cross-Connect Frame

DTCU
Distant Terminal Channel Unit

DTE
Data Terminating Equipment

DTMF
Dual Tone Multifrequency

DWDM
Dense Wavelength Division Multiplexing

E

EBER
Equivalent Bit Error Rate

EC
Echo Canceller

EC-1, EC-N
Electrical Carrier, Levels 1 and N

ECI
Equipment Catalog Item

EEPROM
Electrically Erasable Programmable Read-Only Memory

EF
Equipment Fail

EIA
Electronic Industries Association

EM
Event Management

EMC
Electromagnetic Compatibility

EMI
Electromagnetic Interference

EMS
Element Management System

EPROM
Erasable Programmable Read-Only Memory

EPT
Event-per-Time

EQ
Equipped

EQPT
Equipment

ES
Errored Seconds

ESD
Electrostatic Discharge

ESF
Extended Super Frame (DS1 signal format)

ETSI
European Telecommunications Standards Institute

EVT
  Event

EXM
  Extended Switching Module

F

FCC
  Federal Communications Commission

FDA
  Food and Drug Administration

FDDI
  Fiber Distributed Data Interface

FE
  Far End

FEBE
  Far End Block Error

FEPROM
  Flash EPROM

FIT
  Failure in Time

G

GB
  Gigabytes

Gb/s
  Gigabits per second

GHz
  Gigahertz

GNE
  Gateway Network Element

GR-XXX
  Bellcore General Requirement-XXX

H

HDLC
High-Level Data Link Control

HS
High Speed

HW
Hardware

Hz
Hertz

I

IAF
Intelligent Alarm Filtering

IAO LAN
Intraoffice Local Area Network

ID
Identifier

IEC
International Electrotechnical Commission

IEEE
Institute of Electrical and Electronics Engineers

I/O
Input/Output

INTFC
Interface

IS
In Service

IS-3
Interconnect Signal-3

ISDN
Integrated Services Digital Network

ITCO
Independent Telephone Company

ITM
Integrated Transport Management

ITM-NM
Integrated Transport Management Network Module

ITM SNC
Integrated Transport Management SubNetwork Controller

ITU
International Telecommunications Union

ITU-R
International Telecommunications Union — Radio standardization sector. Formerly known as CCIR: Comité Consultatif International Radio; International Radio Consultative Committee.

ITU-T
International Telecommunications Union — Telecommunication standardization sector. Formerly known as CCITT: Comité Consultatif International Télégrafique & Téléphonique; International Telegraph and Telephone Consultative Committee.

IXC
Interexchange Carrier

K

Kb/s
Kilobits per second

L

LAN
Local Area Network

LATA
Local Access and Transport Area

LBC
Laser Bias Current

LBFC
    Laser Backface Currents

LBO
    Lightguide Build-Out

LBP
    LAN Bridge Port

LCN
    Local Communications Network

LCT
    Large Capacity Terminal

LEC
    Local Exchange Carrier

LED
    Light-Emitting Diode

LGX
    Lightguide Cross-Connect

LMP
    LAN Management Port

LNE
    Logical Network Element

LOF
    Loss of Frame

LOP
    Loss of Pointer

LOS
    Loss of Signal

LPBK
    Loopback

LS
    Low Speed

LTE
    Line Terminating Equipment

M

μ
  Microns

μm
  Micrometer

MB
  Megabytes

Mb/s
  Megabits per second

MCOND
  Maintenance Condition

MDS
  Metallic Digital Server

MDSCU
  Metallic Digital Server Channel Unit

MEM
  Memory

MIPS
  Millions of Instructions Per Second

MJ
  Major (alarm)

MML
  Human-Machine Language

MN
  Minor (alarm)

ms
  Millisecond

MTBF
  Mean Time Between Failures

MTBMA
  Mean Time Between Maintenance Activities

MTTR
  Mean Time To Repair

N

NA
Not Applicable

NCC
Network Communication Controller

NE
Network Element

NEBS
Network Equipment-Building System

nm
Nanometer (10^{-9} meters)

NMA
Network Monitoring and Analysis System

NMA-F
Network Monitoring and Analysis-Facility

NMON
Not Monitored

NMS
Network Management System

NORM
Normal

NPPA
Non-Preemptible Protection Access

NRZ
Nonreturn to Zero

NSA
Non-Service Affecting

NSAP Address
Network Service Access Point Address (used in the OSI network layer 3)

NTF
No Trouble Found

NVM
Non-Volatile Memory

O

O&M
  Operation and Maintenance

OA
  Optical Amplifier

OALAN
  Overhead Access Local Area Network

OAM&P
  Operations, Administration, Maintenance, and Provisioning

OC, OC-N
  Optical Carrier

OC-1
  Optical Carrier, Level 1 Signal (51.84 Mb/s)

OC-3
  Optical Carrier, Level 3 Signal (155.52 Mb/s)

OC-3c
  Optical Carrier, Level 3 Concatenated Signal (155.52 Mb/s)

OC-12
  Optical Carrier, Level 12 Signal (622.08 Mb/s)

OC-48
  Optical Carrier, Level 48 (2488.32 Mb/s) (2.5 Gb/s)

OC-192
  Optical Carrier, Level 192 (9953.28 Mb/s) (10 Gb/s)

ODU
  Optical Demultiplexing Unit

OI
  Operations Interworking

OILU
  Optical Line Interface Unit

OLS
  Optical Line System

OMU
  Optical Multiplexing Unit

OOF
  Out-of-Frame

OOS
  Out-of-Service

OPS∕INE
  Operations System for Intelligent Network Elements

ORM
  Optical Remote Module

OS
  Operations System

OSI
  Open Systems Interconnect

OSMINE
  Operations Systems Modifications for the Integration of Network Elements

OT
  Optical Translator

OTCTL
  Optical Translator Controller

OTPM
  Optical Translator Port Module

OTU
  Optical Translator Unit

OW
  Orderwire

P

PAD
  Packet Assembler/Disassembler

PCB
  Printed Circuit Board

PCM
  Pulse Code Modulation

PDH
   Plesiochronous Digital Hierarchy

PM
   Performance Monitoring

PMD
   Polarization Mode Dispersion

POH
   Path Overhead

POP
   Point of Presence

POTS
   Plain Old Telephone Service

PRI
   Primary

PROTN
   Protection

PROV
   Provisioned

PSDN
   Public Switched Data Network

PSN
   Packet-Switched Network

PSTN
   Public Switched Telephone Network

PTE
   Path Terminating Equipment

PTY
   Parity

PVC
   Permanent Virtual Circuit

PWR
   Power

PWR ON
   Power On

Q

QOS
Quality of Service

QOTU
Quad Optical Translator Unit

QRSS
Quasi-Random Signal Source

R

RAM
Random Access Memory

RCV
Receive

RCVR
Receiver

RDI
Remote Defect Indication

RF
Radio Frequency

RFI
Remote Failure Indication

RPP
Reliability Prediction Procedure

RT
Remote Terminal

RTAC
Regional Technical Assistance Center

RTRV
Retrieve

RTV
Remote Terminal Video

RZ
   Return to Zero

S

SA
   Service Affecting

SDH
   Synchronous Digital Hierarchy

SDS
   Standard Directory Service based on ANSI recommendation T1.245

SEC
   Secondary

SES
   Severely Errored Seconds

SF
   Super Frame (DS1 signal format)

SLN
   A 12-character circuit pack serial number

SNR
   Signal-to-Noise Ratio

SOH
   Section Overhead

SONET
   Synchronous Optical Network

SPE
   Synchronous Payload Envelope

STBY
   Standby

STS
   Synchronous Transport Signal

STS-1, STS-N
   Synchronous Transport Signal, Levels 1 and N

STS-3
 Synchronous Transport, Level 3

STS-3c
 Synchronous Transport, Level 3 Concatenated Signal

STS-12
 Synchronous Transport, Level 12

STS-12c
 Synchronous Transport, Level 12Concatenated Signal

SVC
 Switched Virtual Circuit

SYNC
 Synchronizer

T

TA
 Technical Advisory

TABS
 Telemetry Asynchronous Byte Serial (Protocol)

TARP
 Target Identifiers Address Resolution Protocol

TBD
 To Be Determined

TBOS
 Telemetry Byte-Oriented Serial (Protocol)

TCA
 Threshold-Crossing Alert

TDM
 Time Division Multiplexing

THz
 Terrahertz (10^{12} Hz)

TID
 Target Identifier

TIRKS
Trunks Integrated Records Keeping System

TL1
Transaction Language 1

TR
Technical Requirement

TSA
Time Slot Assignment

TSI
Time Slot Interchange

TSO
Technical Support Organization

TU
Tributary Unit

U

UAS
Unavailable Seconds

UITS
Unacknowledged Information Transfer Service. Unconfirmed mode of LAPD operation.

UNEQ
Path Unequipped

UPSR
Unidirectional Path-Switched Ring

USAM
User-Settable Alarm Monitoring

V

V
Volts

VAC
Volts Alternating Current

VDC
  Volts Direct Current

VF
  Voice frequency

VM
  Violation Monitor

VMR
  Violation, Monitor, and Removal

VRT
  Virtual Remote Terminal

VT
  Virtual Tributary

VT1.5
  Virtual Tributary, Level 1.5

VT-G
  Virtual Tributary Group

W

WAD
  Wavelength Add/Drop

WAN
  Wide Area Network

WaveStar™ OLS 40G ⁄ 80G ⁄ 400G
  WaveStar Optical Line System 40G/80G/400G

WBS
  Wideband Shelf

WDCS
  Wideband Digital Cross-Connect System

WDM
  Wavelength Division Multiplexing

X

X.25

An ITU standard defining the connection between a terminal and a public packet-switched network