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Meridian SuperNode

Meridian SL-100

Network Management for SPECTRUM Service Guide

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NORTEL
NORTHERN TELECOM

Meridian SuperNode

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Network Management for SPECTRUM Service Guide

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The SL-100 system is certified by the Canadian Standards Association (CSA) with the Nationally Recognized Testing Laboratory (NRTL).

This equipment is capable of providing users with access to interstate providers of operator services through the use of equal access codes. Modifications by aggregators to alter these capabilities is a violation of the Telephone Operator Consumer Service Improvement Act of 1990 and Part 68 of the FCC Rules.

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About this document

When to use this document

This book provides information about setting up and using the Meridian SL-100 network management system for SPECTRUM. It is intended for personnel involved in maintaining the MSL-100 switch. Previous knowledge of the MSL-100 PBX, the MicroFrame Sentinel 2000 system, and the Cabletron SPECTRUM system is assumed.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *DSN Master Index of Publications*.

This document is written for all DMS-100 Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information *DSN Master Index of Publications*.

References in this document

The following documents are referenced in this document:

- Some procedures in this book may also refer to the *Alarm and Performance Monitoring Procedures*. MSL-100 PBX customers should refer instead to *Alarm Clearing Procedures*.

- *Commercial Systems Log Report Reference Manual, Volume 1-5, 555-4031-8401.*
- *Ethernet Interface Unit on LPP Services Guide, 555-4001-024*
- *General Description*
- *Input/Output Devices Maintenance Guide, 297-1001-590*
- *Meridian SL-100 Cabinetized General Description, 555-4001-103*
- *Meridian SuperNode Commercial Systems Customer Data Schema*
- *Meridian SuperNode Enhanced MAP (EMAP) Workstation Product Guide, 555-4001-012*

Cabletron Systems, Inc. documents:

- Cabletron Systems, *Getting Started with SPECTRUM*
- Cabletron Systems, *SPECTRUM Guide to Integrating Applications*
- Cabletron Systems, *SPECTRUM Installation Guide*
- Cabletron Systems, SPECTRUM on-line help

MicroFrame Systems, Inc. documents:

- MicroFrame Systems, *Getting Started for the Sentinel 2000, Installation Guide*
- MicroFrame Systems, *MicroFrame Installation Guide for the Sentinel 2000*
- MicroFrame Systems, *MicroFrame User Guide for the Sentinel 2000*

What precautionary messages mean

The types of precautionary messages used in Nortel (Northern Telecom) documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

**DANGER****Risk of electrocution**

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

**WARNING****Damage to the backplane connector pins**

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

**CAUTION****Possible loss of service**

Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command. The input prompt (>) is not included when typing the command. For example, the command, **BSY**, is displayed in the text this way:

- 1 Manually busy the system by typing:

>BSY

Type **BSY** only — not the prompt (>).

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.  
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

- 2 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.  
FP 3 Busy CTRL 0: Command passed.
```

Introduction

Understanding the Sentinel 2000 and SPECTRUM systems

The Meridian SL-100 network management system for the SPECTRUM Enterprise Manager (hereinafter referred to as the SPECTRUM system) is a network management system for the MSL-100 switch. It is comprised of third-party software and hardware providing a fully integrated network management system in a graphical user interface (GUI) environment for the MSL-100 switch.

The MSL-100 switch terminal/printer port is connected to a host port on the Sentinel 2000 system to transmit DMS log reports. The Sentinel 2000 system maps these logs to Simple Network Management Protocol (SNMP) messages called traps. These SNMP traps are sent by the Sentinel 2000 SNMP proxy agent to the SPECTRUM system.

The SPECTRUM system provides fault isolation and alarm interpretation capability in a GUI environment. A telnet session to the on-switch MSL-100 maintenance and administration position (MAP) is used to resolve alarms on the MSL-100 switch. Alarms and system status are indicated by changes in icon appearances in the SPECTRUM system GUI. The icon representing the MSL-100 switch is labelled **MSL100** in the SPECTRUM GUI. The network manager selects the alarm-signaling icon and, by navigating through the GUI, determines the location and nature of the alarm. Once the alarm is analyzed, a telnet session to MAP is launched from the icon to perform system management functions on the MSL-100 switch.

This section provides an overview of the Sentinel 2000 system and the SPECTRUM network management system as it relates to the MSL-100 switch. Refer to the appropriate manufacturer's existing documentation for detailed information on each individual system.

Benefits

While the MSL-100 switch has a MAP management system, there are several advantages to using the Sentinel 2000 system and the SPECTRUM system:

- GUI environment to aid in network monitoring and fault isolation as opposed to a text based system

- All alarms for every system level are easily accessible, minimizing the time spent looking for the alarms.
- Switch system management is integrated with other systems in one environment.

Hardware components

The Sentinel 2000 system and the SPECTRUM network management system for MSL-100 switch consists of three major components:

- MSL-100 switch
- Sentinel 2000 system (by MicroFrame, Inc.)
- One or two Windows NT computers running SPECTRUM software: SpectroSERVER and SpectroGRAPH (by Cabletron Systems, Inc.)
 - SpectroSERVER and SpectroGRAPH are the components of the SPECTRUM system.

The Sentinel 2000 system configuration is factory-customized to accommodate an interface between an MSL-100 switch and the SPECTRUM network management system. Figure 1-1 illustrates the logical data flow between the MSL-100 switch, the Sentinel 2000 system, and the SPECTRUM network management systems.

MSL-100 switch module

MSL-100 DMS logs are sent to the Sentinel 2000 system over a 9600 baud modem dial-up or direct connection to the terminal/printer port. Once the logs are processed and events are generated and displayed in the SpectroGRAPH GUI, system management functions using a MAP terminal can be performed. The MAP terminal is accessed from the SPECTRUM system GUI by means of a telnet session to the MSL-100 switch. Telnet access over ethernet to the MSL-100 switch is provided using an ethernet interface unit (EIU) or a single shelf link peripheral processor (SSLPP).

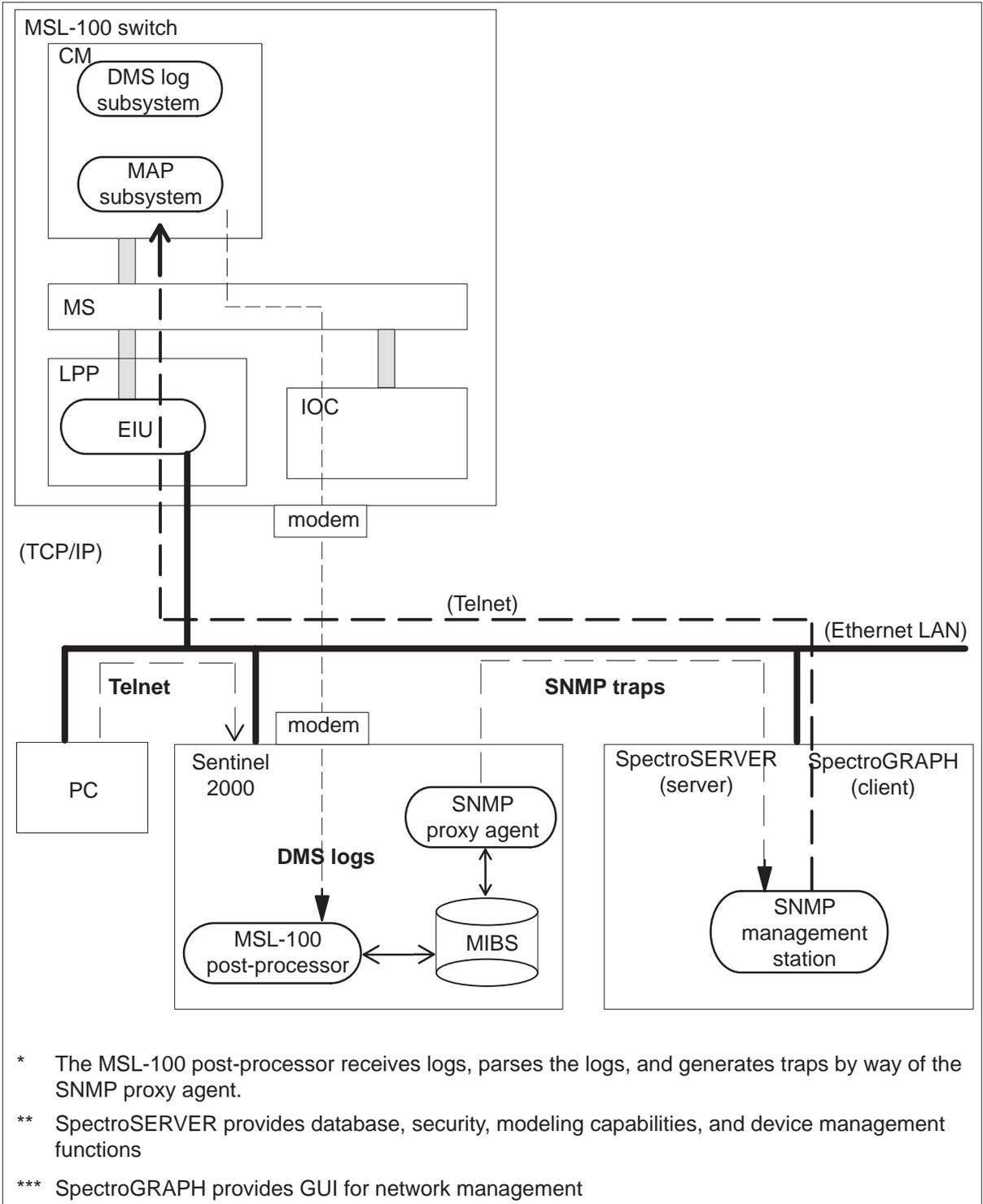
For more information on EIU and LPP, refer to the *Ethernet Interface Unit on LPP Services Guide*. For MAP terminal information, refer to *Meridian SuperNode Enhanced MAP (EMAP) Workstation Product Guide*.

Sentinel 2000 system module

The Sentinel 2000 system is operated and administered using a command line interface on a dumb terminal or PC with terminal emulation capability through an auxiliary port connected to a LAN.

The Sentinel 2000 system post processor receives DMS logs, performs the log analysis, and generates traps to the SPECTRUM system by way of the SNMP proxy agent. The SNMP proxy agent provides the interface to the SpectroSERVER system.

Figure 1-1
The network management system logical data flow



The system operator can use the Sentinel 2000 system to monitor DMS logs processing and other system events including SNMP traps sent to the SPECTRUM system.

For detailed information on the Sentinel 2000 system operation, refer to the *User Guide for the Sentinel 2000*.

SPECTRUM system module

SPECTRUM system is based on client/server architecture. The client, called SpectroGRAPH, provides the GUI that displays icons, alarms, and alarm status for managing the network. The server, called SpectroSERVER, provides the database, security, device modeling capabilities, and device management functions.

Configuration and management of the MSL-100 is accomplished in two ways:

- by launching a telnet session from the **MSL100** icon on SPECTRUM system GUI to the MSL-100 switch or
- by launching a telnet session from the **MSL100** icon on SPECTRUM system GUI to a terminal server with a connection to an MSL-100 terminal/printer port.

For detailed information on the SPECTRUM system, refer to *Getting Started with SPECTRUM* and other Cabletron Systems documentation.

General steps for system setup and operation

First, setup the hardware according to Chapter 2 of this document, *Physical connections*. This chapter explains system requirements (minimum and recommended) for each module and it explains hardware connections.

Second, configure ports, install any software required, and begin initial logs distribution using Chapter 3, *Software configuration*. This chapter explains the steps to install MSL-100 model type files on the SPECTRUM system, datafill MSL-100 switch tables, and configure software specifically for MSL-100 switch working with the Sentinel 2000 system and the SPECTRUM system.

Finally, operate the systems to aid in MSL-100 network management using Chapter 4, *Getting started*. This chapter explains how to create a new MSL-100 model, establish a connection to the MAP terminal, and manually clear alarms in the SPECTRUM system.

Physical connections

This section explains system requirements and physical hardware connections of the Sentinel 2000 and the SPECTRUM systems configuration as these connections relate to the MSL-100 switch. Nortel suggests the requirements included in this document as minimum requirements for installation and operation (unless a recommendation is indicated). Figure 2-1 illustrates a physical connection example for connecting the MSL-100 switch to the SPECTRUM system, Sentinel 2000 system and the local area network (LAN). Refer to the *SPECTRUM Installation Guide*, the *MicroFrame Installation Guide*, the *MicroFrame User Guide*, and other appropriate manufacturer's documentation for detailed instructions on setting up individual system hardware and software.

MSL-100 system requirements

In the Sentinel 2000 and the SPECTRUM systems configuration, the MSL-100 switch requires:

- MSL05 (or above) software
- Input/output controller (IOC) terminal/printer port with an optional 9600 baud modem
- Ethernet interface unit (EIU) resident on the Link Peripheral Processor (LPP) (for telnet option); OR
- Single shelf link peripheral processor (SSLPP) with an enterprise LAN connection and an assigned IP address

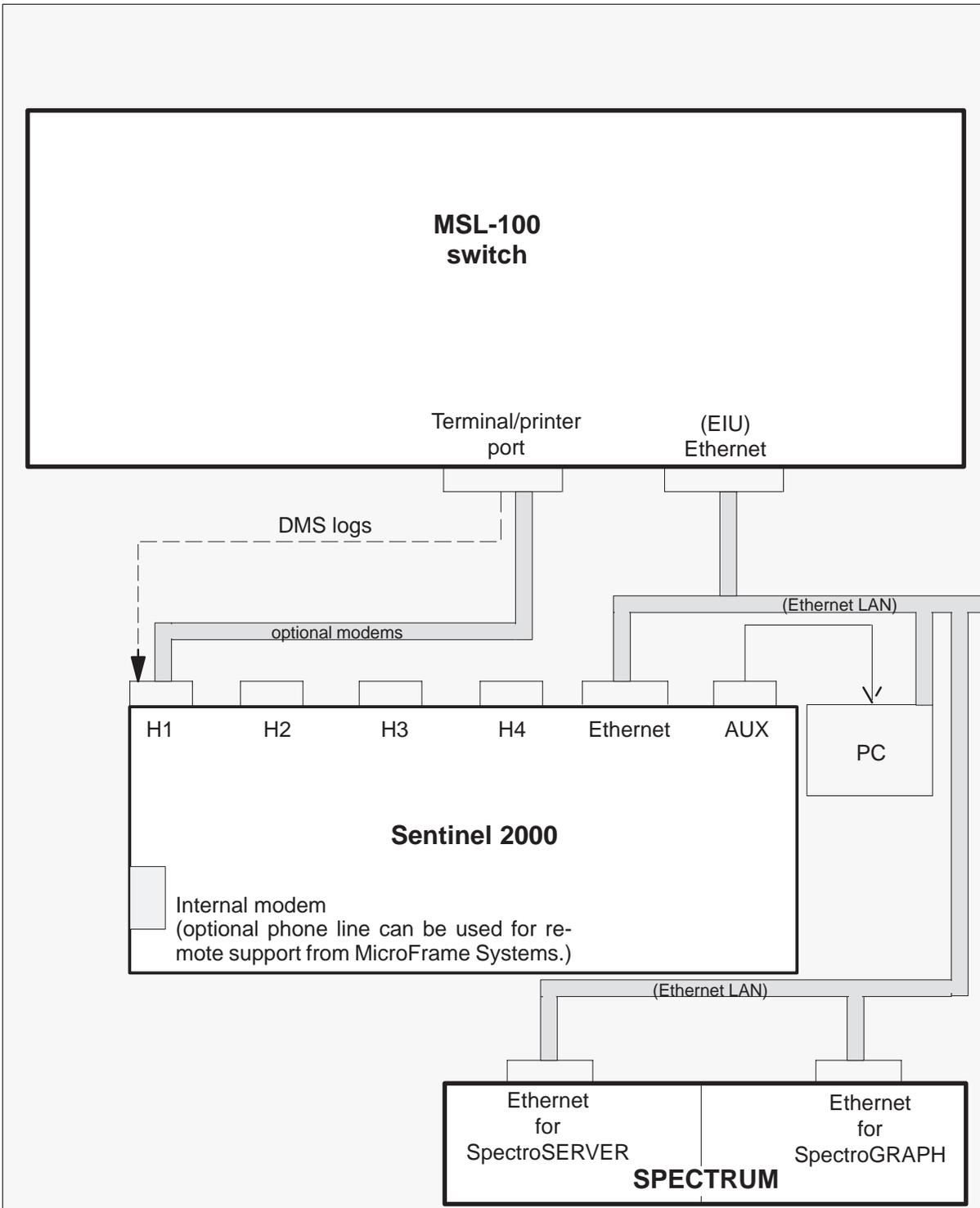
Sentinel 2000 system requirements

In the Sentinel 2000 and the SPECTRUM systems configuration, the Sentinel 2000 system requires:

- factory-installed MSL-100 post-processing routine (log parser) with MSL-100 alarms filter
- SNMP proxy agent with Nortel trap format support
- 9600 bps baud modem to analog line (for dial-up to the MSL-100 terminal/printer port in the MSL-100 switch)
- RS-232C cable (for modem connection)

2-2 Physical connections

Figure 2-1
The MSL-100 switch and the Sentinel 2000 system cable connections (modem direct connection inclusive)



- telephone cords with RJ11 connector
- network cable with an AUI or 10base-T connector (furnished with ethernet card in Sentinel 2000 system) with an enterprise LAN connection
- assigned ethernet address for network applications (furnished with ethernet card in Sentinel 2000 system)
- assigned IP address (for network applications)
- local terminal or personal computer (PC) running a terminal emulation program (used to initialize and administer the Sentinel 2000 system using the Aux port). The terminal must have a standard RS-232 (serial) interface for connection to data communications equipment. Use the following terminal settings:
 - asynchronous
 - 9600 bps
 - 8-bit character length, one stop bit, no parity
 - XON/OFF (software) flow control

SPECTRUM system requirements

Cabletron Systems, Inc. offers several system configurations for the SPECTRUM system. The SpectroSERVER and SpectroGRAPH system components can be installed on the same or separate platforms. In the Sentinel 2000 and the SPECTRUM systems configuration for the MSL-100 switch, the SPECTRUM system (SpectroGRAPH and SpectroSERVER) requires:

- LAN connection
Enterprise LAN connection for each platform running either SpectroSERVER or SpectroGRAPH workstations
- SCSI drive
Cabletron Systems, Inc. recommends running the SPECTRUM system only on platforms with SCSI drives.
- 96 MB of RAM for SpectroSERVER workstations or 64 MB for SpectroGRAPH graphical user interface (GUI) workstations (minimum suggested)
- 1 GB of disk space for SpectroSERVER workstations or 500 MB for SpectroGRAPH GUI workstations (minimum suggested)
- CD-ROM drive (for loading the SPECTRUM system)

- 1024 x 768 PCI bus video card supporting 256 colors or 8-bit color with at least 2 MB of DRAM
- 17-inch color monitor for workstations running SpectroGRAPH software.

Physical hardware connections

Physical cable connections depend upon the type of system configuration that you choose. The configurations described in this section are an ethernet LAN connection and a modem direct connection to the MSL-100.

Note: Since it is not practical to describe all possible configurations or all possible connections for each, consult your Nortel, MicroFrame, or Cabletron Systems support representative in determining the best configuration for your system.

Figure 2-1 illustrates the ethernet LAN connection and the modem direct connection to the MSL-100 switch from the Sentinel 2000 and the SPECTRUM systems systems.

MSL-100 switch cable connections

The following is a description of the cable connections from the MSL-100 switch:

- Connect the MSL-100 IOC terminal/printer port to a host port on the Sentinel 2000 system using an RS232 direct cable.

or:

For a modem configuration, connect the host port on the Sentinel 2000 system to the MSL-100 IOC port using 9600 baud modems and analog lines. This connection supports DMS logs transfer to the Sentinel 2000 system.

- Connect the EIU LPP or the SSLPP to the enterprise LAN where the Sentinel 2000 and the SPECTRUM systems are connected.

Refer to *Meridian SL-100 Cabinetized General Description*, for detailed information on MSL-100 switch cabling requirements and connections.

Sentinel 2000 system cable connections

The following is a description of the cable connections from the Sentinel 2000 system:

- Connect the PC or terminal to the Aux port

This connection is used to initialize the Sentinel 2000 system and may be disconnected after the Sentinel 2000 system is initialized.

- Connect the MSL-100 IOC terminal/printer port to a host port on the Sentinel 2000 system (to direct DMS logs to the Sentinel 2000 system) using an RS232 direct cable.

or:

For a direct modem configuration, connect the host port on the Sentinel 2000 system to the MSL-100 IOC port using 9600 baud modems and analog lines.

- Connect the Sentinel 2000 system internal modem(s) to analog telephone line(s) for remote Sentinel 2000 system support.
- Connect the Sentinel 2000 system to the enterprise LAN either through the AIU or 10 Base-T connector.

Refer to *MicroFrame Installation Guide for Sentinel 2000* for detailed information on the Sentinel 2000 system cabling requirements and connections.

SPECTRUM system cable connections

The SPECTRUM systems (SpectroGRAPH and SpectroSERVER) are connected to the Ethernet LAN. Refer to *SPECTRUM User Guide* for detailed information on the SPECTRUM system cable connections.

Software configuration

This section explains the software installation and configuration for the Sentinel 2000 and the SPECTRUM systems configuration as these requirements relate to the MSL-100 switch. These procedures assume the SPECTRUM system is installed and fully operational.

Refer to the *SPECTRUM Installation Guide*, the *MicroFrame User Guide*, the *MicroFrame Installation Guide*, and other appropriate manufacturer's existing documentation for detailed instructions on installing hardware and software for these systems.

The Sentinel 2000 and the SPECTRUM systems software configuration for the MSL-100 switch includes:

- installing the MSL-100 management module on the SPECTRUM server system (SpectroSERVER)
- installing the MSL-100 model type on the SPECTRUM client system (SpectroGRAPH)
- configuring the MSL-100 terminal/printer port (datafilling table TERMDEV)
- configuring the MSL-100 permanent log distribution (datafilling table LOGDEV) (optional)
- configuring software on the Sentinel 2000 system

Installing the MSL-100 management module on the SpectroSERVER system

The MSL-100 management module must be installed on the SPECTRUM SpectroSERVER and SpectroGRAPH systems. The MSL-100 management module defines the MSL-100 model type.

The MSL-100 model type (defined by the MSL-100 management module) includes definitions of common switch attributes, the MSL-100 icon, and available menu options. The MSL-100 model type is used to create models in SpectroGRAPH of MSL-100 switches in the network.

These MSL-100 models are represented by icons in the SpectroGRAPH GUI. Operators monitor and manipulate these icons to accomplish network administration.

Installing the MSL-100 management module on the SPECTRUM system

Use the following procedure describes to install the MSL-100 management module on the SpectroSERVER. This procedure describes an installation using a Windows NT computer compact disk (CD).

Note: This procedure assumes SpectroSERVER and SpectroGRAPH have been installed and functioning. If these components have not been installed, see Cabletron Systems documentation to install the SPECTRUM system before continuing.

Note: This procedure also assumes SpectroSERVER and SpectroGRAPH components installation on the same computer.

Installing the MSL-100 management module on the SPECTRUM system

- 1 Place the **MSL-100 MM** CD in the CD ROM drive.
- 2 Start SPECTRUM from the **Start/Programs** menu.
This starts the SpectroSHELL software.

At the SpectroSHELL prompt:

- 3 Start the installation program by typing;

drive:/MMinstall
where

drive is the CD ROM drive on the computer.

Example: d:/MMinstall

At the extraction key confirmation request prompt:

- 4 Click **OK**.

Note: If the installation program prompts a request for the extraction key, enter the SPECTRUM extraction key.

When the SPECTRUM Host Evaluation window displays:

- 5 Verify the physical memory and swap space requirements and click **OK**.

When the Installation Configuration window and the Component Configuration subwindow displays:

- 6 Click the **Select all SpectroSERVER components** check box to installing management modules for SpectroSERVER only.
- 7 Click the **Select all SpectroGRAPH components** check box to install the SpectroGRAPH management module on this same computer.

At the Installation successful prompt:

- 8 Click **OK**.

- 9 Click **Exit** to exit the installation.
- 10 You have completed the procedure for installing MSL-100 management module on the SPECTRUM system.

MSL-100 configuration

This section describes the logs distribution to the Sentinel 2000 and the MSL-100 switch datafill and maintenance operations for the MSL-100 terminal/printer port connection.

MSL-100 switch data tables contain hardware and software information and are accessed by commands supported by the TABLE EDITOR software program at the command interpreter (CI) maintenance and administration position (MAP) level. This procedure requires access to the MSL-100 MAP CI, TABLE EDITOR, and LOGUTIL utilities.

Only table datafills specific for the Sentinel 2000 and the SPECTRUM systems configuration are explained here. For more detailed information on datafilling tables, refer to the *Defense Switched Network Customer Data Schema*.

Datafilling table TERMDEV

The TERMDEV table is used to setup the input/output controller (IOC) port for the Sentinel 2000 system connection. The following table describes datafilling table TERMDEV in the Sentinel 2000 and the SPECTRUM systems configuration for the MSL-100 switch.

Datafilling table TERMDEV

Field	Entry	Sample data	Explanation and action
TERMDDES	1- to 8- alpha-numeric characters	S2k	Terminal designation. Enter the name for each terminal device.
IOCNO	0 to 19	2	Input/output controller number. Enter the number of the input/output controller (IOC) to which the terminal device is assigned. Valid entries are from 0 to 19.
CKTNO	0 to 35	15	Input/output controller circuit number. Enter the IOC circuit number to which the terminal device is assigned. Valid entries are from 0 to 35.
—continued—			

3-4 Software configuration

Datafilling table TERMDEV (continued)

Field	Entry	Sample data	Explanation and action
TERMTYPE	alphanumeric	VT100	Terminal type. Enter the terminal type. Valid entries are HAZ, LSG, VUC4, KSR, PRT, HP, VT100, VT102, TEC, CYB, SPRT, FPRT, DPH, and SMDI.
BAUDRT	alphanumeric	B9600	Baud rate. Enter the baud rate of the terminal device. Valid entries are B110, B134PT5, B150, B300, B600, B1200, B1800, B2000, B2400, B3600, B4800, B7200, B9600, and B19200.
INTYP	alpha	EIA	Interface type. If the terminal device is equipped with a data set or modem, enter EIA (Electronic Industries Association interface). Otherwise, enter CL (current loop).
EQPEC	alphanumeric	1X89BB	Equipment product engineering code. Enter the product engineering code (PEC) of the terminal controller circuit pack. Valid entries are 1X67AA, 1X67AB, 1X67AC, 1X67BC, 1X67BD, 1X67CA, 1X67CB, 1X67FA, and 1X89BB.
PRTY	See subfield.	NONE	Parity. Enter the parity of the terminal device. Valid entries are ODD, EVEN, and NONE.
GUAR	Y or N	N	Guaranteed device. Enter Y if the device is guaranteed to run despite the call processing or maintenance load. Enter N if the device is not guaranteed. The default is N.
MODEM	NONE, DBANS, CTS, RIXON, and UDS	NONE	Modem type. Enter the type of modem that corresponds to its connecting port. Valid entries are NONE, DBANS, CTS, RIXON, and UDS.
—continued—			

Datafilling table TERMDEV (continued)

Field	Entry	Sample data	Explanation and action
COMCLASS		ALL	Command class. Enter the command class allowed for the terminal device. Valid entries are from 0 to 30, NONE, and ALL. Note: A user logged in at the terminal is permitted to execute only those commands that are allowed on the terminal and for the user's login ID.
CKERDISC	Y or N	Y	CkEr alarm on DISconnected device. Enter Y if the device will cause a CkEr alarm whenever it is in a DISconnected state. Otherwise enter N.
—end—			

The following example shows a MAP display depicting the datafill for table TERMDEV.

MAP display example for table TERMDEV

```

TERMDES  IOCNO  CKTNO  TERMTYPE  BAUDRT  INTYP  EQPEC  PRTY  GUAR  MODEM  COMCLASS
                                     CKERDISC
-----
S2Kdial  2      15     VT100    B9600   EIA  1X89BB  NONE  N    NONE  ALL
                                               Y

```

MSL-100 terminal/printer port maintenance

The following table shows how to maintain the terminal/printer port using the MAP terminal.

Maintaining the terminal/printer port using MAP**At the MAP terminal command interpreter prompt**

- 1 Access the IOD level of the MAP display by typing

```
>MAPCI;MTC;IOD
```

and pressing the Enter key.

Example of a MAP display:

```

IOD
IOC  0  1  2  3
STAT .  .  .  .

```

- 2 Post the IOC associated with the card and card number by typing

>IOC ioc_no

and pressing the Enter key.

where

ioc_no is the IOC identification number (0 to 19)

Example of a MAP display:

```

IOD
IOC 0 1 2 3
STAT . . . .

DIRP: AMA B XFER: . SLM : SLMbsy NOP : . NX25: .
MLP : . DPPP: . DPPU: . SCAI: .

IOC CARD 0 1 2 3 4 5 6 7 8
0 PORT 0123 0123 0123 0123 0123 0123 0123 0123 0123
STAT .---- .---- .... .---- .... ---- .---- .---- ----
TYPE MTD DDU CONS MPC CONS CONS MPC

```

- 3 Post the card by typing

>CARD card_no

and pressing the Enter key.

where

card_no is the card identification number (0 to 8)

Example of a MAP display:

```

IOD
IOC 0 1 2 3
STAT . . . .

DIRP: AMA B XFER: . SLM : SLMbsy NOP : . NX25: .
MLP : . DPPP: . DPPU: . SCAI: .

IOC CARD 0 1 2 3 4 5 6 7 8
0 PORT 0123 0123 0123 0123 0123 0123 0123 0123 0123
STAT .---- .---- .... .---- .... ---- .---- .---- ----
TYPE MTD DDU CONS MPC CONS CONS CONS MPC
Card 6 Ckt 0 1 2 3
Status . . - -
Cons Id RD040 RD041 TEAM4 s2kdial
ConType VT100 VT100 VT100 VT100

```

- 4 Manually busy the port on the card by typing

>ManB port_no
and pressing the Enter key.

where

port_no is the port identification number (0 to 3)

- 5 Return the port to service by typing

>RTS port_no
and pressing the Enter key.

where

port_no is the port identification number (0 to 3)

On the MSL-100 switch MAP terminal window, the port state displays **Disc** until the Sentinel 2000 system connects. When Sentinel 2000 is system connected, the port state is . (period).

- 6 You have completed this procedure.

Datafilling table LOGDEV (permanent logs distribution configuration)

Table LOGDEV lists the log (output message) classes that can be printed or displayed at each of the terminal or data devices. Table LOGDEV also defines the alternate terminal or data device to which messages are sent if the main terminal device is not operational.

Datafilling table LOGDEV establishes a permanent configuration for routing logs from the MSL-100 switch to the Sentinel 2000 system. While manually starting log routing is required at the initial system start and operation, a permanent configuration allows you to operate the system without manually starting the log routing after a system restart.

Note: Datafill table TERMDEV before table LOGDEV.

Datafilling table LOGDEV

Field	Entry	Sample data	Explanation and action
DEV	alphanumeric (up to 12 characters)	s2kdial	<p><i>Device</i> Enter the name assigned in table TERMDEV to the terminal device.</p> <p>Note: This field can only be set to SCC2 if the office parameter SCC2_LOGS in table OFCOPT is Y (yes) and field PRIORITY is Y, or if field FORMAT is STD and field PRIORITY is N (no).</p>

Datafilling table LOGDEV (continued)

Field	Entry	Sample data	Explanation and action
ALT	alphanumeric (up to 12 characters) or NIL	NONE	<i>Alternate</i> Enter the name assigned in table TERMDEV to the terminal device to which logs are to be sent if the main terminal device is not operational. If no alternate device is required, enter NIL.
CLASSES	vector of numeric values (0 to 31) with delimiter characters (,), -, and +	(0-31)	<i>Classes</i> Enter the class numbers that are assigned to the terminal device. Enter ((open bracket) if the entry is the first record for the terminal device. If entry is a block of consecutive classes, enter the first and last class in the block separated by a - (dash). For example, if classes are 1, 2, 3, 4, and 5, enter 1-5. Separate each log or block of log classes with a blank space. Enter + if additional information for this field is contained in the next record. Otherwise, enter) (close bracket) to indicate the end of the tuple. If adding an individual entry using the table editor of the switch, a single quotation mark must precede the open bracket and a single quotation mark must follow the close bracket, for example '(22 24)'.
FORMAT	SCC2 or STD	STD	<i>Format</i> Enter SCC2 for the AT&T #2 Switching Control Center format. Enter STD for the standard format. Note: This field can only be set to SCC2 if office parameter SCC2_LOGS in table OFCOPT is set to Y.
PRIORITY	Y or N	N	<i>Critical message prioritization</i> Enter Y (yes) if the alarm level sets the prioritization of the reports. The report with the highest alarm level at any given time is generated. Enter N (no) if prioritization is not required and the reports are generated in chronological order. Note: This field can only be set to Y if office parameter LOG_PRIORITIZATION in table OFCENG is set to Y.
—continued—			

Datafilling table LOGDEV (continued)

Field	Entry	Sample data	Explanation and action
GUAR	Y or N	N	<p><i>Guaranteed device</i></p> <p>Enter Y if the device is guaranteed (for example, the device continues to run despite the call processing or maintenance load). Otherwise, enter N.</p> <p>The default value for this field is N.</p>
—end—			

Manually starting and stopping logs routing

After setting up the MSL-100 terminal/printer port, (and datafilling table LOGDEV for a permanent logs distribution configuration), you must start logs routing to the terminal/printer port manually. Where table LOGDEV has been datafilled for permanent logs distribution configuration, this procedure is required at the initial system startup or if a connection between systems has been lost. Where table LOGDEV has been datafilled for a temporary or manual logs distribution configuration, this procedure is required after each time the system is restarted to resume logs distribution to the port.

The following procedures describes how to start (and stop, if needed) logs routing to the MSL-100 terminal/printer port manually.

Manually starting and stopping log routing to the MSL-100 terminal/printer port

Note: The STOPDEV and STARTDEV commands in LOGUTIL can be used at any time to turn off and turn on the flow of logs to the specified port.

After the Sentinel 2000 system communication with the MSL-100 switch is established, use the MAP terminal to start (and stop, if needed) routing logs using the log utility.

At the MAP terminal command interpreter prompt (>)

- 1 Start the log utility by typing
>LOGUTIL
and pressing the Enter key.
The log utility displays.

In the LOGUTIL utility

- 2 Start the logs distribution to the IOC terminal/printer port by typing
>STARTDEV terminal_des.
and pressing the Enter key.

where

terminal_des. is the IOC port dialup designation in the TERMDEV table.
- 3 Log routing can be stopped at any time by typing
>STOPDEV terminal_des.
and pressing the Enter key.

where

terminal_des. is the IOC port dialup designation in the TERMDEV table.
- 4 You have completed the procedure for starting and stopping logs routing to the MSL-100 terminal/printer port.

Configuring the Sentinel 2000 system

When the Sentinel 2000 system is ordered from MicroFrame Systems, Inc. for use with the MSL-100 and SPECTRUM systems, it comes configured with customized software, an MSL-100 alarm filter, and Nortel trap format. Additional procedures are necessary to configure the host port connection, alarm-to-trap mapping and network managers. Also, you must know the Sentinel 2000 IP address.

Additional procedures are necessary to configure the host port connection, alarm-to-trap mapping and network managers. It is also necessary to obtain the Sentinel 2000 IP address for use in creating MSL-100 models in the SpectroGRAPH system.

Refer to *MicroFrame User Guide for the Sentinel 2000* for detailed information on Sentinel 2000 system software configuration, administration, and operations.

Configuring the host port

Verify or setup host port parameters used for the MSL-100 connection. Use the **dh** command to display the parameters and the **sh** command to set the parameters. The following is an example of the Sentinel 2000 system modem port settings:

Example of Sentinel 2000 system modem port settings

```

>sh1
--- Set Host Port Params ---
Restore Factory Defaults?  no
--Host 1:
  Host Name:  MSL100A
  Baud Rate Setting  9600
  Character Length/Parity  8/None
  Alarm Filter  SL100 Alarms
Force CD/DSR High  Yes
Flow Control  XON/XOFF

--Automatic Buffering--
Enable Automatic Buffering?  Yes
Compress closed buffer files?  No
Auto Switch:  (Enter 0 to disable)
  When CURRENT file exceedsn KB  50
  Everyn Hours  24
  - Synchronize at what hour (0-23)  0

```

Configuring the SNMP manager parameters

After configuring the host port, use the **snp** command to set the SNMP manager parameters. Here is an example of the Sentinel 2000 system manager parameter settings:

Example of the Sentinel 2000 system SNMP manager parameter settings

```

>snp
--- Set Network Params ---
1=Network Initialization Params
2=SNMP Manager Params

Select Group ->2
Restore Factory Defaults?  no
-- SNMP Manager Parameters --
PPP link needed for trap?  No
Trap format  Nortel
SNMP Community Name  public
-- IP Addresses for SNMP Managers (NNN.NNN.NNN.NNN) --
Manager 1      xxx.xxx.xxx.xxx (Note: Enter SpectroSERVER IP address)
Manager 2
Manager 3
Manager 4
Manager 5

```

Configuring action items for SNMP traps

After setting the SNMP manager parameters, add alarm level action items to generate SNMP traps to be sent to the SPECTRUM platform. These actions can be configured to send traps for all alarm levels.

Action items must be defined for each alarm level for which SNMP traps are generated. Use the `aa` command to add action items for each alarm level. Specify `SNMPTRAP` with the integer parameter corresponding to the alarm level: `CRI = 3`, `MAJ = 2`, and `MIN = 1`. Include meaningful comments for action items because they appear in SpectroGRAPH alarm details.

Here is an example of defined actions for the three MSL-100 log reports alarm levels:

Note: In this example, an SNMP trap is sent for each alarm level with a parameter indicating the alarm level.

Example of the Sentinel 2000 system SNMP manager parameter settings

```
>la
--- List Action Items ---
  Alarm      Routine:    Parameters:    Comments:
1) CRI       SNMPTRAP3    Critical
2) MAJ       SNMPTRAP2    Major
3) MIN       SNMPTRAP1    Minor
4) NON       NOACT        (not an alarm)
-- End of List --
```

Obtaining the Sentinel 2000 IP address

After adding alarm level action items to generate SNMP traps, use the `dnf` command to display the Sentinel 2000 IP address and other network parameters. Use this IP address in the model IP address field when creating the MSL-100 switch icon in the SpectroGRAPH GUI.

The following is an example of the network parameters display:

Example of the Sentinel 2000 system network parameter display

```

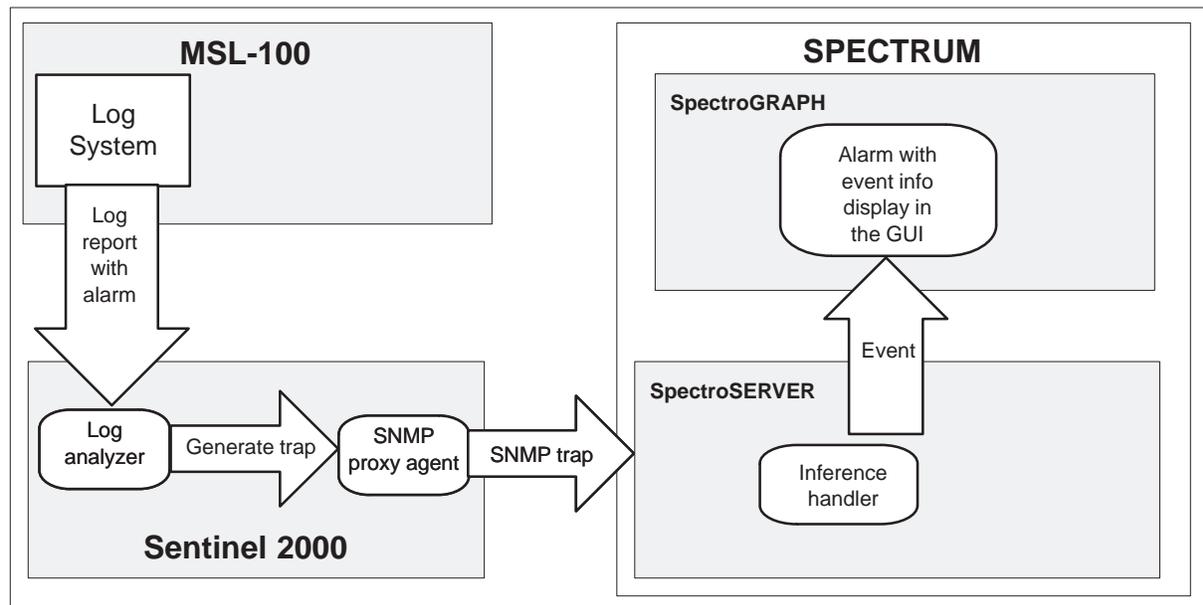
>dnpp

--- Display Network Params ---
--- Network Initialization Parameters ---
Start Network On Power-up? Yes
Ethernet Address (hhhhhhhhhhhh): 09 23 02 12 00 EE
IP Address (nnn.nnn.nnn.nnn): 48.77.204.154
PPP Address (nnn.nnn.nnn.nnn): 121.91.203.4
Subnet Mask (nnn.nnn.nnn.nnn): 25.255.240.0
Default Gateway (nnn.nnn.nnn.nnn): 48.77.204.100
Network-Loss Alarm Delay Time: 60

```

The Sentinel 2000 system is now configured and ready for startup. Figure 3-1 below depicts the logical DMS logs flow according to the system you have configured.

Figure 3-1
Logical DMS logs flow



The MSL-100 DMS logs and alarms are directed to the Sentinel 2000 system where these original logs and alarms are mapped to SNMP traps. The SNMP traps from the Sentinel 2000 are routed to the SpectroSERVER where the traps have been configured in association with action items. These action items produce alarms with event information and are displayed in the SpectroGRAPH GUI.

3-14 Software configuration

You are ready to begin operating the system. Operating procedures are described in the *Getting started* section of this document.

Getting started

This section provides information specific to getting started using the Sentinel 2000 and the SPECTRUM systems. Familiarity with MSL-100 switch, the maintenance and administration position (MAP) terminal, the Sentinel 2000 system, and SPECTRUM systems is required. Refer to the appropriate manufacturer's existing documentation for detailed instructions on operating individual system hardware and software. See the *Commercial Systems Log Report Reference Manual*, Volume 1-5, for information about MSL-100 alarms. Refer to *Getting Started with SPECTRUM* and the SPECTRUM system on-line help for information on using the SPECTRUM system. Refer to *MicroFrame User Guide for the Sentinel 2000* for information on using the Sentinel 2000 system.

Once hardware and software configuration is completed, you are ready to start the event monitoring and alarm resolution activities. Use the following step sequence when operating the system.

- 1 Create a new MSL-100 model in SpectroGRAPH.
- 2 Login to the Sentinel 2000 system.
- 3 Connect to the MSL-100 switch from Sentinel 2000 system.
- 4 Start MSL-100 switch log routing to the Sentinel 2000 system.
- 5 Monitor the **MSL-100** icon for alarm notification.
- 6 Analyze events and alarms when notification is indicated.
- 7 Resolve alarms using a telnet session from the SPECTRUM system to the MAP terminal.
- 8 Manually clear the alarms in the SPECTRUM system.

SpectroGRAPH presents network device information from several perspectives within three hierarchical views: topology, location, and organizational.

Refer to the *SPECTRUM system User Guide* for detailed information about setting up the hierarchical views in SpectroGRAPH.

Using the SPECTRUM system views

Use SpectroGRAPH system views to create MSL-100 switch models, monitor the **MSL-100** icon for alarm interpretation, and execute alarm clearing procedures.

Creating a new model of the MSL-100 switch in a SpectroGRAPH system view

After starting SpectroSERVER and SpectroGRAPH, use this procedure to add a new MSL-100 model to a SpectroGRAPH view:

Creating a new model of the MSL-100 switch in a SPECTRUM system view

At the SpectroGRAPH view window:

- 1 Click the **File** menu item and select **Edit**
A grid appears in the view background.
- 2 Click the **Edit** menu item and select **New Model..**
The **Select Model Type** window showing a list of model types is displayed.
- 3 Select **MSL-100** from the model type list and click OK
The **Creating MSL-100** window is displayed.
- 4 Fill in the fields in the **Creating MSL-100** window:

Model name:	enter a model name of your choice. The icon representing the switch will have the name that you enter in this field.
Network address:	enter Sentinel 2000 system IP address.
RMAP Address:	enter MSL-100 ethernet interface unit (EIU) address. If no EIU is present, enter an IP address of a network node to which you may want to connect from the SPECTRUM system.
Community name:	leave supplied entry unchanged.
Location:	(optional) enter information for your own purposes.
Contact:	(optional) enter information for your own purposes.
Serial number:	(optional) enter information for your own purposes.
Security string:	(unused) leave as is.
Polling interval:	supplied. Denotes the frequency of the polling interval.
Log ration:	supplied
Device type:	(defaulted to switch) leave supplied entry unchanged.
- 5 Click OK.
An icon representing the new model appears in the SpectroGRAPH universe view.

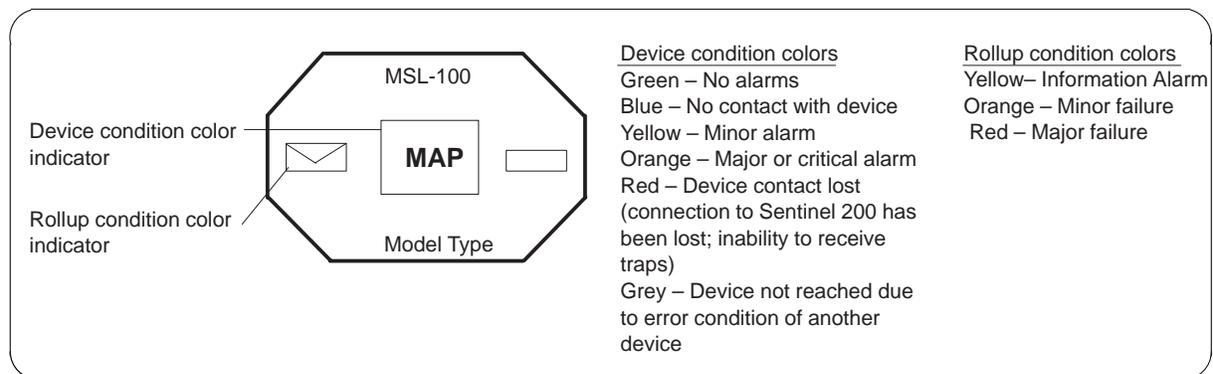
- 6 Click the **File** menu and select **Save & Close**.

The grid disappears and the model type icon indicates the system status.

- 7 You have completed the procedure for adding a model in the SPECTRUM system universe window.

If the SPECTRUM system has made contact with the device since the model was created, the contact status label device condition color is initially green. If no contact has been made, the contact status label device condition color is blue. Figure 4-1 illustrates a contact status label example as it appears in the SPECTRUM system graphical user interface (GUI).

Figure 4-1
Contact status label display example



Connecting to the MSL-100 switch from Sentinel 2000 system

The next step after creating an MSL-100 switch model in SpectroGRAPH is to establish a host connection from the Sentinel 2000 system to the switch. Use this procedure to connect to the MSL-100 switch from Sentinel 2000 system:

Connecting to the MSL-100 switch from Sentinel 2000 system

At the Sentinel 2000 system login window:

- 1 Login to the Sentinel 2000 system (either by direct terminal connection or by telnet).
- 2 Initiate dial out to the host port connected to the MSL-100 IOC port by typing
>js port_no
and pressing Enter.

where

port_no is the port identification number (1 to 4)

Note: At this point, you can send AT commands to the MSL-100 modem.

- 3 Test modem response by typing

>AT

and pressing the Enter key.

OK is displayed.

At the prompt:

- 4 Type the appropriate modem commands to dial the MSL-100 IOC port.

On the MSL-100 switch MAP terminal window, the port state displays **Disc** until the Sentinel 2000 system connects. When Sentinel 2000 system is connected, the port state is . (period).

On the Sentinel 2000 system host session display, **Connect 9600** is displayed indicating the connection is established.

- 5 You have completed the procedure for connecting to the MSL-100 switch from Sentinel 2000 system.

Starting MSL-100 switch log routing to Sentinel 2000 system

The purpose of this step is to direct logs to the Sentinel 2000 system. If you configured your system by datafilling table LOGDEV (the permanent configuration), and you have not stopped the log routing process, you can see generated logs on the Sentinel 2000 in the host session. If you can see generated logs, skip this procedure and go on to *Monitoring the MSL-100 for alarm indications*.

Manually starting and stopping log routing to the MSL-100 terminal/printer port

After the Sentinel 2000 system communication with the MSL-100 switch is established, use the MAP terminal to start (and stop, if needed) routing logs using the log utility.

At the MAP terminal command interpreter prompt

- 1 Start the log utility by typing

>LOGUTIL

and pressing the Enter key.

The log utility prompt displays.

In the LOGUTIL utility

- 2 Initiate log routing to the MSL-100 IOC terminal/printer port by typing

>STARTDEV terminal_des.

and pressing the Enter key.

where

terminal_des. is the IOC port dialup designation in the TERMDEV table.

- 3 Log routing can be stopped at any time by typing
>STOPDEV terminal_des.
and pressing the Enter key.

where

terminal_des. is the IOC port dialup designation in the TERMDEV table.
- 4 You have completed the procedure for starting and stopping logs routing to the MSL-100 terminal/printer port.

Monitoring the MSL-100 icon for alarm indications

You are ready to monitor the **MSL-100** icon displayed in the SpectroGRAPH view for alarms and events. See Figure 4-1 for basic information on icon indicators.

See *Getting Started with SPECTRUM for Operators* and other end user information for detailed discussions about monitoring and managing alarms using the SPECTRUM system.

Use this procedure to monitor events and alarm notifications for an MSL-100 model in SpectroGRAPH.

Monitoring events and alarms in SpectroGRAPH

Note: If the icon is any color other than green or if the icon is blinking, diagnose and resolve any alarms, faults, or errors in modeling. Refer to SPECTRUM system on-line help for detailed rollup condition and device condition color interpretation.

At the SPECTRUM view window:

- 1 Use the right mouse button to click the icon representing the MSL-100 switch to access the Alarms view.

The **Alarms manager** window is displayed showing information about the alarms. Use this information to determine the actions needed to resolve the alarm in the MSL-100 MAP terminal.
- 2 Examine the events information tab for a selected alarm in the alarm manager.

Note: The tab labelled **Events** contains detailed alarm information including the original MSL-100 switch log report text.
- 3 Close the **Alarms manager** by clicking the window close bar or clicking the **File** menu item and selecting **Exit**.

Actual MSL-100 switch maintenance functions must be accomplished using a MAP terminal. After you have analyzed the alarm using the SPECTRUM system, use the next procedure to resolve the alarm by accessing MAP terminal using a telnet session from the SPECTRUM system.

Resolving alarms using a telnet session from the SPECTRUM system to the MAP terminal

Use this procedure to establish a telnet (or communication) session from the SPECTRUM system to the MSL-100 MAP terminal:

Resolving alarms using a telnet session from the SPECTRUM system to the MAP terminal

At a SpectroGRAPH view:

- 1 Double click the center of the **MSL-100** icon or use the right mouse pulldown menu to select the **MSL100 CsSTel Script** menu item.

A telnet window displaying the MAP terminal login is displayed.

Note: If you entered the MSL-100 EIU address in the **Model Creation** window RMAP Address field, the MAP terminal login is displayed.

Note: If you entered some other IP address in the RMAP Address field, the telnet window is populated with the appropriate system connection or login information.

- 2 Diagnose and resolve all MSL-100 switch alarms reported in the SPECTRUM **alarm events** information using standard maintenance procedures for the MSL-100 switch.
- 3 Logout of the MAP terminal and disconnect the telnet session.
- 4 You have completed the procedure for resolving alarms.

Manually clearing alarms in SpectroGRAPH alarms manager

Use this procedure to clear alarms after resolving alarms using the MAP terminal.

Note: Clearing several alarms at the same time requires a relatively long time period. For this reason, avoid clearing many alarms at once.

Manually clearing alarms in SpectroGRAPH alarm manager

At the SpectroGRAPH view:

- 1 Use the right mouse button to click the center of the **MSL-100** icon.
The **Alarm Manager** window displays.
- 2 Select the alarm(s) to be cleared.
- 3 Click the **Actions** menu item and select **Clear** or **Clear All**.

- 4 You have completed managing alarms in the SpectroGRAPH alarms manager.

ATTENTION

If alarms are not received verify:

Sentinel 2000 system is connected to the host port

Sentinel 2000 system is configured to send traps

Logs are being routed to the Sentinel 2000 system.

List of terms

common channel signaling 7 (CCS7) link interface unit (LIU7)

A peripheral module that processes messages entering and leaving a link peripheral processor through an individual signaling data link. Each LIU7 consists of a set of cards and a paddle board that is provisioned in one of the link interface shelves of the link peripheral processor.

CI

See command interpreter.

CM

See computing module.

command interpreter (CI)

Command interpreter. A component in the support operating system (SOS) that functions as the main interface between machine and user.

computing module (CM)

The process and memory of a dual-plane combined core (DPCC) used by DMS SuperNode. Each CM consists of a pair of CPU with associated memory that operate in a synchronous matched mode on two separate planes. The CM maintains overall control of the system while the other plane is on standby.

DMS logs system

Output reports created by the individual DMS subsystem software and are transmitted to a history file, called logs. The logs system stores this report information in a log buffer dedicated to that subsystem. In addition to being logged, the output reports are also forwarded to an output device. The report routing is controlled by the routing and reporting system.

EIU

Ethernet Interface Unit The EIU is used to provide access to the MAP terminal from third party computing equipment (workstations, terminals, and printers) connected to the MSL-100 switch by way of an external Ethernet LAN. Telnet is used to access the maintenance and administration position (MAP) terminal. The Telnet protocol runs atop the TCP/IP. The EIU also permits the file transfer of OMs and logs using FTP programs.

EMC

See enhanced multipurpose cabinet.

emergency technical assistance service (ETAS)

Emergency technical assistance service.

enhanced multipurpose cabinet (EMC)

A cabinet containing one or more fiberized link interface shelves.

ETAS

See emergency technical assistance service.

ethernet interface unit (EIU)

The EIU is used to provide access to the MAP terminal from third party computing equipment (workstations, terminals, and printers) connected to the MSL-100 by way of an external Ethernet LAN. Telnet is used to access the maintenance and administration position (MAP) terminal. The Telnet protocol runs atop the TCP/IP. The EIU also permits the file transfer of OMs and logs using FTP programs.

GUI

graphical user interface

IP address

internet protocol address used in TCP-IP.

IOC

See input output controller.

input/output controller (IOC)

A level in the maintenance and administration position (MAP) terminal. An equipment shelf that provides an interface between up to 36 input/output (I/O) devices and the central message controller (CMC). The IOC contains a peripheral processor (PP) that independently performs local tasks, thus relieving the load on the central processing unit (CPU).

LAN

See local area network.

LIU7

See common channel signaling 7 (CCS7) link interface unit 7.

LPP

See link peripheral processor.

link peripheral processor (LPP)

The DMS SuperNode equipment frame or cabinet that contains two types of peripheral modules: a link interface module (LIM) and one or more application-specific units (ASU).

local area network (LAN)

A network that permits the interconnection and intercommunication between multiple computers, primarily for sharing resources such as data storage devices and printers.

MAP

See maintenance and administration position

MIB

See management information base.

MS

See message switch.

maintenance and administration position (MAP)

A group of components that provides a user interface between operating company personnel and DMS-100 Family switches. The interface consists of a video display unit (VDU) and keyboard, a voice communications module, test facilities, and special hardware.

management information base structure (MIBS)

Structure used to define data management by Simple Network Management Protocol (SNMP). MIBS tools consist of a collection of applications that allow access and the management of any SNMP compliant device through its MIBS. At the core of the MIBS tools, is a database of MIBS supported by devices on the network, which the applications use when communicating with the network devices.

message switch (MS)

A high-capacity communications facility that functions as the messaging hub of the dual-plane combined core (DPCC) of a DMS SuperNode processor. The MS controls messaging between the DMS-bus components by concentrating and distributing messages and by allowing other DMS-signaling transfer point (STP) components to communicate directly with each other.

network interface unit (NIU)

A peripheral module that provides the interface between an LIU7 in an LPP or EMC and the DMS-bus.

NIU

See network interface unit.

OM

See operational measurements.

operational measurements (OM)

operational measurements. The hardware and software resources of the DMS-100 family switches that control the collection and display of measurements taken on an operating system. The OM subsystem organizes the measurement data and manages its transfers to displays and records. The OM data is used for maintenance, traffic, accounting, and provisioning decisions.

SCCS

See switching control center system.

SSLPP

See single shelf link peripheral processor.

single shelf link peripheral processor (SSLPP)

A link peripheral processor in which all application specific units (ASU) and interface components are provisioned on a single shelf and connected directly to the message switch using fiber optic cables. The SSLPP is installed in the enhanced multipurpose cabinet (EMC).

switching control center system (SCCS)

See switching control center system.

SNMP

See simple network management protocol.

simple network management protocol (SNMP)

A standard network management protocol developed by the Internet Engineering Task Force (IETF); the dominant protocol in use today.

SPECTRUM Enterprise Manager

A network management system for the MSL-100 switch providing fault isolation and alarm interpretation capability in a graphical user interface (GUI) environment. The system is based on client/server architecture; the SpectroGRAPH is the client system and the SpectroSERVER is the server system.

TCP/IP

See transmission control protocol/internet protocol.

TRAP

An interrupt generated by the central control (CC) when there is a hardware or software error. A software trap (TRAP) provides information concerning software errors found during code execution, including the code location where the trouble was encountered.

TTP

See trunk test positions.

transmission control protocol/internet protocol (TCP/IP)

A collection of network protocols referred to as Internet Protocol Suite. A protocol that allows multi-vendor computer networks to share and communicate data across a network.

trunk test positions (TTP)

A maintenance and administration position (MAP) terminal specially equipped to perform trunk testing.

VDU

See video display unit.

video display unit (VDU)

An electronic output device that presents data to a terminal user in the form of a television picture. In a DMS switch, the VDU is one of the components of the MAP terminal and, along with a keyboard, provides the main user interface in the DMS-100 family switches.

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Meridian SuperNode
Meridian SL-100
Network Management for SPECTRUM
Service Guide

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Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of FCC Rules, Docket No. 89-114, 55FR46066

The SL-100 system is certified by the Canadian Standards Association (CSA) with the Nationally Recognized Testing Laboratory (NRTL).

This equipment is capable of providing users with access to interstate providers of operator services through the use of equal access codes. Modifications by aggregators to alter these capabilities is a violation of the Telephone Operator Consumer Service Improvement Act of 1990 and Part 68 of the FCC Rules

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