AG Communication Systems

A Subsidiary of

Lucent Technologies

Bell Labs Innovations

SuperLine™ Access System

Element Manager
User's Guide
Release 3.0 (R3.0)

SD-110300-EMUP
363-225-104
Issue 3
July 1999

Publisher

AG Communication Systems Corporation
Customer Documentation
P. O. Box 52179
Phoenix, Arizona 85072-2179
623-582-7000
www.agcs.com

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Ordering Information

The AG Communication Systems order number for this IP is SD-110300-EMUP.

The Lucent Technologies order number for this IP is 363-225-104.

Support Telephone Numbers

Information Product Support Number

Refer to **How to comment** in the About this information product section of this IP.

Technical Support Telephone Number

Refer to **Technical support** in the About this information product section of this IP.

Contents

About this information product

Purpose

The *SuperLine Access System Element Manager User's Guide* describes how to use AG Communication Systems' *SuperLine*™ Element Manager (*SuperLine* EM) and Multi-Element Manager (Multi-EM) applications on a Microsoft Corporation *Windows NT*® or *Sun*™ Microsystems *Solaris*™ operating system to configure, administer, and monitor lines and equipment within the *SuperLine* Access System.

Although *SuperLine* EM and Multi-EM provide a Graphical User Interface (GUI) through which telephone company (telco) personnel can detect trouble conditions and alarms within the *SuperLine* Access System, this information product does not describe troubleshooting procedures. The *SuperLine Access System Troubleshooting* manual and the online help for *SuperLine* EM and Multi-EM provide that information.

Reason for reissue

This is the third issue of this information product.

Intended audience

This document contains information for telco personnel who are responsible for administering networks, *SuperLine* Access Shelf equipment, derived or baseband lines supported by *SuperLine* equipment, and *SuperLine* Integrated Access Devices (IADs) at the subscriber premises.

Adapter vs. *SuperLine* Integrated Access Device

The user interfaces of *SuperLine* Element Manager and Multi-Element Manager use the term *adapter* to refer to the *SuperLine* Integrated Access Device (IAD).

Example: The tab screen that displays information about the status of *SuperLine* IADs is called the Adapters tab screen, and that screen's display area displays the header *Adapter Information*.

Systems supported

The information in this information product is valid for Release 3.0 (R3.0) of the *SuperLine* Access System.

Safety labels

Admonishments (DANGER, WARNING, and CAUTION statements) tell customers that the actions they are about to perform may harm them or the equipment. Following are the three types of admonishments in the order of priority.

DANGER
Electric shock

Danger indicates the presence of a hazard that will cause death or severe personal injury if the hazard is not avoided.

WARNING

Warning indicates the presence of a hazard that can cause death or severe personal injury if the hazard is not avoided.

CAUTION

Caution indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided.

Dual media information product

This information product is published as both an electronic document in Hypertext Markup Language (HTML) format and as a paper document. To accommodate both media, this document uses several navigation aids that may not be familiar to you. For example, in typical manuals, a List of Figures or List of Procedures helps guide you to graphics or summary information. Such traditionally provided lists do *NOT* appear in this information product. Instead, the Index entries Figures and Procedures show where these items are located.

Conventions used

The following typographical conventions help you navigate through the document.

Convention	Description
Bold print, first letter capitalized	Represents a reference to a topic, a menu option you must select, or a button you must select.
Italicized Print	Indicates the title of a published document. Also used for emphasis and for names of screen fields.
ALL CAPITAL LETTERS	Emphasizes the text.
□	Identifies the end of a topic.
Underlined Bold Print	Indicates text that is an HTML hyperlink.

Related documentation

The complete *SuperLine* Access System documentation set consists of the following information products:

Document Name	Vendor
SuperLine™ Access System Applications and Engineering, Release 3.0, SD-100300-SAEP	AG Communication Systems
SuperLine Access System Applications and Engineering, Release 3.0, 363-225-101	Lucent Technologies
SuperLine Access System Element Manager User's Guide, Release 3.0, SD-110300-EMUP	AG Communication Systems
SuperLine Access System Element Manager User's Guide, Release 3.0, 363-225-104	Lucent Technologies
SuperLine Access System Release Notes, Release 3.0, SD-100300-SRNP	AG Communication Systems
SuperLine Access System Release Notes, Release 3.0, 363-225-102	Lucent Technologies
SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance, Release 3.0, SD-100300-IOMP	AG Communication Systems
SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance, Release 3.0, 363-225-105	Lucent Technologies
SuperLine Access System Troubleshooting, Release 3.0, SD-100300-TSGP	AG Communication Systems
SuperLine Access System Troubleshooting, Release 3.0, 363-225-103	Lucent Technologies

SuperLine Integrated Access Device Model 6512-A2 Installation Instructions	Paradyne Corporation (This document is provided with each *SuperLine* IAD.)
Model 6035 Phone Filter Installation Instructions	Paradyne Corporation (This document is provided with each *SuperLine* IAD, and is included in the Customer Premises Equipment Filter (CPEF) package.)
HP OpenView Network Node Manager Performance and Configuration Guide with HP NNM Examples	Hewlett-Packard Company
OpenView Network Node Manager 5.02 Runtime Release Notes	Hewlett-Packard Company

Related training

The following training provides additional information about the *SuperLine* Access System. Contact the appropriate supplier, either AG Communication Systems or Lucent Technologies, as follows:

AG Communication Systems

For information on related training, contact your AG Communication Systems sales representative.

Lucent Technologies

The National Product Training Center in Altemonte Springs, Florida, provides management courses for planning, engineering, and ordering as well as training for telecommunications technicians in installation, operations, and maintenance. Suitcasing of these courses may be available. Consult your Local Lucent Technologies Account Executive for more information or reservations. Enroll in a course using one of the following methods.

- 1-888-LUCENT8 (1-888-582-3688). Call the training coordinator for your company to get information on these and other training courses available, and on schedules, fees, and registration. If your company does not have an assigned training coordinator, call this toll-free number [1-888-LUCENT8 (1-888-582-3688)] Monday through Friday, 7:30 a.m. to 5:30 p.m. EST. Use this number to order a product training catalog, get more information about a course, find out about new courses, or register for a class. However, in Canada, please call 1-800-221-1647.

  When you call 1-888-LUCENT8, select Option 2 (press 2 one time on a touchtone phone) for Lucent Technologies product training.
- COMCATS. You may also use a computer and modem to log into the online catalog, computerized catalog system (COMCATS). Set your terminal options to the following values.
  - 300/1200/2400 baud rate
  - Full duplex
  - Space parity
  - 7 data bits
  - 1 stop bit

dial:	1-800-662-0662 or 614-764-5566
login:	comcats
password:	at&tcat

If you have trouble accessing COMCATS, call 1-888-LUCENT8 and ask to speak with the COMCATS Administrator.

Technical support

For technical support, contact the appropriate supplier, either AG Communication Systems or Lucent Technologies, as follows:

AG Communication Systems

AG Communication Systems provides customer assistance for the *SuperLine* Access System including, but not limited to, troubleshooting assistance, technical consultation, operational problem consultation, procedural advice, and emergency recovery assistance from a qualified system support professional.

If you have technical information questions, contact the Customer Support Center (CSC) by telephone at 1-888-888-AGCS (1-888-888-2427) or by electronic mail at superlinehelp@agcs.com.

If you need help with installing or operating *SuperLine* EM or Multi-EM, contact the Customer Support Center.

If you need help to resolve problems with *SuperLine* IADs, refer to the *SuperLine Access System Troubleshooting* manual or the *SuperLine Integrated Access Device Installation Instructions* document provided by Paradyne Corporation, a partner in *SuperLine* development.

For more information about the *SuperLine* Access System, contact your AG Communication Systems technical sales staff or visit our Web site at www.agcs.com (from outside the United States: www.agcs.com.us).

Lucent Technologies Regional Technical Assistance Center (RTAC)

Lucent Technologies provides customer assistance for the *SuperLine* Access System including, but not limited to, troubleshooting assistance, technical consultation, operational problem consultation, procedural advice, and emergency recovery assistance from a qualified system support professional from the Regional Technical Assistance Center (RTAC).

- 1-800-225-RTAC (1-800-225-7822). Service is provided from the RTAC at 1-800-225-RTAC (1-800-225-7822). This telephone number is monitored 24 hours a day, 7 days a week. During regular business hours, your call will be answered by your local regional RTAC. Outside normal business hours, all calls will be answered at a centralized technical assistance center where service-affecting problems will be dispatched immediately to your local RTAC. All other problems will be referred to your local RTAC on the next regular business day.

How to comment

AG Communication Systems

To provide feedback or comments, send electronic mail to the Customer Support Center at superlinehelp@agcs.com, or contact your sales representative.

How to order

AG Communication Systems

To order copies of documents, send or call in an order.

Mail Order	Telephone Order (Monday through Friday)
AG Communication Systems ATTN: Order Fulfillment P.O. Box 52179 Phoenix, AZ 85027	Within USA: 1-623-581-4263 7:30 a.m. to 4:00 p.m. MST FAX: 1-623-582-7840

Lucent Technologies

To order copies of documents and/or to request placement on the standing order list, send or call in an order.

Customer	Mail Order	Telephone Order (Monday through Friday)
Commercial Customers a.	Lucent Technologies Customer Information Center ATTN: Order Entry Center 2855 N. Franklin Road P.O. Box 19901 Indianapolis, IN 46219	Within USA: 1-888-LUCENT8 or 1-888-582-3688 7:30 a.m. to 6:30 p.m. EST From Canada: 1-800-255-1242 Worldwide: 1-317-322-6416 FAX: 1-317-322-6699
RBOC/BOC	Process through your Company documentation coordinator.	
a. For commercial customers, a check, money order, purchase order number, or charge card number is required with all orders. Make checks payable to Lucent Technologies. Lucent Technologies entities should use Form IND 1-80.80 FA, available through the Customer Information Center.		

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1 Introducing *SuperLine* Element Manager

Overview

Introduction

This chapter provides a high-level overview of AG Communication Systems *SuperLine*™ Element Manager (*SuperLine* EM) and Multi-Element Manager (Multi-EM) applications and their features. This chapter also describes menus, toolbar buttons, and other navigation features included on all *SuperLine* EM/Multi-EM screens, as well as buttons that are unique to the tab screens.

In this chapter

This chapter covers the following topics:

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SuperLine EM described

SuperLine EM defined

The *SuperLine* EM application enables telephone company (telco) craftpersons and technicians to do the following:

- Use a laptop, a personal computer (PC), or a *Sun*™ workstation to configure, manage, and monitor the status of *SuperLine* Access Shelf equipment.
- View alarms for trouble conditions at the *SuperLine* Access Shelf or on TR-303 message channels.
- Enable, disable, or monitor status of derived lines and voice Digital Signal 1s (voice DS1s).
- Monitor and manage Internet Protocol (IP) routing for a *SuperLine* Access System's network and local interfaces.

SNMP protocol

SuperLine EM uses Simple Network Management Protocol (SNMP) and enterprise Management Information Bases (MIB) to manage the *SuperLine* Access System. *SuperLine* EM runs under the following operating systems:

- Microsoft *Windows NT*® version 4.0
- Microsoft *Windows*® 95 or 98
- *Sun* Microsystems *Solaris*™ version 2.6 or higher

SuperLine EM applications

The following examples illustrate how *SuperLine* EM can help telco personnel administer *SuperLine* Access Systems.

Example: using *SuperLine* EM for administration

As the *SuperLine* Access System administrator during the day shift, Bill configures line service between the *SuperLine* Access Shelf and the *SuperLine* Integrated Access Device (IAD) at a new subscriber's premises. He uses *SuperLine* EM's Graphical User Interface (GUI) as follows:

- Bill displays the Firmware tab screen and uses it to download new firmware.
- Using the Telephony tab screen, he configures the *SuperLine* Access Shelf for TR-303 telephony.

Example: using *SuperLine* EM for monitoring

The *SuperLine* Access System administrator for the evening shift, Jackie, uses *SuperLine* EM to monitor the status of system devices. While viewing the *SuperLine* EM screens:

- On the Status tab screen, Jackie sees that the icon for the QV8 line card installed in slot 5 on the *SuperLine* Access Shelf turns red and the icons for the eight ports, located just below the card icon, also turn red.
- On the Inventory tab screen, Jackie sees that the status of line card 5 is flagged in red.
- On the Adapters tab screen, she sees the status of the ports on line card 5 displayed in red, and the ports' status listed as `Failed`.
- The Event Log screens include entries showing Major shelf alarms for line card 5 and its ports.

Jackie concludes that line card 5 has failed and dispatches a technician to install a new card.

The *SuperLine* EM environment

SuperLine EM is among items customers receive when they purchase a *SuperLine* Access System. *SuperLine* EM runs on the PC or *Sun* workstation that serves as the craft interface terminal for the *SuperLine* Access System.

If *SuperLine* EM software is not already loaded onto the craft interface terminal, follow the procedures included in the CD-ROM package provided by Lucent Technologies or AG Communication Systems to load *SuperLine* EM.

Multi-Element Manager

For customers who use Hewlett-Packard *OpenView*® Network Node Manager (NNM) product to manage their data networks, Lucent Technologies and AG Communication Systems provide an application called Multi-Element Manager (Multi-EM). Sold separately as an enhancement to *SuperLine* Access Systems, Multi-EM is a version of *SuperLine* EM that runs under *OpenView* NNM; it allows *OpenView* NNM to monitor and manage *SuperLine* Access Shelves as network nodes.

When an alarm occurs at a *SuperLine* Access Shelf, *OpenView* NNM uses Multi-EM's event reporting to help system administrators investigate the alarm. Users can also activate Multi-EM at any time to view equipment status or to provision the *SuperLine* Access System.

Multi-EM requires version 5.02 of *OpenView* NNM for *Windows NT*, or version 5 of *OpenView* NNM for *Solaris* version 2.6.

Multi-EM looks and operates very much like the stand-alone *SuperLine* EM application, but there are some significant differences. The topics **How Multi-EM and *SuperLine* EM differ** on page 12–2 and **Running Multi-EM** on page 12–5 describe these differences in detail.

SuperLine EM/Multi-EM screens

Most of a user's interaction with *SuperLine* EM or Multi-EM involves the following screens:

- The main screen, which appears after you have started *SuperLine* EM or Multi-EM and have opened a session to a *SuperLine* Access Shelf. From this screen, you can access tab screens to perform monitoring or management tasks.
- Event log screens. *SuperLine* EM provides two event logs:
  - One log records events on the *SuperLine* Access Shelf with which the application has a open session.
  - The Global Event Log screen displays information about events on all *SuperLine* Access Shelves on your network. This log tracks the status of all *SuperLine* Access Shelves that have been identified to the *SuperLine* Access System, even those for which you currently do not have an open *SuperLine* EM session.

SuperLine EM does not display the Global Event Log screen unless you request it.

Multi-EM does *NOT* use the *SuperLine* Access Shelf and global event logs to report alarms and other events on *SuperLine* Access Shelves. Instead, Multi-EM uses *OpenView* NNM's Event Browser window to report such events.

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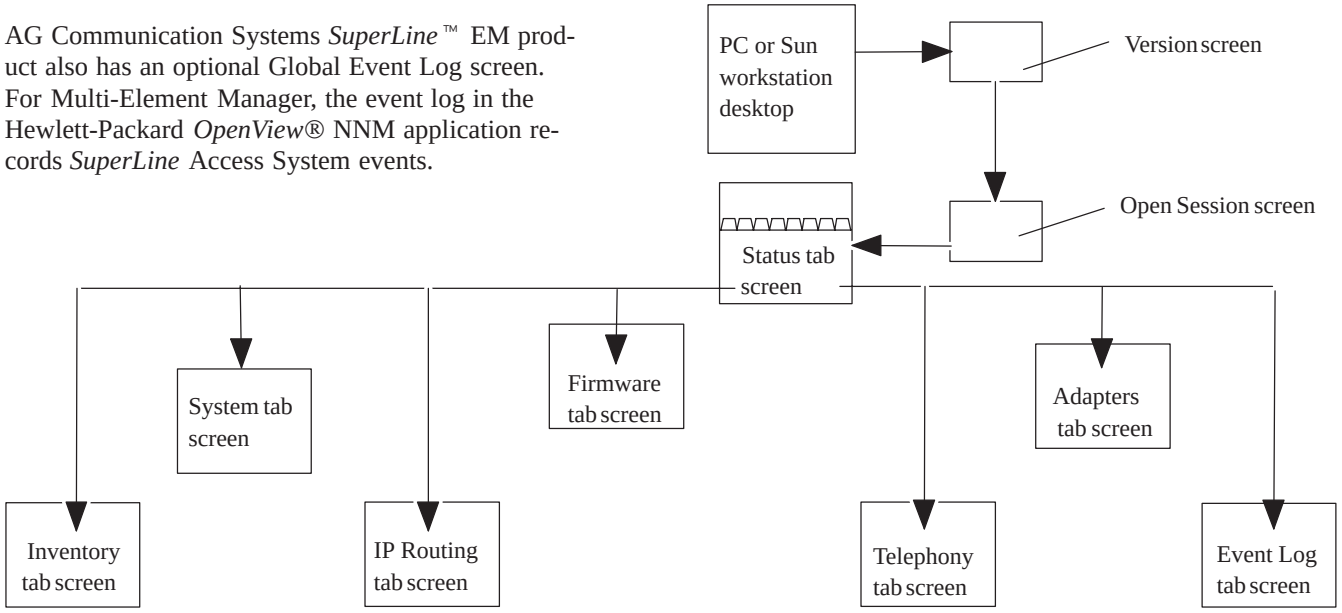
Overview of *SuperLine* EM screens

Screen hierarchy

The following diagram shows the major *SuperLine* EM and Multi-Element Manager screens.

AG Communication Systems *SuperLine*™ EM product also has an optional Global Event Log screen. For Multi-Element Manager, the event log in the Hewlett-Packard *OpenView*® NNM application records *SuperLine* Access System events.



Initiating certain tasks from the IP Routing tab screen causes *SuperLine* EM or Multi-EM to display additional screens not represented here. The subtopics in the topics **Setting a *SuperLine* Access Shelf's IP address/mask** on page 7–6 and **Adding an IP route** on page 7–8 discuss these tasks and screens.

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Common screen features

Common menus and toolbar buttons

The tab screens of *SuperLine* EM and Multi-EM share a common set of menus and toolbar buttons:

- A menu bar with the following menus: File, Tear Off, Windows, Options, Global Log, and Help. (The Tear Off menu is not available in the *Windows* 95 or *Windows* 98 versions of *SuperLine* EM.) Selecting items from these menus causes various system-wide activities to occur.

Example: On the File Menu, an icon showing a red arrow labeled Exit represents the option to exit from *SuperLine* EM or Multi-EM.

- A toolbar button area just below the menu bar.

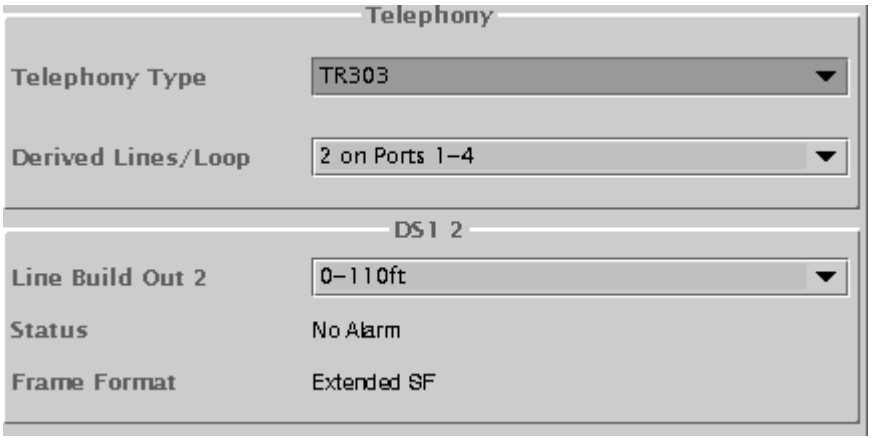
Example: On all tab screens, the toolbar area contains Save and Reset buttons. Most screens also have a Refresh button.

Some screens use additional toolbar buttons. The **Screen-specific buttons** topic on page 1–14 describes these buttons.

Drop-down list boxes

Drop-down list boxes enable you to set the values of some *SuperLine* Access Shelf parameters. On the Telephony tab screen, drop-down list boxes enable you to specify the number of DS1s enabled for the *SuperLine* Access Shelf, the telephony type used (such as TR-303), the number of derived lines per subscriber loop, and the line build out.

An example of two drop-down list boxes follows.



Setting parameters with list boxes

To use drop-down list boxes to set *SuperLine* Access Shelf parameters, follow these steps:

1. Place the cursor on the triangle on the list box.
2. Click the left mouse button.

   Result: A list of valid parameter values appears.
3. Hold the left mouse button down and place the cursor on the value you want to select.
4. Release the mouse button.

   Result: *SuperLine* EM or Multi-EM sets the parameter to the selected value.

END OF STEPS

Communication icon

A communication icon located in the upper right corner of the screen, showing a lightning bolt between a *SuperLine* Access Shelf and a PC or workstation, blinks when *SuperLine* EM or Multi-EM retrieves data from or sends data to the *SuperLine* Access Shelf.

Tool tips

Context-sensitive tool tips are textual descriptions of items on the screen you are currently viewing; they pop up as you place the cursor on an item. A tool tip may describe both the item and its current state (such as `In Service`). Tool tips for the toolbar buttons also show keystroke combinations you can enter instead of clicking buttons.

When the state of an item changes, the text of its tool tip also changes.

Examples:

- If you place the cursor on the Refresh toolbar button, the tool tip reads, `Reloads Data (Refreshed <date> <time>) alt+R.`
- If you place the cursor on the Pwr Maj icon on the Status tab screen when there is no major alarm for *SuperLine* Access Shelf power, the tool tip reads, `Major Power Alarm (not alarmed).`
- The state of the line card in shelf slot 12 changes from `In Service` to `Warning`. On the Status tab screen, the tool tip text for the Slot 12 icon changes from `In Service` to `Warning`. The color of the icon also changes from green to yellow.

By default, *SuperLine* EM and Multi-EM display tool tips. To disable tool tips, select the **Options** menu, then click the check mark on the Show Tool Tips sub-option so that the check mark disappears.

Other common screen features

SuperLine EM and Multi-EM screens also have the following features in common:

- A screen/device ID bar located directly below the tabs on the screens. The screen/device ID bar indicates the Internet Protocol (IP) address of the *SuperLine* Access Shelf involved in the current *SuperLine* EM or Multi-EM session.
- The current day, date, and time, shown at the bottom of the screen.
- Greyed-out objects. Greying indicates the following:
  - For devices and LED icons: the device is not equipped or not available.
  - For *SuperLine* Access Shelf parameters: parameter values are read-only.

Reordering columns in tables

The Inventory, IP Routing, Adapters, Event Log, and Global Event Log screens have tables that allow you to reorder their columns. The Event Log tab screen and the Global Event Log also allow you to re-sort the event list by clicking the heading of the column on which to sort.

Both the reordering of columns and the sorting apply only to the current *SuperLine* EM or Multi-EM session. If you close the session or exit the application, the column order and sort order return to their defaults.

Changing column widths

In any table, when the data displayed in a cell ends with three periods (for example, `192.168.22...`), the cell contains more data than you can see on the screen. You can widen the cell to see its complete contents, and you can also narrow a cell to create more room for displaying the contents of other cells.

To change the width of a table cell, follow these steps:

1. Place the mouse pointer on the right edge of the cell.
   Result: The mouse pointer changes to a symbol that looks like this: →|
2. Press and hold down the left mouse button.
3. Drag the mouse pointer to the right to make the cell wider, or drag to the left to make the cell smaller.
   Result: The cell width changes accordingly, and you see more or less of the information in it. When you make a cell wider, the cells to its right shift further right, and may even disappear from the screen.
4. Release the mouse button.

Shelf configuration and reset messages

On all *SuperLine* EM or Multi-EM tab screens, the bottom of the screen displays an error message when:

- The *SuperLine* Access Shelf is not consistent with a user-selected telephony mode.
- The *SuperLine* Access Shelf needs to be reset for some reason.

When you reset a *SuperLine* Access Shelf after making changes to shelf provisioning, one of the following messages is sent to the *SuperLine* EM event log or the *OpenView* NNM event log:

```
New provisioning OK.  Resetting with new values:
telephony type = '<type>' num dlines/loop =
'<value>' shelf type = '<shelf type>'
```

This message appears when the new settings for the *SuperLine* Access Shelf's telephony type, derived lines per loop, and shelf type are compatible. The message reports that the shelf parameters are being reset to the new values.

```
New provisioning invalid.  Resetting with original
values: telephony type = '<type>' num dlines/loop =
'<value>' shelf type = '<shelf type>'
```

This message appears when the settings for the telephony type, derived lines per loop, and shelf type parameters are *NOT* compatible.

Example: Setting the *SuperLine* Access Shelf's telephony type to `TR-008 Mode 1` and the number of derived lines per loop to `2 on all Ports` produces this message, because this derived line configuration is valid only for TR-303 telephony.

The message reports that new parameter settings have been rejected, and that the old values will remain in effect following the reset.

Choosing menu options

To choose an option from any menu, follow these steps:

1. Place the cursor on the name of a menu and click the left mouse button.

   Result: A list of menu options appears.

2. Hold the left mouse button down and move the cursor to the menu option you want.

   Result: The menu option is highlighted.

3. Release the mouse button.

   Result: *SuperLine* EM or Multi-EM does the task for the selected option.

END OF STEPS

File menu

The File menu has the following options:

- Open Session – Open a management session with a *SuperLine* Access Shelf. This option causes the Open Session screen, described in the **Starting *SuperLine* EM** topic on page 2–13, to appear.
- Close Session – Close a session with a *SuperLine* Access Shelf. This option causes the Close Session screen to appear.
- Exit – Exit from *SuperLine* EM or Multi-EM.

Tear Off menu

The Tear Off menu, available only on *Windows* NT or *Solaris* versions of *SuperLine* EM and Multi-EM, allows you to display two or more tab screens on your PC or workstation desktop at the same time. To display multiple tab screens, follow these steps:

1. On any tab screen, place the cursor on the Tear Off menu and press the left mouse button.

   Result: A list of tab screens appears.
2. Hold the left mouse button down and move the cursor to the name of the tab screen you want to view and tear off.
3. Release the mouse button.

   Result: A new window (separate from the original tab screen) appears on your PC desktop. This window displays the contents of the tab screen you selected.
4. To return from the torn off window to the original tab screen, click the **X** (**Close**) button in the upper right corner of the tear-off window.

END OF STEPS

Windows menu

The Windows menu lists, by IP address, all *SuperLine* Access Shelves for which *SuperLine* EM or Multi-EM sessions are currently open. If multiple sessions are open, you can display the screens for a particular session on top of all other open session screens by selecting the desired session's IP address from the Windows menu.

Help menu

The Help menu lists the following options:

- Help on EM – Displays three sub-options:
  - Context – Display help topics for the tab screen you are currently using.
  - Topics – Display all help topics except troubleshooting.
  - Troubleshooting – Display help topics that provide instructions for troubleshooting equipment problems.
- About EM – Displays the pop-up SuperLine Version screen, which indicates the version of *SuperLine* EM or Multi-EM software you have.

Save toolbar button

To save the contents of a tab screen to an ASCII text file, follow these steps:

1. Click the **Save** button in the toolbar.

   Result: The pop-up Save screen appears.
2. Type in the name of the path or folder to which you want to save the screen contents.
3. Type in the name of the file to store the screen contents.
4. Do one of the following:
   - Click **OK** to save the file.
   - Click **Cancel** to cancel the save operation.

END OF STEPS

Reset toolbar button

Click the **Reset** toolbar button to reset the *SuperLine* Access Shelf which *SuperLine* EM or Multi-EM is currently monitoring.

CAUTION

- ***Resetting a SuperLine Access Shelf disrupts service on subscriber lines connected to the shelf.***
- ***Clicking the Init to Defaults button causes loss of all provisioning data on the SuperLine Access Shelf and disconnects your SuperLine EM or Multi-EM session.***

When you click **Reset**, a pop-up screen displays the following buttons:

- Reset Now – Resets the *SuperLine* Access Shelf
- Init to Defaults – Re-initializes *SuperLine* Access Shelf parameters to default settings. If you click this button, a pop-up dialog asks you to confirm your choice.
- Cancel – Cancels the reset operation

Refresh toolbar button

SuperLine EM and Multi-EM automatically receive notice of changes to alarm conditions. The applications also automatically retrieve data from the device that is most likely to change (for example, the up time for the *SuperLine* Access System). However, *SuperLine* EM or Multi-EM updates some data (such as the system's location) only when you go from one tab screen to another.

To ensure that a screen is displaying the most recent data, click the **Refresh** button to update the screen contents. The Communication icon in the upper right corner of the screen blinks while *SuperLine* EM or Multi-EM fetches new information. The tool tip for the Refresh button shows you the date and time when the screen was last refreshed.

Screen/shelf ID bar

A screen/shelf ID bar on each tab screen, just above the data display area, shows the name of the screen you are currently viewing and the IP address or Domain Name Service (DNS) name of the shelf to which the displayed data applies.

The two small icons at the right end of the shelf ID bar allow you to minimize the screen's data display area and restore it to full size.

Date and time information

The bottom of each *SuperLine* EM or Multi-EM screen shows the current day, date, and time, based on the day, date, and time provided by the PC or Sun workstation running the application.

Selecting a list entry or menu option

When you select an option from a menu or an entry from a list, *SuperLine* EM or Multi-EM highlights it**.**

On some lists, you can select multiple list entries at the same time, for example to modify the content of several entries at once. To select multiple items that are next to each other, follow these steps:

1. Place the cursor on the first list entry to select.
2. Holding the left mouse button down, drag the cursor over the other list entries to select.
3. Release the mouse button.

   Result: The list entries you selected are highlighted.

END OF STEPS

Selecting adjacent entries or options

To select multiple items that are *NOT* next to each other, follow these steps:

1. Click (highlight) the first entry you wish to select.
2. Press and hold down the **Ctrl** (Control) key on your PC or workstation keyboard.
3. While still holding the **Ctrl** key down, select any other entries by clicking on them with the mouse. The order in which you select these entries makes no difference.
4. Release the **Ctrl** key.

   Result: The list entries you selected are highlighted.

END OF STEPS

Selecting all list items

On the Adapters tab screen, you can select all *SuperLine* IADs listed when you want to make a global change to their states. To do so, follow these steps:

1. Right-click anywhere in the list of adapters.
   Result: The Select All button pops up.
2. Click **Select All**.
   Result: All *SuperLine* IADs in ths list are selected (highlighted).
3. Make the desired state changes to the adapters.

On the event log screens, you can delete all log entries by following these steps:

1. Right-click an any event record.
   Result: The Delete All button pops up.
2. Click **Delete All**.
   Result: *SuperLine* EM or Multi-EM deletes all log entries.

END OF STEPS

□

Screen-specific buttons

Introduction

The Save, Reset, and Refresh toolbar buttons are present on most *SuperLine* EM or Multi-EM tab screens. The Status, System, IP Routing, Firmware, and Event Log screens have additional toolbar buttons. This topic describes toolbar buttons that are unique to each screen.

Status screen buttons

The Status tab screen has a Temp toolbar button. Click this button to display the internal temperature, in Celsius and Fahrenheit degrees, of the *SuperLine* Access Shelf that *SuperLine* EM or Multi-EM is monitoring.

System screen buttons

The System tab screen has a Community toolbar button. Click this button to display a dialog for setting SNMP Set Community and Get Community strings.

CAUTION

Changing SNMP Get and Set Community strings requires any entities who can access the SuperLine Access Shelf by way of SNMP to know the new strings. If you change the community strings, be sure to record the new strings somewhere. You will need to enter the new strings the next time you try to connect to the shelf.

The System tab screen also has a Clear MAC Tables toolbar button. You can click this button should you wish to delete all entries in the Media Access Control (MAC) address tables used by a *SuperLine* Access Shelf.

IP Routing screen buttons

The IP Routing tab screen has the following unique toolbar buttons:

- Click the **Set IP/Mask** button to specify a new IP address and mask value for the platform's network (local) interface, for its LAN interface, or for both. Refer to the **Setting a *SuperLine* Access Shelf's IP address/mask** topic on page 7–6 for more information.
- Click the **New Route** button to define a new IP route.
- Click the **Delete Route** button to delete a highlighted IP route.
- Click the **Update Route** button to update a highlighted route definition.

Firmware screen toolbar buttons

The Firmware tab screen has the following unique toolbar buttons:

Important: You must download a new firmware load to temporary memory before attempting a Run New operation.

- Click the **Run Old** button to cause the *SuperLine* Access Shelf to run the firmware currently stored in its permanent memory.
- Click the **Run New** button to cause the shelf to run the firmware currently stored in its temporary memory.
- Click the **Commit New** button to commit (save) a new load to permanent memory.
- Click the **Erase New** button to delete the firmware load in temporary memory. You can delete the new load only if you are running the old load.

Start Download and Cancel Download buttons

Use the Start Download and Cancel Download buttons, located in the data display area of the Firmware tab screen, to download a firmware file from an IP address you specify. Refer to the **Downloading new firmware** topic on page 8–5 for information about the download process.

Select All button

The Select All button on the Adapters tab screen enables you to select all *SuperLine* Integrated Access Devices (IAD) when you want to do global provisioning on all IADs. For additional information about the Select All button, refer to the **Configuring subscriber lines** topic on page 10–2.

Delete Selection button

SuperLine EM's Event Log tab screen and Global Event Log screen have a Delete Selection toolbar button. You can delete an entry in either log screen by selecting one or more entries, then clicking **Delete Selection**.

Delete All button

Also on the *SuperLine* EM event log screens, you can delete all log entries in one operation, using the pop-up Delete All button. Refer to the topic **Using a SuperLine Access Shelf's event log** on page 11–2 for more information.

□

2 Installation and startup

Overview

Introduction

This chapter discusses how to:

- Meet hardware, software, and system access requirements for installing AG Communication Systems *SuperLine*™ Element Manager (*SuperLine* EM) or Multi-Element Manager (Multi-EM).
- Configure communication between *SuperLine* EM or Multi-EM and the *SuperLine* Access Shelf.
- Start the application and establish a session with a *SuperLine* Access Shelf.
- Shut down a session, *SuperLine* EM, or Multi-EM.

In this chapter

This chapter covers the following topics:

□

Installation requirements

Hardware for *SuperLine* EM

To ensure good *SuperLine* EM performance, the following hardware features are recommended or required:

***SuperLine* EM for *Windows 95, Windows 98*, or *Windows NT*:**

- An IBM-compatible personal computer with Intel *Pentium*® or *Pentium II*® 266 MHz (or faster) processor, 96 megabytes of Random Access Memory (RAM), a color monitor with a minimum screen resolution of 1024 x 768 pixels, and a Network Interface Card (NIC).
- 20 megabytes of free hard disk space
- CD-ROM drive

At minimum, the PC must have a 166 MHz processor with 64 megabytes of RAM, a color monitor with a screen resolution of 600 x 800 pixels, 20 megabytes of free hard disk space, a CD-ROM drive, and a NIC. However, if you choose a PC with the minimum configuration:

- You cannot run Multi-EM.
- *SuperLine* EM displays use up the entire monitor screen.
- *SuperLine* EM performance is degraded.

***SuperLine* EM for *Solaris*:**

SuperLine EM for *Sun*™ *Solaris*™ systems requires a *Sun SPARCstation*™ 20 or higher workstation with a color monitor.

Software for *SuperLine* EM

***SuperLine* EM for *Windows*:**

SuperLine EM for the PC requires one of the following operating systems:

- Microsoft *Windows NT*® operating system, versions 4.0 and higher.
- Microsoft *Windows*® 95
- Microsoft *Windows*® 98

***SuperLine* EM for *Solaris*:**

SuperLine™ EM for *Solaris* operating systems requires *Solaris* version 2.6.

Hardware for Multi-EM

Multi-EM for *Windows NT*:

In addition to meeting PC hardware requirements for *SuperLine* EM, users of Multi-EM for the PC must also meet hardware and software requirements for running Hewlett-Packard *OpenView*® NNM. Several factors, including the number of network nodes managed and the types of network management tasks *OpenView* NNM does at your site, also affect the PC's RAM and paging file space requirements. For example, the RAM and file space requirements for doing SNMP management with remote consoles differ from requirements for NNM using active data collections.

Two manuals, *HP OpenView Network Node Manager Performance and Configuration Guide with HP NNM Examples* and *OpenView Network Node Manager 5.02 Runtime Release Notes*, describe in detail how to plan your PC hardware/software configuration for running *OpenView* NNM. To view these documents online, visit the Web site www.openview.hp.com.

Multi-EM for *Solaris*:

The following hardware meets requirements of both Multi-EM and *OpenView* NNM:

- A *Sun SPARCstation* 20 or higher with a CD-ROM drive and color monitor
- At least 160 megabytes of free disk space. Databases and application files require additional disk space.

Software for Multi-EM

Multi-EM for *Windows NT*:

The PC version of Multi-EM runs on the *Windows NT* operating system, versions 4.0 and higher.

Multi-EM for *Solaris*:

Important: You must install *OpenView* NNM on your system *BEFORE* installing Multi-EM.

Multi-EM requires both version 2.6 of the *Solaris* operating system and version 5.0 of *OpenView* Network Node Manager.

Note the following:

- *OpenView* NNM software is *NOT* provided with *SuperLine* equipment, and AG Communication Systems does *NOT* provide technical support for the software. Users of Multi-EM must purchase *OpenView* NNM separately.
- Multi-EM follows established guidelines for integration with the *OpenView* platform.

Root access required

Important: Installing *SuperLine* EM or Multi-EM requires root access on *Solaris* systems and administrator access on *Windows NT* systems.

Crossover cable

In addition to the PC or workstation hardware required to run *SuperLine* EM or Multi-EM, you need a crossover cable to connect either machine to the *SuperLine* Access Shelf. This cable can be purchased from AG Communication Systems as part number EC-26806-Axx, where xx is one of the following:

- An increment of 5 feet, if the cable is between 5 and 25 feet long.
- An increment of 25 feet, if the cable is between 25 and 325 feet long.

Installation procedures

For instructions on installing *SuperLine* EM or Multi-Element Manager software, refer to the CD-ROM package and jewelcase inserts provided by AG Communication Systems.

Important: If the CD-ROM does not load correctly, or if you have problems loading the CD, contact the AG Communication Systems Customer Support Center at 1-888-888-AGCS (1-888-888-2427) or by e-mail at superlinehelp@agcs.com.

Un-installing *SuperLine* EM or Multi-EM (*Windows* versions)

Important: Un-installing either *SuperLine* EM or Multi-EM from either *Windows* or *Solaris* systems does *NOT* delete the directory called `SuperlineFirmware` that was created automatically when the application was installed. The `SuperlineFirmware` directory is the location into which firmware for the *SuperLine* Access Shelf is loaded.

To un-install the Windows version of either *SuperLine* EM or Multi-EM, on your PC desktop select **Start→Programs→SuperLine 3.0.0→Uninstall**.

An alternate way to un-install a *Windows* version of *SuperLine* EM is to use the Add/Remove Program option in the Control Panel. However, do *NOT* use the Add/Remove Program option to un-install the *Windows NT* version of Multi-EM. If you do, some Multi-EM files and information are not un-installed completely.

Un-installing *SuperLine* EM or Multi-EM (*Solaris* version)

To un-install the *Solaris* version of either *SuperLine* EM or Multi-EM version 3.0.0, follow these steps:

1. Insert the *SuperLine* EM or Multi-EM version 3.0.0 CD-ROM into your CD-ROM drive.
2. Mount the CD-ROM drive if it is not automounted.
3. Issue one of the following commands to access the *Solaris* version of the application:

   `cd/cdrom/Element_Manager_3_0_0/unix for EM`

   `cd/cdrom/Multi-Element_Manager_3_0_0/unix for Multi-EM`
4. From this directory, as root, type **`./uninstall`**.
5. Follow the directions specified by the `uninstall` script.

END OF STEPS

□

Configuring Access Shelf-to-EM communication

Introduction

Before *SuperLine* EM can establish sessions with a new *SuperLine* Access Shelf, you need to discover the shelf's Internet Protocol (IP) address and establish a connection between it and the application.

Shelf address discovery procedure

To discover the IP address for a *SuperLine* Access Shelf and establish the connection, follow these steps:

1. Connect the PC or *Sun* workstation to the *SuperLine* Access Shelf through the Craft 10Base-T port on the VDS1 card. Use a crossover 10Base-T cable.
2. Do one of the following:
   - Start *SuperLine* EM on the PC desktop, by double-clicking the **SuperLine EM `<version number>`** icon.
   - Start *SuperLine* EM on your *Sun* workstation by typing `superline` at the system prompt.
   - Start Multi-EM by selecting an SL icon, then selecting **Configuration→SuperLine EM** on the appropriate *OpenView* NNM submap window. Alternatively, you can right-click an SL icon, then choose *SuperLine* EM from the pop-up list of options that appears.

     Result: The SuperLine Version screen appears, followed by the Open Session screen.
3. Do one of the following:
   - If you are using *SuperLine* EM, go to step 4.
   - If you are using Multi-EM, skip to step 6.
4. On the Open Session screen, click the **Discovery** button.

   Result: The SuperLine Auto-Discovery screen opens and lists the *SuperLine* Access Shelf's IP address and corresponding serial number.

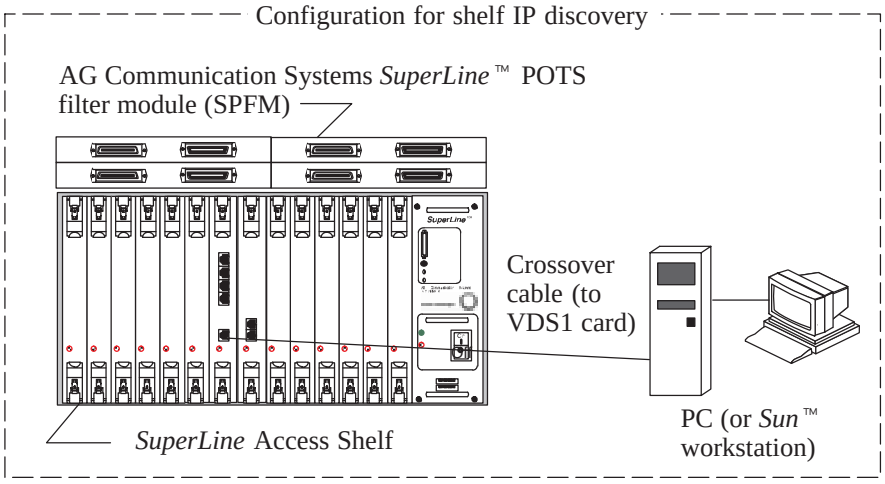
   The Auto-Discovery process discovers only *SuperLine* Access Shelves that are on the same sub-network as the system where *SuperLine* EM is running.
5. Select (highlight) the IP address. There should be only one address, since you have a direct connection to the *SuperLine* Access Shelf. Click the **Open Session** button.

   Result: The Status tab screen appears on your PC desktop with a session open to the *SuperLine* Access Shelf you specified.
6. Configure the *SuperLine* Access Shelf with a new IP address, if desired.

END OF STEPS

Shelf IP discovery configuration

The following diagram shows the configuration for establishing communication between *SuperLine* EM and the *SuperLine* Access Shelf.



Connection problems: what to do

If you have difficulty connecting to the *SuperLine* Access Shelf and the 10Base-T link integrity Light Emitting Diode (LED) on the VDS1 is unlighted (dark), check the following:

- *SuperLine* Access Shelf power is on.
- Your 10Base-T cable is a crossover Category 5 Ethernet cable.
- Your 10Base-T cable is connected correctly to the Craft 10Base-T port on the VDS1 card.

To troubleshoot VDS1 problems, refer to the problem descriptions discussed in the *SuperLine Access System Troubleshooting* manual.

Management configuration types

You can configure management of the *SuperLine* Access System in one of three ways:

- Simple Local Area Network (LAN) configuration
- Complex LAN configuration
- Complex data configuration with simple LAN

Simple LAN configuration

Important: In this configuration, both Multi-EM and *OpenView* NNM must be installed on the same PC or *Sun* workstation.

The simple LAN management configuration is identical to the configuration used to set up communication between *SuperLine* EM and the *SuperLine* Access Shelf; that is, the PC or workstation running *SuperLine* EM or Multi-EM connects directly to the *SuperLine* Access Shelf through the Craft 10Base-T port on the VDS1 card. This configuration is required to install *SuperLine* Access Shelf firmware for the first time, because the data port on the FETH card initially is disabled.

This configuration provides direct, out-of-band management. This type of management protects network security, because the channels carrying customer data and network management data are physically separate.

Provisioning IP routes for simple LAN management

To provision IP routes for the simple LAN management configuration, follow these steps.

1. Click the **IP Routing** tab to display the IP Routing tab screen.
2. Click **Set IP/Mask to display** the Set IP/Mask screen.
3. In the *LAN* fields, type a mask value of **`255.255.255.255`** and the IP address you wish to assign to the *SuperLine* Access Shelf's LAN interface.

   Examples: **`10.0.0.0`** (IP address) and **`255.255.255.255`** (mask)
4. In the *Network* fields, type **`255.255.255.255`** as the mask value and type an IP address that exists at your site but is unimportant. (The simple LAN management configuration does not use the data network, so this step sets the network IP and mask values to insignificant values.)
5. Click **Apply**.

   Result: The IP and mask values for the shelf's network and LAN interfaces changes to what you specified.
6. Click the Default Gateway route in the list of IP routes.

   Result: The route is highlighted.

7. Click **Update Route**.

   Result: The Update IP Route screen appears.

8. Type in the mask value **0.0.0.0** and the IP address of the LAN port for the gateway.

   Examples: **10.0.0.0** (IP address) and **0.0.0.0** (mask)

9. Set the gateway route type to Direct if necessary.

10. Click **Update.**

11. Click the **System** tab to display the System tab screen.

12. If the Management field is not set to Disabled (the default setting), change the setting.

END OF STEPS

Complex LAN configuration

This management configuration resembles the simple LAN configuration, except that:

- The *SuperLine* Access Shelf is located on a subnetwork and has an *indirect* IP route to the default gateway.
- The PC or Sun workstation running *SuperLine* EM or Multi-EM is located remotely from the shelf.
- The PC and shelf are connected through a hub on the LAN that is connected to the Craft 10Base-T port on the VDS1 card.

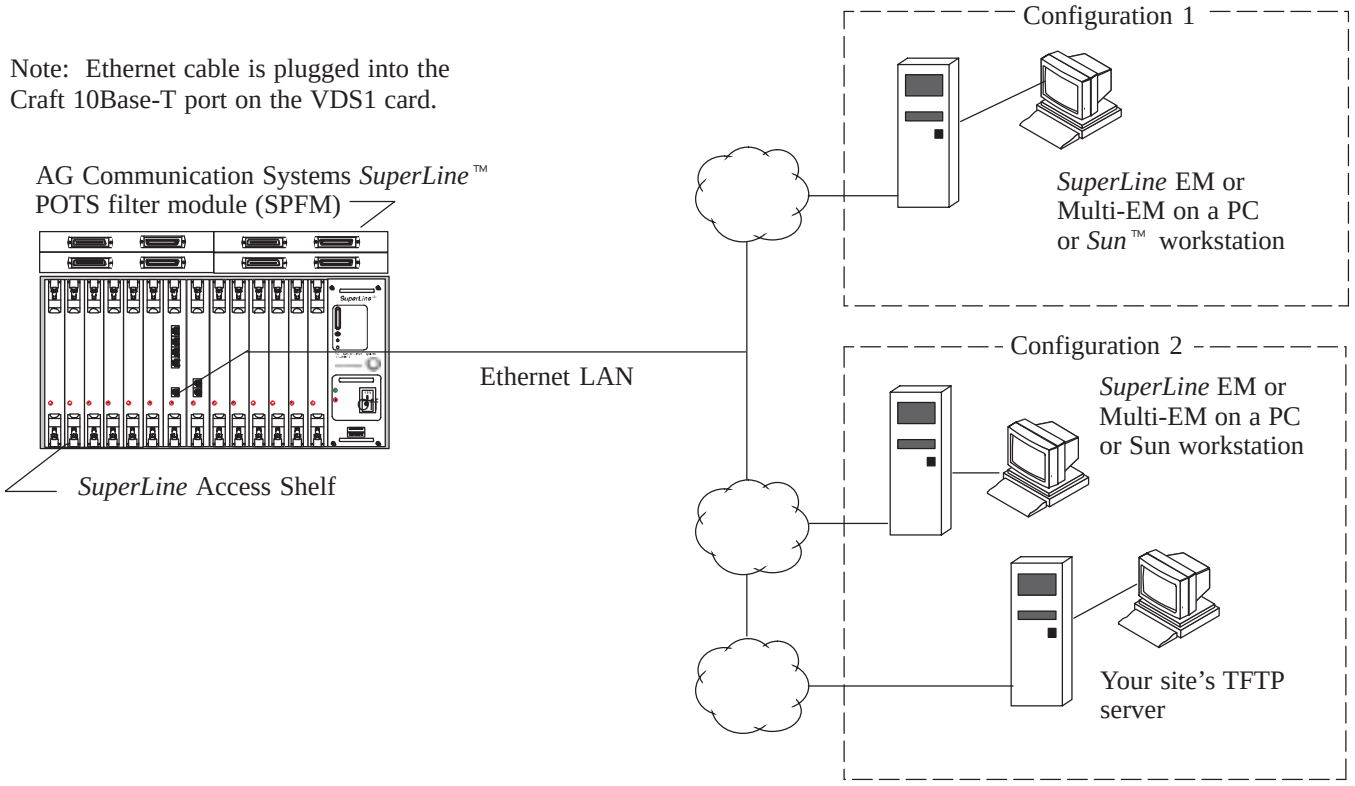
IP routing for the complex LAN configuration

To provision IP routes for the complex LAN management configuration, follow the procedure used to set up the simple LAN configuration. However, set the following values:

- Set the LAN IP address to the desired value (such as **10.0.0.0**), and set the LAN mask to whatever the appropriate subnet mask is (such as 255.255.255.0).
- Set the IP address of the default gateway to the IP address of the gateway device on the subnet (for example, **10.0.0.1**).
- Set the mask for the default gateway to **0.0.0.0**.
- Set the route type for the default gateway to **Indirect.**
- On the System tab screen, make sure that the *Management* field is set to Disabled.

Complex LAN configuration diagram

The following diagram shows the possible complex LAN management configurations.



Complex data network with simple LAN management

The third possible management configuration is a complex data network with a simple LAN. In this scenario:

- A PC or workstation running *SuperLine* EM or Multi-EM is connected remotely to the 10/100Base-T port on the *SuperLine* Access Shelf's FETH card.
- Another PC or workstation running *SuperLine* EM or Multi-EM uses a local (LAN) connection to the shelf through the VDS1 card. (A third PC or workstation may also be connected through the LAN.)
- The default gateway is an indirect route through the IP address for the data network.
- The type of network management is in-band, meaning that data and other traffic use the same network channel.

Be aware that *when you manage the SuperLine System using in-band management through the FETH card, people not authorized to access or make changes to your network may be able to do so*. To protect network security, insert firewalls between the SuperLine Access Shelf and the network, and between the machines hosting the TFTP server and SuperLine EM or Multi-EM.

IP route for PCs on the LAN interface

Before you set the LAN and network IP address and mask values for the complex data/simple LAN configuration, you must provision a range of IP/mask values for additional *SuperLine* EM or Multi-EM host machines that may be connected through the LAN. If you do not do so, only the device provisioned with the LAN IP address can communicate with the data network and the *SuperLine* Access Shelf.

IP routes for the complex data network/simple LAN configuration

To provision IP routes for the complex data network/simple LAN management configuration, follow the procedure used to set up the other management configuration. However, set the following values:

- Set the LAN IP address to the desired value (such as **`10.0.0.0`**), and set the LAN mask to whatever the appropriate subnet mask is (such as **`255.255.255.255`**).
- Set the Network IP address and mask to the IP and mask values for your data network.

Example: **`10.10.0.0`** (IP address) and **`255.255.255.0`** (mask)

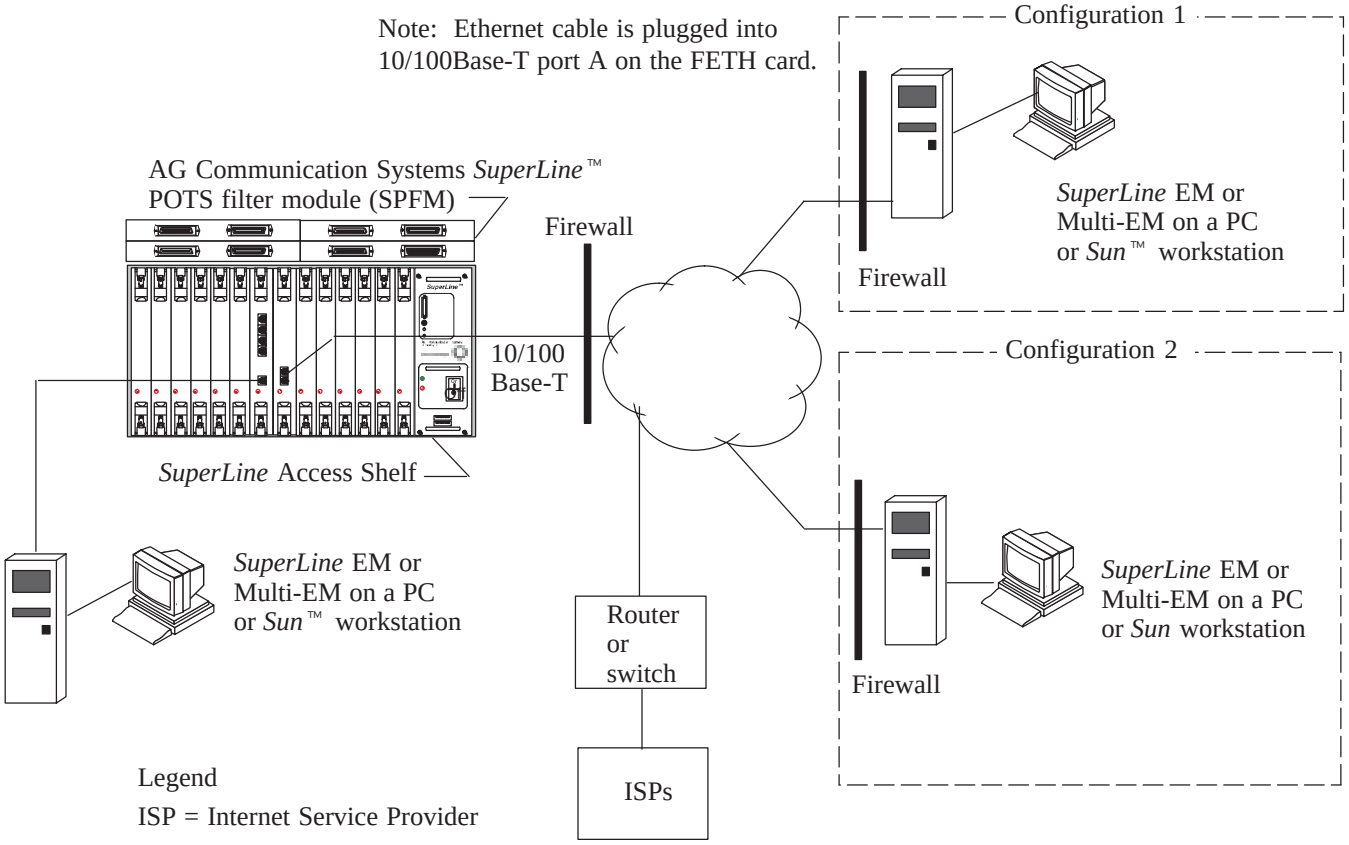
- Set the IP address of the default gateway to the IP address the gateway device on the subnet, and set the LAN mask to **`0.0.0.0`**.

Example: **`10.10.0.1`** (IP address) and **`0.0.0.0`** (mask)

- Set the route type for the default gateway to **`Indirect.`**
- On the System tab screen, set the *Management* field to **`Enabled.`**

Complex data/simple LAN configuration diagram

The following diagram shows the recommended configurations for a complex data network with a simple LAN. You can use either configuration to manage equipment once *SuperLine* Access Shelf firmware is installed and operating.



Configuration notes

Note the following:

- In both Configuration 1 and Configuration 2, *SuperLine* EM or Multi-EM can have access to several *SuperLine* Access Shelves.
- *SuperLine* EM software has built-in TFTP capability. However, you optionally can provide TFTP services to *SuperLine* EM through a TFTP server already existing at your site.
- Multi-EM software must be installed on the same machine as *OpenView* NNM software. In addition, Multi-EM requires access to a TFTP server.
- Connect no more than three PCs or *Sun* workstations to a *SuperLine* Access Shelf.

□

Starting *SuperLine* EM

Starting *SuperLine* EM

Important: This procedure assumes that the IP address of each *SuperLine* Access Shelf has been configured and that IP routes between *SuperLine* EM and the shelves have been defined. For more information on IP routes, refer to the topic **Adding an IP route** on page 7–8.

Follow these steps to start *SuperLine* EM.

For information about starting Multi-Element Manager, refer to the topic **Running Multi-EM** on page 12–5.

1. Do one of the following:
   - *SuperLine* EM for *Windows*: Double-click the **SuperLine EM `<version number>`** icon on the desktop of the PC used to interface with the *SuperLine* Access Shelf.
   - *SuperLine* EM for *Solaris*: Type `superline` at the system prompt.

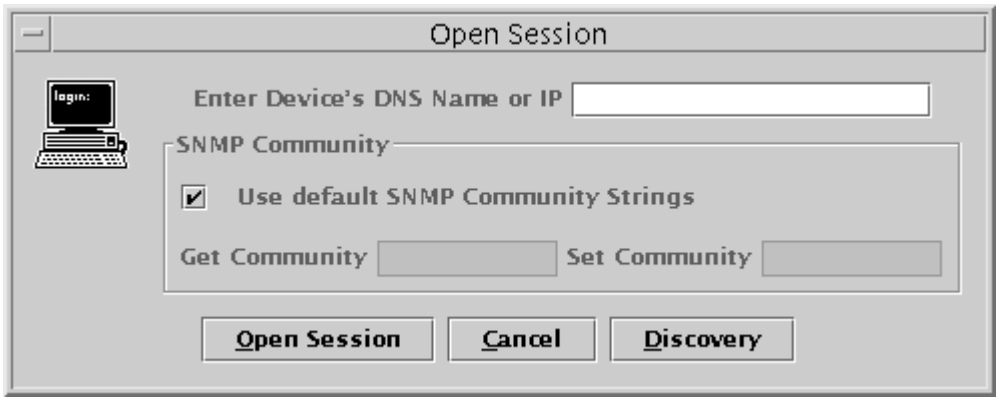
     Result: *SuperLine* EM starts up and displays the SuperLine Version screen. After a few seconds, the Open Session screen appears.

2. (Optional step) To use SNMP Get Community or Set Community strings other than the default strings, remove the check mark in the *Use default SNMP Community Strings* field by clicking it, then type new strings in the fields provided.

3. Do one of the following:
   - If you know the IP address or Domain Name Service (DNS) device name of the shelf with which you want to open a session, then in the *Enter Device's DNS Name or IP* field, type the IP address or the DNS device name for the shelf to which you want to open a *SuperLine* EM session. Click **Open Session**.

     Result: *SuperLine* EM establishes a session with the shelf you specified, and the Status tab screen appears. You can now use the tab screens to monitor and manage devices associated with the selected shelf.
   - If you do not know the *SuperLine* Access Shelf's IP address or device name, continue by following the steps in the subtopic **Auto-Discovery procedure**.
   - If you decide not to open a session with the shelf, click **Cancel**.

END OF STEPS



Auto-Discovery procedure

To start *SuperLine* EM when you do not know the IP address or device name of a *SuperLine* Access Shelf, follow these steps:

Important: If the PC or workstation is connected directly to the 10Base-T interface on the *SuperLine* Access Shelf, the only device you can establish a session with is that device. However, if you are connected to the 10Base-T interface of the shelf through a network, several devices may appear in this list. To determine which is the correct device, compare the serial number displayed in the list with the serial number displayed on the baffle of the *SuperLine* Access Shelf.

1. Do one of the following:
   - Double-click the **SuperLine EM `<version number>`** icon on the desktop of the PC used to interface with the *SuperLine* Access Shelf.
   - Type `SuperLine` at a *Solaris* command prompt.
2. When the Open Session screen appears, click **Discovery**. The SuperLine Auto-Discovery screen appears.
3. (Optional step) To refresh the list of shelves, click **Rediscover**. After a few seconds, the updated list appears.
4. Select (highlight) the entry for the shelf to connect to.
5. Click **Open Session** to have *SuperLine* EM open a session with the selected shelf. Otherwise, click **Exit** to exit from the Auto-Discovery screen without connecting to a shelf.

END OF STEPS

Auto-Discovery screen

An example of the SuperLine Auto-Discovery screen follows.

Auto-Discovery screen fields and buttons

The following list describes the fields and buttons in the SuperLine Auto-Discovery screen. Italics indicate column or field names.

- *Enter Device's DNS Name, IP or Select from List*

  This field enables you to enter a device's DNS name or IP address instead of selecting one from the list.

- *IP*

  This column identifies the IP addresses available.

- *Serial #*

  This column identifies the serial number for each available IP address. These serial numbers are also visible on the front of the baffle on each *SuperLine* Access Shelf. Compare the serial numbers on the screen and on the shelf to determine which IP address to connect to.

- *Location*

  This column shows the location of the selected *SuperLine* Access Shelf. Nothing appears in this column unless you update the *Location* field on the System tab screen. Refer to the topic **Viewing general system information** on page 6–2 for details.

Opening multiple shelf sessions

The *Windows NT* and *Solaris* versions of *SuperLine* EM and Multi-EM (but not the *Windows* 95 or 98 versions) can have simultaneous sessions with multiple *SuperLine* Access Shelves. However, limiting the number of sessions to as few as possible is recommended to avoid memory usage problems on your system. Therefore:

- If *SuperLine* EM or Multi-EM is running on one PC or workstation, limit the number of open sessions to no more than three.
- Instances of *SuperLine* EM or Multi-EM running on up to three PCs or workstations can communicate with the same shelf, provided that only one session is open between that shelf and each *SuperLine* EM or Multi-EM.

To establish a new session between a *SuperLine* Access Shelf and *SuperLine* EM or Multi-EM once the software is operating, follow these steps:

1. Select the **Open Session** option from the File Menu.

   Result: The SuperLine Open Session screen appears.

2. Do one of the following:
   - If you know the device's DNS name or the IP address of the shelf, type it in the *Enter Device's DNS Name or IP* field and click **Open Session**.
   - If you do not know the IP address, click **Discovery**. When the Auto-Discovery screen appears, select the IP address of the shelf to be connected and click **Open Session**.

     Result: *SuperLine* EM establishes a session with the *SuperLine* Access Shelf you specified.

END OF STEPS

Any sessions that are already open for other *SuperLine* Access Shelves remain open.

CAUTION

- ***Using one instance of SuperLine EM to open all sessions is recommended to avoid running out of memory on the host PC or workstation. If you run more than one instance of SuperLine EM at a time, you may receive a pop-up message reporting an SNMP bind error at the local trap port.***
- ***Only the SuperLine EM that was started first can receive update SNMP traps.***
- ***The device hosting SuperLine EM may run out of RAM if too many sessions at a time are open with SuperLine Access Shelves. Limiting the number of open sessions to as few as possible is recommended.***

Bringing a screen to the front

When more than one session is open, you can display a screen for a particular session on top of other sessions' screens. To do so, select the Windows menu, then select the IP address of the desired session.

□

Shutting down *SuperLine* EM, Multi-EM, or a session

Closing a session

To close a session with a *SuperLine* Access Shelf without shutting down *SuperLine* EM or Multi-Element Manager, follow these steps:

1. Select the **Close Session** option from the File menu.

   Result: The SuperLine Close Session screen appears.

2. Do one of the following:
   - Select the IP address of the platform for the session to close, then click **Close Session**.
   - Click **Cancel** to cancel the close operation.

   Result: *SuperLine* EM or Multi-EM takes the requested action.

END OF STEPS

Exiting from the application

Important: On *Windows* 95 or *Windows* 98 systems, you can exit from a session only by exiting the *SuperLine* EM application.

To exit from *SuperLine* EM or Multi-EM, follow these steps:

1. Select the **Exit** option from the File Menu.

   Result: A pop-up dialog asks whether you wish to shut down the application.

2. Click **OK** to exit, or click **Cancel** to return to the application.

END OF STEPS

□

3 Screen and task roadmap

Overview

Introduction

This chapter presents a roadmap of the screens that both AG Communicaiton Systems *SuperLine*™ Element Manager (*SuperLine* EM) and Multi-Element Manager (Multi-EM) use. It describes which screens you access to do *SuperLine* Access System monitoring, provisioning, or firmware management.

In this chapter

This chapter covers the following topics.

□

Management tasks

Task types

You can use the tab screens of *SuperLine* EM or Multi-Element Manager to do the following management tasks:

- View information about alarms.
- Monitor the status of *SuperLine* Access Systems and equipment.
- Provision the *SuperLine* Access System and its telephony and data modes.
- Manage firmware for the *SuperLine* Access System.

Task paths

This topic pictures and describes the paths to follow through the screens to perform management tasks. The descriptions:

- Include diagrams showing the screens used to do monitoring, provisioning, or firmware maintenance.
- Describe the tasks each screen supports.
- Include links to procedures for doing these tasks.

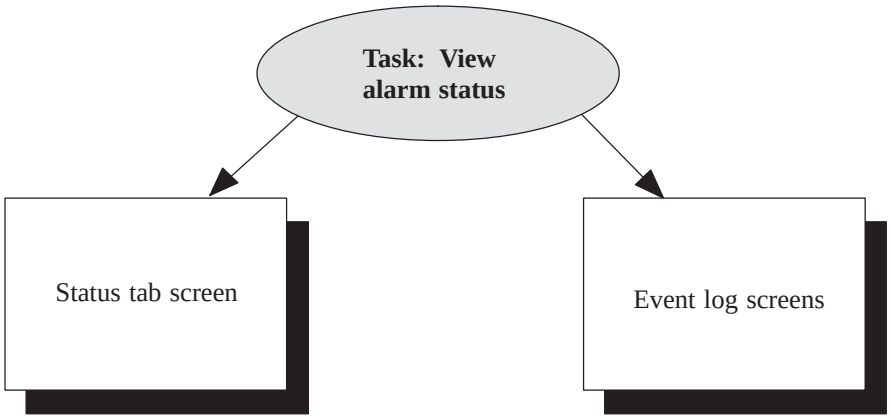
□

Screens for system monitoring

Paths for alarm detection

To detect alarm conditions on the *SuperLine* Access Shelf, display the following screens.

Important: Only *SuperLine* EM displays the event log screens. Multi-EM uses the event log of Hewlett-Packard *OpenView*® Network Node Manager (NNM) application to display alarm information.



Alarm icons on the Status tab screen

Icons on the Status tab screen indicate Major or Minor alarms on the *SuperLine* Access Shelf or alarm conditions at the remote and far ends of the Digital Signal 1s (DS1s) enabled for the shelf. Other icons on the Status tab screen indicate whether environmental and other miscellaneous conditions have triggered an alarm.

For additional information, refer to the **Viewing alarms** topic on page 4–7.

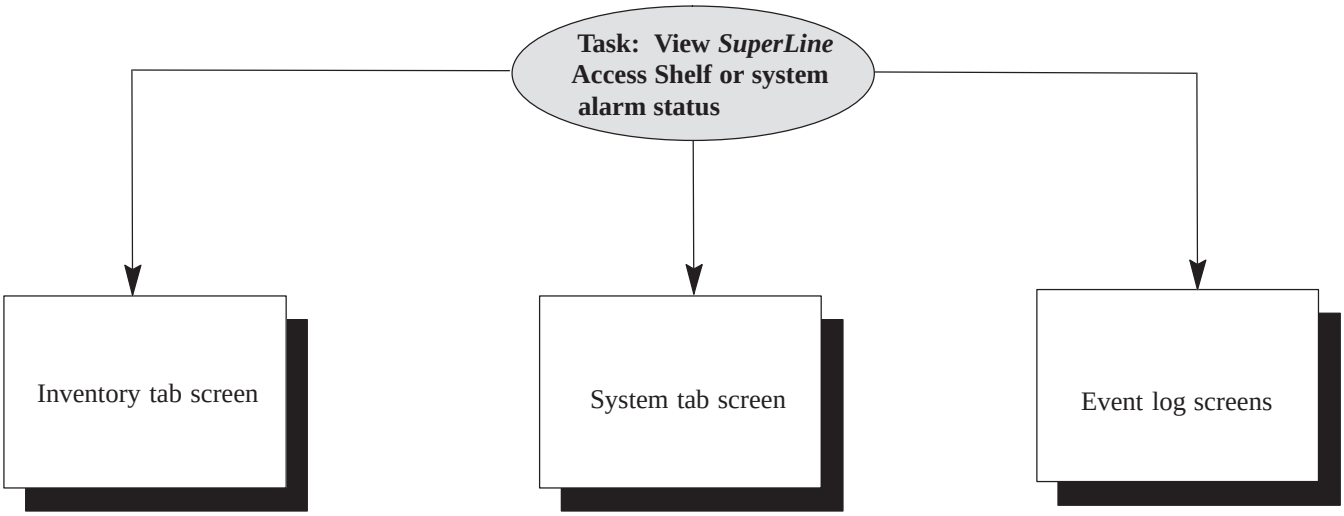
Alarm indicators on the event log screens

Any event that triggers an alarm generates an entry, including an explanatory message, in the *SuperLine* EM event log screens or in the *OpenView* NNM event log. The event log entries use color and text cues to flag events that produce a Major or a Minor alarm.

Refer to the procedures for **using a shelf's event log** on page 11–2 for more information about event log entries. For more information about event logging by *OpenView* NNM, refer to the topic **Running Multi-EM** on page 12–5.

Paths to *SuperLine* Access Shelf information

To view information about the *SuperLine* Access Shelf, display the following screens.



Shelf information on the Inventory tab screen

The Inventory tab screen displays inventory information for the *SuperLine* Access Shelf: Common-Language Equipment Identification (CLEI) code, date of manufacture, and the shelf's part number, issue number, and serial number.

For details, refer to the topic **Viewing circuit pack inventory** on page 5–2.

Shelf status information on the System tab screen

The System tab screen displays the following information about the *SuperLine* Access Shelf and *SuperLine* Access System, including:

- The system's location.
- The user's name for the *SuperLine* Access System, such as *Test System*.
- Time zone at the system location.

  For details on the items listed above, refer to the topic **Viewing general system information** on page 6–2.
- System date and time
- Amount of time the system has been running since it was initialized. For details, refer to the topic **Viewing the time and date** on page 6–8.
- Whether Simple Network Management Protocol (SNMP) error and authentication trapping are enabled or disabled
- The IP address of the device to receive traps

  For details on SNMP items, refer to the topics **Viewing trap/community information** on page 6–4.
- The *SuperLine* Access Shelf type, which should be QV8 (Quadrature Amplitude Modulation Voice 8). For details, refer to the topic **Viewing miscellaneous system information** on page 6–9.

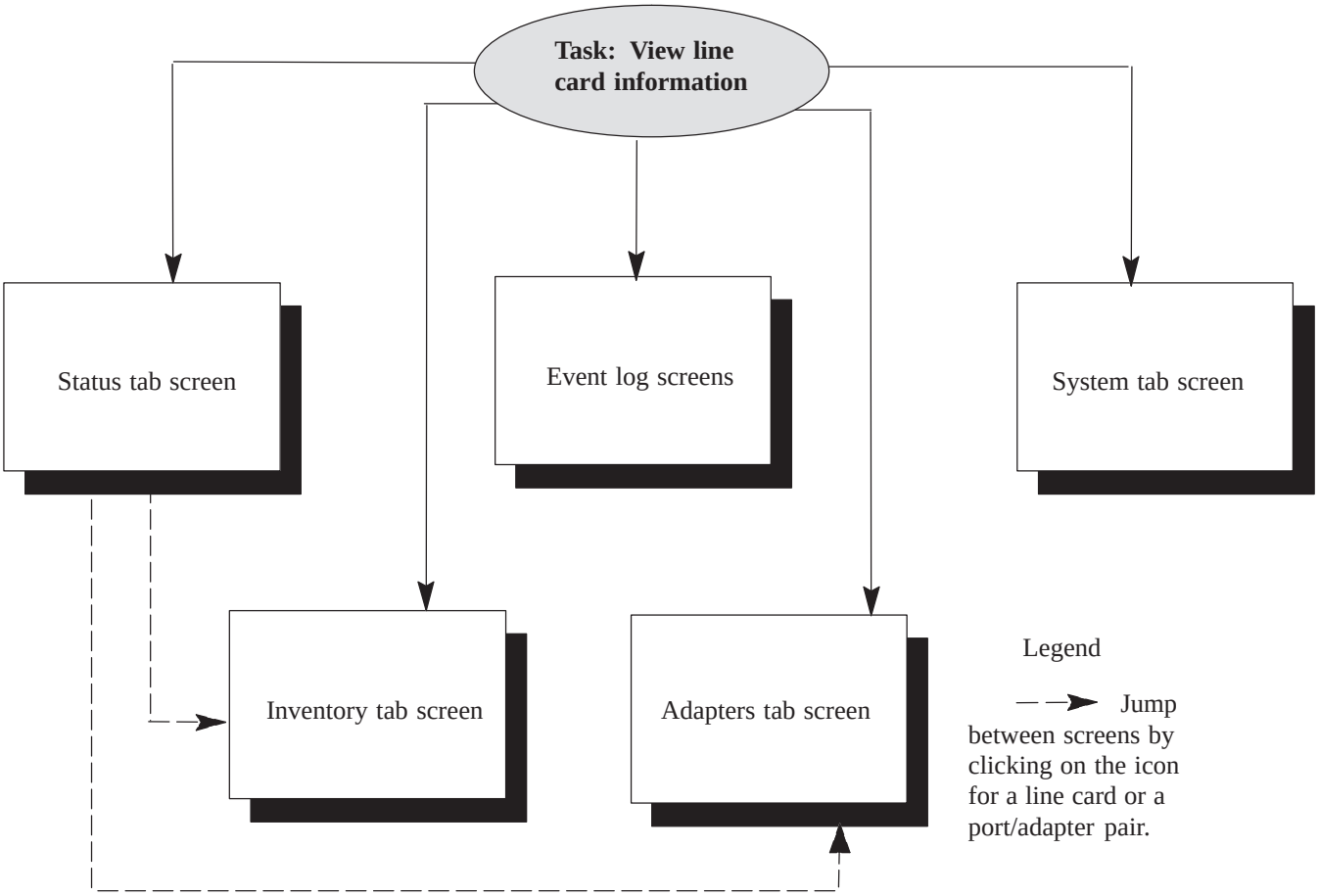
Shelf and system status messages

The *SuperLine* EM event logs or *OpenView* NNM's event log display the IP address of the *SuperLine* Access Shelf, the event timestamps, and messages about events, such as `Shelf INITIALIZATION Completed`.

Refer to the information on **using a shelf's event log** on page 11–2 for more information about event log entries.

Paths to line card information

To view information about line cards, display the following screens.



Line card information on the Status tab screen

The Status tab screen displays icons showing you the status of:

- QV8 line cards.
- The eight ports on each line card and the *SuperLine* Integrated Access Device (IAD) connected to each port.
- Voice Digital Signal 1 (VDS1), Fast Ethernet (FETH), and POWR cards.

For details, refer to the description of how to **view device status** on page 4–2.

Line card information on the Inventory tab screen

You can jump from the Status tab screen to the Inventory tab screen by clicking the icon for a line card. The Inventory tab screen displays status and inventory information for each card in each slot on the *SuperLine* Access Shelf.

Refer to the topic **Viewing circuit pack inventory** on page 5–2 for more information.

Line card information on the Adapters tab screen

You can jump from the Status tab screen to the Adapters tab screen by clicking the icon for any port/IAD pair belonging to any of the line cards. The Adapters tab screen shows you information about the ports on each line card. For details, refer to the topic **Viewing subscriber line information**. on page 10–6.

Line card information on the System tab screen

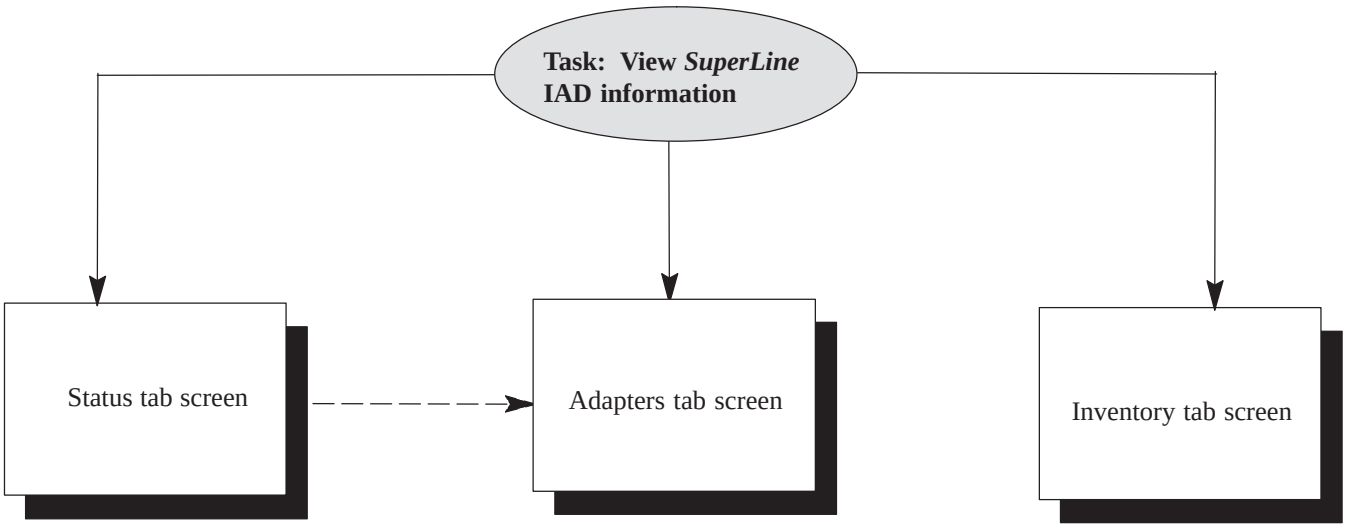
The *Shelf Type* drop-down list box on the System tab screen indicates whether the *SuperLine* Access Shelf uses QV8 line cards (it should). For more information, refer to the topic **Viewing miscellaneous system information** on page 6–9.

Line card information in the event logs

Entries in the Event Logs tab screens display information about events involving line cards, such as line card failure. Refer to the procedures for **using a shelf's event log** on page 11–2 for more information about event log entries.

Paths to *SuperLine* IAD information

To view information about *SuperLine* IADs, display the following screens.



SuperLine IAD information on the Status tab screen

The Status tab screen shows the status of the *SuperLine* IAD connected to each port on a line card. Refer to the description of how to **view device status** on page 4–2 for details.

SuperLine IAD information on the Adapters tab screen

The Adapters tab screen displays:

- Status of the circuit between a *SuperLine* IAD and one of the ports on a line card.
- Status of the *SuperLine* IAD.
- Current transmission rate, in Kbps (kilobits per second), of the port-to-IAD circuit.
- Whether data transmission on this circuit is enabled or disabled.
- The upstream/downstream ratio for data bandwidth for a *SuperLine* IAD.

For more information, refer to the topic **Viewing subscriber line information** on page 10–6.

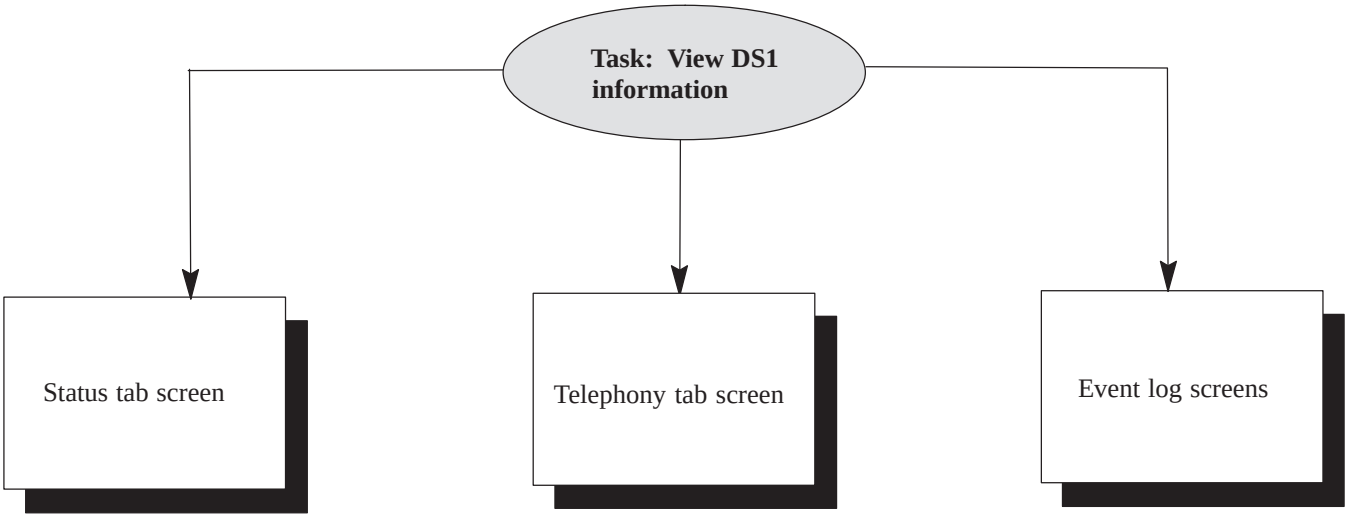
SuperLine IAD information on the Inventory tab screen

You can jump to the Inventory tab screen by clicking one of the port/IAD icons on the Status tab screen. The Inventory tab screen displays the status of and inventory information for the *SuperLine* IAD connected to each port on each line card.

Refer to the information on **viewing IAD information** on page 5–5 for details.

Paths to DS1 information

To view information about Digital Signal 1s (DS1s) enabled for the *SuperLine* Access Shelf, display the following screens.



DS1 information on the Status tab screen

The DS1 LED icons on the status tab screen indicate whether problems exist at the local and remote ends of each DS1 enabled for the *SuperLine* Access Shelf. For more information, refer to the description of how to **view device status** on page 4–2.

DS1 information on the Telephony tab screen

The Telephony tab screen displays the following information about DS1s:

- How many DS1s are enabled.
- The status, line build out, and frame format for each DS1.
- The telephony type supported.
- The number of derived lines per subscriber loop.

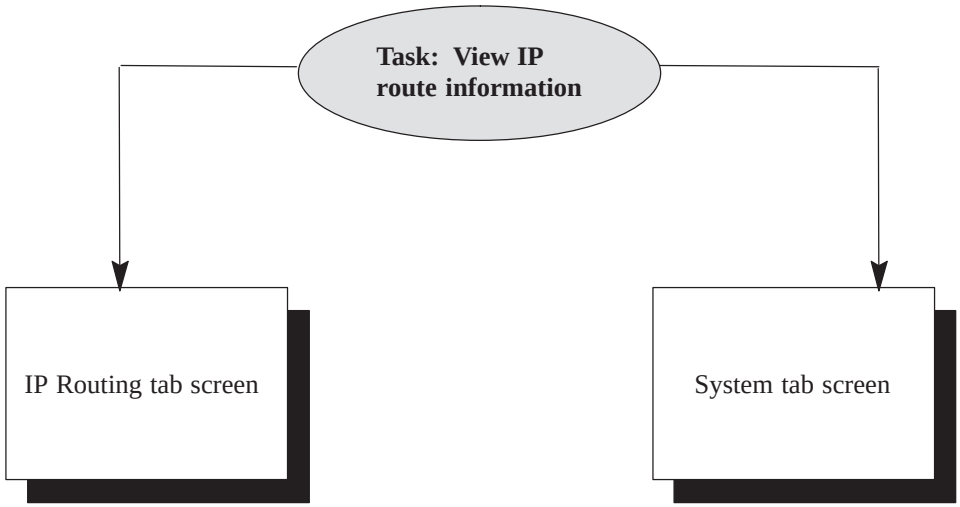
For details, refer to the topic **Managing DS1s**. on page 9–2.

DS1 information in the event logs

Entries in the Event Log screens report DS1-related events such as DS1 failures. Refer to the description of how to **use a shelf's event log** on page 11–2 for more information about event log entries.

Paths to IP route information

To view information about Internet Protocol (IP) routes for the *SuperLine* Access Shelf, display the following screens.



IP route information on the IP Routing tab screen

The IP Routing tab screen displays the following information:

- The IP address, mask, and Media Access Control (MAC) address of *SuperLine* Access Shelf's network and Local Area Network (LAN) interfaces
- The desired and actual transmission rates for the data ports on the FETH card
- Descriptions of each IP route, including the IP addresses of the destination, gateway, and mask for each route, the type of route (direct or indirect) and the type of interface for each route

Refer to the topic **Viewing IP routing parameters** on page 7–2 for details.

IP route information on the System tab screen

The System tab screen lists the IP addresses of the device that receives SNMP error and authentication traps and the Trivial File Transfer Protocol (TFTP) server telephone company (Telco) personnel use to download firmware to the *SuperLine* Access Shelf. Refer to the topics **Viewing trap/community information** on page 6–4 and **Viewing miscellaneous system information** on page 6–9 for details.

□

Screens for provisioning

What can you provision?

Using *SuperLine* EM or Multi-EM tab screens, you can provision:

- *SuperLine* Access System attributes.
- IP routes for the *SuperLine* Access System.
- DS1s for the *SuperLine* Access Shelf.
- How the *SuperLine* Access Shelf supports data traffic.

Saving provisioning information

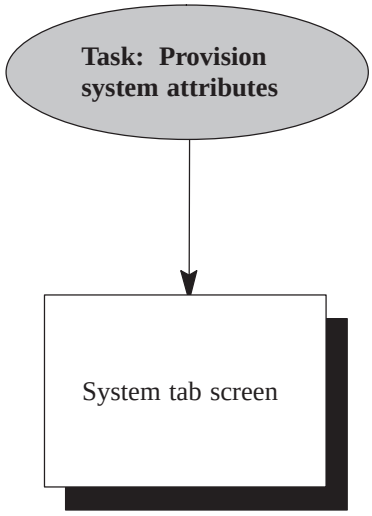
When you use *SuperLine* EM or Multi-EM screens to provision parameters for a *SuperLine* Access Shelf, saving the provisioned values to files or keeping a written record of the values is recommended strongly, because it prevents these values from being lost should the shelf's VDS1 card fail.

Saving the values of provisioned parameters to files does not restore those values; you still have to re-provision the parameters manually. However, re-provisioning a *SuperLine* Access Shelf is easier if you have a record of the former parameter settings.

Use the Save toolbar button on any tab screen to save the screen contents, including any user-provisioned values.

Path for system provisioning

Use the following tab screen to provision *SuperLine* Access System attributes.



Provisioning system attributes

Use the data fields and selection buttons on the System tab screen to define or provision:

- The location of the *SuperLine* Access System and its name.
- The name of the person responsible for system maintenance.
- The local time zone and the system date and time.

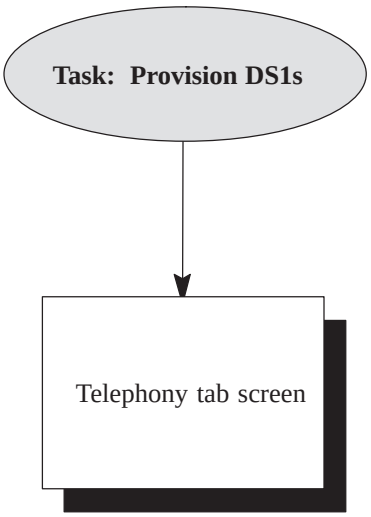
  For more information about the tasks listed above, refer to the topics **Viewing general system information** on page 6–2 and **Viewing the time and date** on page 6–8.
- SNMP error and authentication trapping.
- SNMP community string settings.

  For more information about SNMP provisioning, refer to the topics **Viewing general system information** on page 6–2 and **Screen-specific buttons** on page 1–14.
- The *SuperLine* Access Shelf type (QV8)

  For more information about provisioning the platform type, refer to the topic **Viewing miscellaneous system information** on page 6–9.

Paths for provisioning DS1s

Use the following tab screen to provision DS1s for a *SuperLine* Access Shelf.



Provisioning DS1s

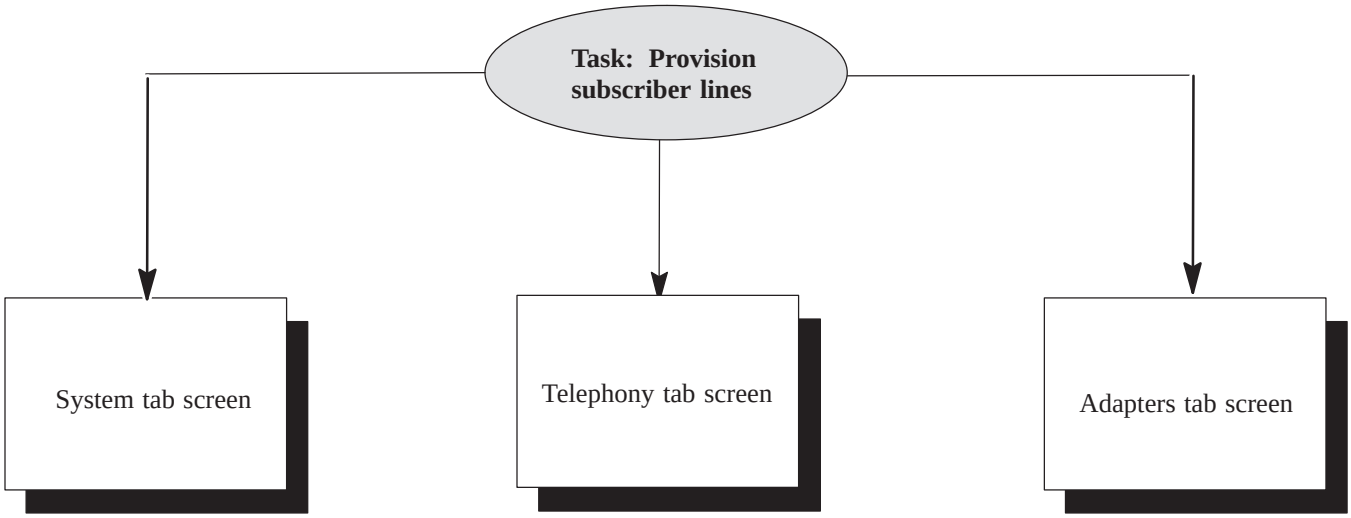
On the Telephony tab screen, you can define or provision:

- How many DS1s are enabled or disabled for a *SuperLine* Access Shelf. (You can enable up to four DS1s.)
- The line build out for each DS1.
- The type of telephony the DS1s use (Direct Digital Interface [DDI], TR-008 Mode 1, or TR-303).

For details, refer to the topics **Managing DS1s** on page 9–2 and **Setting telephony parameters** on page 9–4.

Path for provisioning subscriber lines

Use the following EM screens to provision subscriber lines for a *SuperLine* Access Shelf.



Subscriber line provisioning by screen

To provision subscriber lines, follow these steps:

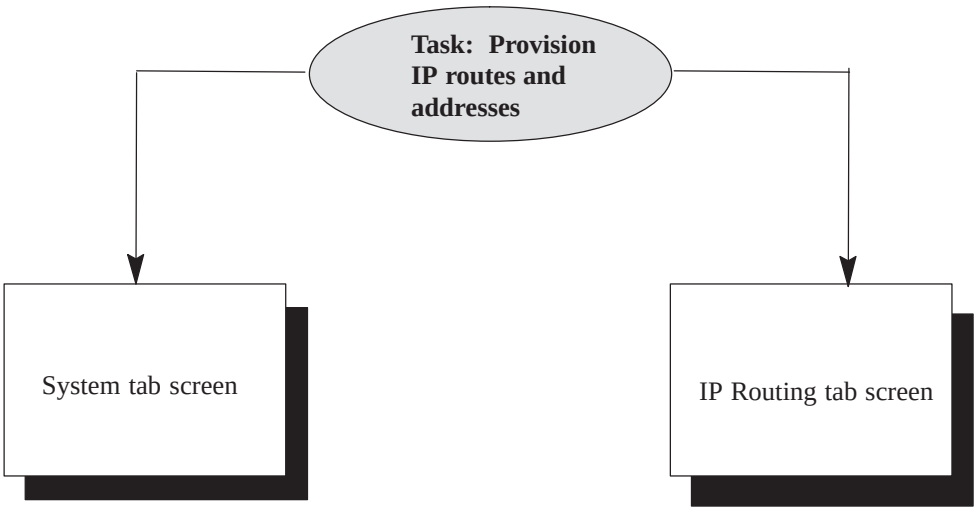
1. On the System tab screen, set the Data Mode selection button to `Point to Point` to enable a *SuperLine* Access Shelf to support derived lines handling data traffic. For more information, refer to the topic **Viewing miscellaneous system information** on page 6–9.
2. On the Telephony tab screen, set the number of lines per subscriber loop. For details, refer to the topic **Setting telephony parameters**. on page 9–4
3. On the Adapters tab screen, enable or disable data traffic support on individual subscriber lines and set the up/down data ratio for each line. This ratio determines how much data bandwidth the line uses to send data upstream and downstream.

END OF STEPS

For more information, refer to the topic **Configuring subscriber lines** on page 10–2.

Paths for provisioning IP routes and addresses

Use the following tab screens to provision IP routes and addresses for the *SuperLine* Access Shelf.



IP provisioning by screen

To provision IP routes or addresses for a *SuperLine* Access Shelf, follow these steps:

1. On the System tab screen, specify the IP addresses of the device to receive SNMP traps and the TFTP server used to download firmware. For more information, refer to the topics **Viewing trap/community information** on page 6–4 and **Viewing miscellaneous system information** on page 6–9.
2. On the IP Routing tab screen, you can:
   - Add, delete, or update IP routes. For details, refer to the topics **Adding an IP route** on page 7–8, **Deleting an IP route** on page 7–9, and **Updating an IP route** on page 7–10.
   - Define IP and mask values for the *SuperLine* Access Shelf's network and LAN interfaces. For more information, refer to the description of **setting a shelf's IP address/mask** on page 7–6.
   - Set the desired transmission rates for the IP (network) ports on the FETH card. For more details, refer to the topic **Viewing IP routing parameters** on page 7–2.

END OF STEPS

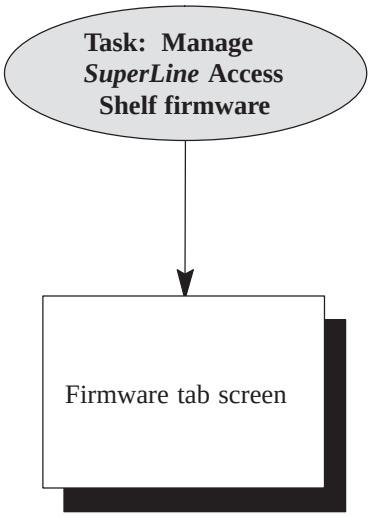
For additional information about provisioning IP routes, refer to the topic **Screen-specific buttons** on page 1–14.

□

Screens for firmware management

Firmware tab screen

Use the following screen to manage firmware for the *SuperLine* Access Shelf.



Firmware management tasks

Use *SuperLine* EM's or Multi-EM's Firmware tab screen to perform the following firmware management tasks:

- Specify which firmware version the *SuperLine* Access Shelf uses.
- Download a new firmware package into the *SuperLine* Access Shelf's temporary memory.

  For details, refer to the topic **Downloading new firmware** on page 8–5.
- Erase a newly-downloaded firmware package.
- Commit (copy) a new firmware package to the *SuperLine* Access Shelf's permanent memory.

The topic **Screen-specific buttons** on page 1–14 explains how to initiate firmware management tasks by clicking toolbar buttons.

4 Monitoring status

Overview

Introduction This chapter describes the Status tab screen and the information this screen displays about the AG Communication Systems *SuperLine*™ Access System, the *SuperLine* Access Shelf, and shelf equipment.

In this chapter This chapter covers the following topics:

□

Viewing *SuperLine* device status

Displaying the Status tab screen

Click the **Status** tab to display the Status tab screen.

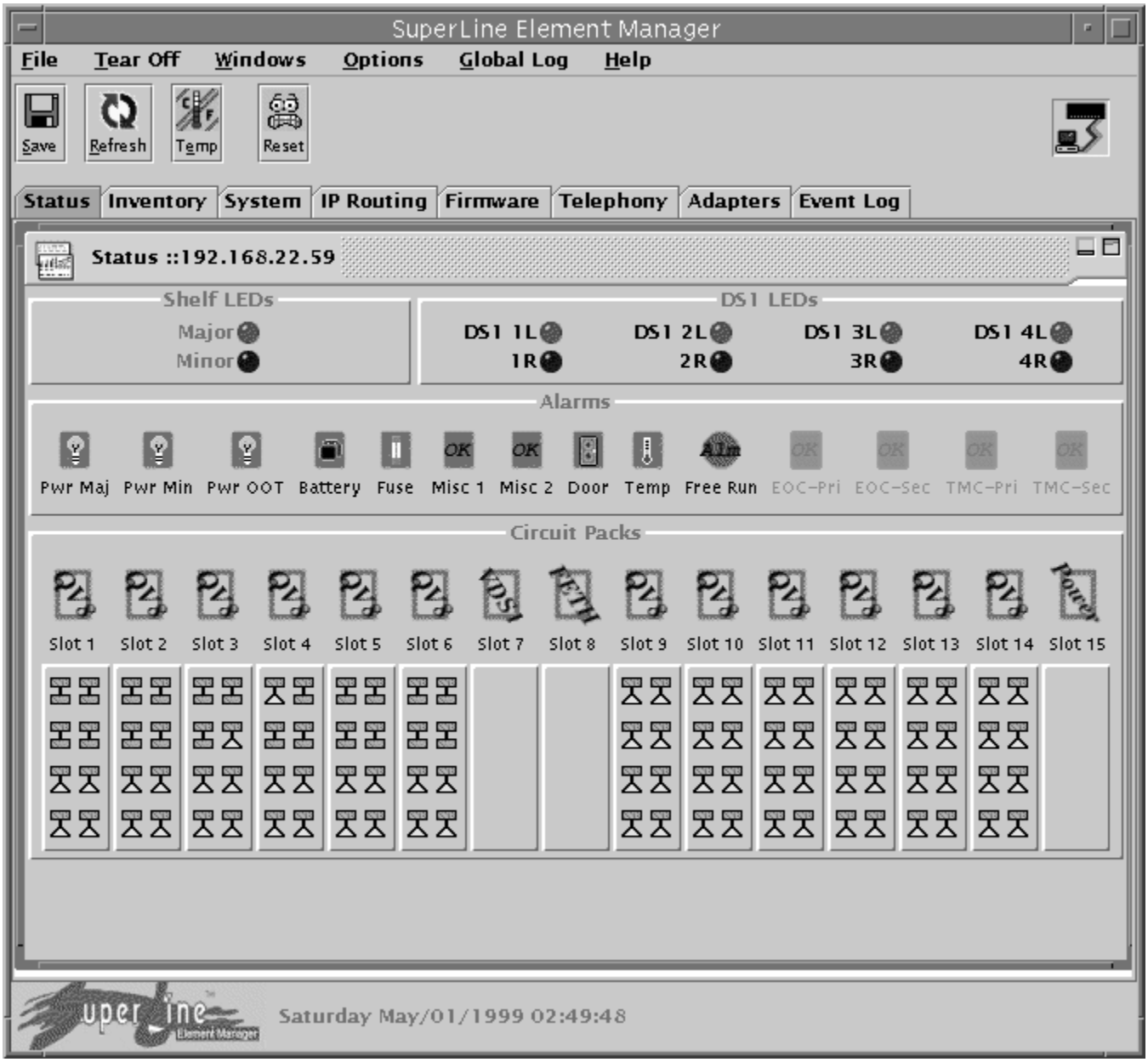
Status information available

The Status tab screen shows you the status of:

- Major and Minor alarm LEDs on the *SuperLine* Access Shelf.
- Alarm LEDs for the Digital Signal 1s (DS1s).
- The circuit packs—POWR card, Voice Digital Signal 1 (VDS1) card, Fast Ethernet (FETH) card, and line cards—installed on the *SuperLine* Access Shelf.
- The eight ports on each Quadrature Amplitude Modulation Voice 8 (QV8) card.
- External alarm devices connected to the *SuperLine* Access Shelf. Refer to the **Viewing alarms** topic on page 4–7 for more information.
- Internal alarms.
- *SuperLine* Integrated Access Devices (IADs).

Status tab screen example

An example of the Status tab screen follows.



LED icons

The Light Emitting Diode (LED) icons, located directly under the tabs on the Status tab screen, change from off (black) to on (red or yellow) to reflect the current state of the *SuperLine* Access Shelf and the DS1s it uses. The following lists describe the LED icons.

Shelf LED icons:

- Major – Turns red when a major alarm has occurred on the *SuperLine* Access Shelf.
- Minor – Turns yellow when a minor alarm has occurred on the *SuperLine* Access Shelf.

DS1 LED icons:

Important: A DS1's LED icons are greyed-out if the DS1 is disabled.

- DS1 1L – Turns red when a local alarm is present on DS1 number 1.
- DS1 1R – Turns yellow when a remote alarm is present on DS1 number 1.
- DS1 2L – Turns red when a local alarm is present on DS1 number 2.
- DS1 2R – Turns yellow when a remote alarm is present on DS1 number 2.
- DS1 3L – Turns red when a local alarm is present on DS1 number 3.
- DS1 3R – Turns yellow when a remote alarm is present on DS1 number 3.
- DS1 4L – Turns red when a local alarm is present on DS1 number 4.
- DS1 4R – Turns yellow when a remote alarm is present on DS1 number 4.

Circuit pack icons

The Status tab screen has a set of circuit pack icons, located just under the internal and external alarm icons. The circuit pack icons indicate which type of circuit pack (QV8, FETH, VDS1, or POWR card) occupies each card slot installed on the *SuperLine* Access Shelf. They also indicate the status of each circuit pack.

Circuit pack icons have the following characteristics:

- The icon for each shelf slot bears the name of the type of circuit pack installed (VDS1, FETH, etc.). A slot containing no circuit pack is labeled *Neqp* and is greyed-out. A label of *Unkn* with a red question mark (? symbol) indicates that *SuperLine* Element Manager (*SuperLine* EM) or Multi-Element Manager (Multi-EM) cannot determine which type of circuit pack is in the slot or whether the slot has no circuit pack.
- If a circuit pack is in service, its icon is a green rectangle. If the circuit pack fails, the icon becomes a red circle. A yellow triangle indicates a less severe problem (a Minor alarm or Warn state).
- To display a tool tip describing the status of a circuit pack icon, place the mouse pointer over that icon and do not move it for a second or two.

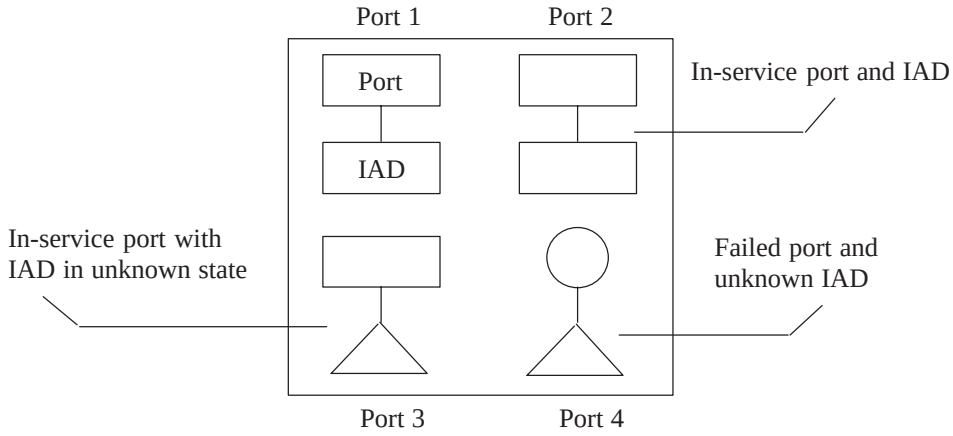
  Result: A box encloses the selected icon, and the tool tip appears.
- To see more information about a circuit pack's status and other attributes, click its icon. Doing so causes *SuperLine* EM or Multi-EM to jump to the Inventory tab screen, which provides detailed card information. Information for the circuit pack you selected is highlighted.

Port/IAD icons

Under the circuit pack icons, a second group of icons indicates the status of the ports on each line card and the *SuperLine* IAD connected to each port. The Status tab screen displays two port/adapter icons for each QV8.

Each icon has four symbols within it. Each symbol represents one of the line card's ports and the *SuperLine* IAD connected to it.

Each port/IAD symbol has an upper and a lower portion, as shown here.



Symbol shapes and colors

The shape and color of the upper portion of the port/IAD symbol indicate the state of the port on the line card. The lower portion indicates the state of the IAD, as follows:

- Greyed-out port symbols indicate that the port is not equipped.
- A green rectangle indicates a port or IAD that is in service.
- A red circle indicates a port or IAD that is in a Failed state.
- A yellow triangle indicates a port that is in a Warning state or an IAD that is in an Unknown state.

To display a tool tip listing the port number of a port, its status, and the status of the connected *SuperLine* IAD, place the mouse pointer on the symbol for that port. To see more information about a port/IAD connection, click its symbol. Doing so causes *SuperLine* EM or Multi-EM to display the Adapters tab screen, which provides detailed IAD/port information. (The information for the selected port/IAD is highlighted.)

□

Viewing alarms

Internal and external alarms

SuperLine EM and Multi-EM report alarms for power failures, environmental problems, TR-303 link failures, and other trouble conditions. On the Status tab screen, color-coded alarm icons located just below the shelf and DS1 LED icons indicate which types of alarm conditions exist.

The background of these icons is a green rectangle if an alarm condition is not present, or a red circle if an alarm exists. In addition, the EOC and TMC alarm icons can be greyed-out. Greyed-out TMC and EOC icons indicate that the *SuperLine* Access Shelf does not use the TR-303 telephony protocol.

External alarm devices connected to the *SuperLine* Access Shelf can be anything the user chooses: sensors, audible alarms, etc. Use of external alarm devices with the shelf is optional.

Pwr Maj alarm icon

The Pwr Maj icon indicates a major alarm condition, detected by an external device connected to the *SuperLine* Access Shelf, that involves shelf power or the POWR card.

Example: A power outage occurs at the Central Office (CO) where the shelf is installed.

Pwr Min alarm icon

The Pwr Min icon indicates a minor alarm condition, detected by an external device connected to the *SuperLine* Access Shelf, involving shelf power or the POWR card.

Example: A power supply is defective.

Pwr OOT alarm icon

The Pwr OOT (out of tolerance) icon indicates that *SuperLine* Access Shelf power is not within approved tolerances (–44 to –46 VDC).

Example: A brownout occurs at the CO. Although the *SuperLine* Access Shelf is still powered up, the power supplied is not sufficient for proper shelf operation.

Battery alarm icon

The Battery alarm icon indicates a backup battery problem, detected by a device connected externally to the *SuperLine* Access Shelf.

Fuse alarm icon

The Fuse alarm icon indicates a problem with external fuses, detected by a device connected externally to the *SuperLine* Access Shelf.

Misc 1 and Misc 2 alarm icons

The Misc 1 and Misc 2 icons indicate *SuperLine* Access Shelf conditions detected by monitoring user-installed devices that are plugged into alarm connectors on the front of the shelf.

Example: Misc alarm 1 could be connected to a moisture sensor. When the sensor detects excessive moisture at the *SuperLine* Access Shelf, the sensor triggers the alarm.

Door alarm icon

The Door icon indicates that the door of a cabinet housing the *SuperLine* Access Shelf is in a certain state, as detected by a device connected externally to the *SuperLine* Access Shelf.

Example: The alarm might be triggered when the cabinet door is opened.

Temp alarm icon

The Temp icon indicates that the shelf's internal temperature is outside the approved range.

Free Run alarm icon

The Free Run icon indicates that the shelf is in a *free run* state; that is, all DS1 synchronization is lost. As a result, the *SuperLine* Access System and the rest of the network are no longer using the same physical clock timing for signals and communication.

EOC-Pri and EOC-Sec alarm icons

The EOC-Pri and EOC-Sec icons are available only when the *SuperLine* Access Shelf uses TR-303 protocol. These icons indicate that the primary TR-303 Embedded Operations Channel (EOC-Pri) datalink has failed, or the secondary EOC channel (EOC-Sec) has failed.

TMC-Pri and TMC-Sec alarm icons

The TMC-Pri and TMC-Sec icons are available only when the *SuperLine* Access Shelf uses TR-303 protocol. These icons indicate that the primary TR-303 Timeslot Management Channel datalink (TMC-Pri) has failed, or the secondary TMC channel (TMC-Sec) has failed.

Greyed-out TR-303 link icons

The EOC-Pri and EOC-Sec and TMC-Pri and TMC-Sec alarm icons are greyed-out when the *SuperLine* Access Shelf is not running under the TR-303 protocol.

□

Displaying *SuperLine* Access Shelf temperature

Displaying shelf temperature

While you are using the Status tab screen, to see the current temperature in the *SuperLine* Access Shelf that *SuperLine* EM or Multi-EM is currently monitoring, click the **Temp** toolbar button. A pop-up screen displays the platform temperature in degrees Celsius and degrees Fahrenheit.

The System tab screen also displays temperature information for the *SuperLine* Access Shelf.

Temperature screen example

An example of the pop-up Temperature screen follows.

□

5 Displaying inventory information

Overview

Introduction

This chapter describes the information the Inventory tab screen displays about AG Communication Systems *SuperLine*™ Access Shelves, circuit packs, and *SuperLine* Integrated Access Devices (IADs).

In this chapter

This chapter covers the following topics:

□

Viewing circuit pack inventory

Inventory tab screen

Click the **Inventory** tab to display the Inventory tab screen. This screen lists the inventory parameters for:

- The *SuperLine* Access Shelf.
- Each circuit pack on the shelf.
- The ports connected to the circuit packs.

When a minor error condition occurs on a circuit pack or on a port, *SuperLine* Element Manager (*SuperLine* EM) or Multi-Element Manager (Multi-EM) displays its status in yellow. When the circuit pack or port is in a Major error state, all inventory information for the device appears in red.

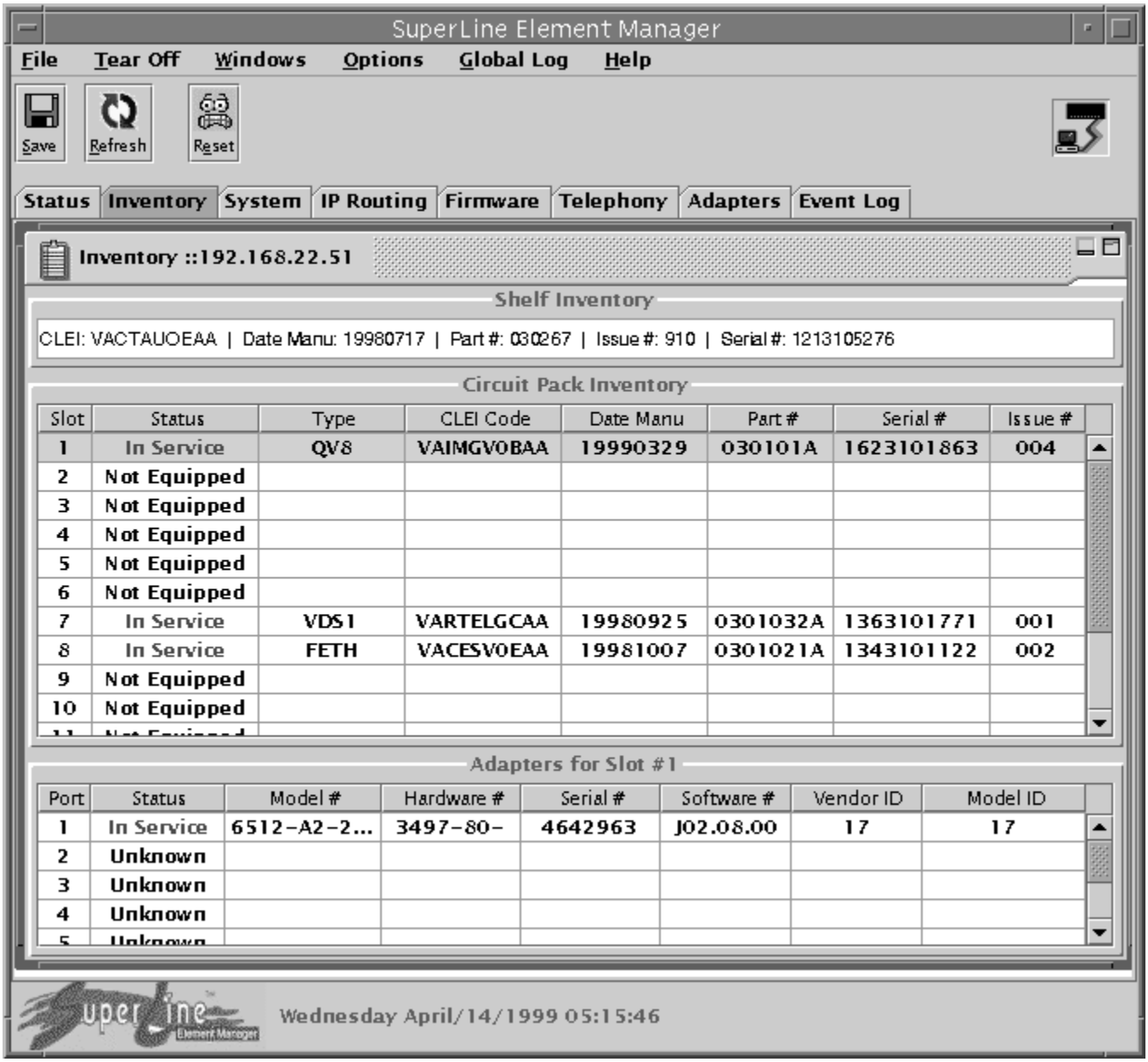
You can scroll the circuit pack inventory list.

SuperLine Access Shelf inventory

The Shelf Inventory section of the screen displays, in text format, the *SuperLine* Access Shelf's:

- Common-Language Equipment Identification (CLEI) code.
- Manufacture date.
- Part number.
- Issue number.
- Serial number.

Inventory tab screen example An example of the Inventory tab screen follows.



Circuit pack information

The following list describes the information listed for each circuit pack:

- The *Slot* column contains the number of the card slot where the circuit pack is installed.
- The *Status* column contains one of the following statuses: `Not Equipped`, `In Service` (shown in green), `Warning` (shown in yellow), or `Failed` (shown in red).
- The *Type* column contains one of the following card types: Fast Ethernet (FETH), Voice Digital Signal 1 (VDS1), line card (Quadrature Amplitude Modulation Voice 8, or QV8), or Unknown.
- The *CLEI Code* column contains the CLEI code assigned to this circuit pack.
- The *Date Manu* column lists the date when the circuit pack was manufactured.
- The *Part #* column lists the AG Communication Systems part number for the circuit pack.
- The *Serial #* column lists the serial number of the circuit pack.
- The *Issue #* column lists the issue number of the circuit pack.

□

Viewing *SuperLine* IAD information

SuperLine IAD information

The Inventory tab screen can display inventory information for any *SuperLine* IAD connected to the *SuperLine* Access Shelf.

To view inventory information for all IADs connected to a circuit pack, select (highlight) the desired circuit pack from the circuit pack inventory list. Doing so displays the inventory for all IADs connected to that circuit pack in the Adapters for Slot `<slot number>` list at the bottom of the screen. (On *SuperLine* EM and Multi-EM screens, the word adapter refers to the *SuperLine* IAD.)

When a minor error condition occurs on a port and the IAD that port is connected to, *SuperLine* EM or Multi-EM displays the status in yellow. When a fail (major error) condition occurs, *SuperLine* EM or Multi-EM displays the status in red.

You can modify the order in which information fields are displayed by dragging and dropping the field header. Refer to the **Common screen features** topic on page 1–6 for more information.

SuperLine IAD inventory fields

The following list describes the IAD inventory information displayed:

- The *Port* column lists the port number.
- The *Status* column shows the current status of the port to which the *SuperLine* IAD is connected.
- The *Model #* column lists the model number of the IAD to which the port is connected.
- The *Hardware #* column lists the hardware version number for the IAD.
- The *Serial #* column lists the serial number of the IAD.
- The *Software #* column lists the version number of the IAD firmware.
- The *Vendor ID* column lists the ID number of the vendor who produced the IAD.
- The *Model ID* column indicates which IAD model is used.

□

6 Displaying system information

Overview

Introduction

This chapter describes the System tab screen and how to use it to provision the following parameters for the AG Communication Systems *SuperLine*™ Access System:

- System time and date information
- Parameters governing Simple Network Management Protocol (SNMP) trapping
- The *SuperLine* Access Shelf's type and data mode
- The Internet Protocol (IP) address of the shelf's Trivial File Transfer Protocol (TFTP) server

In this chapter

This chapter covers the following topics:

□

Viewing general system information

System tab screen

Click the **System** tab to display the System tab screen. This screen, divided into four areas, displays:

- General information about the *SuperLine* Access System.
- Time and date information.
- Information about SNMP trap and community settings.
- Miscellaneous system information.

General system information

The general system information area of the System tab screen, located on the upper left side of the screen, displays:

- The ID of the system (*SuperLine*).
- The location of the *SuperLine* Access Shelf involved in this *SuperLine* Element Manager (*SuperLine* EM) or Multi-Element Manager (Multi-EM) session.
- The name of the person, if any, who is responsible for shelf maintenance.
- The *SuperLine* Access Shelf's device name, such as *TR-303 Test System*.

You can change the values in the *Location*, *Contact*, and *Device Name* fields, by blanking out the current values and typing in new information. then pressing the **Enter** or **Return** key to put the new text into effect. The text you type in is red; it turns black after you press Return or Enter. (The same is true for all fields on the System tab screen that accept typed-in information.)

Information you type into the *Location* field is displayed automatically on the Auto-Discovery screen that appears when you click the Discovery button on the Open Session screen.

A *Description* field below the other fields contains a brief text description of the *SuperLine* Access Shelf's software load plus copyright and trademark information for *SuperLine*.

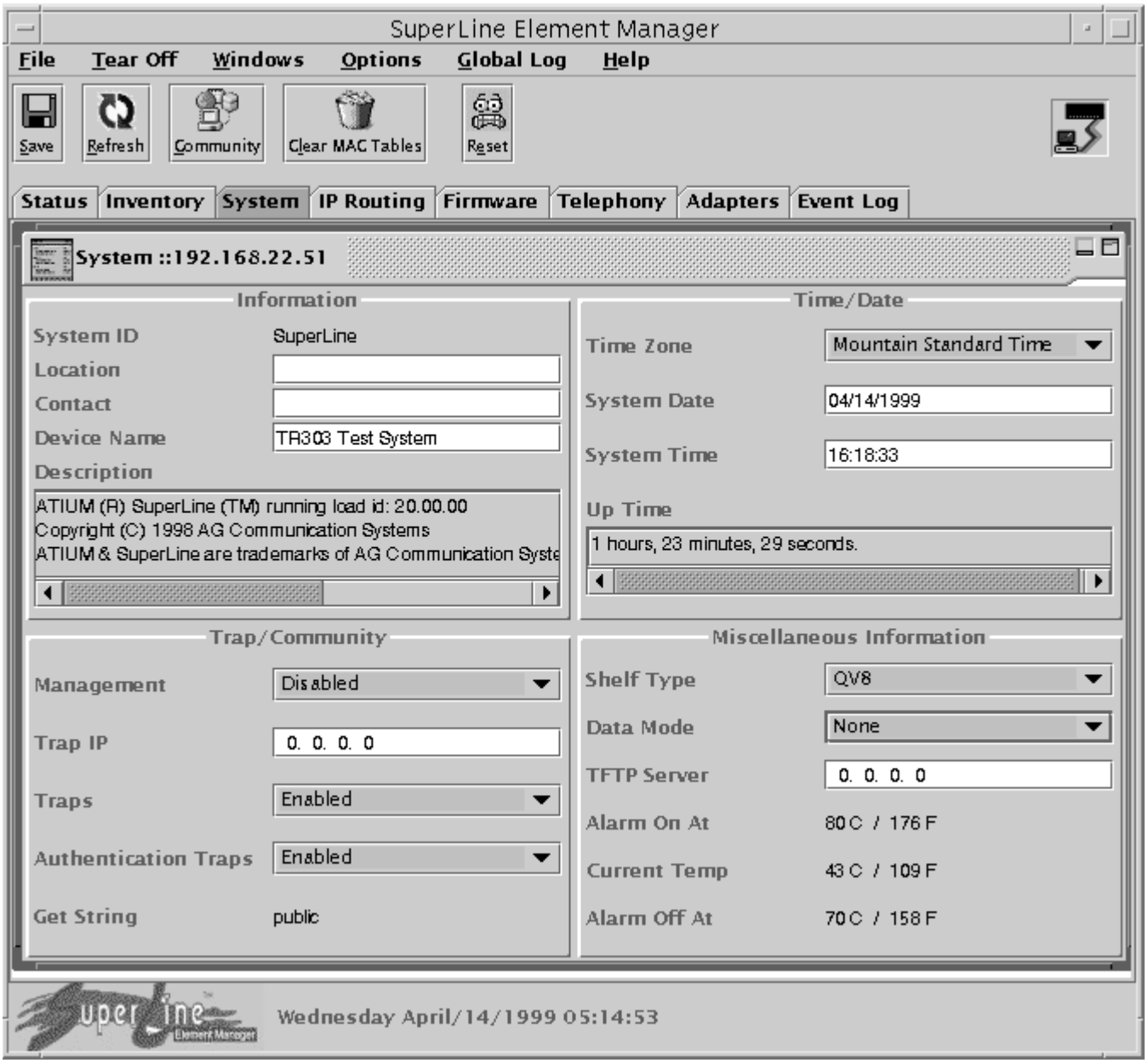
Clearing MAC tables

The Clear MAC Tables button in the toolbar area of the System tab screen enables you to remove all entries from the table of Media Access Control (MAC) tables for the *SuperLine* Access Shelf involved in the current *SuperLine* EM or Multi-EM session. (However, doing so is not recommended.)

When you click the Clear MAC Tables button, a pop-up dialog asks you to confirm or cancel deletion of all MAC table entries. Click **Clear Tables** to empty the tables.

System tab screen example

An example of the System tab screen follows.



□

Viewing trap/community information

Trap and community information

The Trap/Community Information section of the System tab screen, located on the lower left side of the screen, displays the IP address to which *SuperLine* EM or Multi-EM sends SNMP traps and the SNMP Get Community text string currently in use.

This area of the screen has the following fields:

- The *Management* drop-down list box sets a parameter that protects the security of *SuperLine* Access Systems. It allows you to determine whether someone at the remote side of the *SuperLine* Access System can do system management using the 10/100Base-T interface on the *SuperLine* Access Shelf.
- In the *Trap IP* field, type the IP address of a permanent trap log. This log can be a *SuperLine* EM that is always running on a computer on the network, or can be a workstation running Hewlett-Packard *OpenView*® Network Node Manager (NNM) application or any other trap collection software. Only one permanent trap IP is allowed, so only that IP can receive traps from *SuperLine* Access Shelves in the network.
- The *Traps* drop-down list box enables or disables SNMP trap messages. Setting the box to Enable allows SNMP to detect alarm or error conditions on the *SuperLine* Access Shelf and notify SuperLine EM or Multi-EM that the condition exists. *SuperLine* EM then notifies you by documenting the alarm in its Event Logs (Multi-EM documents the item in the *OpenView* NNM event log) and by indicating the alarm on other tab screens.
- The *Authentication Traps* drop-down list box enables or disables authentication traps. SNMP authenticates all SNMP messages that are sent to the *SuperLine* Access Shelf, by checking to see if the Get and Set Community strings sent in each message match those stored in the *SuperLine* Access Shelf. If the strings do not match, the SNMP message is rejected. If authentication traps are enabled, a trap is sent to the device at the Trap IP each time an SNMP message is rejected for lack of authentication.
- The Trap/Community information section of the screen displays the current Get Community string. You can set this string and the Set Community string using the Community toolbar button.

Enabling or disabling remote management

The default setting for the parameter set by the *Management* drop-down list box, `Disabled`, prevents remote personnel from managing the system. To enable remote management, follow these steps:

Important: When you manage the SuperLine System using in-band management through the FETH card, people not authorized to access or make changes to your network may be able to do so. To protect network security, insert firewalls between the SuperLine Access Shelf and the network, and between the machines hosting the TFTP server and SuperLine EM or Multi-EM.

1. Place the mouse pointer on the list box and hold down the left mouse button.

   Result: The options `Enabled` and `Disabled` appear.
2. Place the mouse pointer on the `Enabled` option and release the mouse button.

   Result: Remote management is enabled, and the following message appears in the *SuperLine* EM event log or the *OpenView* NNM event log:

   ```
   Turning on Management over the 10/100bt Interface
   ```

If you change the remote management parameter setting to `Disabled`, the following text appears in the *SuperLine* EM or *OpenView* NNM event log:

```
Turning off Management over the 10/100bt Interface
```

END OF STEPS

Setting or changing SNMP community strings

Important: If you change the community strings, be sure to record the new strings somewhere. You will need to enter the new strings the next time you try to connect to the *SuperLine* Access Shelf.

To set or change either of the SNMP community strings, follow these steps:

1. Click the **Community** toolbar button.

   Result: The Set Community Strings screen appears.
2. Type a Get or Set Community string in the appropriate fields. If you are changing an existing string, blank it out then type in a new string.
3. Click **Apply** to set the strings, or **Cancel** to cancel.

END OF STEPS

Enabling or disabling error/alarm traps

By default, trapping is disabled for the *SuperLine* Access Shelf. To enable or disable trapping, follow these steps:

CAUTION

Disabling traps can cause SuperLine EM or Multi-EM to display incorrectly the status of the SuperLine Access Shelf and its equipment.

1. Place the mouse pointer on the drop-down list box for the *Traps* field and press the left mouse button.

   Result: The options `Enabled` and `Disabled` appear.
2. Holding down the left mouse button, place the mouse pointer on the option you want to select.
3. Release the mouse button.

   Result: Trapping is enabled or disabled, depending on what you selected.

END OF STEPS

Enabling or disabling authentication

By default, authentication traps are enabled for the *SuperLine* Access Shelf. Authentication in SNMP terms means that the *SuperLine* Access Shelf has a unique device password which must be included in any messages sent to configure the platform.

- When authentication traps are enabled, if messages do not include the *SuperLine* Access Shelf's unique device password, those messages are rejected and generate traps that *SuperLine* EM records in both the shelf event log and the global event log. (Multi-EM sends the traps to the *OpenView* NNM event log.)
- When authentication traps are disabled, unauthorized SNMP messages are still rejected, but no trap is sent.

To disable authentication traps, or to re-enable them if they are disabled, follow these steps:

1. Place the mouse pointer on the drop-down list box for the *Authentication Traps* field and press the left mouse button.

   Result: The options `Enabled` and `Disabled` appear.
2. Holding down the left mouse button, place the mouse pointer on the option you want to select.
3. Release the mouse button.

   Result: Authentication traps are enabled or disabled, depending on what you selected.

END OF STEPS

Packet processing errors

In rare cases, depending on whether a trace bit (the SNMP message bit) is set, the following message might appear in the *SuperLine* EM or *OpenView* NNM event log:

```
Error providing SNMP packet from host <IP address>
```

Should this message appear, check the settings of the Get and Set community strings for the *SuperLine* Access Shelf. To do so, click the **Community** toolbar button to display the pop-up Set Community Strings screen.

If an application on the network is sending SNMP v.2 packets (*OpenView* NNM sends one occasionally), turn off the trace bit.

□

Viewing the time and date

Time and date information

The Time/Date area of the System tab screen, located on the upper right side of the screen, displays:

- The time zone at the site where the *SuperLine* Access Shelf is located.
- The system date; that is, the date according to the shelf's internal clock.
- The system time; that is, the clock time at the *SuperLine* Access Shelf. Do not confuse the system time with the time and date shown in the bar at the bottom of the System tab screen; the time value at the bottom of the screen is the clock time at the PC or workstation running *SuperLine* EM or Multi-EM.
- Up time; that is, the amount of time since the shelf was last powered up or reset.

The system date and time may not be identical to the calendar date and time of day.

Every 10 seconds, the up time displayed on the System tab screen is updated from the device. Placing the mouse pointer in this field stops the automatic updating for that field until you move the mouse pointer to another field. Click the **Refresh** button to update the system date and time field contents.

Changing the time zone

The default time zone is Universal Time. To specify a different time zone, follow these steps:

1. Place the mouse pointer on the drop-down list box for the *Time Zone* field and press the left mouse button.

   Result: A scrollable list of time zones appears.
2. Holding down the left mouse button, place the mouse pointer on the time zone you want to select.
3. Release the mouse button.

   Result: The time zone in effect for the *SuperLine* Access Shelf changes to the time zone you selected.

END OF STEPS

□

Viewing miscellaneous system information

Miscellaneous information

The Miscellaneous Information area of the System tab screen displays:

- The type of line cards installed on the *SuperLine* Access Shelf.
- The data mode setting for the *SuperLine* Access Shelf, which determines whether subscriber lines support data service.
- The IP address of the default TFTP server for the shelf; under most conditions, this is the IP address of the PC or workstation where *SuperLine* EM or Multi-EM is running
- Information about current temperature at the *SuperLine* Access Shelf and alarm thresholds for temperature

Selecting the shelf type

The Shelf Type parameter identifies the type of line cards installed on the *SuperLine* Access Shelf. If you need to change this setting, follow these steps:

1. Hold down the left mouse button and place the mouse pointer on the *Shelf Type* drop-down list box.

   Result: The options QV4 and QV8 appear.

2. Place the mouse pointer on QV8, then release the mouse button.

   Result: The *SuperLine* EM event log or the *OpenView* NNM event log displays one of the following messages.

```
New provisioning OK.  New values take effect after
shelf is reset.
```

This message reports that the shelf type has been re-provisioned to what you selected.

```
Original provisioning selected.
```

This message reports that the shelf type you selected is already in effect. If you really want to change the shelf type, repeat steps 1 and 2.

```
New provisioning invalid.  Original shelf type is
'<value>.' Check telephony type and num dlines/loop.
```

This message appears when the shelf type selected is incompatible with settings provisioned for the *SuperLine* Access Shelf's telephony type and number of derived lines per loop. To view or change these parameter settings, click the **Telephony** tab, then refer to the help topic **Setting telephony parameters** on page 9–4.

END OF STEPS

Selecting the data mode

The data mode setting for the *SuperLine* Access Shelf determines whether subscriber lines can support data service. To select the data mode, follow these steps:

1. Place the mouse pointer on the *Data Mode* drop-down list box and press the left mouse button.

   Result: A list of options appears.

2. Holding down the left mouse button, place the mouse pointer on one of the options:
   - None
     Lines do not support data transmission.
   - Point to Point
     Lines support data transmission. This option allows the *SuperLine* Access System's administrators to manage and track the entry of users into the network. This mode allows packet transport only from feeder port to feeder port or from distribution port to feeder port.
   - Switched
     Data support emulates an Ethernet switch. All ports on a *SuperLine* Access Shelf can send or receive packets from any other port.
   - Directed Switched
     Data support emulates an Ethernet switch, except that unknown packets are forwarded only to feeder ports and not to distribution ports.
3. Release the mouse button.

   Result: The data mode changes to what you selected.

END OF STEPS

Temperature information

The System tab screen displays the current temperature in the *SuperLine* Access Shelf in both Celsius and Fahrenheit degrees. This area of the screen also displays the thresholds at which temperature sensors in the shelf activate a temperature alarm or turn an alarm off. If the *SuperLine* Access Shelf temperature exceeds the *Alarm On at* setting, the shelf generates a trap and notifies *SuperLine* EM or Multi-EM. The event is then recorded in the *SuperLine* EM or *OpenView* NNM event logs.

When shelf temperature falls below the *Alarm Off at* setting, another trap is sent, clearing the temperature alarm.

You can also obtain the current shelf temperature by clicking the **Temp** toolbar button on the Status tab screen.

□

7 Managing IP routes

Overview

Introduction

This chapter describes the IP Routing tab screen and how you can use it to:

- View information about the AG Communication Systems *SuperLine*™ Access Shelf's IP routes.
- Set the IP address and mask for the shelf.
- Add, delete, or update IP routes.

In this chapter

This chapter covers the following topics:

□

Viewing IP routing parameters

IP route defined

An IP route is a path defined between multiple networks that allows packets of data to travel from an originating network device (such as the *SuperLine* Access Shelf) to a destination device. This document discusses IP routes that support communication between *SuperLine* Element Manager (*SuperLine* EM) or Multi-Element Manager (Multi-EM) and the *SuperLine* Access Shelf, *NOT* other IP routes that may exist in your network.

When defining an IP route, you specify the IP addresses of the gateway and the IP address or subnet you want to be sent to the gateway. You also specify a subnet mask—a number that identifies which part of an IP address indicates the subnet number.

IP Routing tab screen

Click the IP Routing tab to display the IP Routing tab screen. This screen displays:

- The IP address, subnet mask, and Media Access Control (MAC) address of the currently monitored *SuperLine* Access Shelf's network interface.
- The IP address, subnet mask, and MAC address of the currently monitored platform's Local Area Network (LAN) interface.
- Information about defined IP routes. An IP route allows you to specify the destination device to receive IP data transmitted over your *SuperLine Access* System.

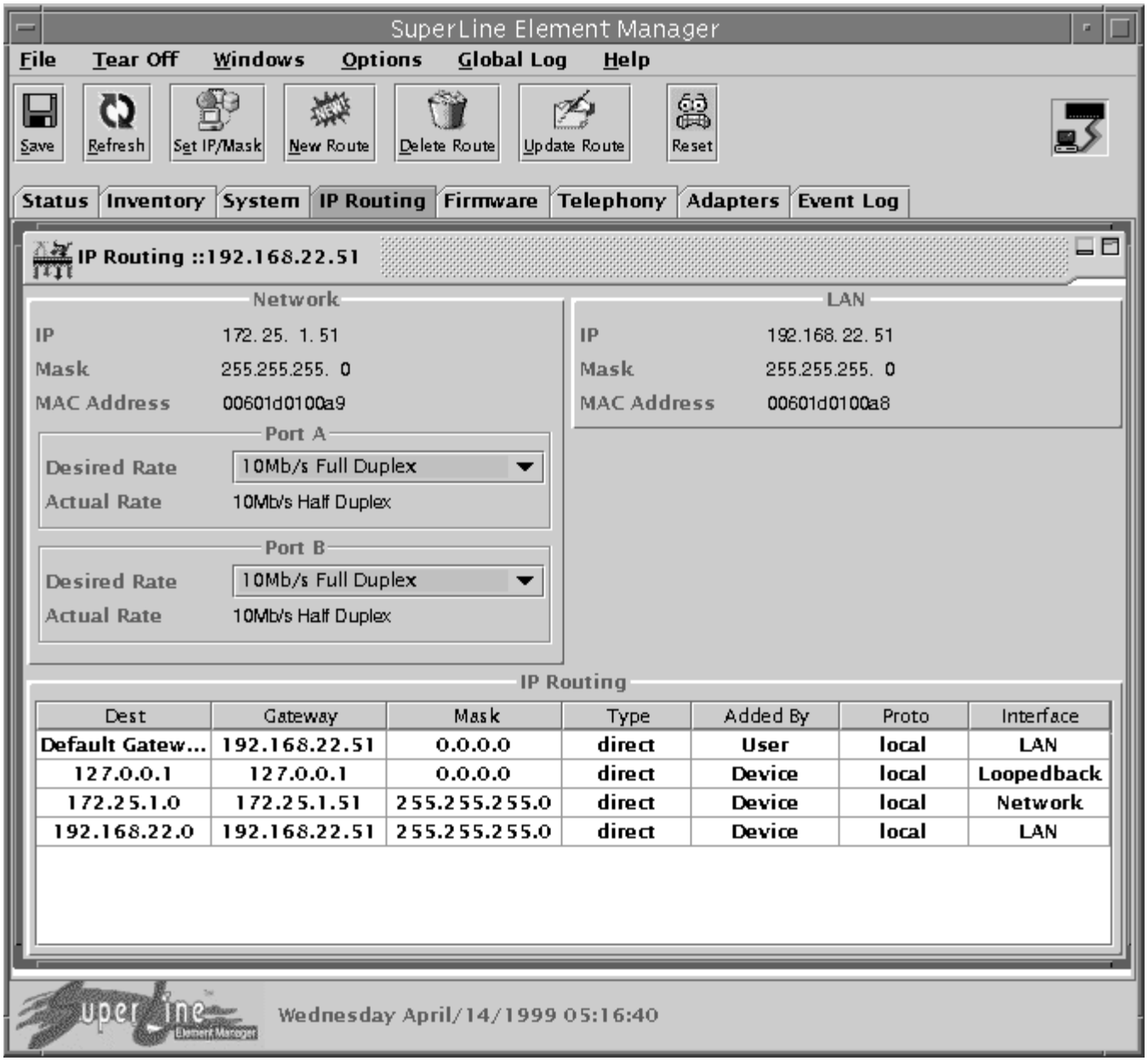
On the IP Routing tab screen, you can also:

- Set the desired transmission rate for the IP ports (network ports) located on the Fast Ethernet (FETH) card.
- View the actual transmission rate achieved on these IP ports.
- Set a new IP address and mask for the network interface, the LAN interface, or both.
- Add IP routes.
- Delete IP routes.
- Update IP routes.

Important: IP routing and route tables can be very complex and difficult to set up. Because of their complexity, a complete discussion of how to configure a *SuperLine* Access Shelf's IP route table is beyond the scope of this document. Fortunately, IP route tables are common among all IP devices that have multiple IP interfaces, so numerous books and other resource materials on the topic are available. Your local network administrator may also be able to provide more detailed information.

IP Routing tab screen example

An example of the IP Routing tab screen follows.



Network and LAN areas

The Network and LAN areas of the IP Routing tab screen show the IP address, mask, and MAC address settings currently in effect for the *SuperLine* Access Shelf's network and LAN interfaces. These settings are read-only. However, you can modify the IP addresses and subnet masks by clicking the Set IP/Mask toolbar button. For more information, refer to the subtopic **Set IP/mask procedure** in the topic **Setting a *SuperLine* Access Shelf's IP address/mask** on page 7–6.

Port A and Port B areas

The Port A and Port B areas of the screen show:

- The desired transmission rates set for the network ports on the FETH card.
- The rate at which transmissions are actually taking place. The actual rate is a read-only value.

Setting the desired rate

Important: Setting the desired rate to a given value does *NOT* mean that the actual rate becomes that value. The actual rate reflects what the data rate is after the *SuperLine* IP port negotiates a rate with the IP device connected to that port. If the device connected to Port A or Port B supports the desired rate, that rate is used. If the port does not support that rate, then the actual rate becomes the rate supported by the connected device that is closest to the desired rate.

To set the desired transmission for Port A or Port B, follow these steps:

1. Click the **Desired Rate** selection button while holding down the left mouse button.

   Result: A list of rates, shown in megabits per second (Mbps), appears.
2. Place the cursor on one of the transmission rates.
3. Release the mouse button.

   Result: The desired rate changes to the rate you selected.

END OF STEPS

IP route information

The bottom of the IP Routing tab screen displays information about all IP routes defined for the *SuperLine* Access Shelf. The following list describes the information displayed for the IP routes:

- *Dest* – IP or subnet for which this device is to be used.
- *Gateway* – IP address to which all IPs matching the IP or subnet found in the Dest column are sent.
- *Mask* – Subnet mask for this IP route.
- *Type* – Direct or indirect route.
- *Added By* – Name of the entity that added this IP route. If the *SuperLine* Access Shelf placed the route in the table, the word Device appears in this column. If a user added the route, this column contains the word User.
- *Proto* – Routing mechanism through which the network learned this route.
- *Interface* – Indicates whether the route is for the network interface or the LAN interface. The *network* is the network to which Port A or Port B on the *SuperLine* Access Shelf is connected. The *LAN* is the local area network to which the craft interface is connected.

The list of IP routes is scrollable.

□

Setting a *SuperLine* Access Shelf's IP address/mask

Set IP/Mask button

Click the **Set IP/Mask** toolbar button on the IP Routing tab screen to define an IP address and subnet mask for the *SuperLine* Access Shelf that *SuperLine* EM or Multi-EM currently is monitoring. You can define an IP and mask for the shelf's network interface, its LAN interface, or both.

Set IP/mask procedure

To set the IP and mask values, follow these steps:

CAUTION

Changing the IP address or mask of the interface SuperLine EM or Multi-EM uses to communicate with the SuperLine Access Shelf causes the application to lose communication with the shelf. To re-establish communication, close the current SuperLine EM or Multi-EM session and open a new session using the new IP address.

1. Click the **Set IP/Mask** toolbar button.

   Result: The Set IP and Mask screen appears.

2. Enter the IP address and mask values to use in the appropriate set of fields (Network, LAN, or both).

   Be sure to use dotted format (for example, 130.131.55.55) when entering these values.

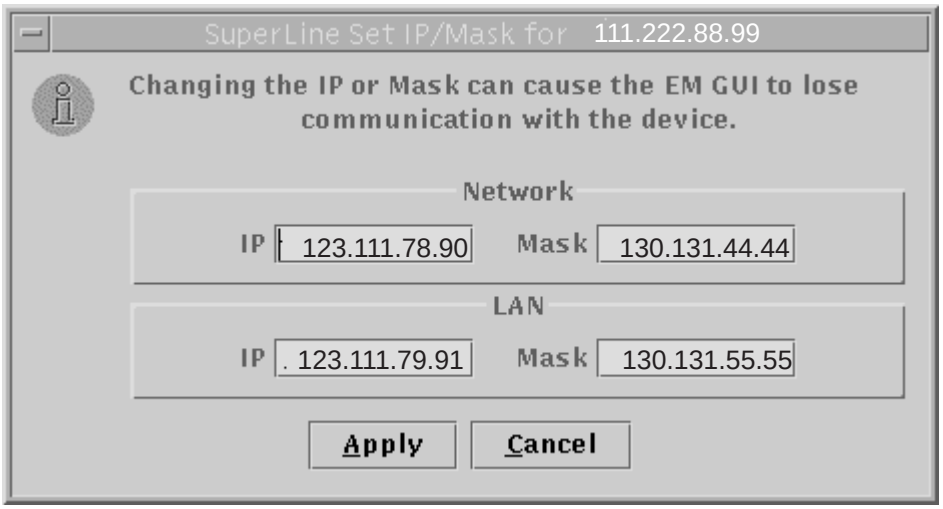
3. Click **OK**.

   Result: The new IP and mask values take effect, and the IP Routing tab screen displays the updated values.

END OF STEPS

Set IP/Mask screen example

An example of the Set IP/Mask screen follows.



□

Adding an IP route

New Route button

Click the **New Route** toolbar button on the IP Routing tab screen to define a new IP route.

Add route procedure

To add an IP route, follow these steps:

1. Click the **New Route** toolbar button.

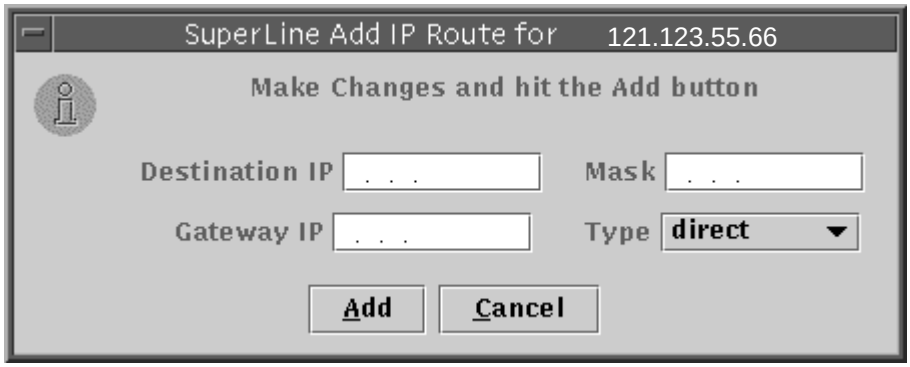
   Result: The Add IP Route screen appears.
2. In the appropriate fields, enter the IP addresses of the destination (the device to receive messages) and the gateway (the device through which messages will be routed).
3. Enter subnet mask values in the appropriate fields.
4. Select the type of IP route this is (direct or indirect).
5. Click **Add** to add the new route, or click **Cancel** to cancel.

   Result: The new IP route becomes available, and *SuperLine* EM or Multi-EM adds information about it to the IP route list on the IP Routing tab screen.

END OF STEPS

Add IP Route screen example

An example of the Add IP Route Screen follows.



□

Deleting an IP route

Delete Route button

Click the **Delete Route** toolbar button on the IP Routing tab screen to delete an IP route.

Delete procedure

To delete an IP route, follow these steps:

Important: You cannot delete an IP route created by a device.

1. In the IP route list at the bottom of the screen, click the IP route to be deleted.

   Result: The route information is highlighted.

2. Click the **Delete Route** toolbar button.

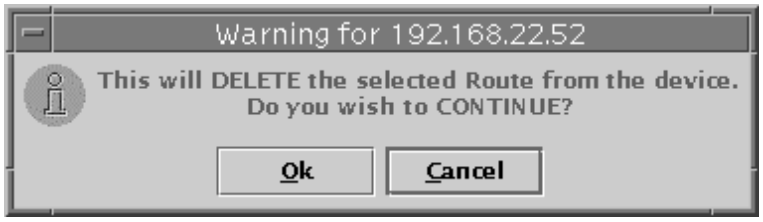
   Result: The Delete Route screen appears.

3. Click **OK** to delete the IP route, or click **Cancel**.

   Result: *SuperLine* EM or Multi-EM deletes the selected IP route and removes it from the IP route list on the IP Routing tab screen.

END OF STEPS

An example of the Delete Route screen follows.



□

Updating an IP route

Update Route button

Click the **Update Route** toolbar button on the IP Routing tab screen to update an IP route's parameters.

Update route procedure

To update information for an IP route, follow these steps:

Important:

- You cannot change the destination IP address.
- You cannot update an IP route created by a device.

1. In the IP route list at the bottom of the screen, select (highlight) the route to update.
2. Click the **Update Route** toolbar button.

   Result: The Update IP Route screen appears.

3. Blank out the parameters you want to change, then type in new values.
4. If you want to change the route type from `Indirect` to `Direct` or vice versa, click the Type selection button while holding down the left mouse button, then place the cursor on the desired type and release the mouse button.
5. Click **Update** to save your changes, or click **Cancel**.

   Result: If you click **Update**, *SuperLine* EM or Multi-EM updates the IP route's parameters and the IP route list on the IP Routing tab screen.

END OF STEPS

An example of the Update IP Route screen follows.

□

8 Managing firmware

Overview

Introduction

This chapter describes the features on the Firmware tab screen that enable you to select a firmware load for the AG Communication Systems *SuperLine*™ Access Shelf, download new firmware, and erase firmware or commit it to the *SuperLine* Access Shelf's permanent memory.

In this chapter

This chapter covers the following topics:

□

Using the Firmware tab screen

Firmware tab screen

Click the **Firmware** tab to display *SuperLine* Element Manager's (*SuperLine* EM) or Multi-Element Manager's (Multi-EM) Firmware tab screen. This screen enables you to see which firmware version you are running on the *SuperLine* Access Shelf that *SuperLine* EM or Multi-EM is monitoring currently, as well as the ID of any new or old firmware versions loaded on the device.

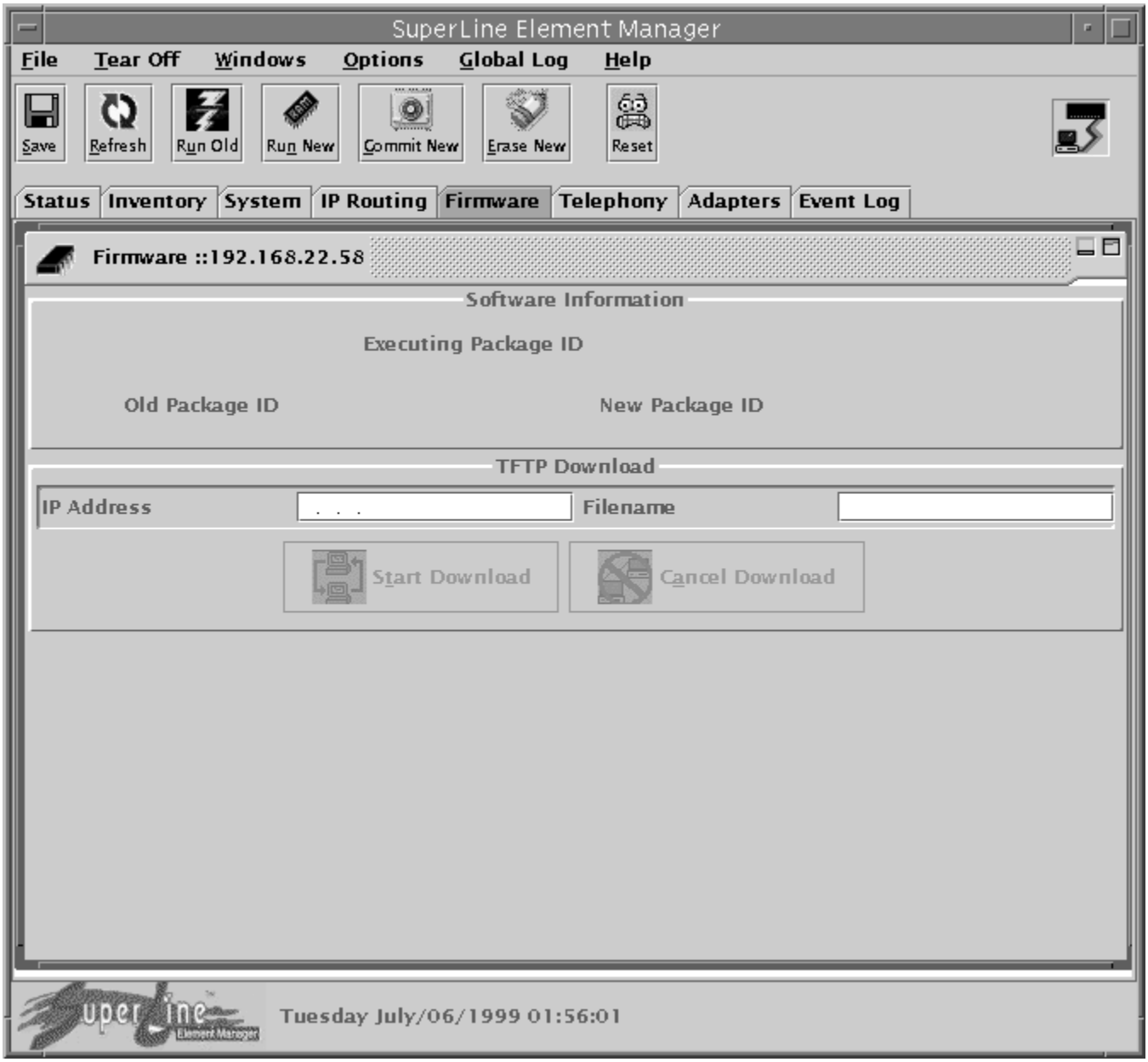
On the Firmware tab screen, you can also:

- Configure the shelf to execute the firmware load in permanent memory (the *old package*).
- Configure the shelf to execute the firmware load in temporary memory (the *new package*).
- Erase the firmware load currently in temporary memory (*new package*).
- Download new firmware to temporary memory using TFTP (either the TFTP capability in *SuperLine* EM—the default—or your own TFTP server.
- Commit (copy) a *new package* that you are running to the *SuperLine* Access Shelf's permanent memory.

When a *SuperLine* Access Shelf is powered down and back up, firmware in permanent memory is not affected. However, firmware in temporary memory is lost. The same is true when a shelf is reset unless the reset is part of the Run New or Run Old process described in the topic **Downloading new firmware** on page 8–5.

Firmware tab screen example

An example of the Firmware tab screen follows.



Package ID fields

Three fields on the Firmware tab screen display the software package ID numbers for *SuperLine* Access Shelf firmware:

- The *Executing Package ID* field indicates the firmware version that is currently executing.
- The *Old Package ID* field indicates the software package ID number for the firmware version in permanent memory.
- The *New Package ID* field indicates the software package ID number for the firmware version in temporary memory.

□

Downloading new firmware

Requirements for downloading

From the Firmware tab screen, you can download new firmware files (loads) to the temporary memory of the *SuperLine* Access Shelf. Before downloading firmware, check that:

- The laptop is connected to the 10Base-T interface, either directly or through a LAN, on the *SuperLine* Access Shelf.
- You know the Internet Protocol (IP) address of a Trivial File Transfer Protocol (TFTP) server. If you use *SuperLine* EM's built-in TFTP capability, the IP address is that of the PC or workstation where *SuperLine* EM is installed. If you use an external TFTP server installed elsewhere on your network, you need to know that server's IP address.
- You know the filename of the firmware to be downloaded.

Refer to the topic **Configuring Access Shelf-to-EM communication** on page 2–6 for additional details.

Storage directory for firmware

Installing *SuperLine* EM or Multi-EM automatically creates a directory called `SuperlineFirmware`. Both the initial load of *SuperLine* Access Shelf firmware and any new firmware you download later reside in this directory.

The `SuperlineFirmware` directory must be present in the SuperLine EM or Multi-EM file structure in order for firmware downloading to take place. For this reason, when you un-install SuperLine EM or Multi-EM, the `uninstall` script or process does *NOT* delete the `SuperlineFirmware` directory.

Before downloading

Before downloading *SuperLine* Access System firmware, note the following:

- Allow about 2 minutes for the download process to complete. To cancel a download in progress, click the **Cancel Download** button.
- To save the downloading information to an ASCII file, click the **Save** button and enter the file name where you want the information saved. Information about the number of bytes transferred is updated every 5 seconds until the download is completed.

Download procedure

To download new firmware, follow these steps:

1. Click the **Firmware** tab.

   Result: The Firmware tab screen appears.

2. Enter the IP address of the TFTP server in the *IP Address* field. This is either the IP address of the machine running *SuperLine* EM or Multi-EM, or the IP address of an external TFTP server to which *SuperLine* EM or Multi-EM is connected.

   Example: **`10.30.192.250`**

3. In the *Filename* field, enter the name of the file to be downloaded.

   Example: **`R2_0_1`**

4. Click the **Start Download** button.

   Result: The firmware program starts loading; the download process may take a few minutes to complete. During this process, the Download Status portion of the screen is updated with downloading information, and you may see the *SuperLine* Access Shelf's IP address appear with the transfer status.

5. When downloading is complete, one of the following dialog boxes appears:

   `Success` – if the download is successful

   `Fail` – if the download is unsuccessful. Check the *SuperLine* EM event log or the event log for the Hewlett-Packard *OpenView* NNM application for more details.

END OF STEPS

Testing the new load

Important: Testing the new software load requires a power cycle of the *SuperLine* Access Shelf. This results in a loss of all connections passing through the shelf. The connection to *SuperLine* EM or Multi-EM is lost because the shelf is re-initializing. You can reconnect after the shelf is initialized.

When the software download has completed successfully, test the new load. To do so, follow these steps:

1. Click the **Run New** button to restart the *SuperLine* Access Shelf and run the software just loaded.

   Result: The *SuperLine* Access Shelf reboots and the LEDs on the circuit packs light (red) until the new load comes up successfully. After the Run New operation is completed and the shelf is initialized, the Power LED on the POWR card and the Link Integrity LEDs on the VDS1 and FETH cards light (green). All other LEDs are NOT lighted (dark).

2. Re-establish communication between *SuperLine* EM or Multi-EM and the Shelf.

   Result: The *SuperLine* Access System responds in one of the following ways:

   – If the new (RAM) load is successful, the circuit pack Fail LEDs are unlighted (dark). Once the new load completes successfully, the event log receives the message `Initialization Declared Complete.`

   – If the new load is NOT successful, the circuit pack Fail LEDs remain lighted (red), and the *SuperLine* Access System automatically tries to reload the RAM for up to five retries. After five retries, the new load is abandoned and the *SuperLine* Access System reverts to the firmware load in the shelf's permanent memory.

END OF STEPS

Downloading *SuperLine* IAD firmware

If a firmware download to a *SuperLine* Access Shelf's RAM is successful, and if *SuperLine* Integrated Access Devices (IADs) exist that require downloading, the message `Operational Adapters Upgrade Started` is sent to the event log and *SuperLine* IAD firmware is downloaded automatically. (During downloading, the Alarm and Test lights stay lighted on the *SuperLine* IADs.)

If the download process discovers an incompatible *SuperLine* IAD, the *SuperLine* EM event log or the *OpenView* NNM event log receives the following type of message:

```
Adapter 1cm.1.1.2.1 Incompatible:  6310-A1-200 :
3413-80B : J01.05.01
```

If the adapter download fails, the event logs receive the following type of message:

```
Adapter 1cm.1.1.2.1 Failed:  6310-A1-200 : 3413-80B
: J01.05.01
```

If IAD downloading fails, the *SuperLine* Access System attempts retries. If the IAD software download still fails during retries, the System generates audits periodically. The Alarm and Test lights are off if the *SuperLine* IAD fails download retries.

When firmware for all operational *SuperLine* IADs is downloaded successfully, the *SuperLine* EM or *OpenView* NNM event log receive the following type of message:

```
All Operational Adapters Upgraded
```

Verifying call processing capability

After successful downloads of firmware to the *SuperLine* Access Shelf and *SuperLine* IADs, verify call processing capability. Then, commit the new load to the devices' permanent memory. To do so, follow the Commit New procedure described in the topic **Committing or erasing firmware** on page 8–10.

Running the new or old firmware load

To specify whether the *SuperLine* Access Shelf uses the firmware version stored in permanent memory or in temporary memory, follow these steps:

CAUTION

- ***Resetting a SuperLine Access Shelf disrupts service on subscriber lines connected to the shelf.***
- ***Clicking the Init to Defaults button causes loss of all configuration data on the SuperLine Access Shelf.***

1. Click either the **Run New** (temporary) or the **Run Old** (permanent) toolbar button, depending on which firmware version you want the *SuperLine* Access Shelf to execute.

   Result: A pop-up dialog asks you to confirm that you want to use the selected firmware version.

2. Click **OK**.

   Result: The *SuperLine* Access Shelf resets and comes back up executing the firmware version you selected. Also, the Executing Package ID field on the Firmware tab screen displays the ID of the firmware version you selected. During the reset, *SuperLine* EM or Multi-EM temporarily loses communication with the shelf; this is normal.

END OF STEPS

□

Committing or erasing firmware

Commit New procedure

To commit the firmware currently residing in the *SuperLine* Access Shelf's temporary memory to its permanent memory, follow these steps:

WARNING

Equipment damage alert. Do not power down or reset the SuperLine Access Shelf while the Commit New procedure is in progress. Doing so corrupts the shelf's temporary memory and renders the VDS1 card inoperable. To avoid equipment damage, wait for up to 5 minutes for the Commit New procedure to complete before powering down or resetting the shelf.

Important: You must be running the new load stored in temporary memory before you can commit it to permanent memory.

1. Click the **Commit New** toolbar button on the Firmware tab screen.

   Result: A dialog screen asks you to confirm the commit operation.

2. Click **OK** to proceed, or click **Cancel**.

   Result: *SuperLine* EM or Multi-EM takes the requested action. Allow about 2 minutes for the commit operation to complete. During this process, the firmware load in temporary memory is automatically erased after it is committed (copied) to permanent memory. Therefore, you do not need to do the Erase New procedure manually as part of the commit operation.

Commit failures

If a problem occurs during the RAM load, subsequent commit operations fail. If multiple commit failures occur, this may indicate a problem with the file being downloaded. Call the AG Communication Systems Customer Support Center at 1-888-888-2427 if the RAM load continually fails.

Erase New procedure

To erase the firmware currently residing in the *SuperLine* Access Shelf's temporary memory, follow these steps:

1. Click the **Erase New** toolbar button on the Firmware tab screen.

   Result: A pop-up dialog screen asks you to confirm the delete operation.

2. Click **OK** to proceed, or click **Cancel**.

   Result: *SuperLine* EM or Multi-EM takes the requested action.

END OF STEPS

□

9 Monitoring and provisioning DS1s

Overview

Introduction

This chapter describes how to use the Telephony tab screen to view the status of and provision Digital Signal 1s (DS1s) for the AG Communication Systems *SuperLine*™ Access Shelf. You can enable or disable DS1s, set their line build out, and set the number of derived lines per loop using this screen.

In this chapter

This chapter covers the following topics:

□

Managing DS1s

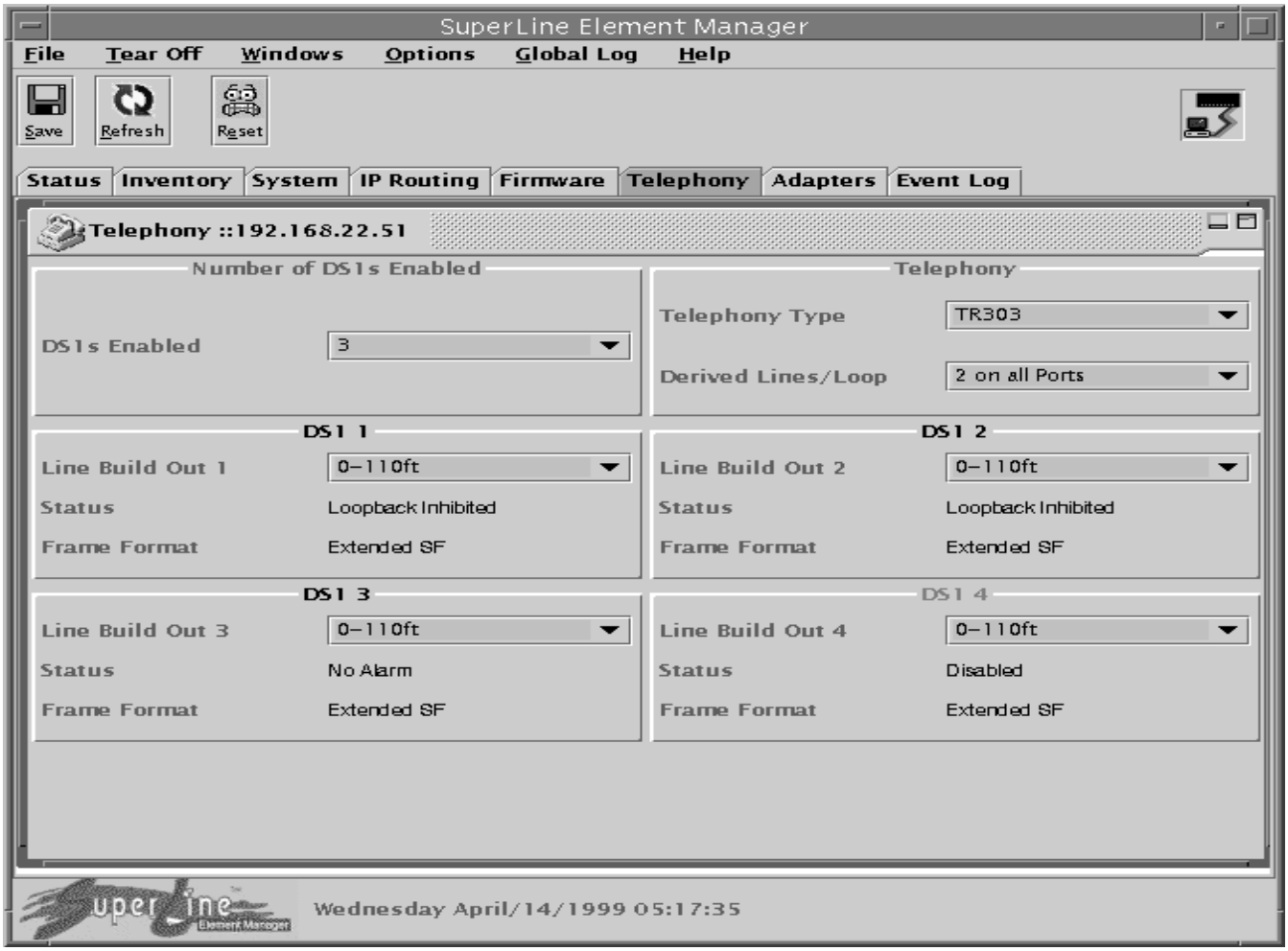
Telephony tab screen

Click the **Telephony** tab to display the Telephony tab screen. On this screen, you can do the following:

- Enable from one to four DS1s for the *SuperLine* Access Shelf.
- Select the type of telephony protocol that the *SuperLine* Access Shelf uses.
- Select the number of derived lines per telephony loop.
- Change the line build out for each enabled DS1.
- View the status and frame format for each enabled DS1. This information is read-only.

Telephony tab screen example

An example of the Telephony tab screen follows.



Setting line build outs

Before you can enable DS1s, you should establish the line build out for each DS1 to be activated. To do so, follow these steps:

1. In the *Line Build Out 1* field, place the cursor on the selection button while holding down the left mouse button.

   Result: A list of line build out options appears. Line build out is the distance between a *SuperLine* Access Shelf and the Local Digital Switch (LDS).

2. Place the cursor on one of the following options:
   - 0 – 110 ft.
   - 110 – 220 ft.
   - 220 – 330 ft.
   - 330 – 440 ft.
   - 440 – 550 ft.
   - 550 – 660 ft.
3. Release the mouse button.

   Result: The line build out for DS1 1 becomes the length you specified.
4. Repeat Steps 1 through 3 for each additional DS1 to be enabled.

END OF STEPS

Enabling DS1s

To enable DS1s, follow these steps:

Important: This procedure assumes that you have specified line build outs for the DS1s to be enabled.

1. In the *DS1s Enabled* field, place the mouse pointer on the selection button while holding down the left mouse button.

   Result: A list of options appears.
2. Place the mouse pointer on one of the following options:
   - Select **1** to enable only DS1 1.
   - Select **2** to enable DS1 1 and DS1 2.
   - Select **3** to enable DS1 1, DS1 2, and DS1 3.
   - Select **4** to enable DS1 1, DS1 2, DS1 3, and DS1 4.
3. Release the mouse button.

   Result: The specified number of DS1s are enabled on the shelf.

END OF STEPS

□

Setting telephony parameters

Setting the telephony type

To set the currently monitored *SuperLine* Access Shelf's telephony parameters, follow these steps:

1. In the Telephony area of the Telephony tab screen, place the mouse pointer on the *Telephony Type* drop-down list box and hold the left mouse button.

   Result: A list of telephony protocols appears.

2. Place the mouse pointer on one of the following options:
   - None (this option provides no data support)
   - DDI
   - TR-303
   - TR-008 Mode 1
3. Release the mouse button.

   Result: The *SuperLine* Access Shelf's telephony type is re-provisioned to what you selected, and is sent to the *SuperLine* Element Manager (*SuperLine* EM) event log or the event log of Hewlett-Packard *OpenView*® Network Node Manager (NNM).

END OF STEPS

Telephony provisioning messages

When you provision telephony for the *SuperLine* Access Shelf, one of the following messages is output to the *SuperLine* EM or *OpenView* NNM event log:

```
New provisioning OK.  New values take effect after
shelf is reset.
```

This message reports that the telephony type was changed successfully. To put the new value into effect, reset the shelf by clicking **Reset** in the toolbar. (If you are provisioning multiple *SuperLine* Access Shelf parameters, you may want to postpone the reset until you have completed all provisioning changes.)

```
Original provisioning selected.
```

This message reports that you selected the telephony protocol that is already in effect for the shelf. If you really want to change the telephony type, repeat steps 1 through 3.

```
New provisioning invalid.  Original telephony type
is '<type>.'  Check num dlines/loop and shelf type.
```

When this message appears, the telephony type is incompatible with the settings provisioned for derived lines per loop and the shelf type. To view or change the shelf type setting, click the **System** tab, then refer to the topic **Viewing miscellaneous system information** on page 6–9.

Setting derived lines per loop

To set the number of derived lines per subscriber loop served by the *SuperLine* Access Shelf, follow these steps:

1. In the Telephony area of the Telephony tab screen, place the mouse pointer on the *Derived Lines/Loop* drop-down list box and hold down the left mouse button.

   Result: A list of options appears.

2. Place the mouse pointer on one of the following options, then release the mouse button.
   - *No telephony* – Turns off ALL derived line telephony for the shelf
   - *2 on Port 1-4* – Places two derived lines on ports 1 through 4 on all line cards
   - *2 on Slots 1-6* – Places two derived lines on all ports found on line cards in slots 1 through 6. Line cards in any other slots have no derived lines available but can be used for data.
   - *2, 1, 0 repeated* – Places two derived lines on line cards in slots 1, 4, 9, and 12 and places one derived line on line cards in slots 2, 5, 10, and 13. No derived lines are placed on line cards in slots 3, 6, 11, and 14, but those lines can be used for data traffic.
   - *1 on Slots 1-6, 2 on 9–11* – Places one derived line on line cards in slots 1 through 6 and two derived lines on line cards in slots 9, 10, and 11. Slots 7 and 8 are reserved for the Voice Digital Signal 1 (VDS1) and Fast Ethernet (FETH) cards respectively. Line cards in slots 12, 13, and 14 have no derived lines, but can be used for data traffic.
   - *2 on all Ports* – Places two derived lines on every port available in the shelf. This option is available only for the TR-303 telephony type.
   - *1 on all Ports* – Places one derived line on every port in the shelf.
3. Release the mouse button.

   Result: The number of derived lines per subscriber is re-provisioned to what you selected, and a message is sent to the *SuperLine* EM event log or the *OpenView* NNM event log.

END OF STEPS

Derived line mapping tables

When you select one of the telephony configurations described above, it is helpful to know how each derived line is mapped to a specific channel within a DS1; that is, a DS0. The topic **DSO channel mapping for telephony configurations** describes the DS0 derived line mapping for each telephony configuration.

Loop provisioning messages

When you provision the number of derived lines per subscriber loop, one of the following messages is output to the *SuperLine* EM event log or *OpenView* NNM's event log:

```
New provisioning OK.  New values take effect after
shelf is reset.
```

This message reports that the number of derived lines per loop was changed successfully. To put the new setting into effect, reset the shelf by clicking **Reset** in the toolbar. (If you are provisioning multiple *SuperLine* Access Shelf parameters, postpone the reset until you finish all provisioning changes.)

```
Original provisioning selected.
```

This message reports that you selected the setting that is already in effect for the shelf. If you really want to change the number of derived lines, repeat steps 1 through 3.

```
New provisioning invalid.  Original num dlines/loop
is '<value>.'  Check telephony type and shelf type.
```

When this message appears, the selected number of derived lines per loop is incompatible with the settings provisioned for the telephony type and the shelf type. To view or change the shelf type setting, click the **System** tab, then refer to the topic **Viewing miscellaneous system information** on page 6–9.

Request for change

Changing the telephony type and number of derived lines per loop causes a request for change to be registered with the *SuperLine* Access Shelf. The changes made do not actually take effect until the shelf is reset. To help you remember this, when you change the telephony type or number of lines per loop, the text `SuperLine Access Shelf needs a reset` appears in red at the bottom of the *SuperLine* EM or Multi-EM screen. Once you reset the shelf (using the Reset toolbar button on any screen), the text disappears.

Access Shelf configuration is invalid message

When you are modifying telephony parameters, the message `Access Shelf configuration is invalid` may appear at the bottom of the *SuperLine* EM or Multi-EM screen. This message indicates that you have configured the *SuperLine* Access Shelf into a state that prevents telephony from functioning.

Example: Setting the telephony type to `DDI` and the number of derived lines per loop to `No telephony` is an invalid configuration.

To clear this error message, correct the invalid configuration by resetting the parameters in error.

CAUTION

Resetting a SuperLine Access Shelf with an invalid configuration causes the invalid configuration changes to be ignored and lost. However, a shelf reset causes a temporary loss of SuperLine service.

1. Click either the **Run New** (temporary) or the **Run Old** (permanent) toolbar button, depending on which firmware version you want the *SuperLine* Access Shelf to execute.

   Result: A pop-up dialog asks you to confirm that you want to use the selected firmware version.

2. Click **OK**.

   Result: The *SuperLine* Access Shelf resets and comes back up executing the firmware version you selected. Also, the Executing Package ID field on the Firmware tab screen displays the ID of the firmware version you selected. During the reset, *SuperLine* EM or Multi-EM temporarily loses communication with the shelf; this is normal.

END OF STEPS

□

DS0 channel assignments for telephony configurations

Introduction

Important: You can set the telephony type for the *SuperLine* Access Shelf using *SuperLine* EM's or Multi-EM's Telephony tab screen.

In TR-008 Mode 1 and DDI telephony modes, each derived phone line is mapped to a specific DS0—a channel within a DS1. In the TR-008 Mode 1 and DDI modes, the relationship between a derived phone line and a DS0 never varies. In TR-303 telephony mode, however, each derived phone line is mapped dynamically to a DS0 by the central office (CO) sending a message over the Timeslot Management Channel (TMC).

Reading the tables

SuperLine EM or Multi-EM in the TR-008 Mode 1 or DDI telephony modes supports five telephony configurations:

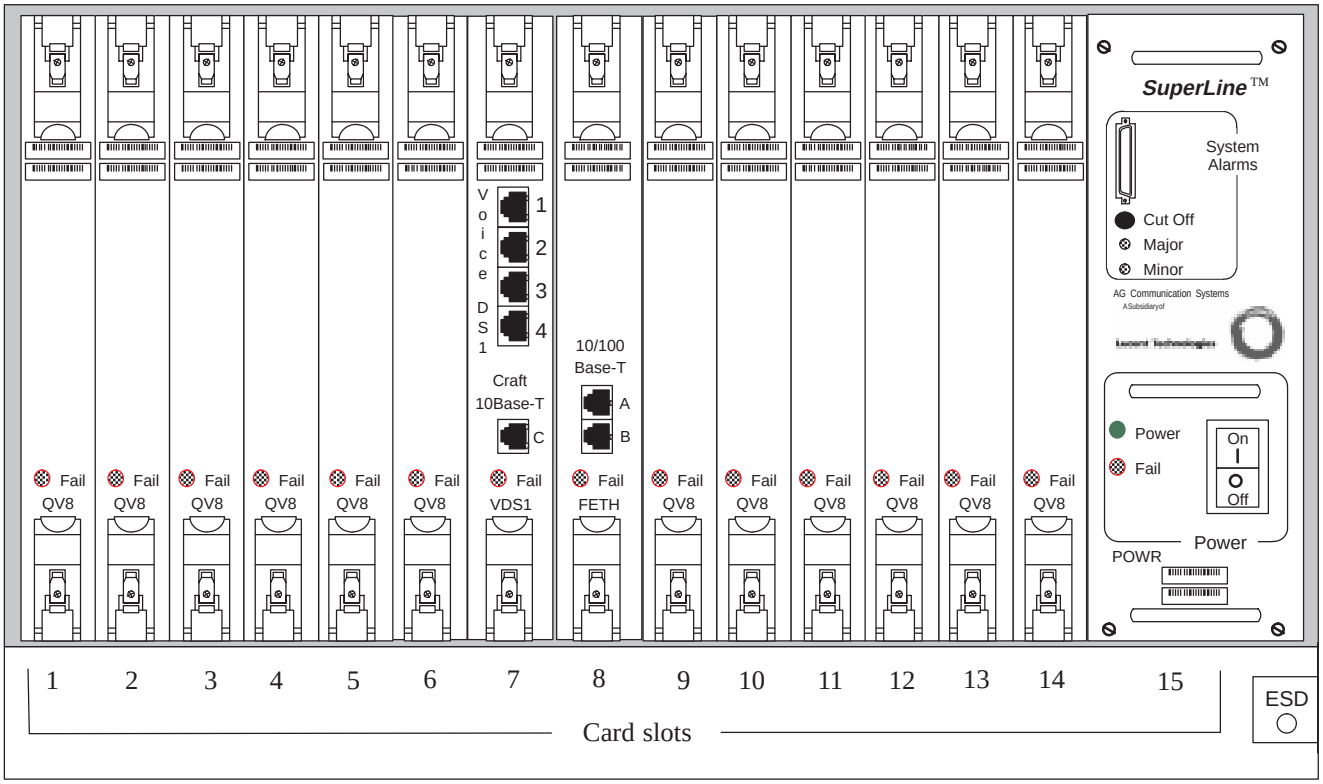
- 2 on Ports 1–4
- 2 on Slots 1–6
- 2, 1, 0 Repeated
- 1 on Slots 1–6, 2 on 9–11
- 1 on all Ports

The following tables list the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony. In columns DS1-1 through DS1-4, the first number refers to the QV8 card slot number; the second number to the QV8 circuit number; and the third number to the derived line number.

Example: On DS0 channel 3 for TR-008 Mode 1 telephony type, the mapping for DS1-1 is 1–1–2, meaning QV8 card slot 1, QV8 circuit 1, and derived line 2.

QV8 cards in a fully equipped *SuperLine* Access Shelf

The following figure shows a fully equipped *SuperLine* Access Shelf. The 12 QV8 cards are positioned in card slots 1–6 and 9–14. Other cards in the shelf are the VDS1 card in card slot 7, the FETH card in card slot 8, and the POWR card in card slot 15.



2 on Ports 1–4

In the Telephony tab screen, you can select this configuration from the *Derived Lines/Loop* drop-down list box as **2 on Ports 1–4**. Selecting that option places two derived lines on ports 1 through 4 on all QV8 cards. Ports 5–8 have no derived lines available but can be used for data traffic and baseband telephony.

The following table lists the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony types in the format card slot number–circuit number–derived line number.

DS1-1	DS1-2	DS1-3	DS1-4	DS0 channels for TR-008 Mode 1	DS0 channels for DDI
1–1–1	4–1–1	9–1–1	12–1–1	1	1
1–1–2	4–1–2	9–1–2	12–1–2	3	2
1–2–1	4–2–1	9–2–1	12–2–1	5	3
1–2–2	4–2–2	9–2–2	12–2–2	7	4
1–3–1	4–3–1	9–3–1	12–3–1	9	5
1–3–2	4–3–2	9–3–2	12–3–2	11	6
1–4–1	4–4–1	9–4–1	12–4–1	13	7
1–4–2	4–4–2	9–4–2	12–4–2	15	8
2–1–1	5–1–1	10–1–1	13–1–1	17	9
2–1–2	5–1–2	10–1–2	13–1–2	19	10
2–2–1	5–2–1	10–2–1	13–2–1	21	11
2–2–2	5–2–2	10–2–2	13–2–2	23	12
2–3–1	5–3–1	10–3–1	13–3–1	2	13
2–3–2	5–3–2	10–3–2	13–3–2	4	14
2–4–1	5–4–1	10–4–1	13–4–1	6	15
2–4–2	5–4–2	10–4–2	13–4–2	8	16
3–1–1	6–1–1	11–1–1	14–1–1	10	17
3–1–2	6–1–2	11–1–2	14–1–2	12	18
3–2–1	6–2–1	11–2–1	14–2–1	14	19
3–2–2	6–2–2	11–2–2	14–2–2	16	20
3–3–1	6–3–1	11–3–1	14–3–1	18	21
3–3–2	6–3–2	11–3–2	14–3–2	20	22
3–4–1	6–4–1	11–4–1	14–4–1	22	23
3–4–2	6–4–2	11–4–2	14–4–2	24	24

2 on Slots 1–6

In the Telephony tab screen, you can select this configuration from the *Derived Lines/Loop* drop-down list box as **2 on Slots 1–6**. Selecting that option places two derived lines on all ports found on the QV8 cards in card slots 1 through 6. QV8 cards in any other card slot have no derived lines available but can be used for data traffic and baseband telephony.

The following table lists the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony types in the format card slot number–circuit number–derived line number.

DS1-1	DS1-2	DS1-3	DS1-4	DS0 channels for TR-008 Mode 1	DS0 channels for DDI
1–1–1	2–5–1	4–1–1	5–5–1	1	1
1–1–2	2–5–2	4–1–2	5–5–2	3	2
1–2–1	2–6–1	4–2–1	5–6–1	5	3
1–2–2	2–6–2	4–2–2	5–6–2	7	4
1–3–1	2–7–1	4–3–1	5–7–1	9	5
1–3–2	2–7–2	4–3–2	5–7–2	11	6
1–4–1	2–8–1	4–4–1	5–8–1	13	7
1–4–2	2–8–2	4–4–2	5–8–2	15	8
1–5–1	3–1–1	4–5–1	6–1–1	17	9
1–5–2	3–1–2	4–5–2	6–1–2	19	10
1–6–1	3–2–1	4–6–1	6–2–1	21	11
1–6–2	3–2–2	4–6–2	6–2–2	23	12
1–7–1	3–3–1	4–7–1	6–3–1	2	13
1–7–2	3–3–2	4–7–2	6–3–2	4	14
1–8–1	3–4–1	4–8–1	6–4–1	6	15
1–8–2	3–4–2	4–8–2	6–4–2	8	16
2–1–1	3–5–1	5–1–1	6–5–1	10	17
2–1–2	3–5–2	5–1–2	6–5–2	12	18
2–2–1	3–6–1	5–2–1	6–6–1	14	19
2–2–2	3–6–2	5–2–2	6–6–2	16	20
2–3–1	3–7–1	5–3–1	6–7–1	18	21
2–3–2	3–7–2	5–3–2	6–7–2	20	22
2–4–1	3–8–1	5–4–1	6–8–1	22	23
2–4–2	3–8–2	5–4–2	6–8–2	24	24

2, 1, 0 Repeated

In the Telephony tab screen, you can select this configuration from the *Derived Lines/Loop* drop-down list box as **2, 1, 0 Repeated**. Selecting that option places two derived lines on QV8 cards in card slots 1, 4, 9, and 12. One derived line is placed on QV8 cards in slots 2, 5, 10, and 13. No derived lines are placed on QV8 cards in slots 3, 6, 11, and 14, but those lines can be used for data traffic and baseband telephony.

The following table lists the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony types in the format card slot number–circuit number–derived line number.

DS1-1	DS1-2	DS1-3	DS1-4	DS0 channels for TR-008 Mode 1	DS0 channels for DDI
1–1–1	4–1–1	9–1–1	12–1–1	1	1
1–1–2	4–1–2	9–1–2	12–1–2	3	2
1–2–1	4–2–1	9–2–1	12–2–1	5	3
1–2–2	4–2–2	9–2–2	12–2–2	7	4
1–3–1	4–3–1	9–3–1	12–3–1	9	5
1–3–2	4–3–2	9–3–2	12–3–2	11	6
1–4–1	4–4–1	9–4–1	12–4–1	13	7
1–4–2	4–4–2	9–4–2	12–4–2	15	8
1–5–1	4–5–1	9–5–1	12–5–1	17	9
1–5–2	4–5–2	9–5–2	12–5–2	19	10
1–6–1	4–6–1	9–6–1	12–6–1	21	11
1–6–2	4–6–2	9–6–2	12–6–2	23	12
1–7–1	4–7–1	9–7–1	12–7–1	2	13
1–7–2	4–7–2	9–7–2	12–7–2	4	14
1–8–1	4–8–1	9–8–1	12–8–1	6	15
1–8–2	4–8–2	9–8–2	12–8–2	8	16
2–1–1	5–1–1	10–1–1	13–1–1	10	17
2–2–1	5–2–1	10–2–1	13–2–1	12	18
2–3–1	5–3–1	10–3–1	13–3–1	14	19
2–4–1	5–4–1	10–4–1	13–4–1	16	20
2–5–1	5–5–1	10–5–1	13–5–1	18	21
2–6–1	5–6–1	10–6–1	13–6–1	20	22
2–7–1	5–7–1	10–7–1	13–7–1	22	23
2–8–1	5–8–1	10–8–1	13–8–1	24	24

1 on Slots 1–6, 2 on 9–11

In the Telephony tab screen, you can select this configuration from the *Derived Lines/Loop* drop-down list box as **1 on Slots 1–6, 2 on 9–11**. Selecting that option places one derived line on QV8 cards in card slots 1 through 6, and two derived lines on QV8 cards in card slots 9 through 11. QV8 cards in card slots 12–14 have no derived lines but can be used for data traffic and baseband telephony.

The following table lists the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony types in the format card slot number–circuit number–derived line number.

DS1-1	DS1-2	DS1-3	DS1-4	DS0 channels for TR-008 Mode 1	DS0 channels for DDI
1–1–1	4–1–1	9–1–1	10–5–1	1	1
1–2–1	4–2–1	9–1–2	10–5–2	3	2
1–3–1	4–3–1	9–2–1	10–6–1	5	3
1–4–1	4–4–1	9–2–2	10–6–2	7	4
1–5–1	4–5–1	9–3–1	10–7–1	9	5
1–6–1	4–6–1	9–3–2	10–7–2	11	6
1–7–1	4–7–1	9–4–1	10–8–1	13	7
1–8–1	4–8–1	9–4–2	10–8–2	15	8
2–1–1	5–1–1	9–5–1	11–1–1	17	9
2–2–1	5–2–1	9–5–2	11–1–2	19	10
2–3–1	5–3–1	9–6–1	11–2–1	21	11
2–4–1	5–4–1	9–6–2	11–2–2	23	12
2–5–1	5–5–1	9–7–1	11–3–1	2	13
2–6–1	5–6–1	9–7–2	11–3–2	4	14
2–7–1	5–7–1	9–8–1	11–4–1	6	15
2–8–1	5–8–1	9–8–2	11–4–2	8	16
3–1–1	6–1–1	10–1–1	11–5–1	10	17
3–2–1	6–2–1	10–1–2	11–5–2	12	18
3–3–1	6–3–1	10–2–1	11–6–1	14	19
3–4–1	6–4–1	10–2–2	11–6–2	16	20
3–5–1	6–5–1	10–3–1	11–7–1	18	21
3–6–1	6–6–1	10–3–2	11–7–2	20	22
3–7–1	6–7–1	10–4–1	11–8–1	22	23
3–8–1	6–8–1	10–4–2	11–8–2	24	24

1 on all Ports

In the Telephony tab screen, you can select this configuration from the *Derived Lines/Loop* drop-down list box as **1 on all Ports**. Selecting that option places one derived line on every port on every QV8 card.

The following table lists the DS0 derived line mapping for both TR-008 Mode 1 and DDI telephony in the format card slot number–circuit number–derived line number.

DS1-1	DS1-2	DS1-3	DS1-4	DS0 channels for TR-008 Mode 1	DS0 channels for DDI
1–1–1	4–1–1	9–1–1	12–1–1	1	1
1–2–1	4–2–1	9–2–1	12–2–1	3	2
1–3–1	4–3–1	9–3–1	12–3–1	5	3
1–4–1	4–4–1	9–4–1	12–4–1	7	4
1–5–1	4–5–1	9–5–1	12–5–1	9	5
1–6–1	4–6–1	9–6–1	12–6–1	11	6
1–7–1	4–7–1	9–7–1	12–7–1	13	7
1–8–1	4–8–1	9–8–1	12–8–1	15	8
2–1–1	5–1–1	10–1–1	13–1–1	17	9
2–2–1	5–2–1	10–2–1	13–2–1	19	10
2–3–1	5–3–1	10–3–1	13–3–1	21	11
2–4–1	5–4–1	10–4–1	13–4–1	23	12
2–5–1	5–5–1	10–5–1	13–5–1	2	13
2–6–1	5–6–1	10–6–1	13–6–1	4	14
2–7–1	5–7–1	10–7–1	13–7–1	6	15
2–8–1	5–8–1	10–8–1	13–8–1	8	16
3–1–1	6–1–1	11–1–1	14–1–1	10	17
3–2–1	6–2–1	11–2–1	14–2–1	12	18
3–3–1	6–3–1	11–3–1	14–3–1	14	19
3–4–1	6–4–1	11–4–1	14–4–1	16	20
3–5–1	6–5–1	11–5–1	14–5–1	18	21
3–6–1	6–6–1	11–6–1	14–6–1	20	22
3–7–1	6–7–1	11–7–1	14–7–1	22	23
3–8–1	6–8–1	11–8–1	14–8–1	24	24

□

10 Managing subscriber lines

Overview

Introduction

This chapter describes how to enable or disable support for data traffic on subscriber lines supported by the AG Communication Systems *SuperLine*™ Access System, using the Adapters tab screen. Adapter is the term the *SuperLine* Element Manager (*SuperLine* EM) and Multi-Element Manager (Multi-EM) use for the *SuperLine* Integrated Access Device (IAD).

This chapter also explains the information the Adapters tab screen shows you about subscriber lines.

In this chapter

This chapter covers the following topics:

□

Configuring subscriber lines

Adapters tab screen

Click the **Adapters** tab to display the Adapters tab screen. On this screen, you can:

- Enable or disable support for data transmission on subscriber lines the *SuperLine* Access System supports. You can enable or disable data support on multiple lines with one operation.
- Set the up/down data ratio. This ratio specifies the percentage of the data bandwidth that should be used to send data upstream, with the remaining bandwidth used for downstream data.

  Important: When no derived lines are active, the data rate is set dynamically on a demand basis, up to the demand rate. When at least one derived line is active, the data ratio setting for the circuit is used.

  Example: Setting the ratio to 20/80 (the recommended setting) causes 20 percent of the data bandwidth to be used to send data up from the adapter, while the other 80 percent of the bandwidth is used to send data down to the adapter from the *SuperLine* Access Shelf.
- View information about subscriber lines and adapters associated with every line card installed on the *SuperLine* Access Shelf associated with the current *SuperLine* EM or Multi-EM session.

Selecting all *SuperLine* IADs for update

The pop-up Select All button on the Adapters tab screen enables you to provision data support or the up/down data ratio for all *SuperLine* IADs in one operation. To select all *SuperLine* IADs for update, follow these steps:

1. Right-click anywhere in the list of *SuperLine* IADs.

   Result: The Select All button appears.
2. Click **Select All**.

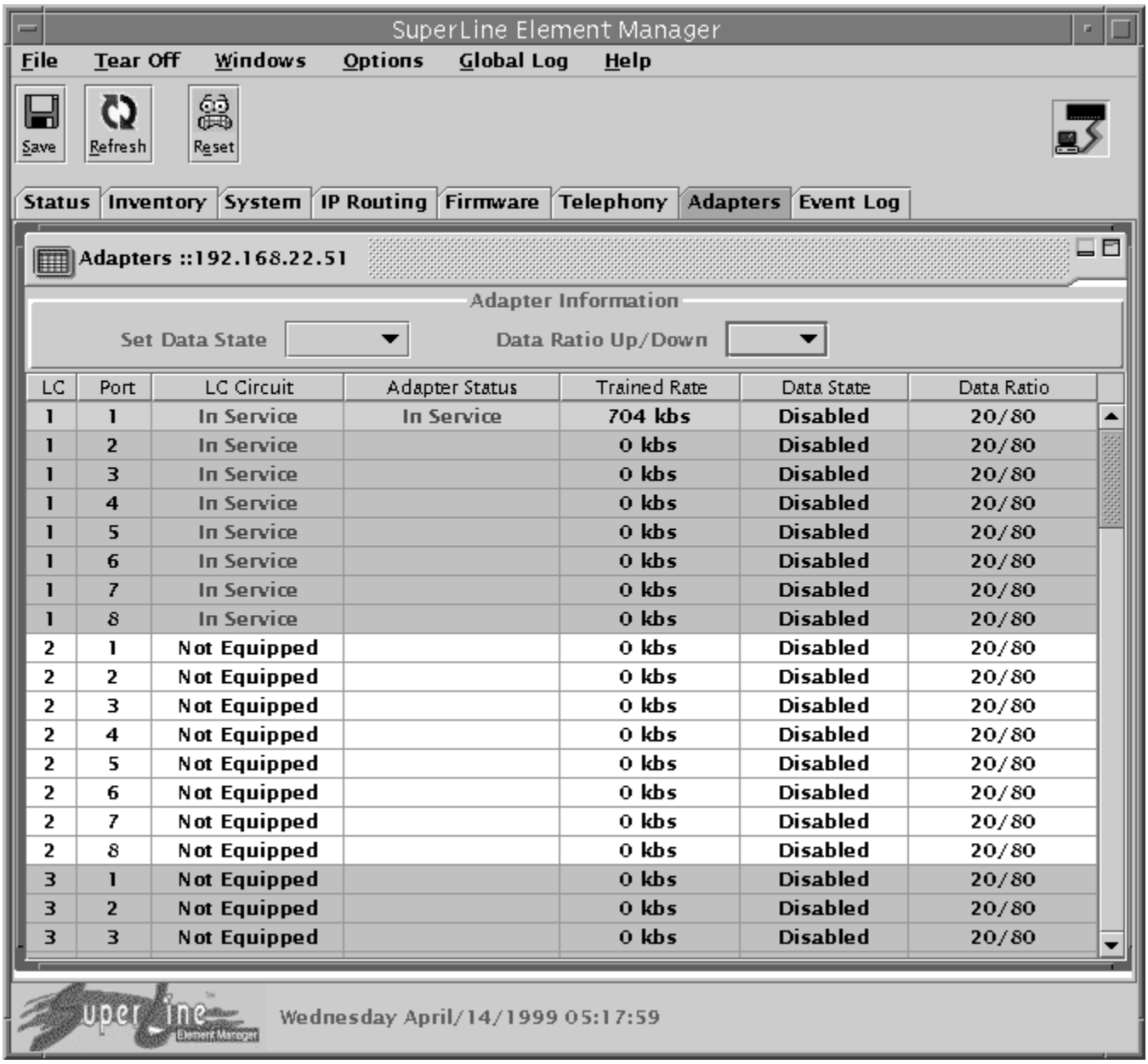
   Result: Entries for all *SuperLine* IADs are highlighted.

END OF STEPS

Adapters tab screen example

An example of the Adapters tab screen follows.

On this screen, the numbers 1 through 12 in the LC (line card) column refer to line card numbers, not the numbers of slots on the *SuperLine* Access Shelf. To learn how slots are mapped to circuits and derived lines, refer to the tables in the topic **DS0 channel mapping for telephony configurations** on page 9–8.



LC	Port	LC Circuit	Adapter Status	Trained Rate	Data State	Data Ratio
1	1	In Service	In Service	704 kbs	Disabled	20/80
1	2	In Service		0 kbs	Disabled	20/80
1	3	In Service		0 kbs	Disabled	20/80
1	4	In Service		0 kbs	Disabled	20/80
1	5	In Service		0 kbs	Disabled	20/80
1	6	In Service		0 kbs	Disabled	20/80
1	7	In Service		0 kbs	Disabled	20/80
1	8	In Service		0 kbs	Disabled	20/80
2	1	Not Equipped		0 kbs	Disabled	20/80
2	2	Not Equipped		0 kbs	Disabled	20/80
2	3	Not Equipped		0 kbs	Disabled	20/80
2	4	Not Equipped		0 kbs	Disabled	20/80
2	5	Not Equipped		0 kbs	Disabled	20/80
2	6	Not Equipped		0 kbs	Disabled	20/80
2	7	Not Equipped		0 kbs	Disabled	20/80
2	8	Not Equipped		0 kbs	Disabled	20/80
3	1	Not Equipped		0 kbs	Disabled	20/80
3	2	Not Equipped		0 kbs	Disabled	20/80
3	3	Not Equipped		0 kbs	Disabled	20/80

Enabling or disabling data support

To enable or disable data support on any subscriber line, follow these steps:

1. In the adapter information list, click on the line or lines on which you want to enable or disable data support. You can select multiple rows that are next to each other by holding down the left mouse button while moving the mouse pointer. You can also select multiple non-contiguous rows by holding down the **Ctrl** key on your PC keyboard while clicking on the rows with the mouse.

   Result: *SuperLine* EM or Multi-EM highlights the selected lines.

2. Place the mouse pointer on the selection button in the *Data State* field and hold down the left mouse button.

   Result: The options `Enabled` and `Disabled` appear.

3. Place the mouse pointer on the option you want and release the mouse button.

   Result: *SuperLine* EM or Multi-EM enables or disables data support for the selected lines.

END OF STEPS

Setting the data ratio

To set the up/down ratio for data, follow these steps:

CAUTION

Setting the data ratio to 10/90 or 90/10 is neither recommended nor supported, because these settings can impair data service.

1. In the adapter information list, click the line or lines for which you want to set the data speed. You can select multiple rows as described above.

   Result: *SuperLine* EM or Multi-EM highlights the selected lines.

2. Place the cursor on the drop-down list box labeled *Data Ratio Up/Down*, and hold down the left mouse button.

   Result: A list of ratios appears:

   – 10/90
   – 20/80
   – 30/70
   – 40/60
   – 50/50
   – 60/40
   – 70/30
   – 80/20
   – 90/10

3. Release the mouse button.

   Result: The ratio for the selected port is reset to the value you chose.

END OF STEPS

□

Viewing subscriber line information

Adapter information list

The lower part of the Adapters tab screen displays a scrollable list of attributes for the subscriber lines connected to the line cards on the *SuperLine* Access Shelf.

The following list describes the information fields shown for each subscriber line:

- *LC* – Number of the line card
- *Port* – Number of the physical port on the line card
- *LC Circuit* – Status of the line card port
- *Adapter* – Status of the *SuperLine* IAD port connected to the line card
- *Trained Rate* – Data transmission rate at which the *SuperLine* Access Shelf is connected to the *SuperLine* IAD
- *Data State* – One of two values (`Enabled` or `Disabled`), depending on whether the port has been provisioned to support data
- *Data Ratio* – The up/down ratio for data; that is, how much data bandwidth is reserved for upstream data transmission and how much bandwidth is reserved for downstream transmission

The *LC Circuit* and *Adapter* fields are displayed in green if the status is `In Service`. If the status for either item is `Failed`, *SuperLine* EM or Multi-EM displays all information for the line in red.

□

11 Using *SuperLine* EM event logs

Overview

Introduction

This chapter describes how AG Communication Systems *SuperLine*™ Element Manager (*SuperLine* EM) logs information about events on the *SuperLine* Access System. This chapter also explains the log contents and tells how to change the way log entries are displayed.

In this chapter

This chapter covers the following topics:

□

Using a *SuperLine* Access Shelf's event log

Event logging by *SuperLine* EM

Stand-alone *SuperLine* EM and Multi-Element Manager (Multi-EM) use different methods to record alarms and other events on *SuperLine* Access Systems:

- *SuperLine* EM records the information in its own event logs.
- Multi-EM sends event records to the event log of Hewlett-Packard *OpenView*® Network Node Manager (NNM). For more information about logging of *SuperLine* Access System events by Multi-EM, refer to the topic **Running Multi-EM** on page 12–5.

This topic discusses how *SuperLine* EM logs events on a *SuperLine* Access Shelf with which it has an open session.

Important: Items listed in the *SuperLine* EM event logs are not persistent. That is, when you close a session with a *SuperLine* Access Shelf, *SuperLine* EM deletes the entries in that Shelf's event log. However, the contents of *SuperLine* EM's Global Event Log screen are not affected. All event logs are empty each time you restart *SuperLine* EM.

Event Log tab screen

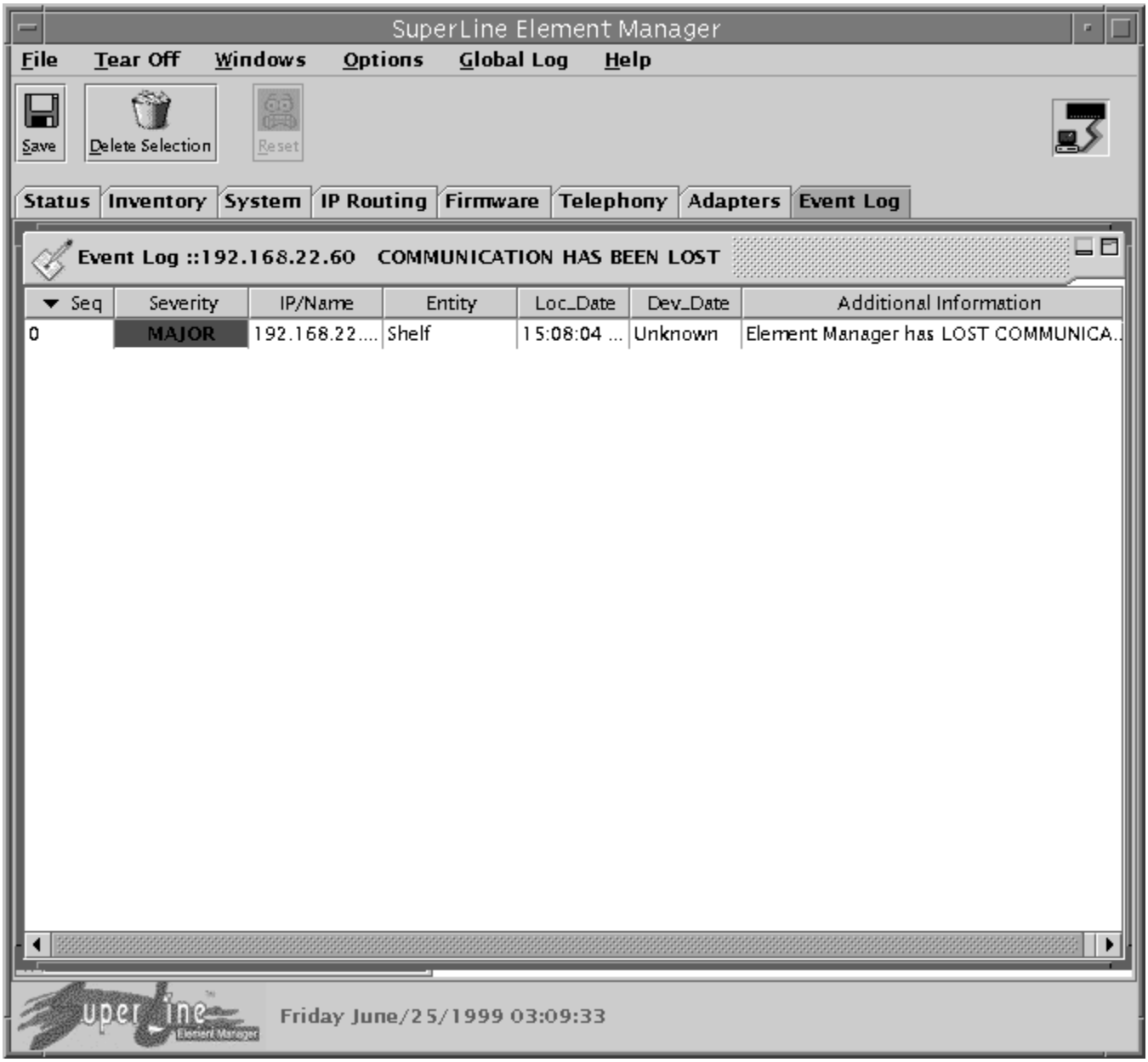
Click the **Event Log** tab to display the event log for the *SuperLine* Access Shelf with which *SuperLine* EM currently has a session. Both the shelf's event log and *SuperLine* EM's global event log display the same types of information about system events, but the two logs differ as follows:

- The shelf-specific Event Log screens display ONLY information about events involving a shelf for which *SuperLine* EM currently has a session. *SuperLine* EM displays a shelf event log when you click the Event Log tab.
- The Global Event Log screen displays information about events involving ALL shelves in the *SuperLine* Access System that have their trap Internet Protocol (IP) address set to the IP address of the system running *SuperLine* EM. The application displays the Global Event Log screen only if you request it. Refer to the topic **Using the global event log** on page 11–7 for details.

Saving log contents to a file

To save the contents of the event log to a text file at any time, click the **Save** toolbar button.

Event Log screen example An example of an Event Log tab screen follows.



Log contents

The following list describes the fields displayed in both event logs:

- *Seq* – A unique number for each log entry, indicating the sequence in which *SuperLine* EM was notified of each event
- *Severity* – The word MAJOR, MINOR, or NORMAL, depending on the severity of the alarm

  Important: If the event is a Major alarm, the *Severity* field appears red. If the event is a Minor alarm, the *Severity* field appears yellow.
- *IP/Name* – The IP address or DNS name of the device involved in the event.
- *Entity* – The type of device involved in the event (for example, shelf, FETH card, etc.)
- *Loc_Date* – Local date and time (per the machine running *SuperLine* EM) when the event occurred, shown in HH:MM:SS (hours:minutes:seconds) format.
- *Dev_Date* – Date and time on the *SuperLine* Access System when the event occurred, shown in HH:MM:SS (hours:minutes:seconds) format.
- *Additional Information* – A text string describing the event.

The list of event records is scrollable. If the data in any field ends with three periods (...), it contains more information than the screen is showing. To see the complete field contents, change the cell width as described in the topic **Common screen features**.

Rearranging event log columns

Like other list display areas on *SuperLine* EM screens, the event log allows you to rearrange the order of log entry columns by clicking a column name and dragging it to a new position. In addition, you can sort log entries based on the contents of any data column, in either ascending or descending order.

To change the sort order for log entries, follow these steps:

1. Click the name of the data column you want to use as the sort criterion.

   Result: The small black triangle beside the *Seq* column name moves to the field you selected.
2. Do one of the following:
   - To sort log entries in ascending order, click the black triangle until it points upward.
   - To sort log entries in descending order, click the triangle until it points downward.

END OF STEPS

SuperLine EM re-sorts log entries in ascending or descending order, based on the contents of the column name you selected.

Saving log contents

When you exit from *SuperLine* EM, data in either of the event logs is lost unless you save it to a file.

Important: Save the contents of the global event log and event logs for individual *SuperLine* Access Shelves to separate files.

To save event log contents, follow these steps:

1. Click the **Save** toolbar button on either event log screen.

   Result: The Event Log Information Save dialog appears.

2. Do one of the following:
   - To save the file containing event log information to the path or folder shown in the *Enter path or folder name* field, go on to step 3.
   - To save the log contents file to a different location, type the name of a new path or folder in the *Enter path or folder name* field and click **Update**.

     Result: The path or folder name changes to what you entered.

3. In the *Enter file name* field, type the name of the file to store the event log entries.
4. Click **OK**.

   Result: *SuperLine* EM saves the event log contents to the named file.

END OF STEPS

Deleting one or more event records

To delete an event record from the log, follow these steps:

1. Click on the record to delete. You can select multiple records that are next to each other by holding down the left mouse button while moving the mouse pointer. You can also select multiple non-contiguous rows by holding down the **Ctrl** key while clicking on the rows with the mouse.

   Result: *SuperLine* EM highlights the selected record.

2. Click the **Delete Selection** toolbar button.

   Result: A pop-up dialog asks you to confirm deletion of this record.

3. Click **OK** to delete the record, or click **Cancel**.

   Result: *SuperLine* EM takes the specified action.

END OF STEPS

Deleting all event records

To delete *ALL* current event log entries, follow these steps:

1. Place the mouse pointer over the first event record.
2. Press and hold down the right mouse button.

   Result: The options `Delete Selection` and `Delete All` appear.
3. Select **Delete All**.

   Result: All event records in the event log are deleted.

END OF STEPS

□

Using the global event log

Global Event Log screen

Important: A *SuperLine* Access Shelf that does not have a current session with *SuperLine* EM can place events in the global event log only if that shelf has its trap IP address set to that of the device that is running *SuperLine* EM. Refer to the topic **Viewing trap/community information** on page 6–4 for details.

SuperLine EM's Global Event Log screen displays information about all *SuperLine* Access Shelves in the network.

SuperLine EM places information about system events in both the shelf-specific event log and the global event log. The Global Event Log screen enables you to view events on all *SuperLine* Access Shelves in the network, even shelves for which *SuperLine* EM does not have aan open session.

Enabling or disabling the global event log

By default, *SuperLine* EM does *NOT* display the Global Event Log screen, so you must enable it manually. To view the Global Event Log, select **Global Log→Display Log** on any tab screen. To disable the Global Event Log, either select **Global Log→Hide Log** on any tab screen, or click the **Close** button in the Global Event Log screen.

Log appearance and contents

The Global Event Log screen looks and behaves exactly like the Event Log screen that appears when you click the Event Log tab. That is, the Global Event Log screen contains the same information fields, displays information in the same way, and allows you to delete selected event records.

□

12 Using Multi-Element Manager

Overview

Introduction

Multi-Element Manager (Multi-EM) is a version of the AG Communication Systems *SuperLine*™ Element Manager (*SuperLine* EM) that runs under Hewlett-Packard *OpenView*® Network Node Manager (NNM). Multi-EM enables *OpenView* NNM to manage *SuperLine* Access Shelves as nodes on a data network.

Although both Multi-EM and the stand-alone *SuperLine* EM use the most of the same GUI screens, Multi-EM operates differently from *SuperLine* EM. This chapter describes the differences between *SuperLine* EM and Multi-EM and explains how *OpenView* NNM and Multi-EM interact to monitor and detect problems on *SuperLine* Access Shelves.

In this chapter

This chapter covers the following topics:

□

How Multi-EM and *SuperLine* EM differ

What Multi-EM does

Many Network Operations Centers (NOCs) and other organizations that operate large communication networks prefer to automate network management, using an application such as the *OpenView* NNM application. For such organizations, Lucent Technologies and AG Communication Systems offer Multi-Element Manager (Multi-EM), a version of *SuperLine* EM that runs as an integrated add-on to *OpenView* NNM.

Multi-EM enables *OpenView* NNM to monitor and manage *SuperLine* Access Shelves as network nodes. *OpenView* NNM uses Multi-EM as a Simple Network Management Protocol (SNMP) agent for collecting status and alarm information about *SuperLine* Access Shelves and their equipment.

Uses of *SuperLine* EM

Multi-EM is designed for different types of users and tasks than the stand-alone *SuperLine* EM. *SuperLine* EM is intended for use by:

- Small Independent Telephone Operating Companies (ITOCs) and other *SuperLine* Access System customers whose communication networks are small, or who want to minimize costs of system management.
- The craftperson who configures *SuperLine* Access Shelves or maintains shelf equipment (replaces circuit packs, etc.).
- Craft or other personnel at the CO who do local network administration.
- The person responsible for provisioning subscriber lines, the *SuperLine* Access Shelf, or both.

Uses of Multi-EM

Multi-EM is intended for use by:

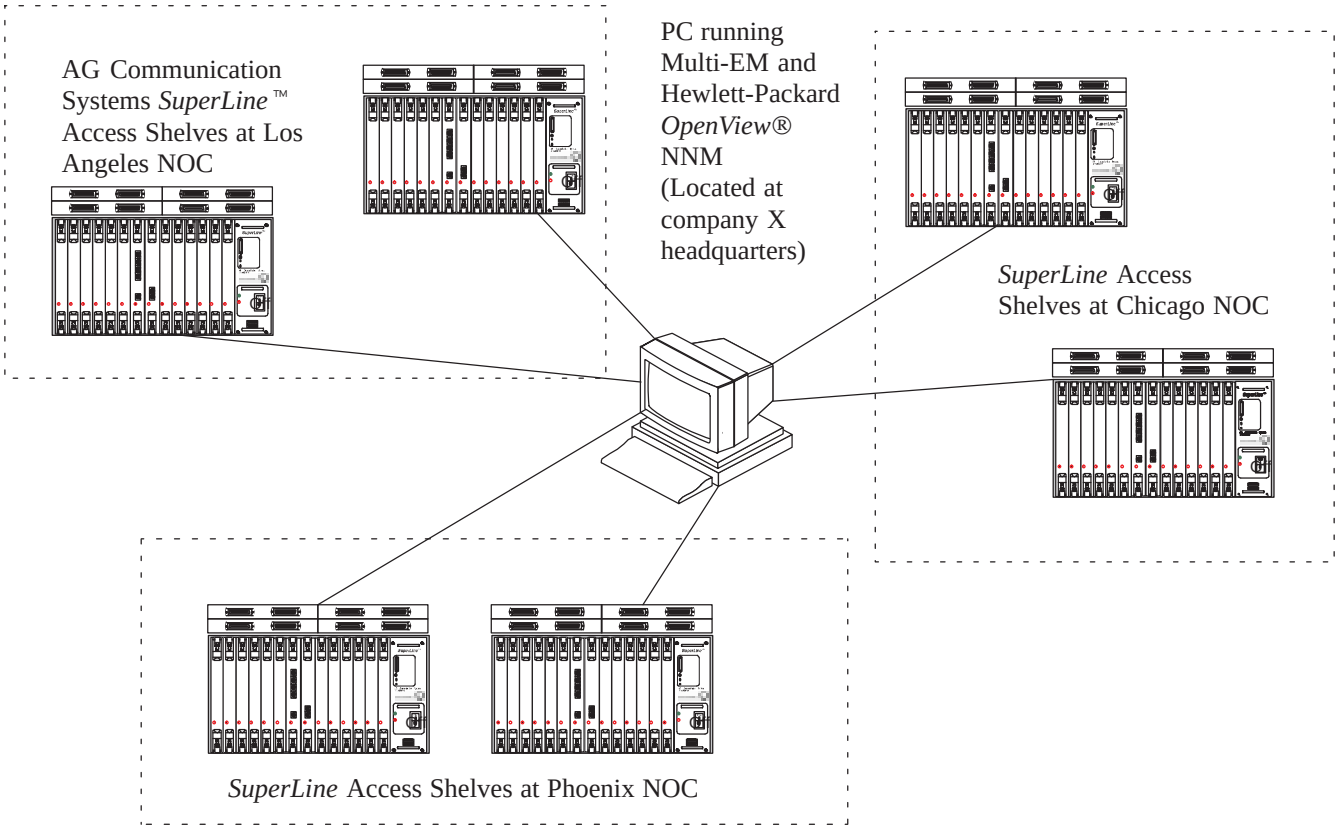
- Administrators of large communication networks that include multiple *SuperLine* Access Shelves and other devices. These devices may all be installed at one local facility, or they may be scattered among multiple remote locations. Multi-EM allows network administrators at this level to see what is happening locally at *SuperLine* Access Shelves.

  When a problem occurs on a *SuperLine* Access Shelf at a remote site, the administrator can notify craftpersons at that site that they need to take corrective actions.

Example network diagram

The following diagram shows an example communications network for company X, which has headquarters in Denver and remote NOCs in Chicago, Los Angeles, and Phoenix. *SuperLine* Access Shelves are installed at the three remote NOCs. In Denver, a PC equipped with *OpenView* NNM and Multi-EM is the device used to monitor the remote sites' equipment.

This diagram illustrates one of the two ways Multi-EM can be used to manage networked *SuperLine* Access Shelves. If the PC with *OpenView* NNM and Multi-EM were located at one of the NOCs (for example, in Phoenix), that PC could manage only the shelves and other network elements installed locally.



Packaging differences

Multi-EM is sold separately from other *SuperLine* Access System components.

Multi-EM runs under both Microsoft *Windows NT*® and the *Sun*™ Microsystems *Solaris*™ 2.6 operating system. Lucent Technologies and AG Communication Systems provide both versions of Multi-EM on a single CD-ROM. Both the *Windows NT* and *Solaris* versions of *SuperLine* EM are offered on a separate CD provided free with the *SuperLine* Access Shelf.

Requirement differences

Multi-EM users must meet the same software and hardware requirements as users of *SuperLine* EM, but must also meet *OpenView* NNM's software and hardware requirements. For detailed descriptions of these requirements, refer to the topic **Installation requirements** on page 2–2 and to Hewlett-Packard's documentation for *OpenView* NNM.

OpenView-integrated vs. stand-alone operation

Multi-EM operation depends on *OpenView* NNM, and vice versa. For example, you receive a warning message if you try to install Multi-EM on a PC or a *Solaris* server where *OpenView* NNM is not already installed.

SuperLine EM, in contrast, operates as a stand-alone application that runs directly under the operating system where you install it.

GUI differences from *SuperLine* EM

Multi-EM and SuperLine EM display exactly the same graphical user interface, except for the Event Log tab screen and the Global Event Log screen. Multi-EM does not display these screens because alarms and events on *SuperLine* Access Shelves are recorded in *OpenView* NNM's event log.

The text of records for these events in *OpenView* NNM's event log is identical to the text of *SuperLine* EM event log entries. However, the colors used to flag Major and Minor events are slightly different in the *OpenView* NNM Event Browser window than they are on *SuperLine* EM event logs. For details, refer to the *OpenView* NNM documentation.

Multi-EM/*SuperLine* EM icons

The installation program for the *Windows NT* version of *SuperLine* EM automatically generates a start-up icon for the application on the PC desktop. Installing the *Windows NT* version of Multi-EM does not produce a desktop icon. Instead, you must activate Multi-EM from within *OpenView* NNM.

□

Running Multi-EM

How Multi-EM and *OpenView* interact

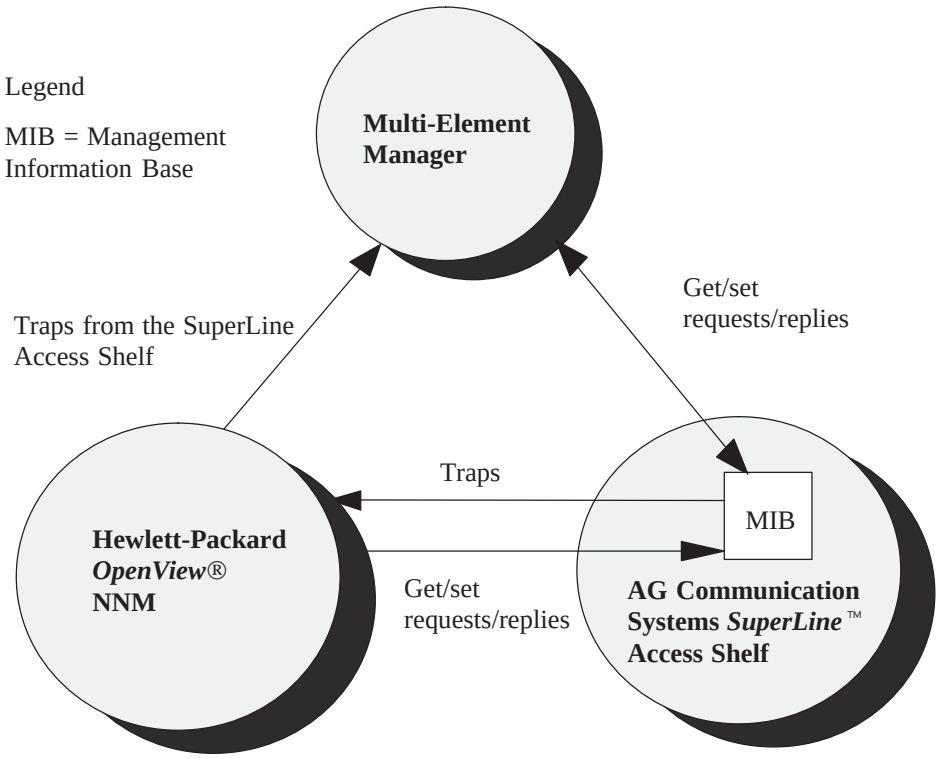
A managed network consists of a network manager such as *OpenView* NNM and an agent that provides the interface to a managed object and is responsible for doing network management tasks requested by the manager. Multi-EM acts as the agent for *SuperLine* Access Shelves in an *OpenView*-managed network.

OpenView NNM and Multi-EM communicate using SNMP, as follows:

- OpenView NNM retrieves management information for *SuperLine* Access Shelves from Multi-EM. *OpenView* NNM can also modify provisioning or management information for *SuperLine* Access Shelves via Multi-EM.
- When an alarm, a reset, or another event occurs at a *SuperLine* Access Shelf, Multi-EM notifies *OpenView* NNM without being requested to do so. This operation is called a trap or notification; it alerts *OpenView* NNM to changes at the shelf.

Communication diagram

The following diagram shows a high-level view of communication between Multi-EM and *OpenView* NNM.



Symbols, maps, and submaps

To understand how to access Multi-EM from *OpenView* NNM, you need to know a little about how *OpenView* NNM displays network information. Although the documentation for *OpenView* NNM explains how to navigate its displays of network information, the following definitions may help you:

- **Symbol** – *OpenView* NNM's graphical representation of a resource in a networked system. *OpenView's* symbol for a *SuperLine* Access Shelf is a box containing the letters SL. Other symbols might depict servers, routers, bridges—or any other resources present on the network.
- **Map** – A set of related objects, symbols, and submaps that shows a graphical and hierarchical view of your network and its systems. You can view only one map at a time during an *OpenView* NNM session, but you cannot view the map directly; instead, you view submaps that comprise the map.
- **Submap** – A closer, *zoom-in* view of a group of network elements. Typically, submaps are organized in a hierarchy that allows you to drill down to an increasing level of detail. A submap may show a high-level image of an entire network, or it may provide a detailed view of a small network segment.

Finding *SuperLine* Access Shelves on the network

The first step in accessing Multi-EM is to find where symbols for *SuperLine* Access Shelves are located in *OpenView* NNM's maps of your network.

When you open a map, *OpenView* NNM displays a single submap window. (You can open more than one submap window to view multiple submaps at the same time.)

Depending on how your *OpenView* NNM administrator has set up your maps and submaps, you may have to open several submap windows or zoom in on a portion of a map or submap to find the symbol for a *SuperLine* Access Shelf. The color of the symbol indicates the shelf's operating status:

- A green symbol means that the *SuperLine* Access Shelf is operating.
- A red symbol indicates that the shelf is off-line.

Activating *OpenView* NNM

Because Multi-EM operation is integrated with *OpenView* NNM operation, you can start Multi-EM only after *OpenView* NNM has been activated.

For information about starting and operating *OpenView* NNM, refer to your *OpenView* NNM documentation.

When *OpenView* NNM starts up, it displays two windows: a network submap window and an Event Categories window that lists types of network events that have been logged. However, note that *OpenView* NNM may require anywhere from a few seconds to a minute or so to update its event log.

An option on the Map menu of the submap window enables you to select any submap or network segment as the home location, including the submap or segment containing *SuperLine* Access Shelves. By doing so, you can have OpenView NNM automatically upon start-up display a submap of a network segment where *SuperLine* Access Shelves reside.

Event logging by *OpenView* NNM

Because entries for events on *SuperLine* Access Systems and Access Shelves go into the *OpenView* NNM log, network administrators can monitor operations on *SuperLine* Access Shelves that *OpenView* NNM manages by monitoring messages in the NNM event log.

The text of NNM event log messages pertaining to *SuperLine* Access System events is identical to the text of messages in the *SuperLine* EM event logs.

Typical Multi-EM usage procedure

A network administrator's interaction with Multi-EM typically proceeds as follows:

Important: *OpenView* NNM receives information about all events on all *SuperLine* Access Shelves that have been identified to it and that have their trap IP address set to the IP address of the system running *OpenView* NNM.

1. Click the button for All Events in *OpenView* NNM's Event Categories window.

   Result: *OpenView* NNM displays its Event Browser window.
2. Look in the Event Browser for records reporting events on *SuperLine* Access Shelves. (These entries are worded like entries in the *SuperLine* EM event logs.)
3. When you find an event you wish to research, double click the event entry.

   On the submap window, the symbol for the *SuperLine* Access Shelf where the event occurred is reverse highlighted. *OpenView* NNM also highlights symbols for other network devices that generated an event record when you click the message reporting the event.
4. Right-click the highlighted *SuperLine* Access Shelf symbol.

   Result: A pop-up list of options appears.
5. Select the **SuperLine EM** option.

   Result: Multi-EM starts up and displays the SuperLine Version screen. After a few seconds, the application automatically discovers the selected *SuperLine* Access Shelf and open a session with it. You can then use the Multi-EM tab screens to see what is happening at the device and take appropriate actions.

END OF STEPS

Obtaining additional event information

OpenView NNM displays more information about events on *SuperLine* Access Shelves than what you see in the Event Browser window. To view this information, follow these steps:

1. In the Event Browser window, select an event.
2. Select **View→Describe Event**.

   Result: The Event Description window appears. This window contains detailed, scrollable information about the event.
3. When you have finished reviewing the information, click **OK** to close the Event Description window.

END OF STEPS

Activating Multi-EM: alternate method

An alternate way to activate Multi-EM manually uses the Configuration menu in the *OpenView* NNM submap window. To use this method, follow these steps:

1. Click a symbol for a *SuperLine* Access Shelf.

   Result: The symbol is reverse highlighted.
2. Select **Configuration→SuperLine EM.**

   Result: Multi-EM starts up, displays the SuperLine Version screen, then opens a session with the selected *SuperLine* Access Shelf.

END OF STEPS

Sessions with multiple SuperLine Access Shelves

You can open concurrent sessions with multiple *SuperLine* Access Shelves. To do so, follow these steps:

CAUTION

- ***Using one instance of Multi-EM to open all sessions is recommended to avoid running out of memory on the host PC or workstation. If you run more than one Multi-EM instance at a time, you may receive a pop-up message reporting an SNMP bind error at the local trap port.***
- ***Only the Multi-EM instance that was started first can receive update SNMP traps.***
- ***The device hosting Multi-EM may run out of Random Access Memory (RAM) if too many sessions at a time are open with SuperLine Access Shelves. Opening as few sessions as possible is recommended.***

1. Start Multi-EM.
2. When you have opened a session with a *SuperLine* Access shelf, select the **Open Session** option from Multi-EM's File menu.

   Result: The SuperLine Open Session screen appears.
3. Follow the steps described in the **Starting *SuperLine* EM** topic on page 2–13 and its subtopic Opening multiple shelf sessions.

END OF STEPS

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Glossary

10Base-T

An Ethernet Local Area Network (LAN) that operates on shielded twisted-pair (STP) or Category 5 UTP cable. Runs at 10 Mbps.

100Base-T

An Ethernet Local Area Network (LAN) that operates on shielded twisted-pair (STP) or Category 5 UTP cable. Runs at 100 Mbps.

A

authentication

A Simple Network Management Protocol (SNMP) process that determines the validity of an SNMP message. For instance, SNMP configuration messages sent to a device in an AG Communication Systems *SuperLine*™ Access System must contain a password that indicates they originated from a source authorized to issue such messages.

C

CD-ROM

Compact Disc-Read Only Memory

Circuit pack

A printed circuit board with microprocessors, transistors, and other electronics components that slides into the *SuperLine* Access Shelf. Circuit packs include the POWR card, the Quadrature Amplitude Modulation Voice 8 (QV8) line card, the Fast Ethernet (FETH), and the Voice Digital Signal 1 (VDS1) cards.

CLEI

Common-Language Equipment Identification. A number assigned to an individual *SuperLine* Access Shelf that uniquely identifies it.

CO

Central Office

Commit

A process that saves software stored in the *SuperLine* Access Shelf's temporary memory to the device's permanent memory.

CSC

Customer Support Center at AG Communication Systems.

D

Data ratio

The percentage of bandwidth on a derived voice line that carries upstream data traffic, vs. the percentage of bandwidth that carries downstream data transmissions.

DDI

Direct Digital Interface

Derived voice line

A standard 64 kilobits-per-second (Kbps) μ-law voice offering, supporting normal telephony services such as Caller ID, special ringing, message waiting, V.34 and V.90 modems, and so on. From the subscriber's perspective, a derived voice looks and behaves like standard telephony service.

DNS

Domain Name System

DS1

Digital Signal, Level 1. DS1 is 1.544 Mbps.

E

Element Manager (EM)

A software application for personal computers that enables telephone company personnel to configure, administer, and monitor *SuperLine* Access Systems.

EOC

Embedded Operations Channel

Ethernet

A network topology that supports high-speed data communication among systems. A widely used standard for LANs.

Event log

A record of alarms and other events on the *SuperLine* Access System. *SuperLine* Element Manager records events in an individual event log for each *SuperLine* Access Shelf with which it has opened as session, and records events on all shelves in a global event log. Multi-Element Manager uses the event log of Hewlett-Packard *OpenView*® Network Node Manager (NNM) to record such events.

F

FETH

Fast Ethernet card for the *SuperLine* Access Shelf.

Free run

A condition in which the *SuperLine* Access Shelf's first two DS1s are no longer synchronized with the network clock.

G

GUI

Graphical User Interface

H

HTML

Hypertext Markup Language

I

In-band network management

Management method for data networks, in which the same channel carries both customer data and management data. In-band management makes the network insecure, because it allows external users access to network management information.

IP

Internet Protocol

IP route

Defined path between two network devices that allows the devices to exchange data packets.

ITOC

Independent Telephone Operating Company

K

Kbps

Kilobits per second (1,000 bits per second).

L

LAN

Local Area Network

Line build out

Distance between a *SuperLine* Access Shelf and the local digital switch.

M

MAC

Media Access Control

Map

A set of related objects, symbols, and submaps used by *OpenView* Network Node Manager to show a graphical and hierarchical view of a network and its systems.

Mask

See *Subnet mask*.

MB

Megabytes

Mbps

Megabits per second (1,000,000 bits per second).

MHz

Megahertz

MIB

Management Information Base

Multi-Element Manager (Multi-EM)

Software application from AG Communication Systems that provides a graphical user interface for monitoring and administering *SuperLine* Access Shelves and their equipment. Multi-EM is a version of *SuperLine* Element Manager that runs intregated with *OpenView* Network Node Manager.

N

Network element

A managed object that represents telecommunications equipment within the telecommunications network and performs network element functions; that is, provide support, service, or both to the subscriber.

NOC

Network Operations Center

O

Out-of-band network management

Management method for data networks, in which the channel carrying customer data and management data are physically separate. In-band management makes the network secure, because it prevents external users from accessing network management information.

OOT

Out of Tolerance

OpenView Network Node Manager (NNM)

Network management software application from Hewlett-Packard Company.

P **PC**

Personal Computer

Permanent memory

Non-volatile memory on the *SuperLine* Access Shelf that can be erased and reprogrammed. Permanent memory does not need continuous power to retain data.

Q **QV8**

Quadrature Amplitude Modulation Voice 8 card for the *SuperLine* Access Shelf. Supports up to eight baseband telephone lines and an additional eight derived lines.

R **RAM**

Random Access Memory

RTAC

Lucent Technologies Regional Technical Assistance Center

S **SNMP**

Simple Network Management Protocol

SPFM

SuperLine POTS Filter Module

Submap

A close-up view of a group of network elements; used by *OpenView* Network Node Manager.

Subnet mask

A number that is used to identify a subnetwork; allows an IP address to be shared on a LAN.

***SuperLine* Access Shelf**

A module that houses *SuperLine* QV8, VDS1, FETH, and POWR cards and the SPFM assembly.

***SuperLine* Access System**

AG Communication Systems product that enables a single standard copper, twisted-pair customer telephone connection to support multiple lines carrying either voice or data traffic.

***SuperLine* Element Manager (*SuperLine* EM)**

Software application from AG Communication Systems that provides a graphical user interface for monitoring and administering *SuperLine* Access Shelves and their equipment.

SuperLine Integrated Access Device (IAD)

A modem that makes *SuperLine* service possible at the customer premises.

Symbol

OpenView Network Node Manager's graphical representation of a resource in a networked system.

T

TAPI

Telephony Application Programming Interface

Telco

Telephone company

TFTP

Trivial File Transfer Protocol

TMC

Timeslot Management Channel

TR-008 Mode 1

Protocol that defines an interface between a CO switch and a remote terminal to handle all call processing and operational functions. Developed by Telcordia Technologies Inc. (formerly Bellcore).

TR-303

Protocol that defines an interface between a CO switch and a remote terminal to handle all call processing and operational functions. Developed by Telcordia Technologies Inc. (formerly Bellcore).

Trapping

SNMP capability to detect problem or error conditions related to network events and issue alarms.

V

VDS1

Voice Digital Signal 1 card for the *SuperLine* Access Shelf.

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