Secure Lantronix Management (SLM)
Virtual Secure Lantronix Management (vSLM)
Appliance User Guide

Part Number 900-386
Revision I October 2012

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Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Note: *This equipment has been tested and found to comply with the limits for Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this User Guide, may clause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.*

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.

The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

Revision History

Date	Rev.	Comments
September 2005	A	Initial Release
June 2006	B	User Interface Enhancements: Improved usability (device/port search, improved UI, Secure Lantronix Management Detector for setup, updated webSSH applet, with increased scroll buffer, cut-and-paste capabilities, and font size adjustments). Simplified ‘end-device only’ view for users with a minimum of privileges. Expanded managed device (end-device) integration: Integration of SLK and SLP to the device port level. Device-type dependent processing and views.
July 2006	C	Added capabilities: Enable, disable, and prioritization of local user authentication; additional (2) polled NTP servers; additional two (2) NIS slave servers; auto-detection of SCSxx00 devices; assignment of managed groups to selected ports, and automatic system backup increased up to 8 SLMs. Modifications to GUI and command line interfaces.
December 2006	D	Added capabilities: IPv4 Filters; modem management; virtual managed devices for easier administration; uploading passwords in bulk; additional search options; get/put SSH keys; new triggers for events; device folder state management; session termination; discovery protocol using multicast.

Date	Rev.	Comments
April 2007	E	Added capabilities: Access SLM by mobile phone; discover USB modems; view session log files; change SNMP settings for SLPs in bulk; connect directly to the port of an SLC or SLB; apply power to multiple ports on an SLP; view port logs, make a web channel connection to an SLC; update SLM and SLP firmware; read SLC information to the SLM database; create banners for the CLI.
November 2007	F	Added capabilities: More Ethernet devices to manage (SLB, WiBox, UDS, Spider); IPsec Management (IKE Policies and VPN Connections); SecurID authentication; WiBox and UDS firmware updates; enhanced SLM update feature; port access for SLC, SLB, SLP and Spider); SLM proxy; additional trigger types for events; more file types to manage.
April 2008	G	Added capabilities: Persistent connection, keep alive, TN3270, and call back.
April 2011	H	New look and feel, add support for XPort, EDS, EDS-MD, Premier Wave, UDS connections, individual keystroke loggins, improved Spider support, use FQDN in place of IP, device locator, UDS port access, UDS applet add, SLC connection management. Firmware version 3.4
October 2012	I	Updated to include the virtual SLM for firmware release 3.4b.

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1: About This Guide

Purpose and Audience

This guide provides the information needed to install, configure, and use the Secure Lantronix Management Appliance (SLM) which includes the SLM-01, SLM-02 and the vSLM. The SLM enables IT professionals to remotely and securely configure and administer multiple Lantronix and non-Lantronix devices.

Chapter Summaries

The remaining chapters in this guide include:

Chapter	Description
Chapter 2: Introduction	Describes the SLM's main features and the protocols it supports.
Chapter 3: Quick Setup	Provides instructions for getting your unit up and running. Describes connection formats and power supplies and how to configure network, date, and time settings so you can use the SLM on the network.
Chapter 4: Virtual SLM Deployment	Describes the differences between the SLM-01 and SLM-02 and the virtual version of SLM (vSLM). Provides directions on how to deploy vSLM.
Chapter 5: Web and Command Line Interfaces	Describes the web and command line interfaces available for configuring the unit. ***Note:*** *The configuration chapters (6-9) provide detailed instructions for using the web interface and include command line interface commands.*
Chapter 6: Configuration and Operation Overview	Outlines the process of setting up and using the SLM and explains the responsibilities of administrators and other user groups.
Chapter 7: Network and Modem Settings	Provides instructions on entering network, date, and time information.
Chapter 8: User Management	Provides instructions for configuring user authentication methods and setting up user accounts and account groups.
Chapter 9: Ethernet Device Management	Provides instructions for detecting devices on the network, entering information about the devices and ports, granting read/write permissions for devices and ports, and auto-saving an SLM configuration to another SLM.
Chapter 10: Managed Devices	Explains how to add, update, and delete Managed Device Groups as well as how to create and "fuse" individual managed devices. Provides information about connecting to and configuring managed devices via the SLM.

Chapter (continued)	Description
Chapter 11: Operation and Maintenance	Explains how the user can search for devices, access notes and logs about the SLC and its ports, and open the SLC, SLP, SLK and SLC interfaces using SSH, secure channel (SLC only), or a browser. Provides instructions for upgrading firmware, viewing system logs and diagnostics, and generating reports. Includes information about web pages and commands used to shut down and reboot the SLM.
Chapter 12: Using SLM on a Mobile Browser	Provides instructions for accessing and monitoring the SLM using a mobile phone.
Appendix A: Command Reference	Lists and describes all of the commands used on the SLM command line interface.
Appendix B: Security Considerations	Provides tips for enhancing SLM security.
Appendix C: Safety Information	Lists safety precautions for using the SLM.
Appendix D: Technical Specifications	Lists information about the SLM hardware.
Appendix E: Compliance	Provides information about the SLM's compliance with industry standards.
Appendix F: Protocol Glossary	Briefly describes networking protocols.

Additional Documentation

Visit the Lantronix website at www.lantronix.com/support/documentation for the latest documentation and the following additional documentation.

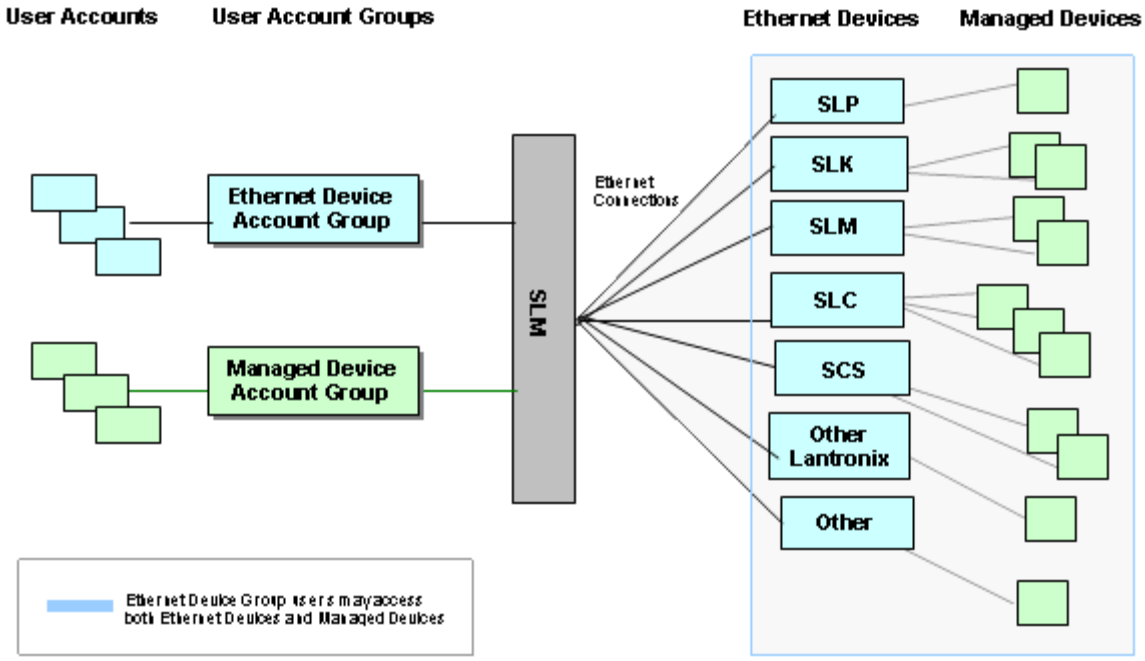
Document	Description
SLM Quick Start	Describes the steps for getting the SLM up and running; provided in printed form.
SLM Online Help for the Command Line Interface	Provides online Help for configuring and operating the SLM using commands.
SLM Online Help for the Web Interface	Provides online Help for configuring and operating the SLM using the web interface.
Detector Online Help	Provides online Help for the utility that enables you to change an automatically assigned IP address to a static IP address quickly.

Terminology

In this User Guide, we use the following terms:

Term	Definition
Ethernet Device	A Lantronix or non-Lantronix device that the SLM discovers on the network. Ethernet devices include: **Secure Lantronix Management Devices:** Members of the Secure Lantronix Management IT family of products: the Secure Lantronix Console (SLC) Server, Secure Lantronix Power (SLP) Manager, Secure Lantronix KVM (SLK) Manager, WiBox, Secure Lantronix Branch (SLB) Office Manager, and Spider. These devices enable you to remotely and securely access and manage networking equipment. **Management Devices:** Lantronix devices that enable you to manage networking equipment. The SCS05/20 is an example. **Lantronix Devices:** Other Lantronix products that network-enable serial devices so you can remotely control, monitor, diagnose, and troubleshoot your equipment over a network or the Internet. **Other Devices:** Non-Lantronix Ethernet devices.
Port	A connector (e.g., serial, power, or KVM) on a management device (e.g., SLC, SLP, SLK, SCS) that allows for control of another device.
Managed Device	A device (such as a Unix server) that has one or more of its connections (e.g., serial, power, or KVM) exposed to allow control and configuration changes by Managed Device Users. A managed device belongs to a Managed Device Group.
Managed Device Group	A group created to allow logical clustering of managed devices (e.g., devices of the same type or devices in the same physical location). A managed device may not be created until at least one Managed Device Group has been defined.
Account	Individual users; must belong to an account group, from which they inherit permissions.
Account Group	A group of accounts (users) with the same privileges. The four types of account groups include: **Administrators Group:** The sysadmin account, which has all privileges and others with specified configuration privileges. ***Note:*** *Throughout this user guide, the term "administrator" means the person using the sysadmin user name and those members of the Administrators Group permitted to perform the task.* **Ethernet Device Account Groups:** Have access to specified Ethernet devices and the managed devices connected to them. **Managed Device Account Groups:** Have access to devices attached to specified Ethernet device ports. **Menu Only Account Groups:** May only access the command line interface and use a limited menu of options.

Figure 1-1 Rights of Ethernet Device Group and Managed Device Group to Devices



2: Introduction

The Secure Lantronix Management (SLM) Appliance is a member of the Lantronix Secure IT Management family of products. There are three models of SLMs: the SLM-01 and SLM-02 which include both the hardware and software and the vSLM, or the virtual, software-only version of the SLM. Other products in the Lantronix Secure IT Management family include the Secure Lantronix Console (SLC) Manager, Secure Lantronix Power (SLP) Manager, and Secure Lantronix KVM (SLK). These products offer systems administrators and other IT professionals a variety of tools for remotely and securely accessing and managing their networking equipment. You can even access the system using a cell phone.

Note: *The SLM-01, SLM-02 and vSLM will be generally referred to as SLM throughout this user guide. For more information about the product family, see the Lantronix web site at* http://www.lantronix.com.

The SLM manages Lantronix and non-Lantronix devices. It "auto-detects" and then displays them in a single, concise view through a web or a command line interface (CLI). A user can search the web view for a desired device or device port (in the case of an SLC or SLK) and then connect to a found device or port without using a separate interface. With an SLC, the user logs in only once, to the SLM, and then any subsequent device logins are automatic. The SLM can also use LDAP, RADIUS, NIS, Kerberos, TACACS+, and SSH public key to authenticate users connecting remotely to the command line interface.

Note: *The SLM is designed to work in an exclusively Lantronix environment. In a mixed environment, the necessary protocols may not be available to provide the same level of functionality.*

Benefits

With the SLM, you can:

- Consolidate management of IT infrastructure through a simple browser interface.
- Maintain a secure, central point of access to all equipment with centralized console logging.
- Reduce equipment diagnosis and repair time while minimizing the cost of ownership and administrative resources.
- Maintain more network up time.

IT Management Application

The following diagram shows how a user can perform management activities through the SLM.

Figure 2-1 SLM Overview

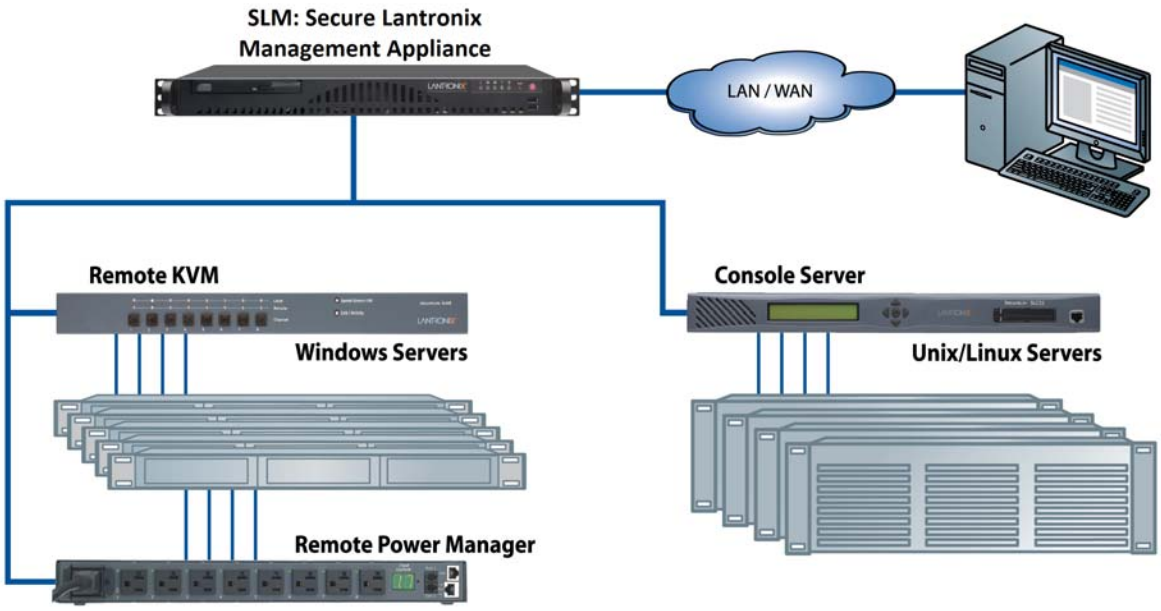
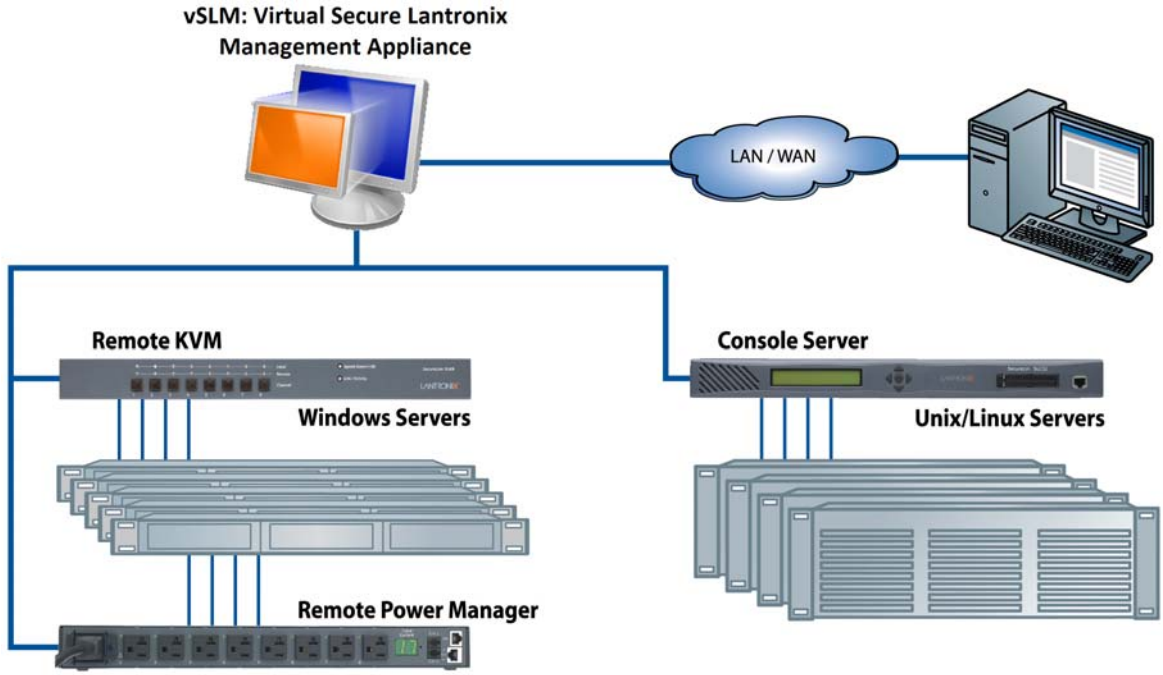


Figure 2-2 vSLM Overview



Firmware

The SLM firmware has the following features:

- Access to up to 256 devices
- User and events logging
- Email notification of trap events, log file events, and Ethernet down
- ID/Password security, configurable access rights
- SSH and SSL security
- External authentication through RADIUS, LDAP, NIS, Kerberos, and TACACS+
- Shared authentication among SLMs and SLCs
- SLC firmware version storage and updates
- Local access through a console port
- Web presentation of SLC and ports in a user-configured view
- Web administration (using most browsers)
- Direct SSH access to SLCs or SLC ports from the web view
- Auto-discovery of devices and other Lantronix and non-Lantronix Ethernet devices
- Support for an internal PCI or external USB modem
- SNMP MIB2
- SNMP trap target
- Mobile phone WAP browser access

Protocols Supported

In addition to supporting the TCP/IP network protocol, the SLM supports:

- SSH for connections in and out of the SLM
- SMTP for mail transfer
- SNMP for remote monitoring and management
- SFTP and FTP for file transfers and firmware upgrades
- DHCP and BOOTP for IP address assignment
- HTTPS (SSL) for secure browser-based configuration
- NTP for time synchronization
- LDAP, NIS, RADIUS, Kerberos, and TACACS+, SecurID, and SSH public key encryption for remote user authentication
- WAP for mobile phone access

For brief descriptions of these protocols, see *Appendix F: Protocol Glossary*.

SLM Hardware

The hardware included with the SLM-01 and SLM-02 have the following features:

- 1U rack mountable
- Two network ports for conventional Ethernet network; uses standard RJ45-terminated Category 5 cables:
- SLM-01: One 10/100Base-T and one 10/100/1000Base-T connection
- SLM-02: Two 10/100/1000Base-T connections
- DB9 RS-232 serial console port for VT100 terminal or PC with emulation
- AC input voltage of 100 to 240 VAC with 50 or 60 Hz
- Operating temperature range of 50°F to 95°F
- PCI expansion slot
- DB25F parallel port (currently disabled) (SLM-02 only)
- USB ports: SLM-01 has three; SLM-02 has four

Note: *For more detailed information, see the Appendix D: Technical Specifications.*

Figure 2-3 Front View of SLM

Figure 2-4 Back View of SLM

The vSLM supports the following virtual hardware features:

- Two network adapters
- USB ports

Product Information Label

The product information label on the underside of the unit contains the following information about each specific unit:

- Part Number
- Revision Number
- Country of Manufacturer

Figure 2-5 Product Information Label.

SLM-01 and SLM-02 Package Contents

In addition to the SLM, the box contains the following items:

- Quick Start Guide
- Null modem DB9 serial cable
- Power cord
- Rack slide kit

Verify and inspect the contents of the SLM package using the enclosed packing slip or the list above. If any item is missing or damaged, contact your place of purchase immediately.

3: Quick Setup

This chapter provides instructions for installing the SLM-01 and SLM-02, getting it up and running, and entering basic network settings so you can configure and use the SLM on a network. For instructions on setting up the vSLM, go to *Chapter 4: Virtual SLM Deployment*.

Warning: ***To avoid physical and electrical hazards, please be sure to read Appendix C: Safety Information before installing the SLM.***

Installing the SLM

Installation includes setting the SLM up in a rack and making serial console port (for initial setup only), network, and power connections.

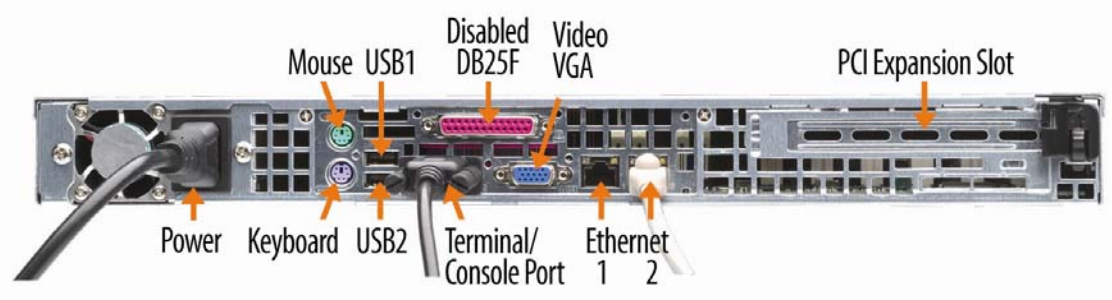
To install the SLM:

1. Place the unit in a 19-inch rack.

Warning: ***Be careful not to block the air vents on the front and back of the unit. If you mount the SLM in an enclosed rack, we recommend that the rack have a ventilation fan to provide adequate airflow through the unit.***

2. For initial configuration, connect a terminal or a computer with terminal emulation to the console port. See *Connecting a Terminal to the Console Port* below.
3. Connect the power cord and apply power. See *Connecting to the Power Supply on page 33*.
4. Wait approximately a minute and a half for the boot process to complete.

Figure 3-1 Connections



Note: *The PS/2 and VGA connectors are not used.*

Connecting a Terminal to the Console Port

The serial console port is for local access to the SLM. You can attach a dumb terminal or a computer with terminal emulation to the console port using a null-modem serial cable with DB9 on the SLM side. The SLM console port uses RS-232C protocol and supports VT100 emulation. The console port is configured as DTE. The default baud rate is 9600.

Connecting to a Network Port

The SLM's two network ports allow remote access to SLCs, SLKs, and SLPs and their attached devices and to system administrative functions. Use a standard RJ45-terminated Category 5 cable to connect to a network port).

Notes:

- *SLM one 10/100Base-T and one 10/100/1000Base-T network port; SLM-02 has two 10/100/1000Base-T network ports.*
- *One possible use for the two Ethernet ports is to have one port on a private, secure network, and the other on an unsecured network.*
- *Both Ethernet ports should not be on the same subnet.*

Connecting to the Power Supply

The SLM has a universal auto-switching AC power supply. The power supply accepts AC input voltage between 100 and 240 VAC with a frequency of 40 or 60 Hz. A rear-mounted IEC-type AC power connector provides universal AC power input (North American cord provided).

Monitoring the LEDs

The SLM has five LEDs on the front panel to signal information during boot-up and while the SLM is running.

Figure 3-2 LEDs on Front of SLM

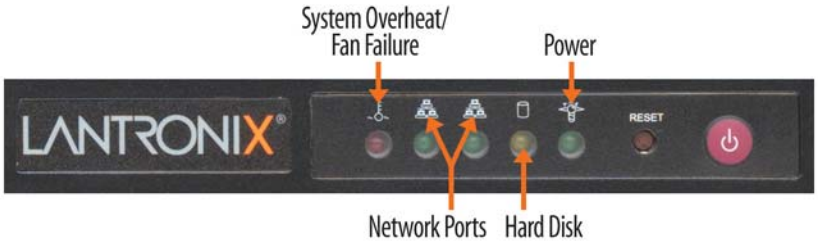


Table 3-3 SLM LED Functions

LED	Function
Power	Steady green when power is on.
Hard drive	Blinking yellow when there is hard drive access (typical PC LED).
Network Port 1	Green indicates activity.
Network Port 2	Green indicates activity.
System Overheat/ Fan Failure	Steady yellow if the unit overheats. ***Warning:*** ***If the alarm LED is on, quickly shut down the*** SLM ***and contact Lantronix Tech Support at*** www.lantronix.com/support***. Continued use of the SLM while the alarm indicator is on may cause permanent system damage to hardware and data stored in the system.***

Quick Network Setup

This section helps get the IP network port up and running quickly, so you can administer the SLM using your network. Your SLM must have a unique IP address on your network. The SLM receives an IP address in one of three ways:

Automatically: The first time you power up the SLM, Network Port 1 tries to obtain its IP address via DHCP. If you have connected Network Port 1 to a network with a DHCP server, it acquires an IP address. Smaller networks may use BOOTP.

Using Detector: This software allows you to quickly assign a static IP address to a unit that has an automatically assigned IP address. This utility can be downloaded from the Lantronix website, by selecting the **Secure Lantronix Management SLM** product from the Firmware/Downloads page: www.lantronix.com/support/downloads.

Manually: If the SLM cannot obtain an IP address by means of DHCP, you must manually enter one using a terminal or a PC running a terminal emulation program to the unit's serial console port.

The administrator generally provides the IP address and corresponding subnet mask and gateway. If you assign an IP address manually, **it must be within a valid range and unique to your network.**

Required Information

To set up the SLM quickly so you can use it on your network, you must first enter some basic information about one network port and the network.

IP address (if not already assigned): _____. _____ . _____ . _____

Subnet mask (if not already assigned): _____. _____ . _____ . _____

Gateway: _____. _____ . _____ . _____

Using Detector

Note: *The Detector software is located under the Secure Lantronix Management SLM product group on the Firmware/Downloads page: www.lantronix.com/support/downloads. Use Detector to replace an If you try to run detector2.exe on a network shared drive, you may get a security exception. We recommend that you copy the detector2 directory to your local hard drive and run it from there. If you must run detector2.exe from a network shared drive, you need to change your security settings using the" .NET Framework Configuration" or "caspol" tool.*

To install Detector:

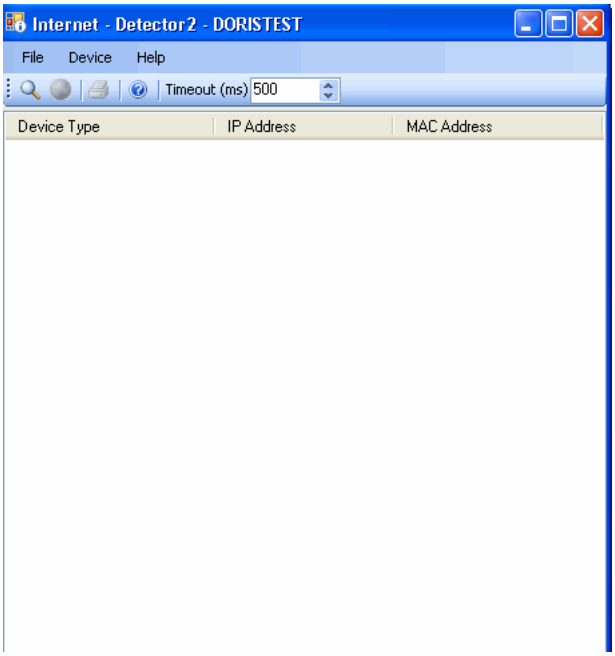
1. Download the Detector.zip compressed folder.
2. Extract all files in the .zip folder.
3. Open the Detector folder and double-click the Detector2.exe.
4. Click **Run**.
5. If a "The application failed to initialize properly (0xc0000135), click OK to terminate the application" message displays, you need to install .NET Framework.

   Obtain the .NET Framework redistributable package. It is available as a stand-alone executable file, Dotnetfx.exe downloadable from Microsoft at: http://www.microsoft.com/downloads/details.aspx?FamilyID=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en

To use Detector to set the IP address:

1. Open the Detector software. The Lantronix Detector window opens.

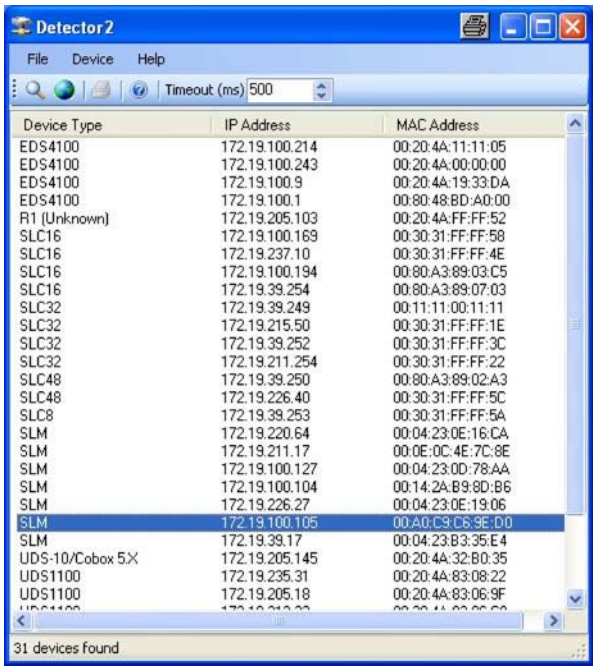
Figure 3-4 Lantronix Detector Window



2. From the Timeout drop-down menu (in the toolbar), select the number of milliseconds before the search stops. The default is 500.

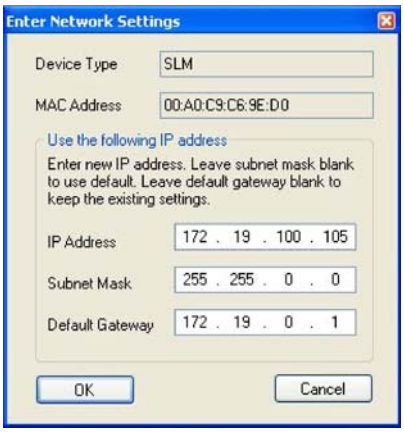
3. Click the **Search** icon. A list of Lantronix Ethernet devices on the network displays.

Figure 3-5 SLMDetector Device List Window



4. If the SLM has an automatically assigned IP address and you want to change it, select the SLM and click the **Network Settings** icon. The Enter Network Settings window displays.

Figure 3-6 Network Settings Window



The Device Type and MAC Address (Ethernet Address) fields identify the unit.

5. Enter the following information:

Table 3-7 Enter Network Settings

Setting	Description
IP Address	An IP address that will be unique and valid on your network and in the same subnet as your PC. There is no default. ***Note:*** *Enter all IP addresses in dot quad notation.*

Setting	Description
Subnet Mask	The subnet mask specifies the network segment on which the SLC resides. To accept the default, leave blank.
Default Gateway	IP address of the router for this network. To accept the default, leave blank.

6. Click **OK**. A message confirms that your network configuration has been sent.
7. Click **OK**.
8. To confirm the change, click the **Search**  icon and verify that the unit has new network settings.

Note: *IP address reassignment is only effective if the CLI quick setup or web network setting has not been configured before. Once you change the IP address using Detector, the network setting recognizes it as the static IP. You must set up a default gateway prior to using the Lantronix Discovery Protocol (LDP) to discover devices that support LDP, such as SLC devices. See .*

Using Quick Setup on the Command Line Interface

If the SLM does not have an IP address, connect a dumb terminal or a PC running a terminal emulation program (VT100) to access the command line interface. If the unit already has an IP address, you can use SSH to connect to the command line interface and add or change the IP address or other network-related information.

To complete the command line interface Quick Setup script:

Note: *Chapter 5: Web and Command Line Interfaces describes the command line interface in detail.*

1. Do one of the following:
   - With a serial terminal connection, power up, and when the command line displays, press Enter.
   - With a network connection, use an SSH program to connect to xx.xx.xx.xx (the IP address in dot quad notation) and press Enter. The login prompt displays.
2. Type `sysadmin` (case sensitive) as the user name and press Enter.
3. Type `PASS` (case sensitive) as the password and press Enter.

Figure 3-8 Beginning of Quick Setup Script

```
Welcome to the Secure Lantronix Manager
Version: 3.4
Login Name: sysadmin
Login Time: Wed July 25 15:24:35 2012
For a list of commands, type 'help'.
Do you want to do quick setup? [no]
```

4. In response to the prompt asking whether you want to do the quick setup, type yes and press Enter.

Note: *The prompt displays the first time you log in only. If you want to run the script again, type admin quicksetup.*

5. Enter the following information at the prompts:

Note: *To accept a default or to skip an entry that is not required, press Enter.*

Table 3-9 Quick Setup Script

Script	Description
Configure Port 1 or 2	Select one of the following: **<1> obtain IP Address from DHCP:** The unit will acquire the IP address and gateway from the DHCP server. (The DHCP server may provide the gateway, depending on its setup.) This is the default setting. **<2> obtain IP Address from BOOTP:** Permits a network node to request configuration information from a BOOTP "server" node. **<3> static IP Address:** Requires you to assign a static IP address manually. The administrator generally provides the IP address. ***Note:*** *For* SLM-*01, Network Port 1 is 10/100/1000Base-T, while Network Port 2 is 10/100Base-T. For* SLM-*02, both Network Ports 1 and 2 are 10/100/1000Base-T.*
IP Address (if specifying)	An IP address that will be unique and valid on your network and in the same subnet as your PC. There is no default. If you selected **DHCP** or **BOOTP**, this prompt does not display. ***Note:*** *Enter all IP addresses in dot quad notation.*
Subnet Mask	The subnet mask specifies the network segment on which the SLC resides. There is no default. If you selected **DHCP** or **BOOTP**, this prompt does not display.
Gateway IP Address	IP address of the router for this network.
Hostname	The default host name is SLM. The host name can be a short host name or a fully qualified domain name. For example, we might add lantronix.com to the factory default name of SLM to get SLM.lantronix.com. There is a 64-character limit (contiguous characters).
Time Zone	If the time zone displayed is incorrect, enter the correct time zone and press **Enter**. If the entry is not a valid time zone, the system guides you through selecting a time zone. A list of valid regions and countries displays. At the prompts, enter the correct region and country.
Date/Time	If the date and time displayed are correct, type n and continue. If the date and time are incorrect, type y and enter the correct date and time in the formats shown at the prompts.
Sysadmin password	Enter a new password for the **sysadmin** account. It can be up to 128 characters and is case sensitive.

Figure 3-10 Completed Quick Setup

```
Quick Setup will now step you through configuring a few basic settings.

The current settings are shown in brackets ('[]').
You can accept the current setting for each question by pressing <return>.

____Ethernet Port and Default Gateway_____________________________________
The SLM has two ethernet ports, Port 1 and Por 2.
Current settings are:
Port State    IP address    Subnet mask Mode           IPv4 filter
---- -------- ------------ ----------- -------------- -----------
1    Static   172.19.220.64 255.255.0.0 Auto-negotiate (None)
2    Disabled 0.0.0.0       0.0.0.0     Auto-negotiate (None)
Configure Port 1 or 2: [1]
Configure Port 1:  (1) obtain IP Address from DHCP
                   (2) obtain IP Address from BOOTP
                   (3) static IP Address(172.19.220.64)
Enter 1-3: [3]
Enter IP Address: [172.19.220.64]
Enter Subnet Mask: [255.255.0.0]
Enter gateway IP Addrses: [172.19.0.1]
Specify a hostname: [DaveSLM]

____Time Zone_____________________________________________________________
The current time zone is 'US/Pacific'.
Enter time zone: [US/Pacific]

____Date/Time_____________________________________________________________
The current time is Thu Jul 26 15:05:35 2007
Change the current time? [n]

____Sysadmin Password_____________________________________________________
New password: [<current password>]
Network settings will be updated, the current terminal may not work.
Please re-connect to SLM with new settings as needed.
[sysadmin@DaveSLM]>
```

Once you complete the Quick Setup script, the changes take effect immediately.

Using the Web Interface

Note: *Chapter 5: Web and Command Line Interfaces describes the web interface in detail.*

Once the SLM has an IP address, you can use the web interface to configure required network parameters that determine how the SLM interacts with the attached network. The unit might have a DHCP-assigned IP address or one assigned manually using Detector or a serial connection to the command line interface.

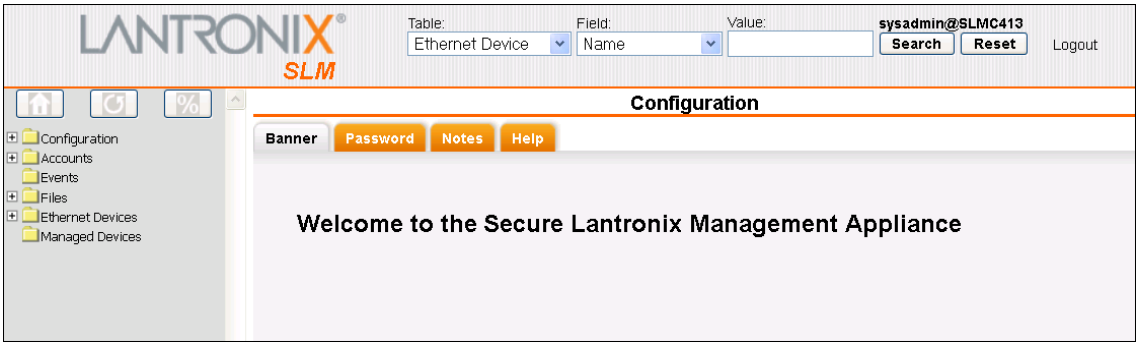
To log in to the web interface:

1. Open a web browser (Internet Explorer 6.0. and later, or Firefox 1.5 and later, with JavaScript enabled).

2. In the URL field, type **https://** followed by the IP address of your SLM.

3. Log in using **sysadmin** as the user name and **PASS** as the password. The SLM Configuration page opens.

Figure 3-11 SLM Home Page

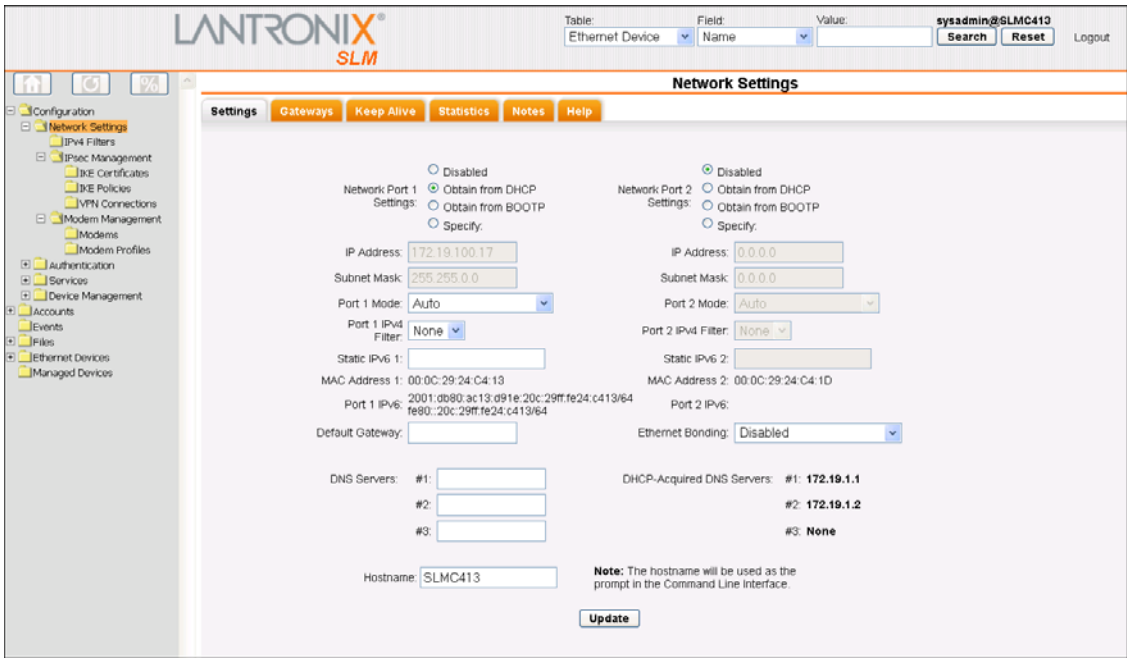


To enter settings for one network port:

Note: *For SLM-01, Network Port 1 is 10/100/1000Base-T, while Network Port 2 is 10/100Base-T. For SLM-02, both Network Ports 1 and 2 are 10/100/1000Base-T.*

1. On the menu (in the pane on the left), click **Configuration > Network Settings.** The following page opens:

Figure 3-12 Network - Settings Page



2. Enter the following information for one network port:

Table 3-13 Network Port Settings

Setting	Description
Network Port Settings	**Disabled**: This is the default setting for Network Port 2. **Obtain from DHCP**: Acquires IP address, subnet mask, and gateway from the DHCP server. (The DHCP server may provide the gateway, depending on its setup.) This is the default setting for Network Port 1. If you select this option, skip to step 3. **Obtain from BOOTP**: Lets a network node request configuration information from a BOOTP "server" node. Skip to step 3. **Specify**: Requires you to assign a static IP address manually. The administrator generally provides the IP address.
IP Address	If specifying an IP address, enter an IP address that will be within a valid range, unique to your network, and in the same subnet mask as your workstation. There is no default. ***Note:*** *Enter all IP addresses in dot quad notation.*
Subnet Mask	If specifying an IP address, enter the network segment on which the SLM resides. There is no default.

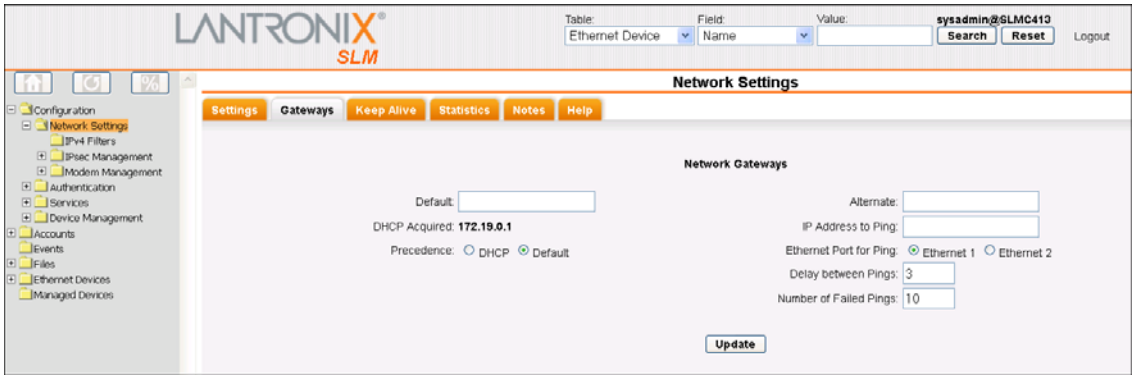
3. To save your entries, click **Apply**. Clicking Apply commits these changes immediately.

Next, enter network gateway information.

To enter gateway information:

1. On the Network - Settings page, click the Gateways tab. The following page opens:

Figure 3-14 Network Settings -Gateways Tab



2. Enter the following:

Table 3-15 Network Gateway Settings

Setting	Description
Default	IP address of the router for this network. If this has not been set manually, any gateway assigned by DHCP for Network Port 1 or Network Port 2 displays. All network traffic that matches the Network Port 1 IP address and subnet mask goes out Network Port 1. All network traffic that matches the Network Port 2 IP address and subnet mask goes out Network Port 2. If you set a default gateway, the SLM sends any network traffic that does not match Network Port 1 or Network Port 2 to the default gateway for routing.
DHCP Acquired (view only)	Gateway assigned by DHCP for Network Port 1 or Network Port 2. The default setting is **None**.
Precedence	Indicates whether the gateway assigned by DHCP or the default gateway takes precedence. The default setting is **Default**. If you select DHCP, and both network ports are configured for **DHCP**, the SLM gives precedence to the Network Port 1 gateway.

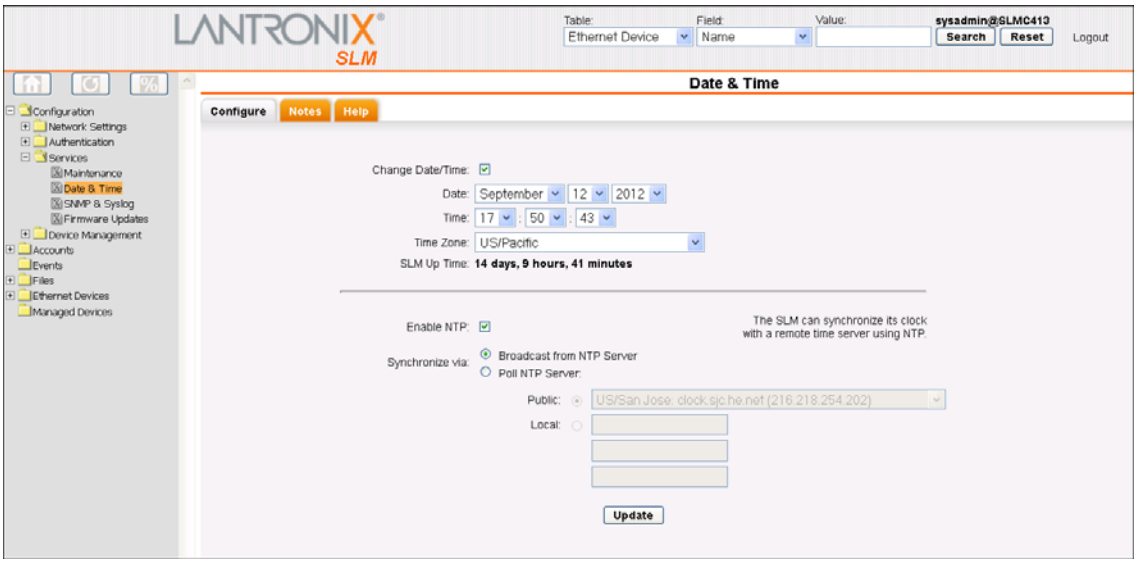
Note: *You have configured only the settings required to get the SLM up and running. To complete the network configuration, see Chapter 7: Network and Modem Settings.*

To set the local date, time, and time zone:

You can specify the current date, time, and time zone at the SLM's location (default), or the SLM can use NTP to synchronize with an NTP server on your network.

1. On the menu, click **Configuration > Services > Date & Time**. The following page opens:

Figure 3-16 Date & Time Page



2. Enter the following information:

Table 3-17 Date & Time

Date and Time Setting	Description
Change Date/Time	Select the check box to manually enter the date and time at the SLM's location.
Date	From the drop-down lists, select the current month, day, and year.
Time	From the drop-down lists, select the current hour and minute.
Time Zone	From the drop-down list, select the appropriate time zone.
SLM Up Time	Indicates how long the SLM has been up and running.

3. To save, click **Update**.

To change the administrator password:

The default sysadmin password is **PASS**.

1. On the menu, click **Accounts > Administrators > sysadmin**. The following page opens:

Figure 3-18 Account Page for Sysadmin

2. Enter the new administrator password in **Password** and (Retype). The password can be up to 128 characters and is case sensitive.
3. Click the **Update** button. When the update is complete, a confirmation message displays.

Quick Setup Command

`admin quicksetup`

Syntax

`admin quicksetup`

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

Next Steps

After quickly getting the SLM up and running, you can complete the configuration on the web pages.

- To learn more about the interfaces, go to *Chapter 5: Web and Command Line Interfaces*.
- To continue configuring the SLM for your needs, start with *Chapter 7: Network and Modem Settings*.

4: Virtual SLM Deployment

The Virtual Secure Lantronix Management (vSLM) Appliance is a virtual appliance that runs under a variety of virtual machine managers, including VMware. vSLM can be downloaded from the Lantronix website and launched on a desktop or server, and used to administer Secure Lantronix Mangement devices like the SLM hardware version. This chapter describes the differences between the SLM and vSLM.

vSLM is available as a 32-bit VMware version or a OVF (Open Virtualization Format) version. The VMware version can be launched on VMware Player or VMware Workstation; it can also be converted for use on VMware ESX and ESXi (see http://kb.vmware.com/kb/900 for more information on converting the VMware version to a format used by ESX or ESXi). The OVF version can be launched on VMware ESX and ESXi, both virtual machine managers that support importing the OVF format.

Minimum Hardware Requirements

- 3.0 Ghz or faster single core speed
- RAM: 2GB
- Disk Space: 60 GB
- Ethernet: 1 Bridged

Deployment Instructions

Below are instructions for deploying a vSLM VM from the VMware or OVF distribution. Refer to the documentation for your virtualization manager for specific instructions on opening or launching a VM.

To deploy the VMware version:

1. Download the `vslm-<firmware version>.vmware.zip` distribution from the Lantronix website.
2. Unpack `vslm-3.4b.vmware.zip` for distribution:
   - `slm-3.4b.vmwarevm/`
   - `vslm-3.4b.vmwarevm/vslm-3.4b.vmdk`
   - `vslm-3.4b.vmwarevm/vslm-3.4b.vmx`
   - `vslm-3.4b.vmwarevm/vslm-VMware-README.txt`
3. Launch your virtualization manager and open the unpacked VM.
4. Before starting the VM, configure the following settings:
   - A minimum of 2GB of RAM
   - USB enabled
   - MAC addresses assigned to both network interfaces BEFORE the first boot of the vSLM sound
   - Floppy disk and printer support removed

5. Start the VM.

To deploy the OVF version:

1. Download the `vslm-<firmware version>.OVF.zip` distribution from the Lantronix website.
2. Unpack `vslm-3.4b.OVF.zip` for distribution:
   - `vslm-3.4b.OVF/`
   - `vslm-3.4b.OVF/vslm-3.4b-disk1.vmdk`
   - `vslm-3.4b.OVF/vslm-3.4b.mf`
   - `vslm-3.4b.OVF/vslm-3.4b.ovf`
   - `vslm-3.4b.OVF/vslm-OVF-README.txt`
3. Launch your virtualization manager and open or import the unpacked .zip files (see `vslm-OVF-README.txt` for instructions for using VMware ovftool).
4. Before starting the VM, configure the following settings:
   - A minimum of 2GB of RAM
   - USB enabled
   - MAC addresses assigned to both network interfaces BEFORE the first boot of the vSLM
   - sound, floppy disk and printer support removed
5. Start the VM

After the VM boots (this may take a few minutes while it is performing its initial setup), the login prompt will be displayed on the console. The initial credentials are username "**sysadmin**" and password "**PASS**". After logging in, the settings for the first network interface can be displayed with the command "show network port 1". The web interface can be accessed with the URL:

`https://<IP Address of the first network interface>`

At this point you can follow the instructions from *Chapter 3: Quick Setup* for Quick Setup starting with *Using Quick Setup on the Command Line Interface on page 37*.

It is recommended that the vSLM be shutdown or restarted using its "admin shutdown" and "admin reboot" commands, rather than using the virtualization manager to shutdown or restart the vSLM.

30-Day Trial License

The vSLM has a 30-day trial period during which all features are available. At the end of the 30 day trial period, most features will be disabled, and a license will be required to reenable the features. The current license options can be viewed at the CLI with the "admin showoptions" command:

```
[sysadmin@SLMB1DC]> admin showoptions
Physical device location:        Disabled
Auto firmware update expiration: apr2014
Virtual Machine:                 Disabled    (2 days remaining in trial
period)
Maximum concurrent users:        25
```

To obtain a permanent vSLM license, contact Lantronix Sales at 800-422-7055. You will need to provide the unique signature for your vSLM:

```
[sysadmin@SLMB1DC]> admin signature show
Signature: 6f32deb993d767081dada4ff9a2b27c2
```

5: Web and Command Line Interfaces

The SLM offers two interfaces for configuring the SLM: a web interface and a command line interface (CLI). This chapter introduces you to both.

Web Interface

A web interface allows the administrator to configure and manage the SLM using most web browsers (Internet Explorer 6.0. and later or Firefox 1.5 and later with JavaScript enabled).

Note: *Certain features, for example Browse http and Browse https access to some non-Lantronix devices, require IE 7.*

Logging in

To log in to the SLM web interface:

1. Open a web browser (Internet Explorer 6.0. and later or Firefox 1.5 and later with JavaScript enabled).
2. In the URL field, type https:// followed by the IP address of your SLM.
3. To configure the SLM, use sysadmin as the user name and PASS as the password. (These are the default values.)

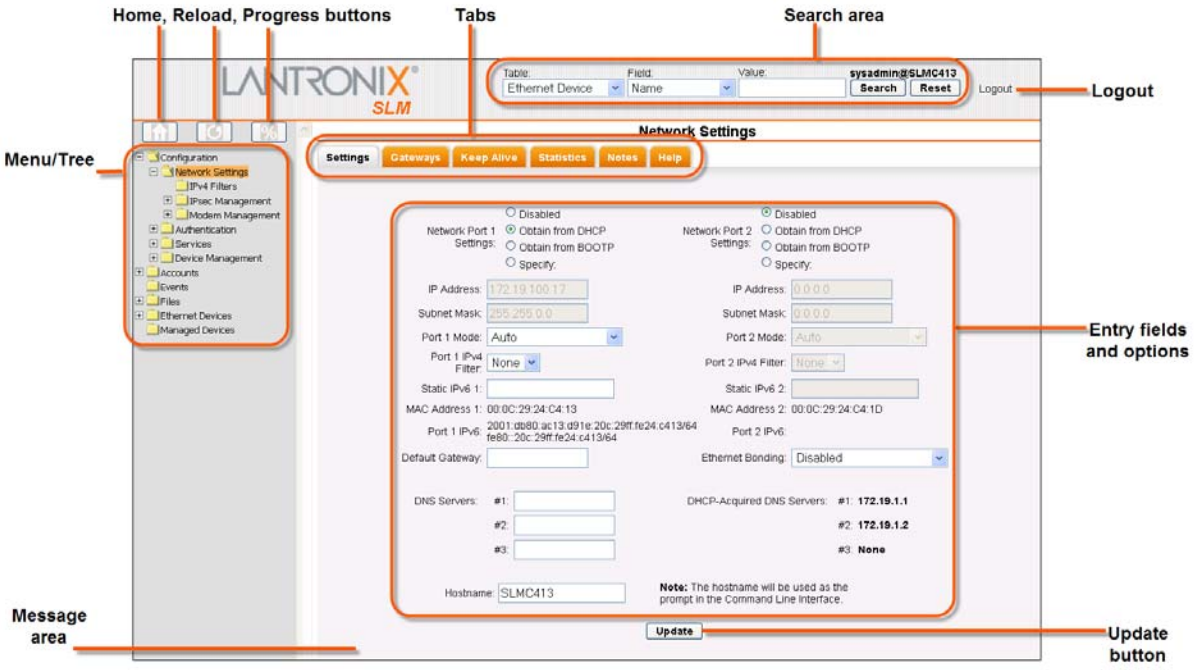
Notes:

- *The administrator may have changed the password using the method described in the previous chapter.*
- *When SecurID is enabled, the user must enter the number on the RSA token. Depending on the state of the user, the login page may require a PIN number, passcode, or new token code.*

Typical SLM Web Page

The following figure shows a typical web page:

Figure 5-1 Web Page Layout



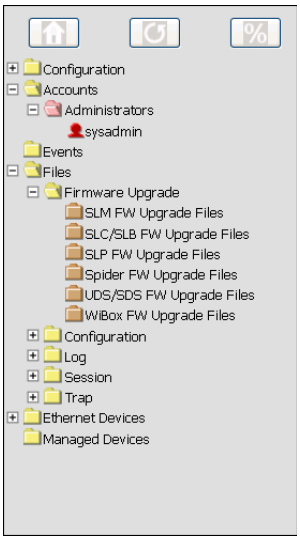
The web page has the following components:

Search Fields: Enable you to search for devices (e.g., SLCs, SLPs, and SLKs), ports, managed devices, users and persistent connections in the SLM database.

Menu/Tree: Enables you to display a page to configure settings or to perform a function.

- Clicking the expand (plus sign) or contract (minus sign) icon causes the tree structure to toggle between expanded and contracted views but does not populate the page.
- Clicking the folder or document icon causes the tree structure to toggle between expanded and contracted views (for folders) and populates the page.
- Clicking the text only populates the page; the tree structure remains unchanged.

Figure 5-2 Tree Structure



Tabs: Display a series of pages related to a particular entity (e.g., account group, network settings, and Ethernet devices).

Home Button: Displays the Lantronix web site home page.

Reload Button: Use to refresh the tree structure after auto-detect, or if some other process (another logged-in user) makes changes that affect the database.

Progress Button: Indicates status of background processes such as bulk updates and automatic detection for SLCs, SLMs, SLKs, SLPs, and SCSs.

Entry Fields and Options: Enable you to enter data and select configuration options.

Update Button: Makes and saves the changes immediately.

Reset Button: Sets field contents to their original values.

Message area: Displays messages such as update confirmations or error messages.

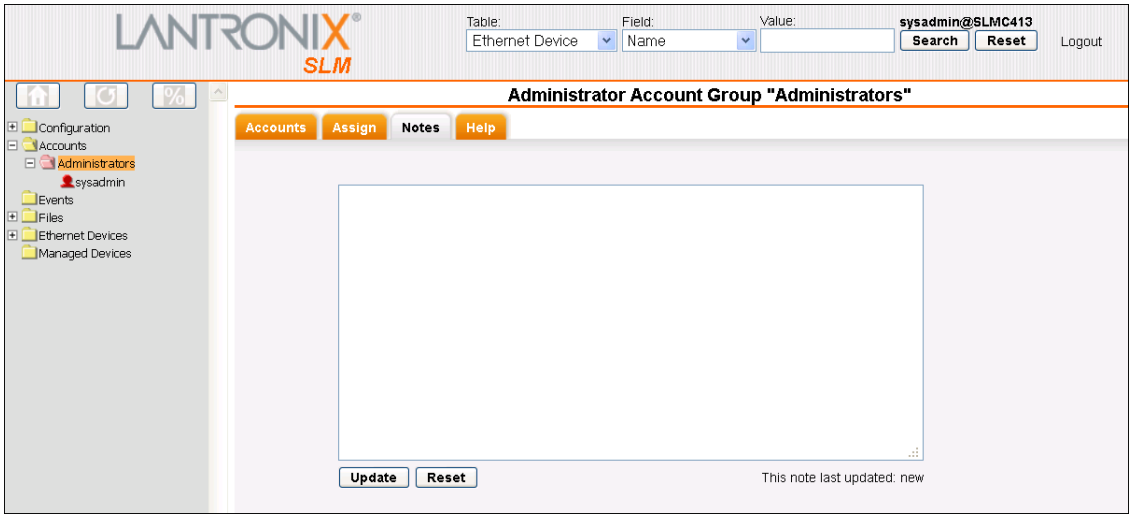
Notes

Administrators and authorized users can add, update, and delete information about any of the entities in the system (e.g., account, account group, device, and event) in the form of a note. All users with permission to view the entity can view notes about it. In this example, we add a note to an account group.

To view, add, update, and delete a note:

1. On the page for the entity to which you want to add a note (e.g., Account Group page), click the Notes tab. The following page opens.

Figure 5-3 Note for an Account Group



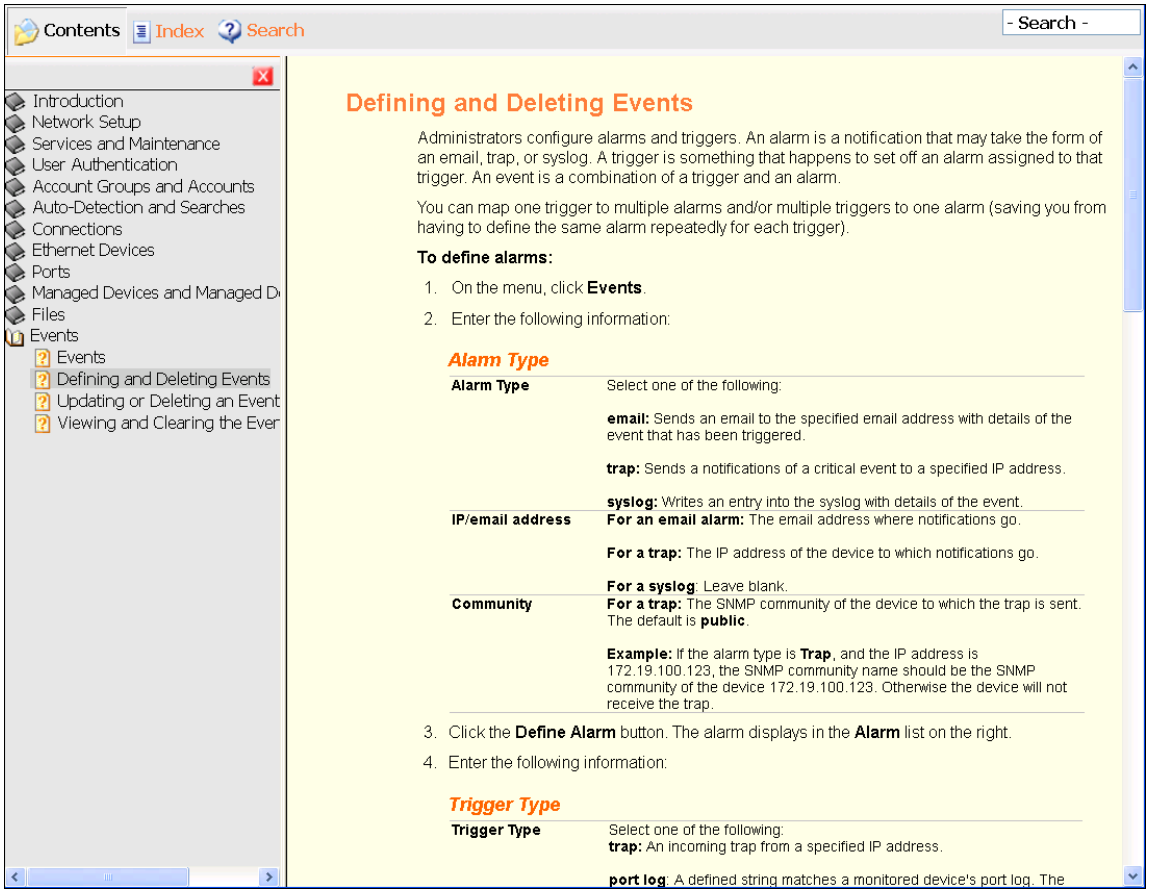
2. In the text box, type the information you want to associate with the entity.
3. Do one of the following:
   - To reset the note to its previous contents, click the **Reset** button.
   - To delete a saved note, click in the box, press **CTRL+A**, press **Delete**, and then click the **Update** button.
   - To save a new note, click the **Update** button. A confirmation message displays. The next time you open the page, it displays the note and the date and time of the update.

Web Page Help

To view context sensitive information about any SLM web page:

1. Click the **Help** tab. A Help page opens for the tab you are viewing. The **Contents** and **Search** buttons are above the pane on the left.

Figure 5-4 Example of a Help Page



To search for information:

1. Click the **Search** button. A search field displays.
2. Enter the word(s) you want to search for and press **Enter**.

Note: *You can also enter the word in the search field to the left of the Lantronix logo and press Enter.*

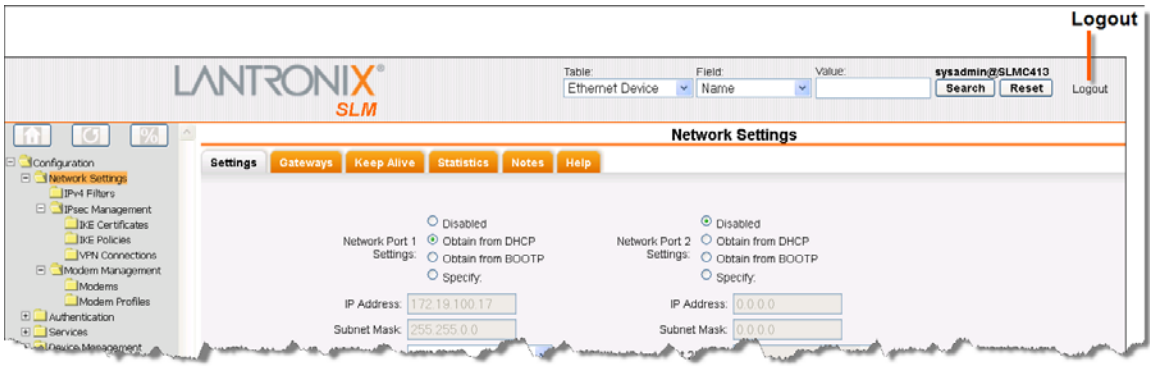
Logging Out of the Web Interface

A **Logout** link is available in the upper right corner of every page.

To log out of the SLM web interface:

1. Click **Logout** to the right of the search buttons on the SLM page banner.

Figure 5-5 Logout on the Page Header



Command Line Interface (CLI)

A command line interface is available for entering the commands for the SLM. You can access the CLI using SSH or a serial terminal connection.

In this User Guide, after each section of instructions for using the web interface, you will find related CLI commands. Not all web page entries have corresponding commands, and vice versa. The sysadmin user has access to the complete command set, while all other users have access to a reduced command set.

Logging into the CLI

To log in to the SLM command line interface:

1. Do one of the following:
   - With a serial terminal connection, power up, and when the command line displays, press Enter.
   - If the SLM already has an IP address (manually assigned previously or assigned by DHCP), SSH to xx.xx.xx.xx (the IP address in dot quad notation) and press Enter. The login prompt displays.
2. To log in as the administrator for setup and configuration:
   a. Type **sysadmin** as the user name and press Enter.
   b. Type **PASS** as the password and press Enter.

   Note: *The administrator may have changed the password using the methods described in the previous chapter.*
3. To log in as any other user:
   a. Enter your SLM user name and press Enter.

b. Enter your SLM password and press Enter.

Note: *When SecurID is enabled, the user must enter the number on the RSA token. Depending on the state of the user, the login page may require a PIN number, passcode, or new token code.*

Commands

Commands have the following format:

`<action> <category> <parameter(s)>`

where

`<action>` is set, show, connect, diag, admin, or logout.

`<category>` is a group of related parameters you want to configure or view. Examples are devicegroup, account, and network.

`<parameter(s)>` is one or more name-value pairs in one of the following formats:

Table 5-6 CLI Commands

Command	Description
`<parameter name> <aa bb>`	Specify one of the values (aa or bb) separated by a vertical line (|). The values are all lowercase and must be entered exactly as shown. Bold indicates a default value.
`<parameter name> <Value>`	Specify an appropriate value, for example, a device group name. This User Guide shows parameter values in mixed case to indicate they are case sensitive. For example, if you saved a device group name in mixed case, you must enter it in mixed case; if you saved it in lowercase, you must enter it in lowercase.
Square brackets `[ ]`	Indicate optional parameters.

Table 5-7 Actions and Category Options

Action	Category
`set`	`network | service | ipfilter | account | accountgroup | auth | nis | ldap | radius | kerberos | tacacs+ | secured | ethernetdevice | manageddevice | mgroup | datetime | cli |` `menu | sshkey | history | modem | dialaccount | persistent | ipmi | ilo`
`show`	`network | service | ipfilter | iptables | account | accountgroup | auth | nis | ldap | radius | Kerberos | tacacs+ | secured | device | port | ethernetdevice | manageddevice | auditlog | syslog | portlog | traplog | eventlog | sessionlog | datetime | cli | menu | sshkey | history | connection | progress | sysconfig | sysinfo | modem | dialaccount | routing | persistent | ipmi | ilo`
`connect`	`device | remote | index | ssh | telnet | tn3270 | terminate | persistent | wakeonlan`
`diag`	`ping | ping6 | arp | traceroute | netstat | nettrace | internals`

Action	Category
admin	autodetect | locallog | version | option | showoptions | config | quicksetup | securechannel | signature | banner | reboot | shutdown | showbootbank | switchbank | copybank | web
logout	Terminates CLI session.

Command Help

For general command help, type: help

For more information about a specific command, type help followed by the command, for example:

```
help set network
```

OR

type ? after the command:

```
set network ?
```

Tips

- Type enough characters to identify the action, category, or parameter name uniquely. For parameter values, type the entire value. For example,

  ```
  set network port 1 state static ipaddr 122.3.10.1 mask 255.255.0.0
  ```

  can be shortened to:

  ```
  se net po 1 st static ip 122.3.10.1 ma 255.255.0.0
  ```

- Use the Tab key to automatically complete action, category, or parameter names. Type a partial name and press Tab to complete the name if only one is possible, or to display the possible names if more than one is possible.
- Should you make a mistake while typing, backspace by pressing the Backspace key or the Delete key, depending on how you accessed the interface. Both keys work if you use VT100 emulation in your terminal access program when connecting to the console port. Use the left and right arrow keys to move within a command.
- Use the up and down arrows to scroll through previously entered commands. If desired, select one and edit it. You can scroll through up to 100 previous commands entered in the session.
- When the number of lines displayed by a command exceeds the size of the window (the default is 20), the "Type more to see the next page" message displays. To display the next page, type more and press Enter. You can override the number of lines (or disable the feature altogether) with the set cli command.
- To clear an IP address, type 0.0.0.0.

Logging Out of the CLI

To log out of the SLM command line interface:

1. Type logout and press **Enter**.

CLI Commands

The following commands relate to the CLI itself.

`set cli terminallines`

Syntax

`set cli terminallines <disable|1-1000>`

Description

Sets the number of lines that display in a page for the auditlog, syslog, portlog, traplog, and device list. Default is 20.

`set history clear`

Syntax

`set history clear`

Description

Clears the CLI command history.

`show cli`

Syntax

`show cli`

Description

Displays the terminal lines settings.

show history

Syntax

`show history`

Description

Displays the 100 most recent CLI commands.

Session Commands

`connect terminate`

Syntax

`connect terminate <connect ID> <one or more parameters>`

Parameters

`outbound <outbound ID>`

You must specify connection ID (inbound ID) to terminate an outbound connection.

Use `show connection` to view the current connections and their ID.

Examples

```
connect terminate 3
connect terminate 3 outbound 1
```

Description

Terminates a user connection to the SLM session. Use `show connection` to view the current connections and IDs.

```
show connection
```

Syntax

```
show connection
```

Description

Displays active user connections and connection IDs.

6: Configuration and Operation Overview

To best use the SLM, review the setup and configuration process outlined below before undertaking the tasks detailed in Chapters 6-10.

Note: *Throughout this user guide, the term "administrator" means the person using the* ***sysadmin*** *user name and those members of the Administrators Account Group permitted to perform the task.*

Following is an overview of the tasks the administrator and other users perform to configure and use the SLM, in roughly the order performed.

The typical user employs SLM as follows:

- Searches for Lantronix Devices and other Ethernet devices.
- Connects by browser, SSH, or Telnet to Lantronix Devices and other Ethernet devices, and additionally, by secure channel to SLCs and other SLMs.
- Accesses notes and logs about the management devices and their ports.

The administrator performs the following configuration and maintenance activities:

- Updates SLM firmware and configurations.
- Configures properties of the log files.
- Manages syslog, portlog, auditlog, upgrade, configuration, session, and trap files.
- Configures an SNMP agent.
- Configures and views events.
- Updates firmware on Lantronix Ethernet devices (SLM, WiBox, UDS, Spider, SLP, and SLC).

Step 1: Configure Network Settings

The administrator enters the network settings that enable the SLM to access the network, manages modems, and sets up IPv4 filter sets

Step 2: Define Authentication Methods

The SLM supports LDAP, RADIUS, NIS, Kerberos, TACACS+, SecurID, and SSH public key authentication. Remote authentication is optional. The administrator can opt to use only local authentication.

Step 3: Set Up User Account Groups and Accounts

The SLM comes with four types of account groups: Administrators, Ethernet Device, Managed Device, and Menu Only users. Administrators create account groups of each type (except Administrators) and create and assign accounts to the account groups.

The administrator can create additional administrator accounts that have the following rights enabled or disabled:

- Network Settings
- Authentication
- Services (e.g., SNMP and syslog, Date and Time, and Maintenance)
- Device Management
- Accounts
- Events
- File Management

Step 4: Auto-Detect Devices

The administrator uses auto-detection methods to find Lantronix devices and other devices on the network and to add them to the SLM database for the SLM to manage. There is no need to add a device manually, although that option is available. Currently, auto-detect supports Lantronix Discovery Protocol (LDP) for SLCs and other Lantronix devices, the Lantronix SCS05/20 device discovery protocol, and SNMP for SLPs, SLKs, and all other Ethernet devices.

Step 5: Associate Account Groups with Ethernet and Managed Devices

Once the SLM administrator adds account groups and Ethernet devices, the next step is to associate the account groups with the Ethernet devices and managed devices (devices attached to Ethernet device's ports) to which they will have access. In the case of SLC/SCS Console Servers, permissions also allow specific account groups listen-only access or full bidirectional control.

Step 6: Manage Devices

The user selects Ethernet devices from the menu's tree structure or enters search criteria to search for Ethernet devices, ports, and managed devices. The user then views port settings (if the device has ports) and can connect to an attached device through a web browser or the CLI.

For ease of communication and management, managed devices that link together device ports (e.g., SLC, SCS, SLK, and SLP) may be created or "fused" together. Users may then manage all of these ports through the managed device on a single web page. In the case of an SLC or another SLM, the user can make a secure channel connection through which the SLM forwards user permission information so a secondary login is not required. For SLCs, once a secure channel has been set up, the user can make a web channel connection.

Step 7: Maintain the SLM

The SLM enables the following maintenance tasks:

SLM Firmware Updates: The SLM administrator updates the SLM firmware.

Auto-Save: The administrator saves the configuration of one SLM on another SLM. If there is a need, the second SLM can "become" the first SLM.

Configuration Save and Restore: The administrator saves and restores system configurations, providing rapid recovery of inadvertent configuration changes.

User Log (Audit Trail): Every successful login, logout, and command on the command line interface and web is logged into a database table. The administrator reads this information from the CLI or web and creates an audit report for one or multiple users.

Events: The administrator defines alarms and triggers that constitute an event. Events are sent to specific users or recorded on the syslog or on another device through an SNMP trap.

Files: The administrator manages (imports, exports, deletes, and renames) and views upgrade, configuration, syslog, audit log, port log, sysconfig, device session, and trap files.

7: Network and Modem Settings

This chapter is primarily for the administrator. It explains how to enter the network configuration, IPv4 filters, and modem settings for the SLM using the SLM web interface or the CLI. If you used a procedure in *Chapter 3: Quick Setup* to get your unit up and running on the network, you can add or update settings here.

IP Address and Other Required Information

Note: *On the SLM-02, both Network Ports 1 and 2 are 10/100/1000Base-T. Previous versions of the SLM have one 10/100Base-T and one 10/100/1000Base-T network port. The vSLM supports two bridged network adapters.*

To configure the unit for use on the network, you need the following information:

Network Port 1:

IP address (if not already assigned): _____. _____ . _____ ._____

Subnet mask: _____. _____ . _____ ._____

Network Port 2: (optional)

IP address (if not already assigned): _____. _____ . _____ ._____

Subnet mask: _____. _____ . _____ ._____

Default Gateway: _____. _____ . _____ ._____

DNS Server: _____. _____ . _____ ._____

Your SLM must have a unique IP address on your network. If you assign an IP address manually, it must be within a valid range and unique to your network. The administrator generally provides this information.

The SLM receives an IP address in one of the following ways:

Automatically: The first time you power up the SLM, Network Port 1 tries to obtain its IP address automatically through DHCP. If you have connected the network port to a network with a DHCP server, the network port acquires an IP address. Smaller networks may use BOOTP.

Using Detector: This software allows you to quickly assign a static IP address to a unit that has an automatically assigned IP address. This utility can be downloaded from the Lantronix website, by selecting the Secure Lantronix Management SLM product from the Firmware/Downloads page: www.lantronix.com/support/downloads.

Manually: If the SLM cannot obtain an IP address by means of DHCP, you must manually enter an IP address using a terminal or a PC running a terminal emulation program to the unit's serial console port.

Once the SLM has an IP address, you can configure the remaining settings (and change the IP address, if desired) using the CLI or the web interface.

Using the Web Interface

After the unit has an IP address, you can configure network parameters that determine how the SLM interacts with the attached network and enter the date, time, and timezone.

Note: *Chapter 5: Web and Command Line Interfaces describes the web interface in detail.*

To log in:

1. Open a web browser (Internet Explorer 7.0. and later or Firefox 15.0 and later with JavaScript enabled).
2. In the URL field, type https:// followed by the IP address of your SLM.
3. Log in using sysadmin as the user name and PASS as the password. The SLM Configuration page opens.

Figure 7-1 SLM Configuration Page (SLM-01 and SLM-02)

Figure 7-2 vSLM Configuration Page

Network Port(s)

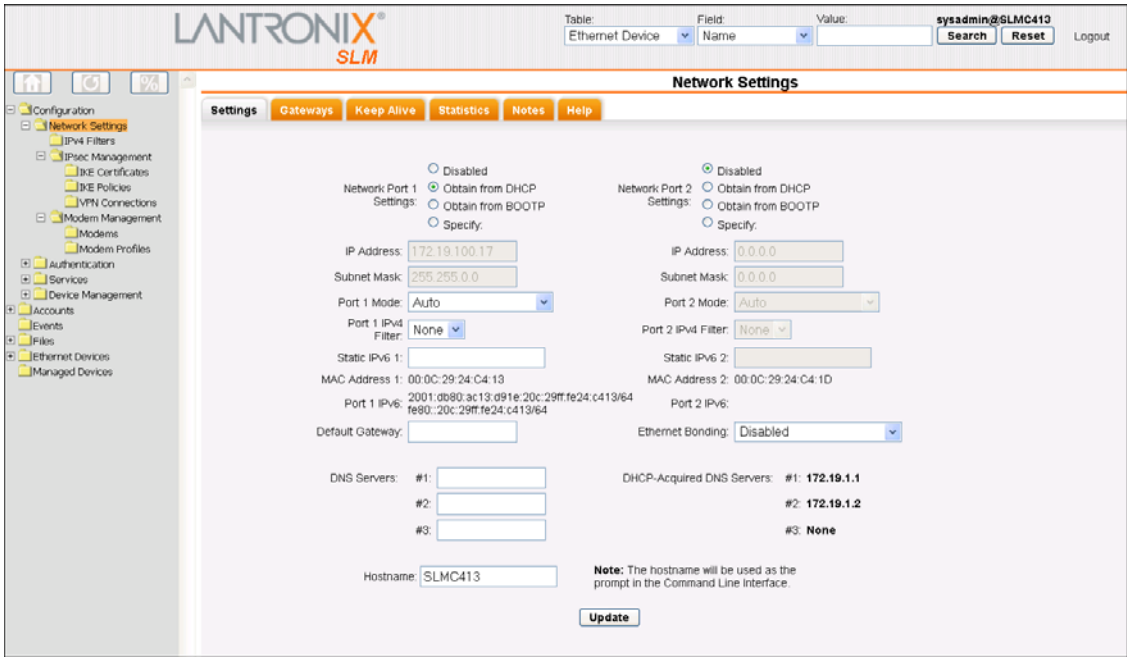
Notes:

- On the SLM-02, both Network Ports 1 and 2 are 10/100/1000Base-T. Previous versions of the SLM have one 10/100Base-T and one 10/100/1000Base-T network port.
- One possible use for the two Ethernet ports is to have one port on a private, secure network, and the other on an unsecured network.
- Both Ethernet ports should not be on the same subnet.

To enter settings for one or both network ports:

1. On the menu, click **Configuration > Network Settings**. The following page opens:

Figure 7-3 Network Settings Page



2. Enter the following information for one or both network ports:

Table 7-4 Network Port Settings

Network Port Setting	Description
Network Port Settings	**Disabled:** This is the default setting for Network Port 2. **Obtain from DHCP:** Acquires IP address, subnet mask, and gateway from the DHCP server. (The DHCP server may provide the gateway, depending on its setup.) This is the default setting for Network Port 1. If you select this option, skip to step 3. **Obtain from BOOTP:** Lets a network node request configuration information from a BOOTP "server" node. Skip to step 3. **Specify:** Requires you to assign a static IP address manually. The administrator generally provides the IP address.

Network Port Setting	Description
IP Address	If specifying an IP address, enter an IP address that is within a valid range, unique to your network, and in the same subnet mask as your workstation. There is no default. ***Note:*** *Enter all IP addresses in dot quad notation.*
Subnet Mask	If specifying an IP address, enter the network segment on which the SLM resides. There is no default.
Port Mode	The method of data transmission (**Auto**, **Half-Duplex**, or **Full-Duplex**).
Port 1 and Port 2 IPv4 Filter	If you have added filter sets on the IPv4 Filter Definitions page, select the desired one. (See *IPv4 Filters*.)
Static IPv6	IPv6 addresses are written as 8 sets of 4-digit hexadecimal numbers separated by colons. There are several rules for modifying the address. For example, 1234:0BCD:1D67:0000:0000:8375:BADD:0057 may be shortened to 1234:BCD:1D67::8375:BADD:57. ***Note:*** *The SLM stores all IP addresses internally using IPv6 format. When rendering these addresses for display, the SLM uses IPv4 unless the address cannot be displayed in that format, in which case it uses shortened IPv6.*
MAC Address (display only)	Also referred to as the Hardware or Ethernet address.
Port IPv6 (display only)	IPv6 addresses active on this network port.
Default Gateway	IP address of the router for this network. If this has not been set manually, any gateway acquired by DHCP for Network Port 1 or Network Port 2 displays. All network traffic that matches the Network Port 1 IP address and subnet mask goes out Network Port 1. All network traffic that matches the Network Port 2 IP address and subnet mask goes out Network Port 2. If you set a default gateway, the SLM sends any network traffic that does not match Network Port 1 or Network Port 2 to the default gateway for routing.

Network Port Setting	Description
Ethernet Bonding	Ethernet bonding is a way of joining two Ethernet interfaces into a single virtual interface for redundancy and/or load balancing. The SLM supports four types of Ethernet bonding in addition to the default state of disabled. ***Note:*** *With bonding enabled, the IP/netmask settings for network port 1 are applied to the virtual bonding interface.* Select one of the following: **Active Backup:** Only one of the two Ethernet interfaces will be active (involved in transmitting and receiving data) at any one time. If the SLM detects that the Ethernet interface has lost network connectivity, the system makes the secondary interface the new active one after a few seconds (~3.5 - 4) of delay. (This delay length is also used with the other bonding settings.) **802.3ad Layer 2:** IEEE 802.3ad-compliant dynamic link aggregation. This is a load-balancing strategy that uses the destination MAC address as the criterion for determining which interface to send each data frame out of. **802.3ad Layer 3+4:** Much like 802.3ad Layer 2, but uses the destination IP and TCP/UDP port number to determine which interface to send data from. ***Note:*** *Both 802.3ad bonding modes require that both network interfaces share the same speed/duplex modes. This rule is currently enforced by the web interface, but not by the CLI.* **Adaptive Load Balancing:** This mode determines which interface to send data from by looking at the current load on each interface. It also controls which interface will receive a response by modifying the SLM's ARP replies before they are sent out. If a link failure occurs on one of the network ports, the system will fail over to the other interface. ***Note:*** *In theory, the active-backup and adaptive load balancing modes do not require any special network switch configuration, while the two 802.3ad modes do. The active-backup mode is recommended for most situations, as redundancy tends to be a more important goal than the relatively small increase in bandwidth (note that bonding two interfaces for load balancing does not double the available bandwidth because of protocol overhead issues).*

3. Configure up to three name servers, either by entering the IP addresses or by accepting the IP addresses assigned by DHCP:

Table 7-5 DNS Servers

IP Address Setting	Description
#1	IP address of the primary name server. This entry is required if you choose to configure DNS (Domain Name Server) servers. Note: Assigning DNS servers allows FQDNs to be used in place of most IP addresses throughout the system.
#2 (optional)	IP address of the secondary DNS name server.
#3 (optional)	IP address of the tertiary DNS name server.
DHCP-Acquired DNS Servers (view only)	DNS servers automatically assigned by DHCP. The default setting for up to three servers is **None**.

4. Enter the following:

Table 7-6 Hostname

Hostname Setting	Description
Hostname	The default hostname is SLM. You can specify a fully qualified domain name (for example, SLM.lantronix.com). There is a 64-character limit (contiguous characters, no spaces). ***Note:*** *The hostname becomes the prompt in the command line interface.*

5. To save your entries, click the **Update** button.

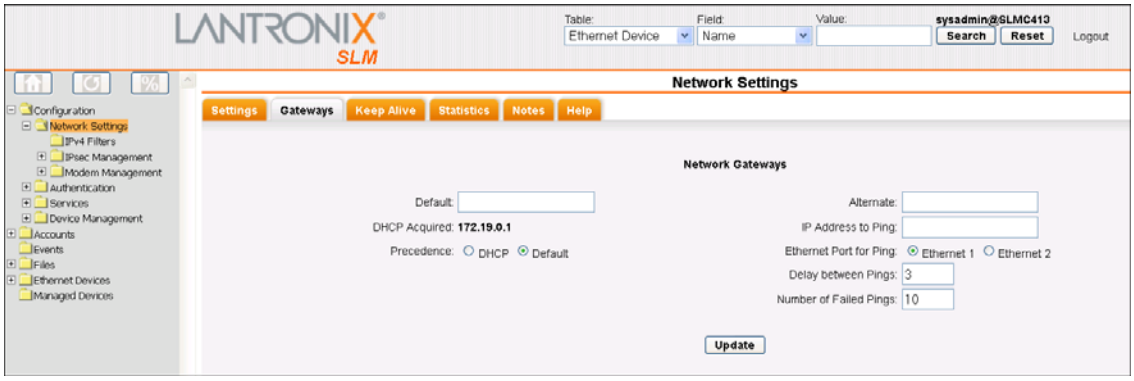
Network Gateways

You can enter network gateway information.

To enter gateway information:

1. On the Network - Settings page, click the **Gateways** tab. The following page opens:

Figure 7-7 Network Settings -Gateways Tab



2. Enter the following:

Table 7-8 Network Gateway

Network Gateway Setting	Description
Default	IP address of the router for this network. If this has not been set manually, any gateway assigned by DHCP for Network Port 1 or Network Port 2 displays. All network traffic that matches the Network Port 1 0IP address and subnet mask goes out Network Port 1. All network traffic that matches the Network Port 2 IP address and subnet mask goes out Network Port 2. If you set a default gateway, the SLM sends any network traffic that does not match Network Port 1 or Network Port 2 to the default gateway for routing.
DHCP Acquired (view only)	Gateway assigned by DHCP for Network Port 1 or Network Port 2. The default setting is **None**.
Precedence	Indicates whether the gateway assigned by DHCP or the default gateway takes precedence. The default setting is Default. If you select DHCP, and both network ports are configured for DHCP, the SLM gives precedence to the Network Port 1 gateway.
Alternate	An alternate IP address of the router for this network, to be used if an IP address usually accessible through the default gateway fails to return one or more pings.
IP Address to Ping	IP address to ping to determine whether to use the alternate gateway.
Ethernet Port to Ping	Ethernet port to use for the ping.
Delay between Pings	Number of seconds between pings
Number of Failed Pings	Number of pings that fail before the SLM uses the alternate gateway.

3. To save your entries, click the **Update** button.

Keep Alive

Keep Alive settings keep TCP connections active and monitor for connections that are no longer active.

To enter Keep Alive settings:

1. Click the **Keep Alive** tab.
2. Enter the following information:

Table 7-9 Keep Alive Settings

Keep Alive Setting	Description
Start Probes	Number of seconds the SLM waits after the last transmission before sending the first probe to determine whether a TCP session is still alive. The default is 600 seconds (10 minutes).
Number of Probes	Number of probes the SLM sends before closing a session. The default is 5.
Interval	The number of seconds the SLM waits between probes. The default is 60 seconds.

3. To save your entries, click the **Submit** button.

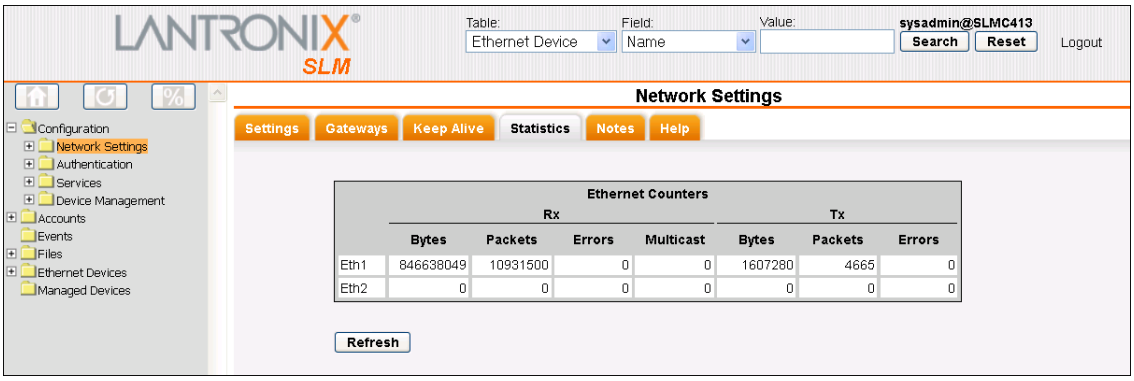
Viewing Network Statistics

You can check Ethernet counters for the network port(s).

To view network statistics:

1. On the Network - Settings page, click the **Statistics** tab. The following page opens:

Figure 7-10 Network Settings - Statistics Tab



Statistics include the following:

Table 7-11 Counters for Rx and Tx Transmissions

Network Statistic Setting	Description
Bytes	Number of bytes received or transmitted through this Ethernet interface.
Packets	Number of Ethernet packets received or transmitted through the interface.
Errors	Number of received or transmitted packets with physical layer errors.
Multicast (Tx only)	Number of received or transmitted packets with the destination address equivalent to a multicast address.

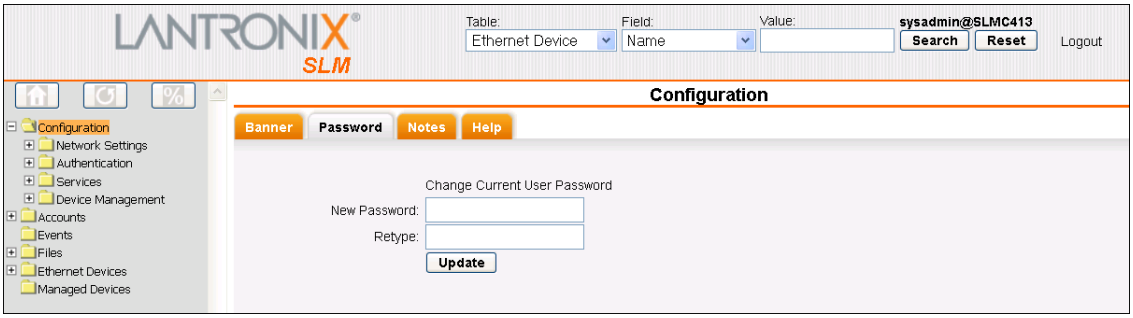
Changing the Current User's Password

Users logged in locally (not using remote authentication) may change passwords at any time, unless the administrator has disabled this option.

To change your password:

1. On the menu, click **Configuration**. The Configuration Home page opens.
2. Click the **Password** tab. The following page opens:

Figure 7-12 Configuration Page - Password Tab



3. Enter the **New Password** and **Retype** fields.
4. Click the **Update** button.

Network Commands

`admin quicksetup`

Syntax

`admin quicksetup`

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

set network dns

Syntax

`set network dns <1|2|3> ipaddr <IP Address>`

Description

Configures up to three DNS servers.

`set network gateway`

Syntax

`set network gateway <parameters>`

Parameters

```
default <IP Address>
precedence <dhcp|default>
alternate <IP Address>

pingip <IP Address>

ethport <1 or 2>

pingdelay <1-250 seconds>

failedpings <1-250>
```

Description

Sets the default gateway.

```
set network host
```

Syntax

```
set network host <Hostname>
```

Description

Sets the SLM hostname.

```
set network port
```

Syntax

```
set network port <1|2> <parameters>
```

Parameters

```
state <dhcp|bootp|static|disable>
[ipaddr <IP Address> mask <Mask>]
mode <auto|10mbit-half|100mbit-half|10mbit-full|100mbit-full>
[ipfilter <IPv4 Filter Name | CLEAR>]
CLEAR removes the IP filter assignment.
```

Description

Configures Network Port 1 or 2.

```
show network all
```

Syntax

```
show network all
```

Description

Displays all network settings.

```
show network port
```

Syntax

```
show network port <l|2>
```

Description

Displays Network Port 1 and Network Port 2 connection information.

```
show network settings
```

Syntax

```
show network settings
```

Description

Displays all network settings.

IPv4 Filters

Warning: ***IPv4 filters configuration is a feature for advanced users. Adding and enabling IPv4 filter sets incorrectly can disable your SLM.***

IPv4 Filters act as a firewall to allow or deny individual or a range of IP addresses, ports, and protocols. On the IPv4 Filter Definitions pages, the administrator defines and edits IPv4 filter sets and displays the current system-recognized filters.

Viewing a List of IPv4 Filters

Each IPv4 filter set is composed of one or more filter rules.

To view a list of available IPv4 filters sets:

1. On the menu, click **Configuration > Network Settings > IPv4 Filters**. The following page displays a list of existing filters.

Figure 7-13 IPv4 Filter Definitions - List Tab

2. View the list of filters and the associated comments.

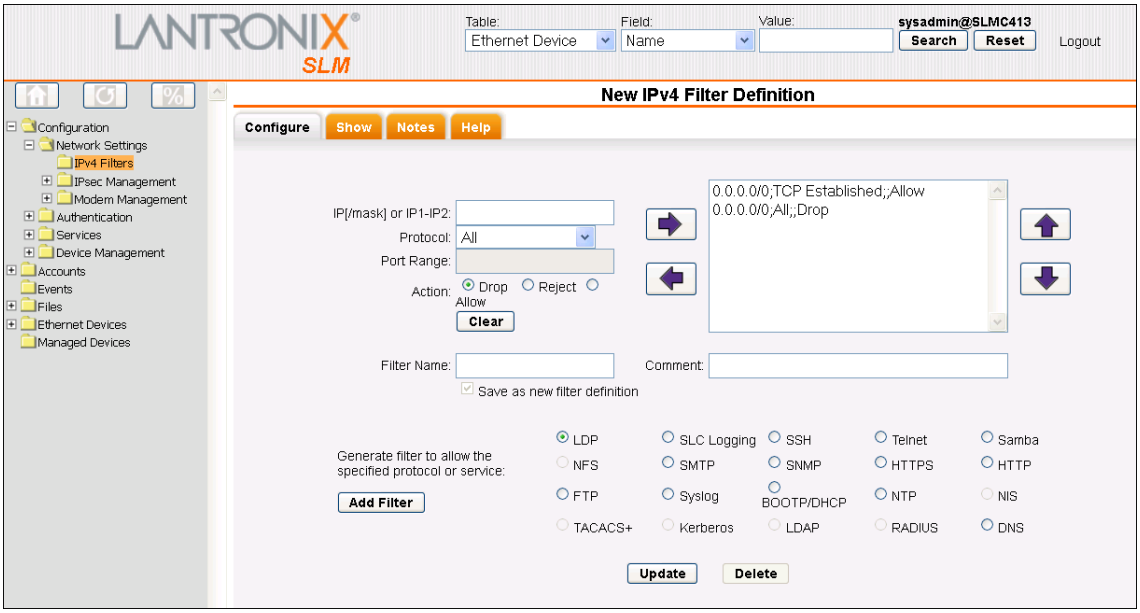
Adding an IPv4 Filter

Note: *User-created IPv4 filter sets display on the menu tree and are composed of one or more filter rules. When a network connection or modem is configured to use an IPv4 filter set, all network traffic through that connection is compared, in order, to the rules of that filter set. Network traffic may be allowed to pass, it may be dropped (without notice), or it may be rejected (sends back an error packet) depending upon the rules of that filter set.*

To add an IPv4 filter:

1. On the List tab, click the **Add New Filter** button. The Configure tab displays.

Figure 7-14 New IPv4 Filter Definition - Configure Tab



Note: *A new filter set is initialized with a rule to allow all established TCP connections. You may remove this rule from your filter set, but do so with caution as loss of connectivity may result.*

2. Enter the following for each filter in the set:

Table 7-15 IPv4 Filter Definition - Configuration Tab

IPv4 Filter Setting	Description
IP[/mask] or IP1-IP2 (optional)	Specify any IP address, IP prefix with mask, or IP range. Examples: 172.19.220.64 - this specific IP address only 172.19.0.0/16 - IP addresses 172.19.0.0 - 172.19.255.255 172.19.0.128 - 172.19.64.0 - IP addresses in this range
Protocol	From the drop-down list, select the type of protocol (if any) through which the filter will operate. The default setting is All.
Port Range	Enter a range of destination port numbers to be tested. An entry is required for TCP, TCP New, TCP Established, and UDP, and is not allowed for other protocols. Separate multiple ports with commas. Separate ranges of ports by colons. Examples: 22 - filter on port 22 only 23,64,80 - filter on ports 23, 64 and 80 23:64,80,143:150 - filter on ports 23 through 64, port 80 and ports 143 through 150
Action	Select whether to drop, reject, or allow communications from IPv4 addresses within the specified range. **Drop** ignores the packet with no notification. **Reject** ignores the packet and sends back an error message. **Allow** permits the packet through the filter.
Filter Name	Name that identifies a filter. The name may be composed of letters, numbers and hyphens only. (The name cannot start with a hyphen.) **Example**: FILTER-2

IPv4 Filter Setting	Description
Save as new filter definition	Select to make small changes to an existing filter set and then save it as a new filter set. If you select this option, you must supply a **Filter Name** that does not already exist.
Comment (optional)	Enter information related to the filter. It displays next to the filter name on the List tab.
Generate filter to allow the specified protocol or service	You may wish to "punch holes" in your filter set for a particular protocol or service. For instance, if you have configured your NIS server and wish to create an opening in your filter set, select the **NIS** option and click the **Add Filter** button. This entry adds a new rule to your filter set using the NIS -configured IP address. Other services and protocols added automatically generate the necessary rule to allow their use.

3. Click the **right arrow** button to add the new rule to the bottom of the list box on the right, or click the **Add Filter** button to add a predefined rule to the bottom of the list box.
4. To remove a rule from the filter set, highlight that line and click the left arrow. The rule populates the rule definition fields, allowing you to make minor changes before reinserting the rule. To clear the definition fields, click the **Clear** button.
5. To change the order of priority of the rules in the list box, select the rule to move and use the up or down arrow buttons on the right side of the filter list box.
6. To save, click the **Update** button. A confirmation message displays, and the new filter displays in the menu tree.

Note: *To add another new filter, return to the List tab (step 1).*

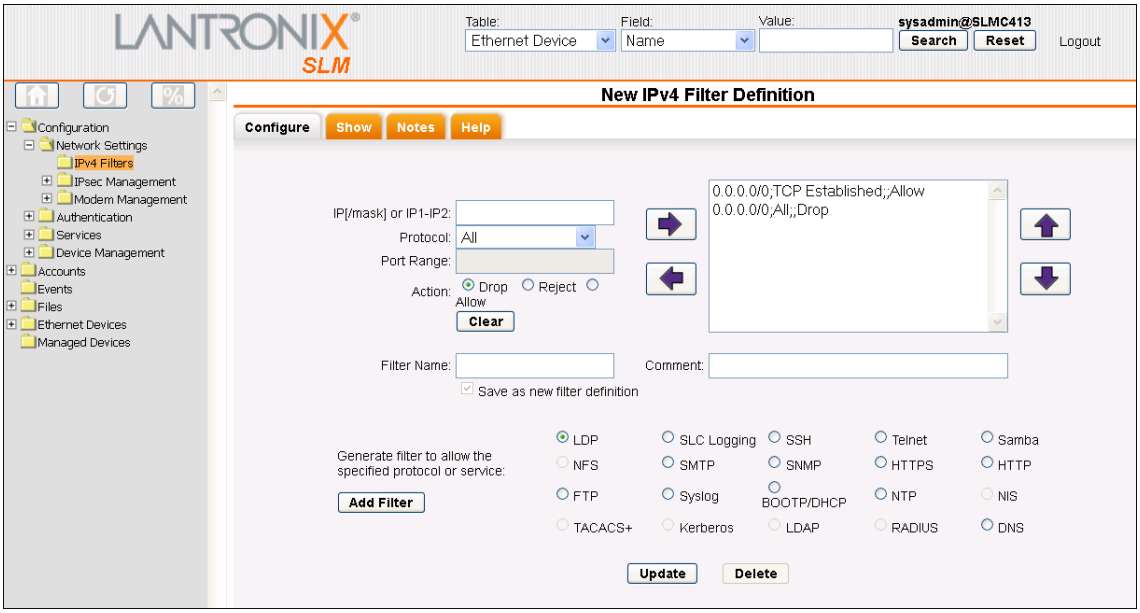
Updating or Deleting an IPv4 Filter

The administrator can update or delete IPv4 filters.

To update or delete an IPv4 filter:

1. On the **List** tab, click the **Edit** icon to the left of the filter. The Configure tab displays.

Figure 7-16 IPv4 Filter - Configure Tab



2. To delete a filter:

   Note: *You may not delete a filter set currently referenced by a network interface or a modem.*

   a. Click the **Delete** button.

   b. In response to the request for confirmation, click **OK**.

   c. Click **IPv4 Filters** on the menu tree. The deleted filter is no longer on the menu tree or listed on the List tab.

3. To update an IPv4 filter:

   a. Edit the information as desired.

   b. Click the **Update** button. A confirmation message displays.

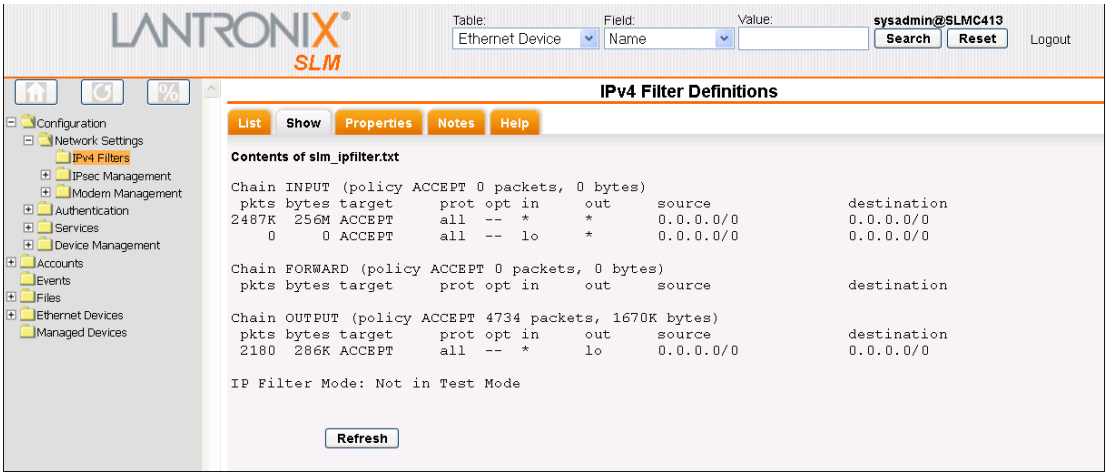
Viewing the System IPv4 Filter Sets

The administrator may view a list of all IPv4 filter sets (user and system) or an individual IPv4 filter set.

To view all filter sets:

1. On the menu, click **IPv4 Filters**. The List tab displays.
2. Click the **Show** tab. The following page opens:

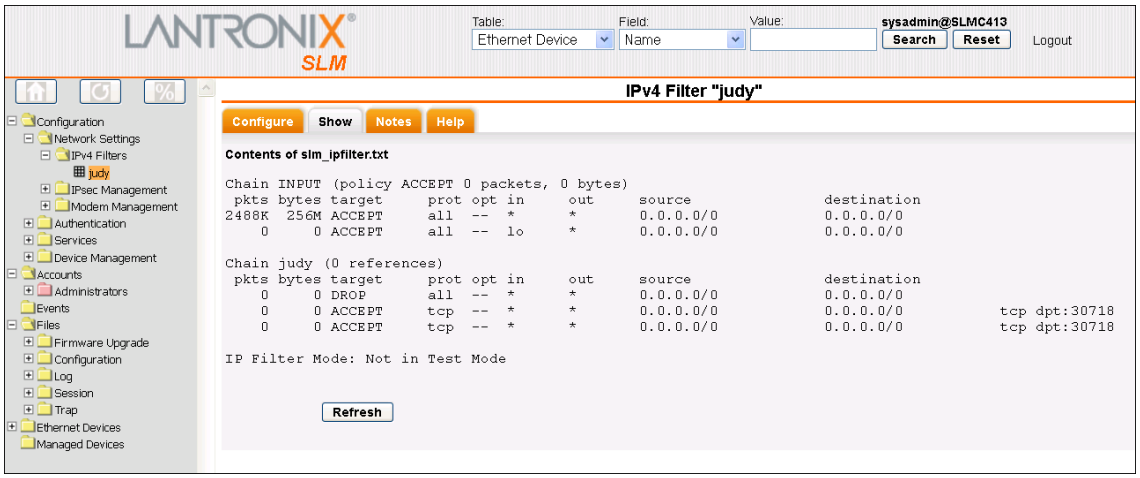
Figure 7-17 IPv4 Filter Definitions - Show Tab



To view an individual IPv4 filter set:

1. On the menu, click the individual filter set name. The IPv4 Filter page for the filter set displays.
2. Click the Show tab.

Figure 7-18 IPv4 Filter - Show Tab



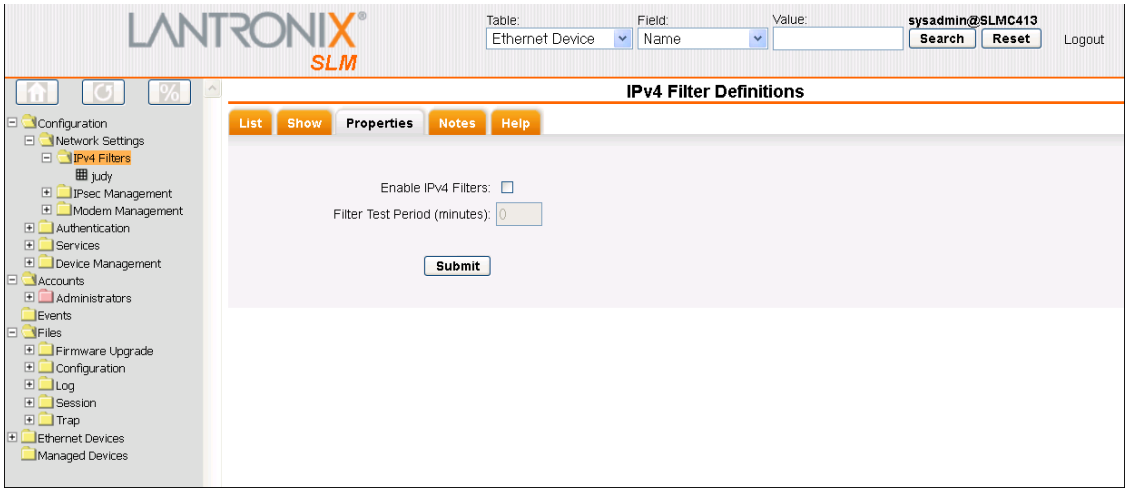
Setting Properties of an IPv4 Filter

For IPv4 filters to be in effect, the **Enable IPv4 Filters** check box must be selected on the Properties tab.

To enable and test the IPv4 filter:

1. On the menu, click **IPv4 Filters**. The IPv4 Filter Definitions page displays.
2. Click the **Properties** tab.

Figure 7-19 IPv4 Filter Definitions - Properties Tab



3. Enter the following:

Table 7-20 IPv4 Filter Definitions - Properties Tab

IPv4 Filter Setting	Description
Enable IPv4 Filters	To enable the filters, select the check box. Disabled by default.

IPv4 Filter Setting	Description
Filter Test Period (minutes)	***Note:*** *There may be times when a complex IPv4 filter set may accidentally lock all users out of the SLM. To allow testing of new filter sets, the administrator can enable and test the filter sets for a specified period.* Before enabling an untested complex filter, enter the number of minutes you would like filters to be active before being automatically disabled. ◆ A zero (0) in this field indicates that filtering will not be automatically disabled, and the Enable IPv4 Filters state you specified will take place immediately. ◆ A non-zero value is the number of minutes until IPv4 filters are disabled, whether or not a lockout condition occurs. ➢ **Example:** You set this value to 5 and enable IPv4 filters. If your system locks up because of a bad filter set definition, then in five minutes, filtering will automatically be disabled. Note that even if there are no problems with the filter set, IPv4 filtering will still be disabled in 5 minutes. Once you are satisfied with the IPv4 filter definitions, return to this page and set the Filter Test Period to 0 and resubmit to enable IPv4 filtering permanently. ***Note:*** *If you submit a new Filter Test Period (larger than 0) when the IP filter is already in test mode, the test timer resets to the new test period and starts test mode again. If you submit a zero Filter Test Period when the IP filter is in test mode, the test mode stops, and the specified Enable IPv4 Filters state takes effect immediately. If you have physical access to the SLM, you can always disable IPv4 from the console using the CLI.*

4. To save, click the **Submit** button.
5. In response to the confirmation request, click **OK**. A confirmation message displays in the message area.

Note: *To determine whether the IPv4 filter is still in test mode, when the test mode was started, and how long until the test mode ends, click the Show tab on the IPv4 Filters page or on an individual IPv4 Filter Set page.*

IPv4 Filter Commands

`set ipfilter delete`

Syntax

`set ipfilter delete <Name>`

Example:

`set ipfilter delete MyFilter`

Description

Deletes IPv4 filter set by specified name.

`set ipfilter delete all`

Syntax

set ipfilter delete all

Description

Deletes all references to filters.

```
set ipfilter delete interactive
```

Syntax

```
set ipfilter delete interactive
```

Description

Deletes IPv4 filters by interactive mode.

```
set ipfilter name delete
```

Note: *Type* `show ipfilter name <Name> or show ipfilter index <number>` *to display the rule number.*

Syntax

```
set ipfilter delete name <Name> [rule <rule number>]
```

Example

```
set ipfilter delete MyFilter rule 3
```

Description

Deletes IPv4 filter rule by specified name and rule number.

```
set ip filter state
```

Syntax

```
set ipfilter state <enable|disable>
```

Description

Enables or disables IPv4 filters.

```
set ipfilter test
```

Syntax

```
set ipfilter test <number of minutes>
```

Description

Enables or disables IPv4 filter test mode.

```
show ipfilter
```

Note: *Type show ipfilter to display index.*

Syntax

```
show ipfilter <parameters>
```

Parameters

```
[name <Filter Name>]
[index <number>]
```

Examples

```
show ipfilter
show ipfilter name MyFilter
show ipfilter index 2
```

Description

Displays IPv4 filter information.

```
show iptables
```

Syntax

```
show iptables
```

Description

Displays all IP filtering rules for all chains.

IPsec Management

Internet Protocol Security (IPsec) for the SLM includes IKE policy for internet key exchanges and Virtual Private Network connections.

Internet Key Exchange (IKE) Policies

The administrator can view, add, and update one or more IKE policies.

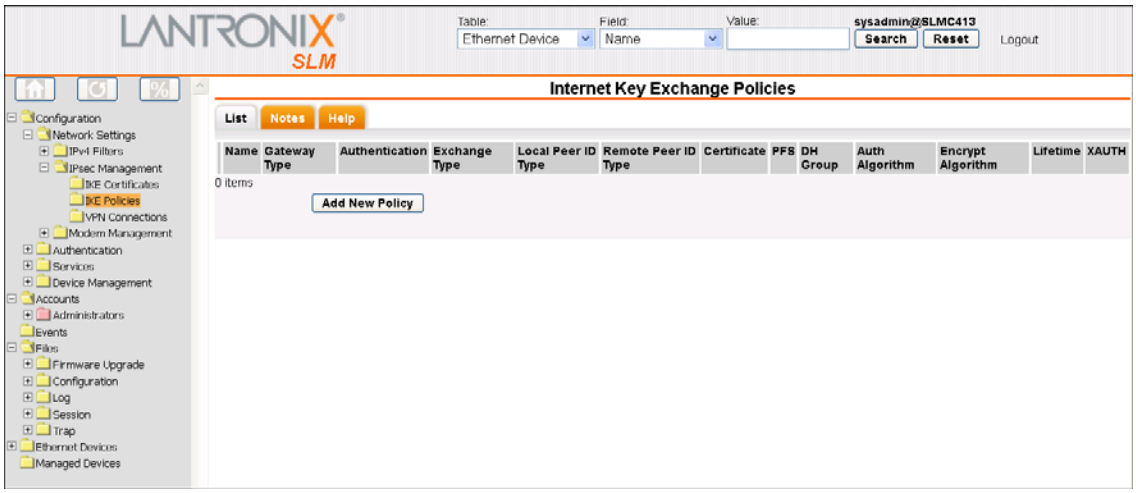
Viewing a List of IKE Policies

The administrator can view IKE Policies.

To view a list of available IKE policies:

1. On the menu, click **IPsec Management > IKE Policies**. The following page displays, listing current IKE policies.

Figure 7-21 Internet Key Exchange Policies Page



2. View the list of policies and associated information:

Table 7-22 Ike Policy Exchange Information

Ike Policy Setting	Description
Name	Name identifying the IKE policy.
Gateway Type	IPv4 or IPv6 type of address.
Authentication	Method of verifying data integrity: **PSK**: Pre-Shared Key uses a password exchange and matching process.
Exchange Type	Mode during the security association phase of the key exchange. ***Note:*** *Aggressive mode will be available in a future release.*
Local Peer ID Type	Local SLM identification type: **IPv4**: Internet Protocol version 4 **IPv6**: Internet Protocol version 6 **FQDN**: Fully Qualified Domain Name **User Email**: Email address of the local user
Remote Peer ID Type	Remote host or gateway identification type.
Certificate	***Note:*** *This feature will be available in a future release.*
PFS	Perfect Forward Secrecy (PFS) ensures that a given IPsec SA key was not derived from any other secret, such as another key. Enabled by default.
DH Group	Diffie-Hellman key group (DHx) used for an encryption key.
Authentication Algorithm	From the drop-down list, select an algorithm for verifying data integrity: **SHA1**: Secure Hash Algorithm 1 **MD5**: Message Digest **SHA2-256**: 256-bit Secure Hash Algorithm
Encryption Algorithm	Method of encrypting data, in order of security level provided: **3DES**: Data Encryption Standard **AES**: Advanced Encryption Standard **AES-192**: 192-bit key with AES encryption **AES-256**: 256-bit key with AES encryption
Lifetime	Duration in seconds before a key expires.
XAUTH	XAUTH in use.

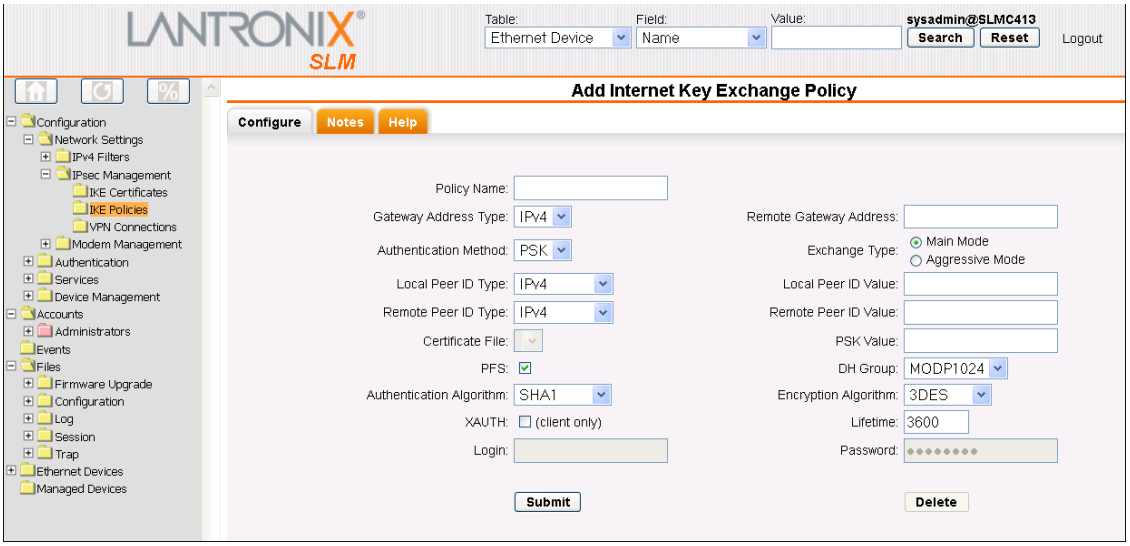
Adding an IKE Policy:

The administrator can add an IKE policy.

To add a new IKE policy:

1. On the **List** tab, click the **Add New Policy** button. The **Configure** tab displays.

Figure 7-23 Add Internet Key Exchange Policy Page



2. Enter the following information:

Table 7-24 Add Internet Key Exchange Policy - Configure Tab

Ike Policy Setting	Description
Policy Name	Enter a name to identify the IKE policy. Must be 1-63 characters, including digits, letters, hyphens, and underscores.
Gateway Address Type	From the drop-down list, select the version of the Internet Protocol used for theaddress: **IPv4**: Internet Protocol version 4 (default) **IPv6**: Internet Protocol version 6
Remote Gateway Address	Enter the IP address of the remote end of the gateway.
Authentication Method	From the drop-down list, select the method of verifying data integrity: **PSK**: Pre-Shared Key uses a password exchange and matching process. (default) **RSA** Signature: Uses a private and public key that together comprise a digital signature. ***Note:*** *This feature will be available in a future SLM release.*
Exchange Type	Select the mode during the security association phase of the key exchange: **Main Mode:** (default) ***Note:*** *Aggressive mode will be supported in a future release.*

Ike Policy Setting	Description
Local Peer ID Type	From the drop-down list, select the method of filtering incoming data. **IPv4**: Internet Protocol version 4 **IPv6**: Internet Protocol version 6 **FQDN**: Fully Qualified Domain Name **User Email**: Email address of the local user
Local Peer ID Value	Enter the local SLM identification value. This value depends on the Local Peer ID Type setting.
Remote Peer ID Type	Select the method of filtering outgoing data: **IPv4**: Internet Protocol version 4 (default) **IPv6**: Internet Protocol version 6 **FQDN**: Fully Qualified Domain Name **User Email:** Email address of the remote user
Remote Peer ID Value	Enter the identification value of the remote host or gateway.
Certificate File	***Note:*** *This feature will be available in a future release.*
PSK Value	Enter the value of a pre-shared key.
PFS	Select the checkbox to enable PFS (Perfect Forward Secrecy). PFS ensures that a given IPsec SA key was not derived from any other secret, such as another key. Enabled by default.
DH Group	Initial Diffie-Hellman value. **MODP1024** **MODP1536** **MODP2048**
Authentication Algorithm	From the drop-down list, select an algorithm for verifying data integrity: **SHA1**: Secure Hash Algorithm 1. **MD5:** Message Digest 5. **SHA2-256:** 256-bit Secure Hash Algorithm
Encryption Algorithm	From the drop-down list, select the method of encrypting data (listed below in order of security level provided): **3DES**: Data Encryption Standard **AES**: Advanced Encryption Standard **AES-192**: 192-bit key with AES encryption **AES-256**: 256-bit key with AES encryption
XAUTH	Select to use a "group" shared secret rather than digital certificates for authentication. Disabled by default. ***Note:*** *This feature will be available in a future SLM release.*
Lifetime	Enter the duration in seconds before a key expires. Default is 3600.
Login	Enter the username for XAUTH.
Password	Enter the password for XAUTH.

3. To save your entries, click the **Submit** button.

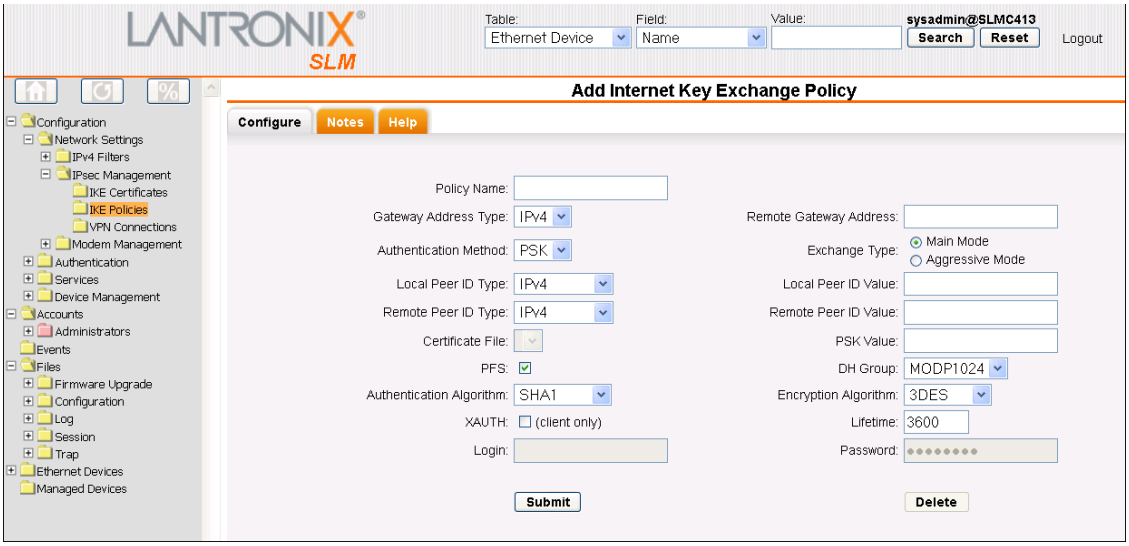
Updating or Deleting an IKE Policy

The administrator can update or delete IKE policies.

To update or delete a policy:

1. On the **List** tab, click the **Edit** icon to the left of the policy. The **Configure** tab displays.

Figure 7-25 Internet Key Exchange Policiy -- Configure Tab



2. To delete a policy:

   Note: *You may not delete a policy currently referenced by a VPN.*

   a. Click the **Delete** button.

   b. In response to the request for confirmation, click **OK**.

   c. Click **IKE Policies** on the menu bar.

3. To update a policy:

   a. Edit the information as desired.

   b. Click the **Update** button. A confirmation message displays.

4. To save your entries, click the **Save** button.

VPN Connections

The administrator can view, add, or update one or more Virtual Private Networks (VPNs). Each VPN must reference an IKE Policy. You can only delete an IKE Policy that is not referenced by a VPN.

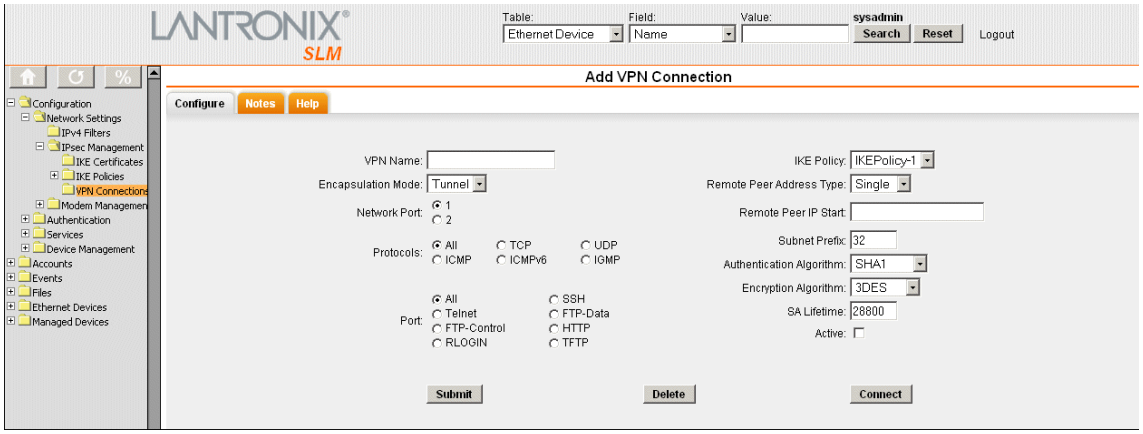
Viewing a List of VPNs

The administrator can view a list of VPNs.

To view a list of VPNs:

1. On the menu, click **Configuration > Network Settings > IPsec Management > VPN Connections**. The following page displays:

Figure 7-26 VPN Connections Page



2. View the following information about each VPN:

Table 7-27 VPN Connection Settings

VPN Connection Setting	Description
Name	Name that identifies VPN.
IKE Policy	IKE policy that references this VPN.
Encapsulation Mode	**Tunnel mode**: Used when the remote peer is an IPSec gateway. **Host mode**: Used when the remote peer is an IPsec host.
Remote Address Type	**Subnet type**: The subnet that is the destination of the IPsec traffic. **Single**: The single host that is the destination of the IPsec traffic.
Network Port	Network port on the SLM that connects to the VPN.
Local Protocol	IP protocol selected to protect data traffic.
Local Port	Method selected to protect data traffic on the TCP port of the SLM.
Subnet Prefix	Subnet prefix length for Subnet type clients.
Auth Algorithm	Algorithm for verifying data integrity.

VPN Connection Setting	Description
Encrypt Algorithm	Method of encrypting data, in ascending order of security level provided: **3DES (Data Encryption Standard)** **Advanced Encryption Standard (AES)** **AES-192: 192-bit key with AES encryption** **AES-256: 256-bit key with AES encryption**
Lifetime	Duration in seconds before a key expires.
Active	Indicates whether the VPN is ready to be connected.
Status	Indicates whether the VPN is connected or disconnected.

Adding a VPN

Administrators may add VPNs.

1. On the List tab, click the **New VPN Connection** button. The Configure tab displays.

Table 7-28 Add VPN Connection Settings

VPN Connection Setting	Description
VPN Name	Enter a name to identify the VPN.
Encapsulation Mode	**Tunnel mode**: Used when the remote peer is an IPSec gateway. **Host mode**: Used when the remote peer is an IPsec host.
Network Port	Select the network port connecting to the VPN.
Protocols	Select the protocol used in the VPN connection: **ALL**: All of the listed protocols are used. **TCP**: Transmission Control Protocol **UDP**: User Datagram Protocol **ICMP**: Internet Control Message Protocol **ICMPv6**: Internet Control Message Protocol version 6 **IGMP**: Internet Group Management Protocol
Port	Select the type of security used on the port: **All** **SSH** **Telnet** **FTP Data** **FTP Control** **HTTP** **RLOGIN** **TFTP**
IKEPolicy	IKE Policy that references this VPN.
Remote Peer Address Type	**Subnet type**: The subnet that is the destination of the IPsec traffic. **Single**: The single host that is the destination of the IPsec traffic.
Remote Peer IP Start	Starting IP address in a range of remote IP addresses.
Subnet Prefix	Prefix of the subnet for Subnet Type peers.

VPN Connection Setting	Description
Authentication Algorithm	From the drop-down list, select the algorithm for verifying data integrity: **None** **SHA1:** **MD5:** **SHA2-256:**
Encryption Algorithm	From the drop-down list, select the method of encrypting data: **3DES (Data Encryption Standard)** **AES** **AES-192** **AES-256**
SA Lifetime	Duration in seconds before an IPsec Security Association (SA) expires. The default is 28800.
Active	Select to activate the VPN.

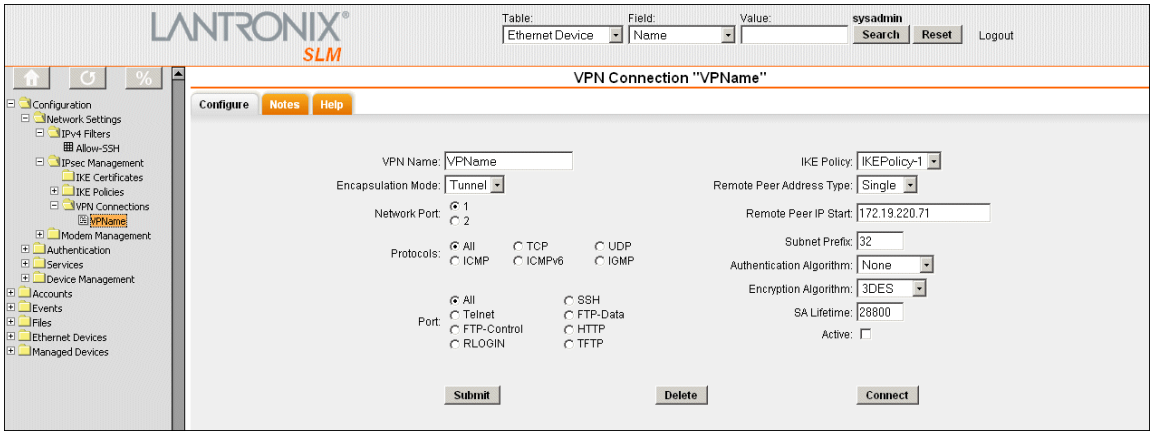
2. To save, click the **Submit** button.

Updating or Deleting a VPN

To update or delete a VPN:

1. On the List tab, click the **Edit** icon to the left of the policy. The Configure tab displays.

Figure 7-29 VPN Connection -- Configure Tab



2. To delete a VPN:
   a. Click the **Delete** button.
   b. In response to the request for confirmation, click **OK**.
   c. Click **VPN Connections** on the menu bar.
3. To update a policy:
   a. Edit the information as desired.
   b. Click the **Update** button. A confirmation message displays.
4. To save your entries, click the **Save** button.

Connecting a VPN

To connect a VPN:

1. On the **List** tab, click the **Edit** icon to the left of the VPN. The VPN Connection page displays.
2. Make sure you have updated the connection.
3. Select the **Active** checkbox (if not already selected).
4. Click the **Connect** button. It will take a couple of seconds before the connection is established.

Modem Management

Dial-up modem support ensures access when the network is not available. SLM supports dial-in (text mode and PPP mode) and dial-out (PPP mode) as follows:

- The administrator can configure dial-in and dial-out from either the web interface or the CLI.
- A user dialing in from a remote computer in text mode can access the CLI on the SLM.
- A user dialing in from a remote computer in PPP mode can access the CLI and the web interface on the SLM. Depending on the PPP settings, the user may access all devices that the SLM has access to as well.
- A user can dial out from the CLI and the web interface in PPP mode.

Viewing a List of Modems

The administrator can view a list of the SLM's internal and external modems.

Note: *Currently, the SLM-01 and SLM-02 support PCI and USB modems. The vSLM supports USB modems only. See Discovering a USB Modem. SLM does not support plug-and-play.*

To view a list of available modems:

1. On the menu, click **Configuration > Network Settings > Modem Management > Modems**.

The following page displays.

Figure 7-30 Modems Page

2. View the following information about each modem:

Table 7-31 Modem - List Tab

Modem Setting	Description
Name	Name that identifies the modem.
Modem Type	Identifies the type of modem (e.g., PCI or USB).
Baud	Communication speed between the SLM and a modem.
Data Bits	Number of data bits used to transmit a character.
Parity	Type of parity checking. Parity checking detects simple, single-bit errors.
Stop Bits	Number of stop bit(s) used to indicate that a byte of data has been transmitted.
Flow Control	Method of preventing buffer overflow and loss of data.
Mount Point	Name of the serial interface device to which the modem is assigned.
Connection	Name of connection assigned for dial-in. See *Enabling or Disabling Dial-in Connections on page 89*.
IPv4 Filter Set	IPv4 filter being used.
Inbound Enabled	Indicates whether the modem is enabled to receive dial-in calls.
Status	Indicates whether the modem is currently connected.

3. To disconnect a connection, select its check box and click the **Disconnect** button.

Configuring a Modem

The administrator can configure the modem for an incoming connection from a remote device or computer.

To configure a modem:

1. Select the modem and click the **Configure** tab. The following page opens:

Figure 7-32 Modem Page - Configure Tab

2. Enter the following information:

Note: *In most cases, you do not need to change these settings.*

Table 7-33 Modem - Configure Tab

Modem Setting	Description
Modem Name	You may change the modem name assigned by the SLM.
Modem Type (view only)	Displays **PCI** or **USB**.
Model (view only)	Manufacturer's name for the modem.
Initialization Script	Commands sent to configure the modem may have up to 100 characters. Consult your modem's documentation for recommended initialization options. If you do not specify an initialization script, the SLM uses a default initialization string of AT `S7=45 S0=0 V1 X4 &D2 &C1 E1 Q0.` ***Note:*** *We recommend that the modem initialization script always be preceded with* ***AT*** *and include* ***E1 V1 x4 Q0*** *so that the SLM can properly control the modem.*
Baud	Communication speed between the SLM and the modem. From the drop-down list, select the baud rate. The default setting is **115200**.
Data Bits	Number of data bits used to transmit a character. From the drop-down list, select the number of data bits. The default is 8 data bits.
Parity	Parity checking detects simple, single-bit errors. From the drop-down list, select the parity. The default is none.
Stop Bits	Number of stop bit(s) used to indicate that a byte of data has been transmitted. From the drop-down list, select the number of stop bits. The default is 1.
Flow Control	Method of preventing buffer overflow and loss of data. The available methods include none, **XON/XOFF** (software), and **RTS/CTS** (hardware). The default is **RTS/CTS**.
Current Status (view only)	Status of the connection.

3. To save, click the **Update** button. A confirmation message displays.

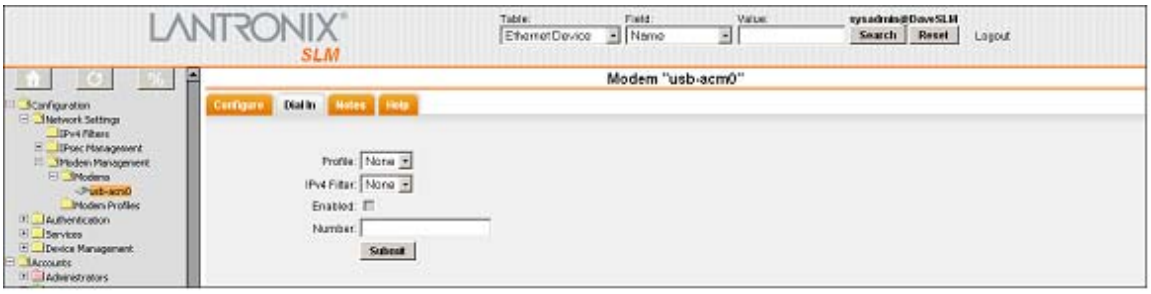
Enabling or Disabling Dial-in Connections

The system administrator can enable the modem to answer incoming calls and can set the mode to use when establishing these connections.

To enable or disable dial-in connections to a modem:

1. Click the **Dial in** tab. The following page opens:

Figure 7-34 Modem - Dial in Tab



2. Enter the following information:

Table 7-35 Modem - Dial-In Tab

Modem Setting	Description
Profile	From the drop-down list, select the desired profile. The default is **none**.
IPv4 Filter	From the drop-down list, select an IPv4 filter for the connection. The default is **none**.
Enabled	Select this check box to allow incoming connections on this modem. Disabled until a connection is selected.

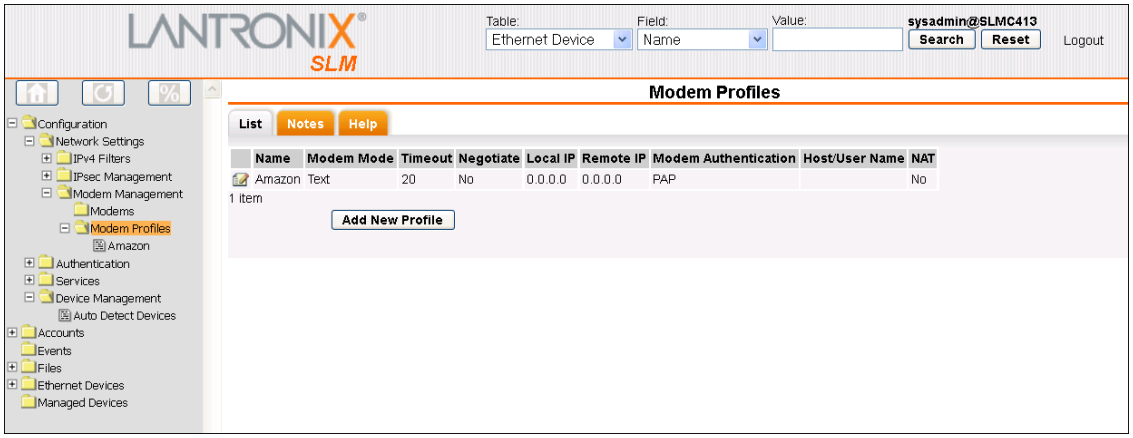
3. To save, click the **Submit** button. A confirmation message displays.

Viewing a List of Profiles

The administrator can view a list of modem connections.

1. On the menu, click **Configuration > Network Settings > Modem Management > Modem Profiles**. The following page opens:

Figure 7-36 Modem Profiles - List Tab



2. View the following information about each connection:

Table 7-37 Modem Profile - List Tab

Modem Profiles Setting	Description
Name	A name identifying the specific connection.
Modem Mode	The format in which the data flows back and forth: **Text**: In this mode, the SLM assumes that the modem is for remotely logging into the CLI. Text mode is only for dialing in. **PPP**: This mode establishes an IP-based link over the modem. Dial-out mode uses PPP connections (e.g., the SLM connects to an external network). You can dial out from both the CLI and the web interface.
Timeout	Indicates whether the connection times out logins after the connection is inactive for a specified number of minutes (1-30).
Negotiate	If **Yes**, the remote device or PC specifies the local (SLM) IP and remote addresses. If **No**, the SLM assigns the local (SLM) IP and remote IP addresses.
Local IP	IP address of the SLM.
Remote IP	IP address of the remote device or remote PC.
Modem Authentication	Indicates whether the SLM uses **PAP** or **CHAP** to authenticate modem logins.
Host/User Name	Username for dial-ins or dial-outs between the SLM and a remote system.
NAT	If **Yes**, the SLM uses Network Address Translation (NAT) for dial-in PPP connections. Users dialing into the SLM access the network connected to Eth1 and/or Eth2. ***Note:*** *This does not apply to dial-out PPP.*

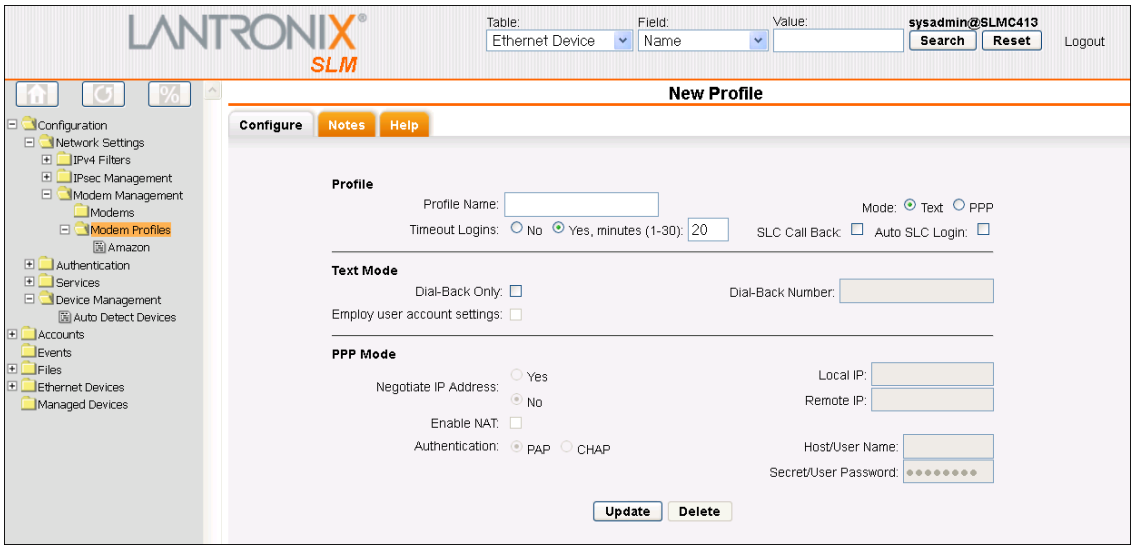
Adding a Profile

The administrator can define a Text or PPP profile for use by an appropriate modem in the system.

To add a profile:

1. On the menu, click **Configuration > Network Settings > Modem Management > Modem Profiles**, and then click the **Add New Profile** button. The following page opens:

Figure 7-38 New Profile-Configure Tab



2. Enter the following information:

Table 7-39 New Profile - Configure Tab - Profile

New Profile Setting	Description
Profile Name	A name identifying the specific profile.
Mode	The format in which the data flows back and forth: **Text**: In this mode, the SLM assumes that the modem is for remotely logging into the CLI. Text mode is only for dialing in. Enabled by default. **PPP**: This mode establishes an IP-based link over the modem. Dial-out mode uses PPP connections (e.g., the SLM connects to an external network). You can dial out from both the CLI and the web interface.
Timeout Logins	For both Text and PPP modes, you can enable logins to time out after the connection is inactive for a specified number of minutes (1-30).
Call Back	Select to enable this security feature. When the SLM user calls an SLC and logs in, the SLC hangs up and calls the user back. The SLM then logs in again. This feature is currently available in text mode only.
Auto Login	If you select the check box, when the SLM attempts to connect to an SLC via a text mode connection, it automatically uses the Login and Password specified on the SLC Device page. If you do not select it, the user will have to enter the password and login manually.

Table 7-40 New Profile - Configure Tab - Text Mode

Text Mode Setting	Description
Dial-Back Only	Select to grant a local user dial-back access. Users with dial-back access can dial into the SLM and enter their login and password. Once the SLM authenticates them, the modem hangs up and dials them back. Disabled by default. Following are the rules the SLM follows concerning **Dial-Back Only in Text** mode. If both **Dial-Back Only** and **Use User Profile** are not selected, users can dial in text mode. (Regular usage). If **Dial-Back Only** is not selected and **Use User Profile** is selected: ◆ If **Enable Dial-back** is selected on the Manage Account page, the user can only dial in using dial-back with the number defined on the Manage Account page. ◆ If **Enable Dial-back** is not selected, the user can dial in using text mode. If Dial-Back Only is selected and Use User Profile is not selected, users can only dial in using dial-back. SLM dials back to the number defined on the Modem Connection. If **Dial-Back Only** is selected and **Use User Profile** is selected ◆ If **Enable Dial-back** on the Manage account page is selected, the user can only dial in using dial-back with the number defined on the Manage account page. ◆ If **Enable Dial-back** on the Manage account page is not selected, the user can only dial in using dial-back. SLM dials back to the number defined on the Modem connection page.
Dial-Back Number	Enter the phone number the modem dials back on. It can be a fixed number or a number associated with the user's login. If you select **Fixed Number**, enter the number in the format 2123456789.
Employ User Account Settings	Select to indicate that the SLM takes dial-back rules from the local user account on the Manage Account page (see *Accounts on page 125*).

Table 7-41 New Profile - Configure Tab - PPP Mode

PPP Mode Setting	Description
Negotiate IP Address	For the remote device or PC to specify the local (SLM) IP and remote addresses, select **Yes**. Defaults to **Yes**. For the SLM to assign the local (SLM) IP and remote IP addresses, select **No**, and enter the local IP (IP address of the SLM) and remote IP (IP address of the remote device or PC).
Local IP	IP address of the SLM.
Remote IP	IP address of the remote device or remote PC.
Enable NAT	Select to enable Network Address Translation (NAT) for dial-in PPP connections. Users dialing into the SLM access the network connected to Eth1 and/or Eth2. ***Note:*** *This does not apply to dial-out PPP.*
Authentication	Enables **PAP** or **CHAP** authentication for modem logins. **PAP** is the default. ◆ With PAP, if you do not specify username and password, users are authenticated by means of the Local Users and any of the remote authentication methods that are enabled. ◆ With CHAP, the CHAP Handshake fields authenticate the user. You must specify the username and password.
Host/User Name	User name for dial-ins or dial-outs between the SLM and a remote system for PAP or CHAP authentication.

PPP Mode Setting	Description
Secret/User Password	Password for dial-ins or dial-outs between the SLM and a remote system for PAP or CHAP authentication.

Updating and Deleting a Profile

The administrator can update or delete profiles.

To update or delete a modem profile:

1. On the menu, click **Configuration > Network Settings > Modem Management > Modem Profiles**, and then click the **Edit** icon to the left of the modem profile you want to update or delete. The Configure tab displays.

Figure 7-42 Modem Profile Page - Configure Tab

2. To delete a profile:
   a. Click the **Delete** button.
   b. In response to the request for confirmation, click **OK**.
   c. Click **Modem Profiles** on the menu tree. The deleted connection is no longer on the menu tree or listed on the List tab.

3. To update a profile:
   a. Edit the information as desired.
   b. Click the **Update** button. A confirmation message displays.

Note: *For information about configuring a dial-out profil, see* *Configuring a Modem Connection to a Managed Device on page 206.*

Discovering a USB Modem

The system administrator can attach a USB modem to an SLM and configure it into the system without rebooting the SLM. For the vSLM, a USB modem must first be connected to the vSLM VM

prior to discovery of the modem; refer to the documentation for your virtualization manager for instructions on connecting a USB device to a VM.

To "discover" a USB Modem:

1. On the menu, click **Configuration > Network Settings > Modem Management > Modems** and then click the **Discover** tab. The Discover tab displays.
2. Click the **Discover** button. A message displays indicating that the task (discovering USB modems) has started.
3. After a few moments, refresh the tree structure. Any new USB modems display in the tree.

Modem Commands

```
reset modem connection
```

Note: *You may only use this command when the modem is completely stuck. Wait for minimum timeout period (3 minutes) before you use this command when:*

- You dial out via PPP and encounter no dial tone.
- You dial out via PPP and encounter a busy signal.

Syntax

```
reset modem connection
```

Description

Resets a modem connection.

set modem disconnect

Note: *Type show modem to view the current modem connections.*

Syntax

```
set modem disconnect <Name>
```

Example

```
set modem disconnect MyPCIModem
```

Description

Terminates modem dial-out connection.

```
set modem edit
```

Syntax

```
set modem edit <Modem Name> <parameters>
```

Parameters

```
name <New Name>
baud <300-115200>
flowcontrol <none|xon/xoff|rts/cts>
initscript <Modem Initialization Script>
defaultinitscript <Modem Default Initialization Script>
dialin <Dial Account Name|CLEAR|disable|enable>
```

`CLEAR` removes the dial account assignment.

`disable` disables dial-in.

`enable` enables dial-in

`ipfilter <IPv4 Filter Name|CLEAR>`

`ipfilter` CLEAR removes the ipfilter assignment.

Description

Configures a currently loaded modem.

`show modem`

Syntax

`show modem`

Description

Displays all modems.

`show modem connection`

Syntax

`show modem connection <parameters>`

Parameters

`[index <number>]`

Description

Displays active (established) modem connections.

`show modem settings`

Syntax

`show modem <parameters>`

Parameters

```
[name <Modem Name>]
[index <number>]
```

Description

Displays modem settings.

`show modem status`

Syntax

`show modem status`

Description

Displays the status of the modem.

Dial Account Commands

`set dialaccount add`

Syntax

```
set dialaccount add <Dial Account Name> <parameters>
```

Parameters

```
modemmode <text|ppp>
If you select text, all other parameters except timeout are ignored.
localipaddr <negotiate|IP Address>
remoteipaddr <negotiate|IP Address>
auth <pap|chap>
username <User Name>
password <Password>
nat <enable|disable>
```

Default is `20`.

Description

Creates a new dial account.

```
set dialaccount delete
```

Syntax

```
set dialaccount delete <Dial Account Name>
```

Description

Delete a dial account.

```
set dialaccount edit
```

Syntax

```
set dialaccount edit <Dial Account Name> <parameters>
```

Parameters

```
modemmode <text|ppp>
localipaddr <negotiate|IP Address>
remoteipaddr <negotiate|IP Address>
auth <pap|chap>
username <User Name>
password <Password>
nat <enable|disable>
```

`forcedialback <disable|enable>` (apply only text mode)

dialbacknumber <dial-back number|CLEAR> (apply only text mode)

CLEAR removes the dial-back number.

`userprofile <disable|enable>` (apply only text mode)

Uses local user-defined dial-back configuration.

```
timeout <disable|1-30 minutes>
```

Description

Modifies a dial account's settings.

```
set manageddevice config
```

Syntax

```
set manageddevice config <Device Name> [dialout <Dial Account
Name|enable|disable> modem <Modem Name> phonenumber
<phonenumber>]application <ssh|telnet|http|none>]
```

Description

Configures modem and dial account settings for a managed device.

```
set manageddevice index
```

Note: *Type* `show manageddevice all` *to display index.*

Syntax

```
set manageddevice index <number> [dialout <Dial Account
Name|enable|disable> modem <Modem Name> phonenumber
<phonenumber>]application ssh|telnet|http|none>]
```

Description

Finds managed device by index and modifies dial account settings.

To set modem parameters, you must specify a dial-out option.

```
set modem edit
```

Syntax

```
set modem edit <Modem Name> dialin <Dial Account
Name|CLEAR|disable|enable>
```

Description

Modifies a dial-in account name.

```
show dialaccount
```

Note: *Type show dialaccount to display index.*

Syntax

```
show dialaccount <parameters>
```

Parameters

```
[name <Dial Account Name>]
[index <number>]
```

Examples

```
show dialaccount
show dialaccount name ppp-pap
show dialaccount index 2
```

Description

Displays dial account settings.

```
show dialaccount mapping
```

Syntax

```
show dialaccount mapping
```

Description

Shows dial account used by dial-in and dial-out.

8: User Management

This chapter is primarily for administrators, who configure authentication methods, add, update, and delete accounts and account groups, and grant account and account group permissions.

By default, local authentication is enabled and is the first method the SLM uses to authenticate users. The administrator can select additional authentication methods, such as NIS, LDAP, RADIUS, SecurID, and SSH public key or CLI login. The ability to assign different degrees of access to individual users or user groups provides another level of security.

User Authentication Methods

On this page you may enable, disable and order methods for authenticating users attempting to log in to the SLM. The methods include NIS, LDAP, RADIUS, Kerberos, TACACS+, SecurID, and Local. The authentication method selection on the SLM does not affect devices or SLM interaction with devices.

By default, local authentication is enabled and is the first method the SLM uses to authenticate users. The ability to assign different degrees of access to individual users or user groups provides another level of security.

The authentication method selection on the SLM does not affect devices or SLM interaction with devices.

Note: *For a user to be authenticated using one of the remote methods, the user's account must be configured for remote access (Remote Only or Local & Remote), or there must be an account defined whose login name is the same as the protocol (e.g., "NIS" for NIS).*

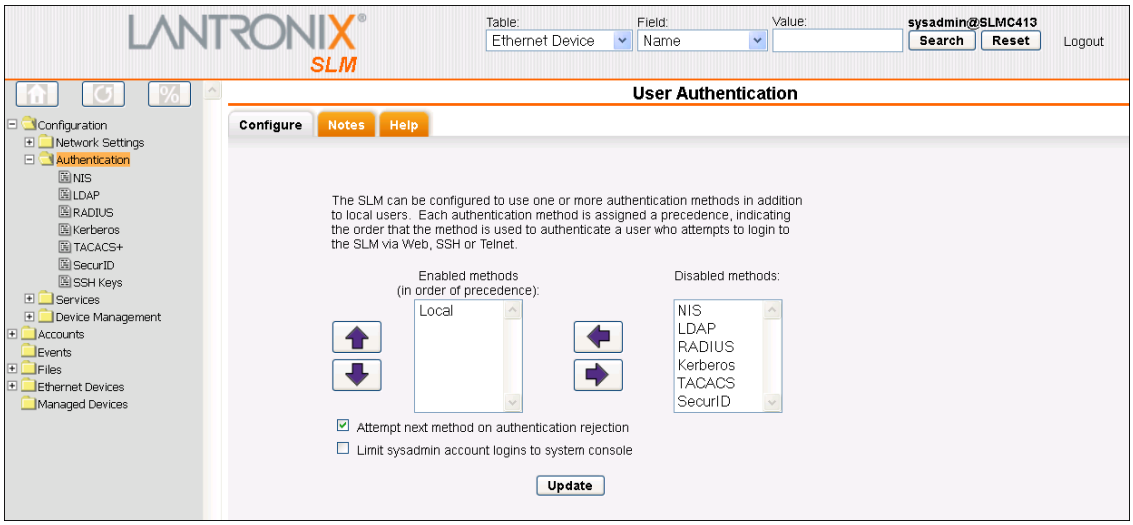
If you enable multiple authentication methods, the SLM attempts login authentication in the order specified. When Attempt next method on authentication rejection is enabled, login authentication continues until a configured method reports success or all configured methods have been exhausted. When Attempt next method on authentication rejection is disabled, login authentication continues until a configured method reports success or failure, skipping non-responding methods.

Note: *Adding an NIS user with the same user name as a local user may result in undefined behavior. For this reason, the SLM prevents the addition of such accounts when NIS is configured and enabled, but it is unable to stop the creation of such accounts when NIS is disabled. The other remote authentication types are not affected by this issue.*

To enable, disable, and set the precedence of authentication methods:

1. On the menu, click **Configuration > Authentication**. The following page opens:

Figure 8-1 User Authentication - Configure Tab



2. To enable a method currently in the Disabled methods list, select the method and click the left arrow.

Table 8-2 User Authentication - Configure Tab

User Authentication Setting	Description
Local	The SLM authenticates users in the local database by user name and password. If this method is enabled, it always responds.
NIS (Network Information System)	A network naming and administration system developed by Sun Microsystems for smaller networks. Each host client or server computer in the system has knowledge about the entire system. A user at any host can access files or applications on any host in the network with a single user name and password. NIS uses the client/server model and the Remote Procedure Call (RPC) interface for communication between hosts. NIS consists of a server, a library of client programs, and some administrative tools. NIS is often used with the Network File System (NFS).
LDAP (Lightweight Directory Access Protocol)	A set of protocols for accessing information directories, specifically X.500-based directory services. LDAP runs over TCP/IP or other connection-oriented transfer services.
RADIUS (Remote Authentication Dial-In User Service)	An authentication and accounting system used by many Internet Service Providers (ISPs). This client/server protocol enables remote access servers to authenticate dial-in users and authorize their access to the requested system or service. RADIUS allows a company to maintain user profiles in a central database that all remote servers can share. It increases security, allowing a company to set up a policy that can be applied at a single administered network point. Select RADIUS if a RADIUS server is used as a proxy for SecurID. Select SecurID if a native SecurID server is used.

User Authentication Setting	Description
Kerberos	Kerberos is a network authentication protocol that enables two parties to exchange private information across an unprotected network. It works by assigning a unique electronic credential, called a ticket, to each user who logs on to the network. The ticket is embedded in messages to identify the sender.
TACACS+ (Terminal Access Controller Access Control System)	TACACS+ allows a remote access server to communicate with an authentication server to determine whether the user has access to the network. TACACS+ is a completely new protocol and is not compatible with TACACS or XTACACS. The SLM supports TACACS+ only.
SecurID	SecurID is a two-factor authentication method based on the user's SecurID token and pin number. The SecurID token displays a string of digits called a token code that changes once a minute (some tokens are set to change codes every 30 seconds). Select RADIUS if a RADIUS server is used as a proxy for SecurID. Select SecurID if a native SecurID server is used.

3. To disable a method currently in the Enabled methods list, select the method and click the right arrow between the lists.
4. To set the order in which the SLM will authenticate users, click the up and down arrows to the left of the Enabled methods list.
5. To instruct the SLM to attempt authentication using the next configured method in the list when an authentication method responds to, and fails, a login, select the Attempt next method on authentication rejection check box.
6. Check the box to Limit sysadmin account logins to the system console.
7. Click the **Apply** button.

Now that you have enabled one or more authentication methods, you must configure them.

NIS

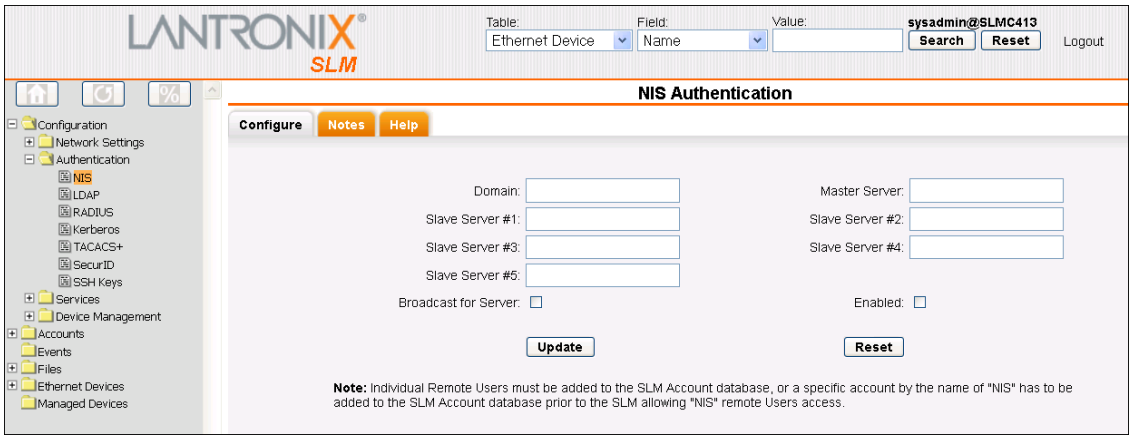
The administrator can configure the SLM to use NIS to authenticate users attempting to log in to the SLM through the web interface, SSH, Telnet, or the console port.

Note: *For a user to log in remotely using NIS, the user's account must have remote access (Remote Only or Local & Remote), or there must be an account defined whose login name is NIS. See* *Accounts on page 125* *for information on setting up accounts.*

To configure the SLM to use NIS to authenticate users:

1. On the menu, click **Configuration > Authentication > NIS**. The following page opens.

Figure 8-3 NIS Authentication Page - Configure Tab



2. Enter the following:

Table 8-4 NIS Authentication - Configure Tab

NIS Authentication Page Setting	Description
Domain	The NIS domain of the SLM must be the same as the NIS domain of the NIS server.
Master Server (required)	The IP address or hostname of the master server.
Slave Server #1 - 5	The IP addresses or hostnames of up to five slave servers.
Broadcast for Server	Select the check box for the SLM to send a broadcast datagram to find the NIS Server on the local network.
Enabled	Displays selected if you previously enabled this method on the User Authentication page or on this page. To configure this authentication method but not enable it, clear the check box. ***Note:*** *You can enable this authentication method here or on the User Authentication page. If you enable it here, it is assigned the lowest priority on the User Authentication page.*

3. To save, click the **Update** button. A confirmation message displays.

LDAP

The administrator can configure the SLM to use LDAP to authenticate users attempting to log in to the SLM through the web interface, SSH public key, Telnet, or the console port.

LDAP allows SLM users to authenticate using a wide variety of LDAP servers, such as OpenLDAP and Microsoft Active Directory. The LDAP implementation supports LDAP servers that do not allow anonymous queries.

Note: *For a user to log in remotely using LDAP, the user's account must have remote access (**Remote Only** or **Local & Remote**), or there must be an account defined whose login name is **LDAP**. See Accounts on page 125 for information on setting up accounts.*

Note: *Users that are authenticated via Microsoft Active Directory LDAP server may automatically be created and assigned to SLM account groups. If an LDAP acount is made a Member of Group and the name has the format "SLM_xxxxx" AND an account group exists on the SLM named "xxxxx" (without the "SLM_" prefix), then a user logging into the SLM using LDAP authentication will have an account automatically created for them in the matching account group, and the user will inherit all permissions assigned to that group.*

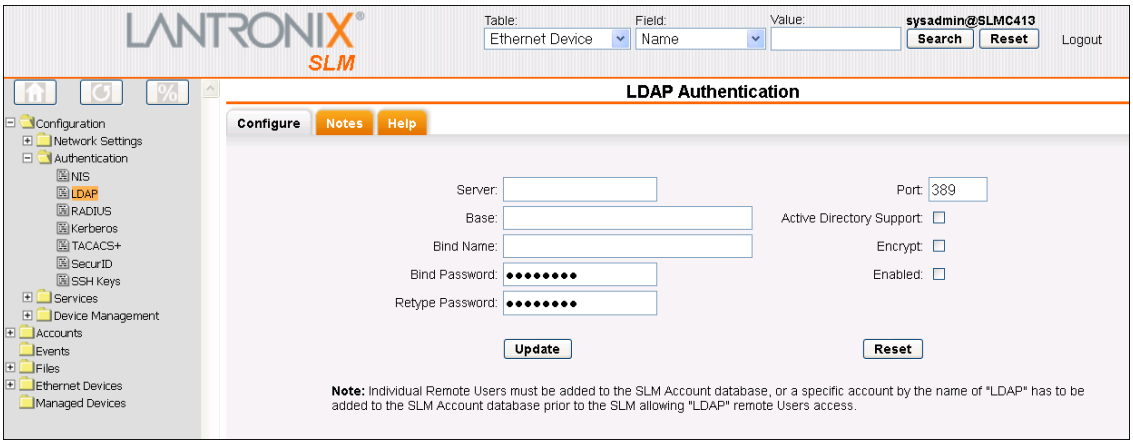
Example: user "dsmith" has an account on the LDAP server and is a member of group "SLM_musers". The account group "musers" has been defined on the SLM. When user dsmith logs into the SLM, a "dsmith" account will be created in the "musers" account group and user dsmith will log into the SLM using that account.

If the dsmith LDAP acccount is a member of more than one group starting with "SLM_" the first one found will be used. If later, the LDAP account dsmith is assigned to a different "SLM_xxxxx" group, then at the next login, the dsmith account on the SLM will be moved to the new account group.

To configure the SLM to use LDAP to authenticate users:

1. On the menu, click **Configuration > Authentication > LDAP**. The following page opens.

Figure 8-5 LDAP Authentication Page - Configure Tab



2. Enter the following:

Table 8-6 LDAP Authentication Settings

LDAP Authentication Setting	Description
Server	The IP address or host name of the LDAP server.
Base	The name of the LDAP search base (e.g., dc=company, dc=com). May have up to 80 characters.
Bind Name	The name for a non-anonymous bind to an LDAP server. This item has the same format as LDAP Base. One example is cn=administrator,cn=Users,dc=domain,dc=com
Bind Password and Retype Password	Password for a non-anonymous bind. This entry is optional. Acceptable characters are **a-z**, **A-Z**, and **0-9**. The maximum length is 127 characters.
Port	Number of the TCP port on the LDAP server to which the SLM talks. The default setting is **389**.
Active Directory Support	Select to enable. Active Directory is a directory service from Microsoft that is a part of Windows 2000 and later versions of Windows. It stores information about network resources within a domain. It is LDAP- and Kerberos- compliant. Disabled by default.
Encrypt	Select to encrypt messages between the SLM and the LDAP server. Disabled by default.
Enabled	Displays selected if you previously enabled this method on the User Authentication page or on this page. To configure this authentication method but not enable it, clear the check box. ***Note:*** *You can enable this authentication method here or on the User Authentication page. If you enable it here, it is assigned the lowest priority on the User Authentication page.*

3. To save, click the **Update** button. A confirmation message displays.

RADIUS

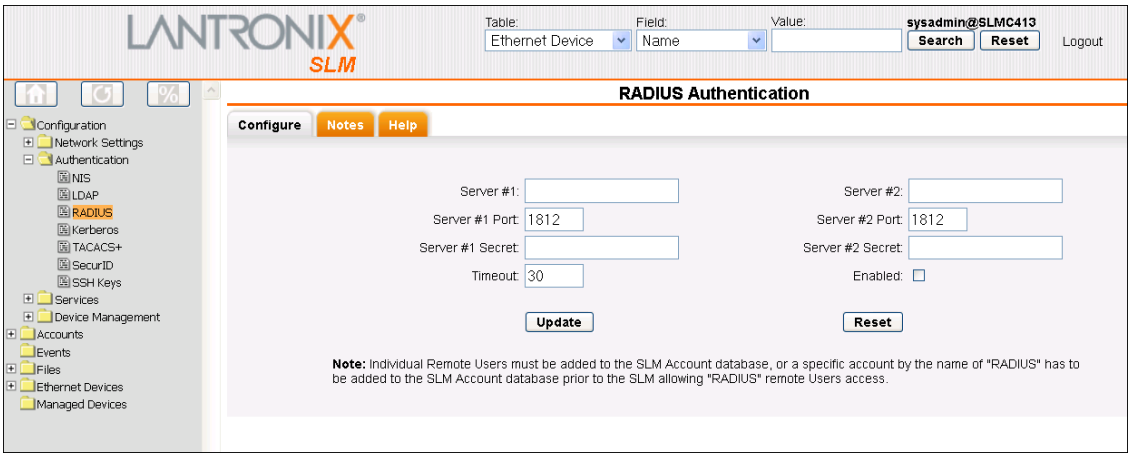
The administrator can configure the SLM to use RADIUS to authenticate users attempting to log in to the SLM through the web interface, SSH public key, Telnet, or the console port.

Note: *For a user to log in remotely using RADIUS, the user's account must have remote access (Remote Only or Local & Remote), or there must be an account defined whose login name is RADIUS. See* *Accounts on page 125* *for information on setting up accounts.*

To configure the SLM to use RADIUS to authenticate users:

1. On the menu, click **Configuration > User Authentication > RADIUS**. The following page opens.

Figure 8-7 RADIUS Authentication Page - Configure Tab



2. Enter the following:

Table 8-8 RADIUS Authentication Settings

RADIUS Authentication Setting	Description
Server #1	IP address or hostname of the primary RADIUS server. This RADIUS server may be a proxy for SecurID. For native SecurID, use the SecurID configuration web page.
Server #1 Port	Number of the TCP port on the RADIUS server used for the RADIUS service. If you do not specify an optional port, the SLM uses the default RADIUS port (1812). ***Note:*** *Older RADIUS servers may use 1645 as the default port. Check your RADIUS server configuration.*
Server #1 Secret	Text that serves as a shared secret between a RADIUS client and the server (SLM). The shared secret is used to encrypt a password sent between the client and the server. May have up to 128 characters.
Server #2	IP address or hostname of the secondary RADIUS server.
Server #2 Port	Number of the TCP port on the RADIUS server used for the RADIUS service. If you do not specify an optional port, the SLM uses the default RADIUS port (**1812**). ***Note:*** *Older RADIUS servers may use 1645 as the default port. Check your RADIUS server configuration.*
Server #2 Secret	Text that serves as a shared secret between a RADIUS client and the server (SLM). The shared secret is used to encrypt a password sent between the client and the server. May have up to 128 characters.
Timeout	The number of seconds after which the connection attempt times out. The default setting is 30.
Enabled	Displays selected if you previously enabled this method on the User Authentication page or on this page. To configure this authentication method but not enable it, clear the check box. ***Note:*** *You can enable this authentication method here or on the User Authentication page. If you enable it here, it is assigned the lowest priority on the User Authentication page.*

2. To save, click the **Update** button. When the update is complete, a confirmation message displays.

Kerberos

Kerberos is a network authentication protocol that provides strong authentication for client/server applications by using secret-key cryptography.

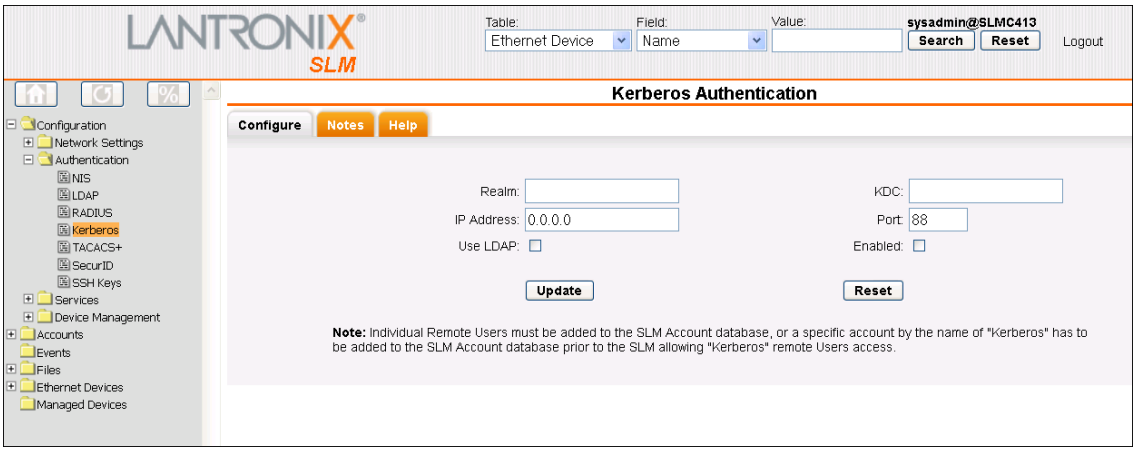
The administrator can configure the SLM to use Kerberos to authenticate users attempting to log in to the SLM through the web interface, SSH, Telnet, or the console port.

Note: *For a user to log in remotely using Kerberos, the user's account must have remote access (Remote Only or Local & Remote), or there must be an account defined whose login name is Kerberos. See* *Accounts on page 125* *for information on setting up accounts.*

To configure the SLM to use Kerberos to authenticate users:

1. On the menu, select **Configuration > Authentication > Kerberos**. The following page opens.

Figure 8-9 Kerberos Authentication Page - Configure Tab



2. Enter the following:

Table 8-10 Kerberos Authentication Settings

Kerberos Authentication Setting	Description
Realm	Enter the name of the logical network served by a single Kerberos database and a set of Key Distribution Centers. Usually, realm names are all uppercase letters to differentiate the realm from the Internet domain. Realm is similar in concept to an NT domain.
KDC	A key distribution center (KDC) is a server that issues Kerberos tickets. A ticket is a temporary set of electronic credentials that verify the identity of a client for a particular service. Enter the **KDC** in the fully qualified domain name format (FQDN). An example is SLC.local.
IP Address	Enter the IP address of the Key Distribution Center (KDC).
Port	Port on the KDC listening for requests. Enter an integer with a maximum value of 65535. The default setting is **88**.
Use LDAP	Indicate whether Kerberos should rely on LDAP to look up user IDs and Group IDs. This setting is disabled by default. ***Note:*** *Make sure to configure LDAP if you select this option.*
Enabled	Displays selected if you previously enabled this method on the User Authentication page or on this page. To configure this authentication method but not enable it, clear the check box. ***Note:*** *You can enable this authentication method here or on the User Authentication page. If you enable it here, it is assigned the lowest priority on the User Authentication page.*

3. To save, click the **Update** button. A confirmation message displays.

TACACS+

Similar to RADIUS, the main function of TACACS+ is to perform authentication for remote access. The SLM supports the TACACS+ protocol (not the older TACACS or XTACACS protocols).

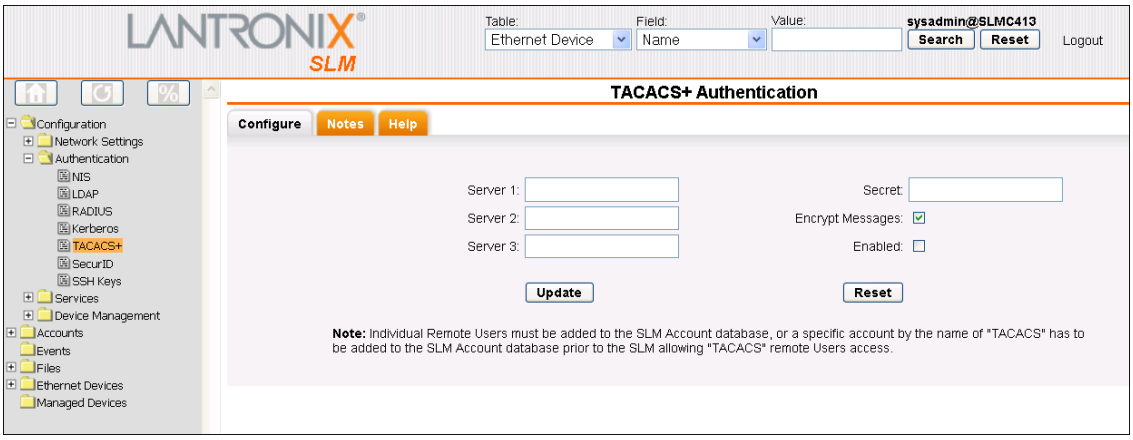
The administrator can configure the SLM to use TACACS+ to authenticate users attempting to log in to the SLM through the web interface, SSH, Telnet, or the console port.

Note: *For a user to log in remotely using TACACS+, the user's account must have remote access (Remote Only or Local & Remote), or there must be an account defined whose login name is TACACS.*

To configure the SLM to use TACACS+ to authenticate users:

1. On the menu, select **Configuration > Authentication > TACACS**. The following page opens.

Figure 8-11 TACACS+ Authentication Page - Configure Tab



2. Enter the following:

Table 8-12 TACACS+ Authentication Settings

TACACS+ Authentication Setting	Description
Servers 1-3	IP address or host name of up to three TACACS+ servers.
Secret	Shared secret for message encryption between the SLM and the TACACS+ server. Enter an alphanumeric secret of up to 127 characters.
Encrypt Messages	Select the check box to encrypt messages between the SLM and the TACACS+ server. Selected by default.
Enabled	Displays selected if you previously enabled this method on the User Authentication page or on this page. To configure this authentication method but not enable it, clear the check box. ***Note:*** *You can enable this authentication method here or on the User Authentication page. If you enable it here, it is assigned the lowest priority on the User Authentication page.*

3. To save, click the **Update** button. A confirmation message displays.

SecurID

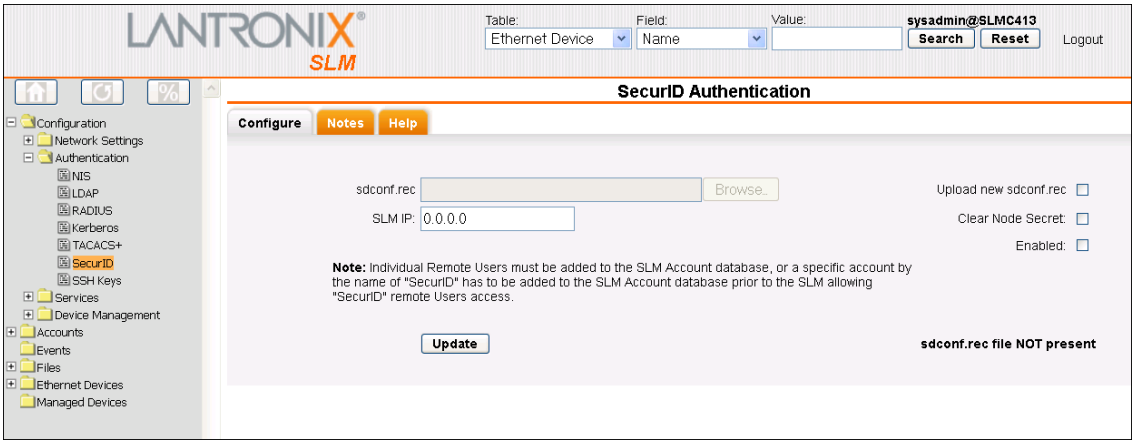
SecurID is a two-factor authentication method based on a SecurID token and a pin number. An analogous two-factor authentication method is an ATM card combined with a pin number. The SecurID token displays a string of digits called a token code that changes once a minute (some tokens are set to change codes every 30 seconds).

The administrator can configure the SLM to use SecurID to authenticate users attempting to log in to the SLM through the web interface, SSH, Telnet, or the console port. Selecting this option will disable all other authentication methods, as SecurID cannot be used in conjunction with other methods.

To configure the SLM to use SecurID to authenticate users:

1. On the menu, select **Configuration > Authentication > SecurID**. The following page opens.

Figure 8-13 SecurID Authentication Page



2. Enter the following information:

Table 8-14 SecurID Authentication Settings

SecurID Authentication Setting	Description
sdconf.rec/Upload new sdconf.rec	Configuration file generated by the SecurID server. To upload this file from the Administrator's browser client, select the **Upload new sdconf.rec** checkbox and select the file with the **Browse** button.
SLM IP	The SLM's IP address as configured on the SecurID server. The SecurID server uses this to validate the identity of the SLM.
Clear Node Secret	Upon the first successful authentication, the SecurID server places a shared node secret key on the SLM. There may be times when this file needs to be cleared by both sides, so this option is available.

SecurID Authentication Setting	Description
Enabled	Select the checkbox to enable SecurID authentication. You can also select this option on the User Authentication page.Selecting this option will disable all other authentication methods, as SecurID cannot be used in conjunction with other methods. The local sysadmin account will still be able to log in, but can be limited to system console logins if desired on the User Authentication page.

3. To save, click the **Submit** button.

SSH Keys

The SLM can import and export SSH keys to facilitate shared key authentication for all incoming and outgoing SSH connections. By using a public/private key pair, a user can access multiple hosts with a single passphrase, or, if a passphrase is not used, a user can access multiple hosts without entering a password.

For imported and exported SSH keys, the SLM supports both RSA and DSA keys and can import and export keys in OpenSSH and SECSH formats. Both imported and exported keys must be associated with a local SLM user.

Imported Keys

Imported SSH keys must be associated with an SLM local user. The key can be generated on host "MyHost" for user "MyUser," and when the key is imported into the SLM, it must be associated with either "MyUser" (if "MyUser" is an existing SLM local user) or an alternate SLM local user. The public key file can be imported through SCP or FTP; once the file is imported, you can view or delete the public key. Any SSH connection into the SLM from the designated host/user combination uses the SSH key for authentication.

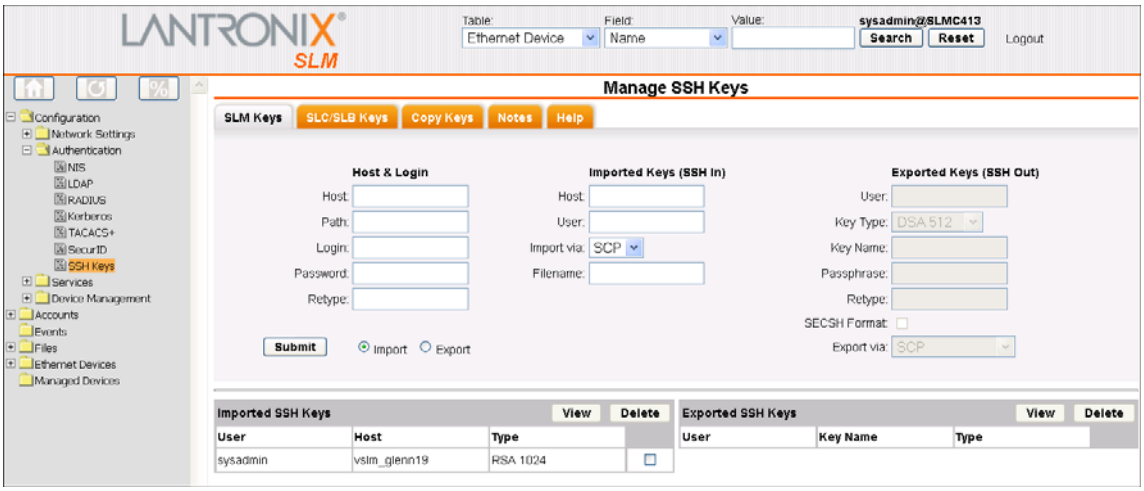
Exported Keys

The SLM can generate SSH keys for SSH connections out of the SLM for any SLM user. The SLM retains both the private and public key on the SLM, and makes the public key available for export through SCP, FTP, or copy and paste. The name of the key is used to generate the name of the public key file that is exported (for example, <keyname>.pub), and the exported keys are organized by user and key name. Once a key is generated and exported, any SSH connection out of the SLM for the designated host/user combination uses the SSH key for authentication.

To configure the SLM to use SSH keys to authenticate users:

1. On the menu, select **Configuration > Authentication > SSH Keys**. The following page opens.

Figure 8-15 Manage SSH Keys - SLM Keys Tab



2. To the right of the **Submit** button, click **Import** or **Export** to indicate the type of keys you are setting.
3. Enter the following:

Table 8-16 Host and Login SSH Key Settings

SSH Key Setting	Description
Host	IP address of the remote server from which to SCP or FTP the public key file.
Path	Optional pathname to the public key file.
Login	User ID to use to SCP or FTP the file.
Password/Retype	Password to use to SCP or FTP the file.

Imported Keys (SSH In)

These entries (the Host, User, Import via, and Filename fields are always required for importing keys) are required in the following cases:

- The imported key file does not contain the host from which the user will be making an SSH connection.
- The SLM local user login for the connection is different from the user name from which the key was generated or is not included in the imported key file.

If either of these conditions is true, or the imported file is in SECSH format, you must specify the host and user. The following is an example of a public key file that includes the host and user:

```
ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAEEApUHCX9EWsHt+jmUGXa1YC3us
ABYxIXUhSU1N+NU9HNaUADUFfd8LYz8/gUnUSH4Ksm8GRT7/8/Sn9jCVfGPh
UQ== asallaway@winserver
```

Table 8-17 Imported Key Settings

Imported Key Setting	Description
Host	Host name or IP address from which the SSH connections to the SLM will be made.
User	User ID of the person given secure access to the remote server.
Import via	Select **SCP** or **FTP** as the method for importing the SSH keys. The default is **SCP**.
Filename	Name of the public key file (for example, mykey.pub).

Exported Keys (SSH Out)

Table 8-18 Exported Keys Settings

Exported Key Setting	Description
User	User ID of the person given secure access to the remote server.
Key Type	Select either the **RSA** or the **DSA** encryption standard followed by the number of bits (**512** or **1024**) in the key. **DSA 512** is the default. All export fields are disabled during import and vice versa.
Key Name	Name of the key. This will generate the public key filename (e.g., <keyname>.pub).
Passphrase/Retype	Optionally, enter a passphrase associated with the key. The passphrase may have up to 50 characters. The passphrase is an optional password that can be associated with an SSH key. It is unique to each user and to each key.
SECSH Format	Indicate whether the keys will be exported in SECSH format. The default is OpenSSH.
Export via	Select the method (SCP, FTP, or Cut and Paste) of exporting the key to the remote server. Cut and Paste, the default, requires no other parameters for export.

4. Click the **Submit** button. The keys display in the list below.
5. To view a user's key, select the user and click the **View** button.
6. To delete a user's key, select the user and click the **Delete** button.

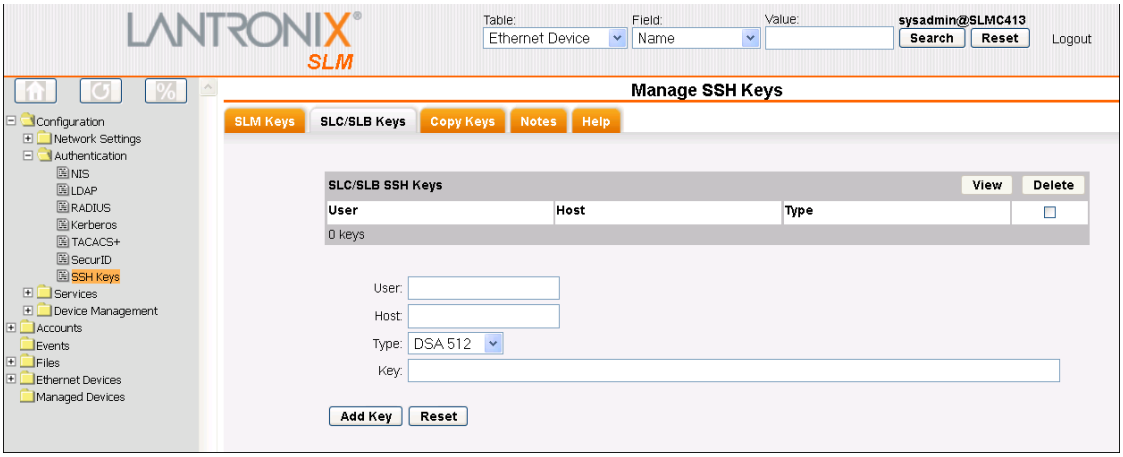
To add or view export SLC keys:

You can enable the SLM to retrieve all the public keys (each with a specific user and host name) from a particular SLC and store them in the SLM database. Then you can push those public keys to other SLCs, allowing those particular users to access the other SLCs from those particular hosts.

Note: *For information about importing and exporting keys, see* *Using the Actions Tab on page 259**.*

1. On the menu, select **Configuration > Authentication > SSH Keys**, and click the **SLC/SLB Keys** tab. The following page opens:

Figure 8-19 Manage SSH Keys - SLC/SLB Keys Tab



2. Enter the following information:

Table 8-20 Manage SSH Keys - SLC Keys Tab

SLC Key Setting	Description
User	User login of the person given secure access to the SLC.
Host	Host name or IP address from which the SSH connections to the SLC will be made.
Type	Select either the **RSA** or the **DSA** encryption standard followed by the number of bits (**512** or **1024**) in the key. **DSA 512** is the default. All export fields are disabled during import and vice versa.
Key	Enter the SSH key content.

3. Click the **Add Key** button. The key information (except the key itself) displays in the table on the top of the page.
4. To view the key, select the check box for the user, and click the **View** button in the top right of the page. The SLC key displays.

Example of an SLC key:

SLC key for sysadmin@SLM_tpham17

```
RSA 1024:
AAAAB3NzaC1yc2EAAAABIwAAAQEAvy7zXy+l1YDbaXalMYVRKGPBue+HdR+ihmdZZqGcN8xc
O2Lqdwb6lyJO4QN4PcQ6n88VwLM0/UEJgW1PF3vp/Z+kKw4v48NHJUOZSKRfTejMssgp1S6
TTf+YWzHCr1mX/+yRUyA+I9VXb9cI2r9uqIlMk/GVTgpI/8YERnAsQ9AeRfy/20MXOSGg895
tdBW6piLKWoJ5P6NRcXsFJScmowGXNU4snUpk2cvVNyGiVMe9jb454fb080+/lphmMrJMUPY
X3uG22Qsm0KZGosnLFKtYzimDaOoRQ2QI9my19i/baFX9RiH2yda+vLmBsTchaEx30Dp7Pw
baHi7gf8Rb9Q==
```

5. To delete one or more keys:
   a. Select the check box for each key to be deleted and click the **Delete** button.
   b. In response to the request for confirmation, click **OK**.

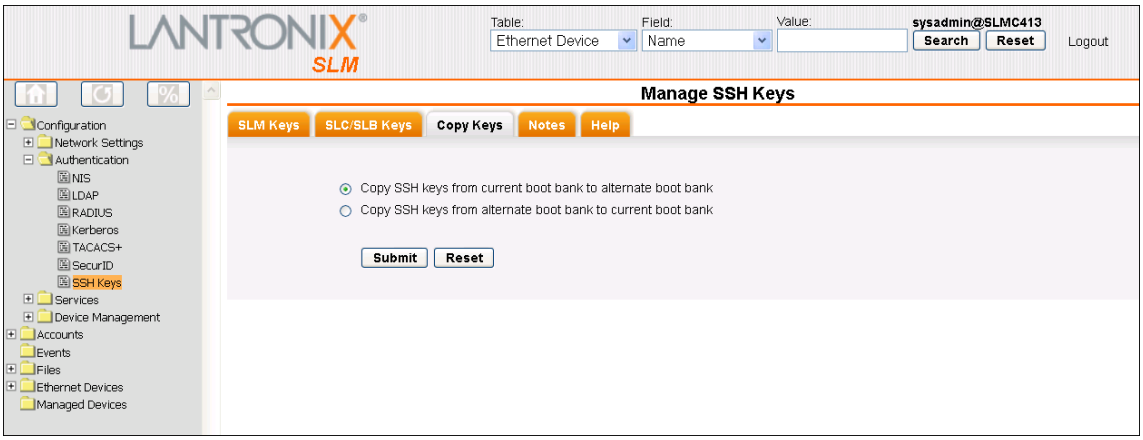
Copy Keys

If your SLM is set up with dual booting, you can move SSH keys from one boot partition to another.

To copy a key:

1. On the menu, select **Configuration > Authentication > SSH Keys**, and then click the **Copy Keys** tab.

Figure 8-21 Manage SSH Keys - Copy Keys Tab



2. Select one of the following:
   - Copy SSH keys from current boot bank to alternate boot bank.
   - Copy SSH keys from alternate boot bank to current boot bank.
3. Click the **Submit** button.
4. To return to the original settings, click the **Reset** button.

Authentication Commands

```
set auth
```

Syntax

```
set auth <one or more parameters>
```

Parameters

```
local <1-7>
nis <1-7>
ldap <1-7>
radius <1-7>kerberos <1-7>
tacacs+ <1-7>
securid <1-7>
authusenextmethod <enable|disable>
limitsysadmin <enable|disable>
```

Description

Sets ordering of authentication methods and how authentication methods are used.

Authentication can occur using all methods, in the order of their precedence, until a successful authentication is obtained, or using only the first authentication method that responds (in the event that a server is down).

Note: *If SecurID is used, no other parameters can be used.*

Any methods omitted from the `set auth` command will be disabled if at least one method is selected

`set ldap`

Syntax

```
set ldap <one or more parameters>
```

Parameters

```
state <enable|disable>
server <IP Address or Name>
 port <TCP Port>
 base <LDAP Base>
 bindname <Bind Name>
 bindpassword <Bind Password>
 adsupport <enable|disable>
 encrypt <enable|disable>
```

Description

Configures the SLM to use LDAP to authenticate users who log in to the SLM via SSH, Telnet, the web, or the console port.

`set nis`

Syntax

```
set nis <one or more parameters>
```

Parameters

```
<enable|disable>
 domain <NIS Domain Name>
 broadcast <enable|disable>
 master <IP Address or Name>
 slave1 <IP Address or Name>
 slave2 <IP Address or Name>
 slave3 <IP Address or Name>
 slave4 <IP Address or Name>
 slave5 <IP Address or Name>
```

Description

Configures the SLM to use NIS to authenticate users who log in to the SLM via SSH, Telnet, the web, or the console port.

`set radius`

Syntax

```
set radius <one or more parameters>
state <enable|disable>
timeout <1-30 seconds>
server1 <IP Address or Name>
```

```
port1 <TCP Port>
secret1 <Secret>
server2 <IP Address or Name>
port2 <TCP Port>
secret2 <Secret>
```

Description

Configures the SLM to use RADIUS to authenticate users who login to the SLM via SSH, Telnet, the web, or the console port.

`set sshkey delete`

Syntax

`set sshkey delete keyuser <SSH Key User> keyhost <SSH Key Host>`

Description

Deletes an imported SSH key.

`set sshkey import`

Syntax

`set sshkey import <copypaste>`

Note: *RSA keys must be 1024 bits.*

Description

Imports an SSH key.

`show auth`

Syntax

`show auth`

Description

Displays authentication methods in use.

`show ldap`

Syntax

`show ldap`

Description

Displays all LDAP information.

`show nis`

Syntax

`show nis`

Description

Displays all NIS information.

`show radius`

Syntax

`show radius`

Description

Displays all RADIUS information.

```
show sshkey import
```

Syntax

```
show sshkey import <one or more parameters>
```

Parameters

```
[keyuser <SSH Key User>]
[keyhost <SSH Key IP Address or Name>]
[viewkey <enable|disable>]
```

Description

Displays imported SSH keys.

Account Groups

The administrator organizes accounts into account groups to simplify the task of assigning permissions. Accounts inherit device rights from the account group to which they belong. To assign unique permissions to an individual account, it must be the only member of an account group. The sysadmin account always has all permissions enabled.

Note: *Only functions and devices for which the user has rights display in that user's menu on the web interface or on the CLI.*

Account Group Types

There are four types of account groups: Administrators, Ethernet Device, Managed Device, and Menu Only.

Administrators Account Group: Has rights and permissions to configure the SLM and to add, edit, and delete account groups within the Ethernet Device, Managed Device, and Menu Only categories. Administrators cannot delete or rename the Administrators Group, although they can add additional accounts to it. Administrators have access to configuration, events, logs, and files, can create groups of managed devices, and interact with Ethernet and managed devices. Administrators can log into both the web interface and the CLI.

Ethernet Device Account Groups: Can interact with SLCs, SLKs, SLPs, and other SLMs, other Lantronix devices, some non-Lantronix device, the ports of the devices, and the managed devices created from these ports to which the group has rights. Ethernet Device Account groups can log into both the web interface and the CLI. Ethernet Device Account groups may also create, update, and delete Managed Device Groups and assign managed devices to which they have rights (by having rights to their parent Ethernet device) to those groups.

Managed Device Account Groups: Have access to the managed devices (e.g., servers and switches) connected to Ethernet device ports to which the group has rights. Managed Device Account Groups can log into both the web interface and the CLI.

Menu Only Account Groups: These groups can log into the CLI but not the web interface. They can interact with managed devices only. The administrator assigns a restricted menu of numbered options that these users can select.

Viewing Account Groups

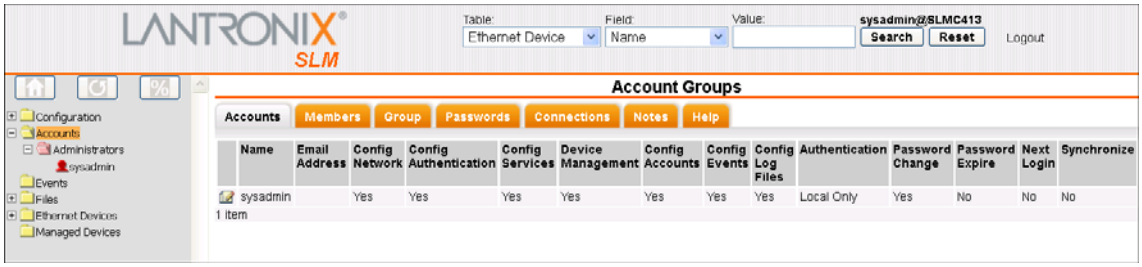
Administrators can view account groups.

To view account groups:

1. On the menu, click **Accounts**.

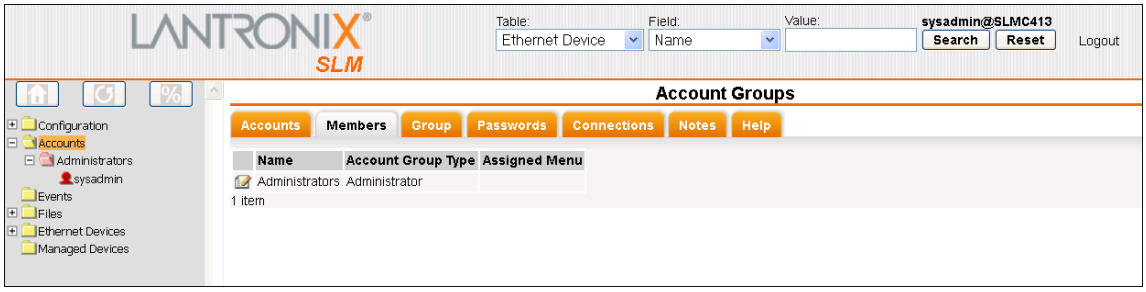
The following page opens:

Figure 8-22 Account Groups Page - Accounts Tab



2. Click the **Members** tab. A list of existing account groups displays.

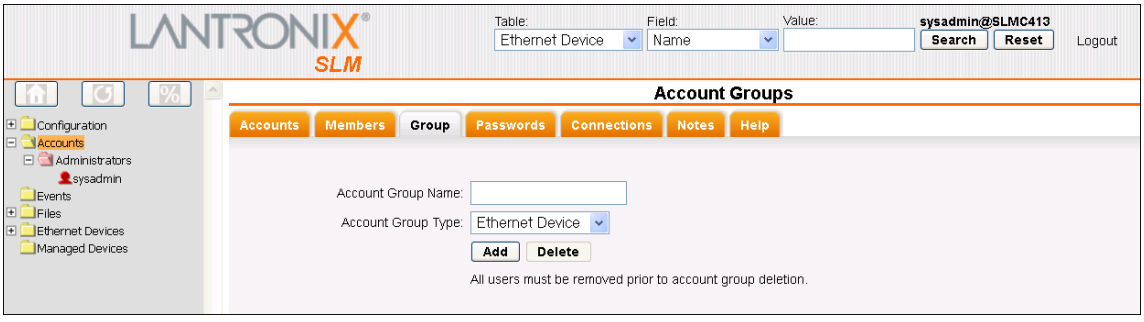
Figure 8-23 Account Groups Page - Members Tab



Adding an Account Group

1. On the Account Groups page, click the **Group** tab. The following page opens:

Figure 8-24 Account Group Page - Group Tab



2. Enter the following:

Table 8-25 Account Group - Group Tab

Account Group Setting	Description
Account Group Name	The name of the new account group.
Account Group Type	From the drop-down list, select the type of account group. The default setting is **Ethernet Device**.

3. To save, click the **Add** button. A confirmation message displays and the new group displays in the **Accounts** menu tree.
4. To display the list of account groups, click **Accounts** on the menu. The new group is on the list.

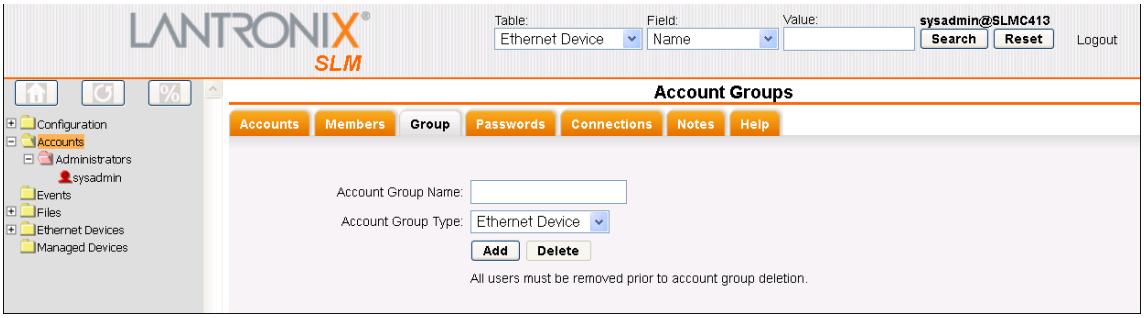
Updating or Deleting an Account Group

The administrator can update or delete any group except for sysadmin.

To update or delete an account group:

1. On the **Members** tab, click the **Edit** icon to the left of the group you want to update or delete. The **Group** tab displays.

Figure 8-26 Account Groups - Group Tab



2. To delete an account group:

   Note: *You can rename an account group but not change its type. You cannot delete an account group if it contains any accounts; delete the accounts first.*

   a. Click the **Delete** button.

   b. In response to the request for confirmation, click **OK**. A blank **Group** tab opens.

   c. Click **Accounts** on the menu tree. The deleted group is no longer on the menu tree or listed on the **Members** tab.

3. To update the name of an account group:

   a. Edit the name as desired.

   b. Click the **Update** icon. A confirmation message displays.

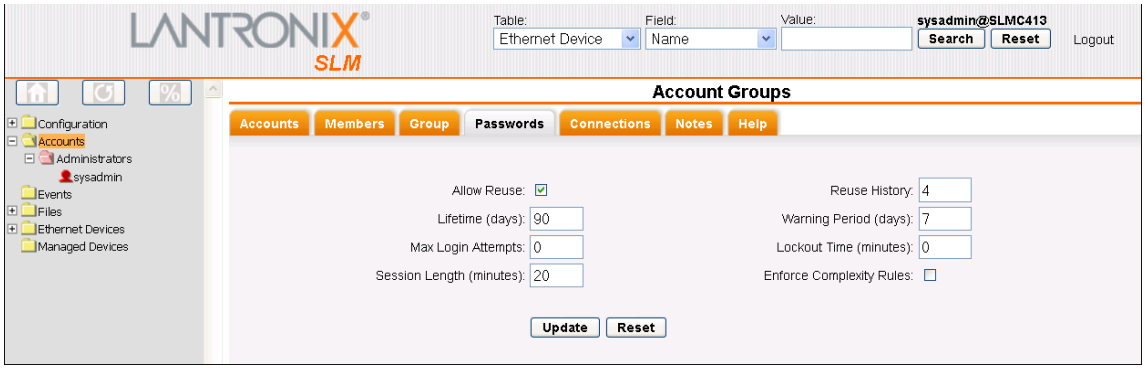
   c. Click **Accounts** on the menu tree. The updated group is on the menu tree and listed on the **Members** tab.

Setting Password Requirements for User Accounts

The administrator sets parameters for passwords that apply to all accounts.

1. On the Account Groups page, click the **Passwords** tab.

Figure 8-27 Account Groups Page - Passwords Tab



2. Enter the following information:

Table 8-28 Password Requirement Settings

Password Requirement Setting	Description
Allow Reuse	Select to enable users to continue to reuse old passwords. If you disable the check box, the user cannot use any of the **Reuse History** number of passwords. Enabled by default.
Reuse History	The number of passwords the user must use before reusing an old password. The default is 4. For example, if you set reuse history to 4, the user may reuse an old password after using 4 other passwords.
Lifetime (days)	The number of days until the password expires. The default setting is 90.
Warning Period (days)	The number of days ahead that the system warns that the user's password will expire. The default setting is **7**.
Max Login Attempts	The number of times the user can attempt to log in unsuccessfully before the system locks the user out. The default setting is 0 (disabled).
Lockout Time (minutes)	The number of minutes the locked-out user must wait before trying to log in to the web interface again. The default setting is 0 (disabled).
Session Length (minutes)	The number of minutes a session can be idle before it times out. The minimum is five minutes. The default setting is 20. This applies to both web and CLI sessions. ***Note:*** *The SLM ships with a default maximum of 25 concurrent user sessions (or "seats"). If you require more than 25 concurrent user sessions, please contact your sales associate to order them. When all seats are in use, the sysadmin can still log in one more time, from the CLI interface only, and terminate other connections.*
Enforce Complexity Rules	Select to enable the SLM to enforce rules concerning the password structure (e.g., alphanumeric requirements, number of characters, punctuation marks). Disabled by default. **Complexity rules:** ◆ Passwords must be at least eight characters long. ◆ Passwords must contain one upper case letter (A-Z), one lower case letter (a-z), one digit (0-9), and one punctuation character (()`~!@#$%^&*-+=\{}[]:;"'<>,.?/_).

3. To save, click the **Update** button. When the update is complete, a confirmation message displays.

Assigning Account Group Device Rights

Accounts inherit the device rights of the account group to which they belong. Administrators can add or remove permission to an account group to view, configure, or interact with specific Ethernet devices or specific ports and the managed devices connected to them.

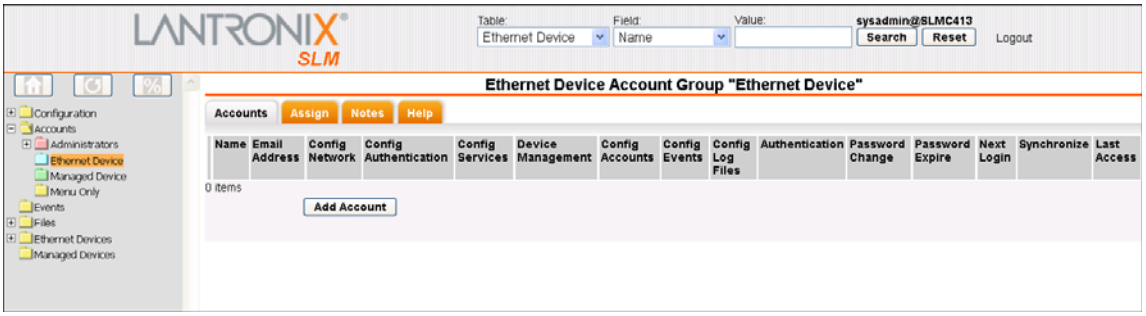
- **Administrators Account Group:** Can view, configure, and interact with all Ethernet devices and with the managed devices connected to the Ethernet device's ports.
- **Ethernet Device Account Groups:** Can view, configure, and interact with specific Ethernet devices, their ports, and the managed devices connected to the ports.
- **Managed Device Account Groups:** Can view, configure, and interact with specific managed devices.
- **Menu Only Account Groups:** Can view and interact with specific managed devices, according to the menu they have permission to use.

To assign permissions to an Ethernet Device Account Group:

The administrator assigns permissions to an Ethernet Device Account Group to access specific Ethernet devices. All members of the group inherit these permissions.

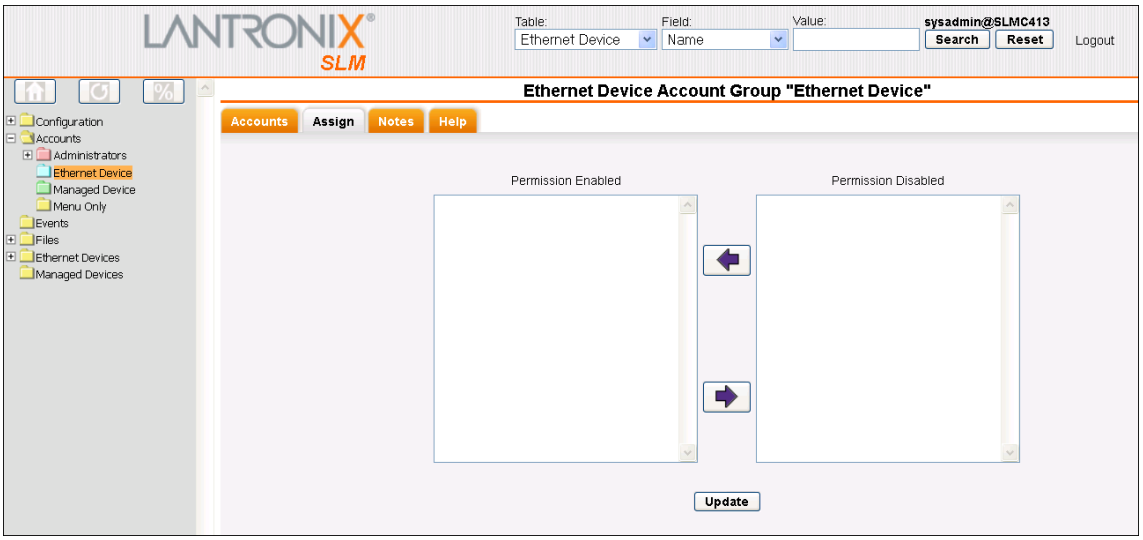
1. Select the account group from the menu. The following page opens.

Figure 8-29 Ethernet Device Account Group - Accounts Tab



2. Click the **Assign** tab. The following page opens:

Figure 8-30 Ethernet Device Account Group - Assign Tab



This tab displays two lists: **Permission Enabled** and **Permission Disabled**.

Note: *You can use **Ctrl+click** to select multiple devices from these lists.*

3. To enable access to a device listed in Permission Denied, select the device and click the left arrow. The device is now in the Permission Enabled list.
4. To remove access to a device, select the device in the Permission Enabled list and click the right arrow. The device is now in the Permission Disabled list.
5. Click the **Update** button. When the update is complete, a confirmation message displays. When the user logs in, only Ethernet and managed devices for which the user has permission display in the menu tree.

To assign permissions to a Managed Device Account Group:

The administrator assigns permissions that allow a Managed Device Account Group to access specific managed devices. All members of the group inherit these permissions.

1. Select the account group from the menu. The following page opens:

Figure 8-31 Managed Device Account Group - Accounts Tab

2. Click the **Assign** tab.

Figure 8-32 Managed Device Account Group - Assign Tab

3. To enable permission to read from and write to a managed device connected to an Ethernet device port, select it from the **Permission Disabled** list and click the top **left arrow**. The device displays in the **Connect Direct Devices** list.

Note: *You can use **Ctrl+Right click** to select multiple devices.*

4. To enable permission to listen only to a managed device, select it from the **Permission Disabled** list and click the bottom **left arrow**. The device displays in the **Listen-only Devices** list.
5. To disable permission for a managed device, select it from the **Connect Direct Devices** or **Listen-only Devices** list, and click the corresponding **right arrow**. The device displays in the **Permission Disabled** list.
6. Click the **Update** button. When the update is complete, a confirmation message displays. When the user logs in, only managed devices for which the user has permission display on the menu tree.

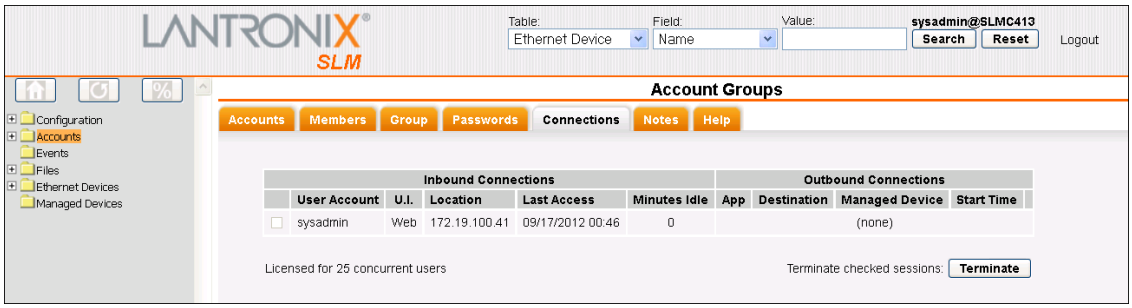
Viewing Currently Logged-In Accounts

Administrators can see which users are currently logged into the SLM and whether they are connected to any managed devices. The page also displays the maximum number of concurrent users for which this SLM is licensed.

To view logged-in accounts:

1. On the menu, click **Accounts**, and then click the **Connections** tab. The following page opens:

Figure 8-33 Account Groups - Connections Tab



2. View the following information:

Table 8-34 Inbound Connections

Inbound Connection Setting	Description
User Account	User name for logging in to the SLM.
U.I.	Type of interface (web or command line) the user is logged in to.
Location	IP address of the client.
Last Access	Date and time the user last accessed the SLM.
Minutes Idle	Number of minutes since the user last took an action in the session.

Table 8-35 Outbound Connections

Inbound Connection Setting	Description
App	Application used to manage the device.
Destination	IP address of the managed device.
Managed Device	Name of the managed device.
Start Time	Time the SLM made the connection.

2. To terminate a session, select the check box for the inbound or outbound session(s) and click the **Terminate** button.

Note: *All outbound connections associated with a closed inbound session will also close.*

3. To refresh the page only, click the **Terminate** button with no sessions selected.

Account Group Commands

`set accountgroup add`

Syntax

```
set accountgroup add <Group Name> type <ethernet|managed|menu>
<parameters>
```

Parameters

```
[menu <Menu Name>]
```

Description

Creates a local account group. Group type is Administrators, Ethernet, Managed, or Menu User.

```
set accountgroup edit
```

Syntax

```
set accountgroup edit <Group Name> <one or more parameters>
```

Parameters

```
[name <new name>]
[menu <Menu Name|CLEAR>]
```

Description

Modifies an account group. Group type is Administrators, Ethernet User, Managed User, or Menu User. `CLEAR` removes the current menu assignment.

```
show accountgroup
```

Syntax

```
show accountgroup <Group Name>
show accountgroup name <Group Name>
```

Description

Displays account group information.

```
show accountgroup all
```

Syntax

```
show accountgroup all
show accountgroup
```

Description

Displays information about all account groups.

```
show accountgroup index
```

Note: *Type* `show accountgroup all` *to display the index.*

Syntax

```
show accountgroup index <number>
```

Description

Displays account groups by index number.

Accounts

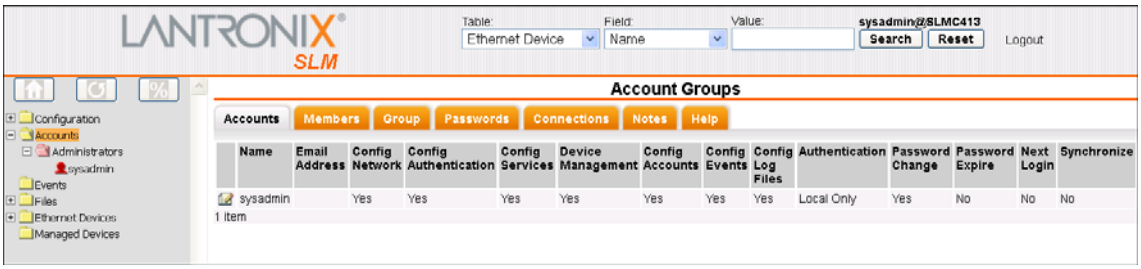
The Accounts page is for administrators who add, update, and delete accounts. Accounts inherit device rights from the account group to which they belong. To assign unique permissions to an individual account, create the account as the sole member of an account group. The sysadmin account always has all permissions enabled.

Note: *Only functions and devices for which the user has rights display in that user's menu on the web interface or on the CLI.*

Viewing Accounts

1. On the menu, click **Accounts**. The Accounts tab on the Account Groups page displays a list of authenticated users with the functions each user has permission to perform.

Figure 8-36 Account Groups -- Accounts Tab



2. View the following information about each user:

Note: *Only Administrator accounts may have the configuration flags enabled.*

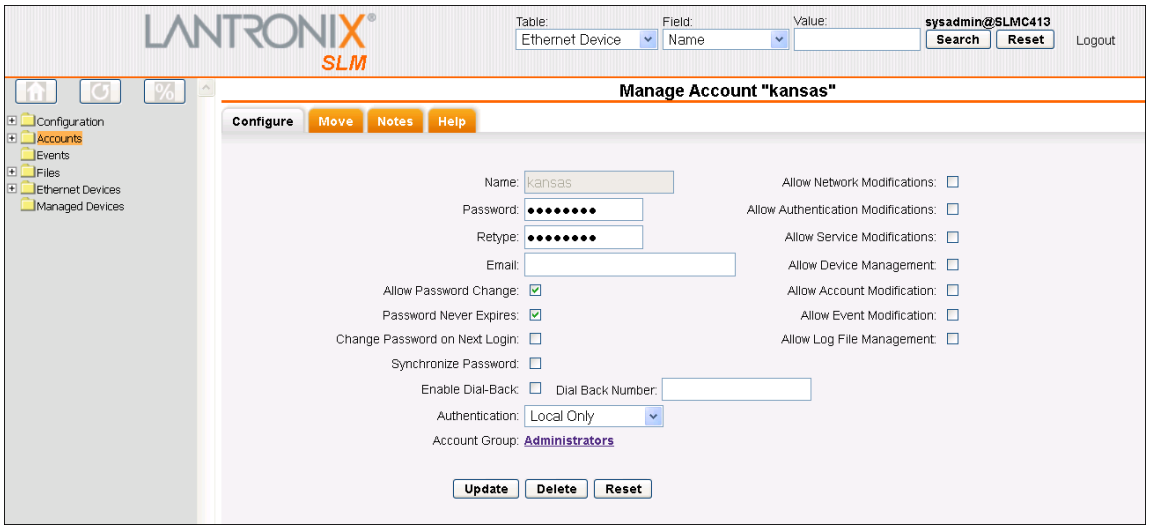
Table 8-37 Account Groups - Accounts Tab

Account Groups Setting	Description
Name	The user name for logging in to the SLM.
Email Address	User's email address; may be used for event notification.
Config Network	Indicates whether the user has permission to open the Network Settings page and configure network settings.
Config Authentication	Indicates whether the user has permission to select and prioritize authentication methods and to configure related settings.
Config Services	Indicates whether the user has permission to configure services such as date and time and SNMP Agent & syslog and to update SLCs to which the user has access.
Device Management	Indicates whether the user has permission to configure settings for auto-detecting devices and ports and for managing alternate SLMs.
Config Accounts	Indicates whether the user has permission to add, update, and delete all accounts and to grant account permissions.
Config Events	Indicates whether the user has permission to set alarms and triggers.
Config Log Files	Indicates whether the user has permission to view, copy, and delete various log files.
Authentication	Indicates whether authentication for this user is **Local Only, Remote Only, Local & Remote**, or **Disabled**.
Password Change	Indicates whether the user has permission to use the current password indefinitely.
Password Expire	No allows the user to keep a password indefinitely.
Change Password Next Login	Indicates whether the user has permission to change the password the next login.

Account Groups Setting	Description
Synchronize	When the Push Passwords check box on the Maintenance page is selected, the SLM uses the password on all accounts with **Synchronize Password** enabled to update accounts on remote SLMs, SLCs, SCSxx05/20s, and SLPs. The accounts must have access rights to and local user accounts on the devices. ***Note:*** *SLP password synchronization uses SSH and CLI commands not an SNMP command, so you must provide the sysadmin login and password in the SLP device page for SLP password synchronization to work.* *Rebooting the SLM for any reason causes it to ignore user account password changes made but not yet pushed before the reboot.*
Last Access	Date and time the account group was last updated.

3. click the **Edit** icon to the left of a user. The following page opens:

Figure 8-38 Account Page - Configure Tab



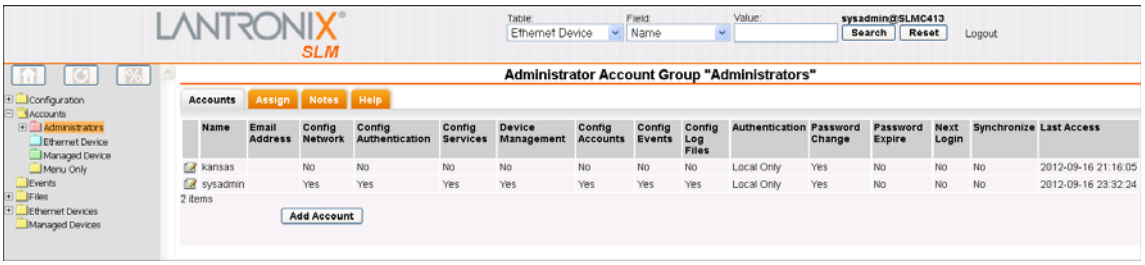
Adding an Account to the Administrators Account Group

The sysadmin account can add other administrators to the Administrators Group, assigning a user name and email address for each user. The name is for logging in over the web interface or the command line interface. The SLM uses the email address to send emails to users based on configured alarm settings.

To add a user to the Administrators Group:

1. On the menu, click **Accounts > Administrators**. The following page opens.

Figure 8-39 Administrator Account Group - Accounts Tab



2. Click the **Add Account** button at the bottom of the table. The following page opens:

Figure 8-40 Add New Account to Group - Configure Tab

3. Enter the following information:

Table 8-41 Add New Account to Group - Configure Tab

Setting	Description
Name	User ID for logging into the SLM. Must be alphanumeric, start with an alpha character, and may include an underscore (_).
Password and Retype	User's password for logging in to the SLM.
Email	User's email address.
Allow Password Change	Select to allow user to change passwords. Enabled by default.
Password Never Expires	Selected by default. Select to allow the user to use current password indefinitely. Selected by default.
Change Password on Next Login	Select to require the user to change the password the next time the user logs in. (You may change this setting at any time.)

Setting	Description
Synchronize Password	When the **Push Passwords** check box on the Maintenance page is selected, the SLM uses the password on all accounts with **Synchronize Password** enabled to update accounts on remote SLMs, SLCs, SCSxx05/20s, and SLPs. The accounts must have access rights to and local user accounts on the devices. ***Note:*** *SLP password synchronization uses SSH and CLI commands not an SNMP command, so you must provide the sysadmin login and password on the SLP device page for SLP password synchronization to work.* *Rebooting the SLM for any reason causes it to ignore user account password changes made but not yet pushed.*
Enable Dial-Back	Users with dial-back access can dial into the SLM and enter their login and password. Once the SLC authenticates them, the modem hangs up and dials them back.
Dial Back Number	Select the phone number the modem dials back on. It can be a fixed number or a number associated with their login. If you select **Fixed Number**, enter the number (in the format 2123456789).
Authentication	From the drop-down list, select how the user will be authenticated (**Local Only**, **Remote Only**, or **Local & Remote**). The default setting is **Local Only**.
Account Group (link)	Click the link to view the Administrator Account group.

Table 8-42 Add New Account to Group - Configure Tab - Permissions

Permission Setting	Description
Allow Network Modifications	Select to allow the user to configure network settings.
Allow Authentication Modifications	Select to allow the user to configure authentication settings.
Allow Service Modifications	Select to allow the user to configure settings for services.
Allow Device Management	Select to allow the user to auto-detect and to auto-save a configuration to another SLM.
Allow Account Modification	Select to allow the user to set up accounts and account groups.
Allow Event Modification	Select to allow the user to modify event settings.
Allow Log File Management	Select to allow the user to manage log files.

4. To save, click the **Add** button. A confirmation message displays, and the account displays in the Administrators Group on the menu tree.
5. Click **Administrators** on the menu tree. The Account Group Accounts tab opens. The added user displays in the list.

Adding an Account to an Ethernet or Managed Device Account Group

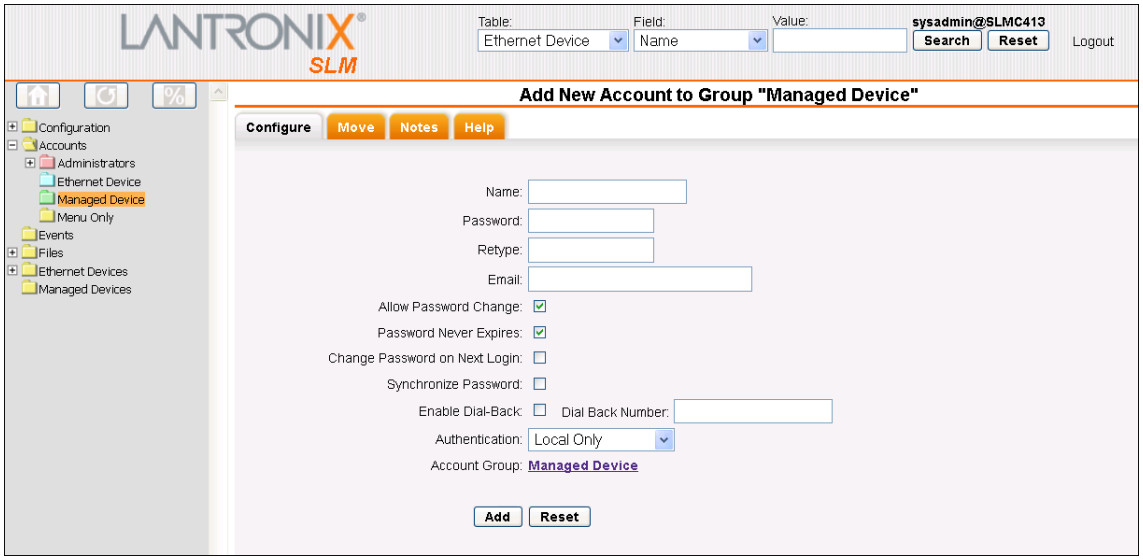
Administrators assign a user name and email address for each user. The name is for logging in over the web interface or the command line interface. The SLM uses the email address to send emails to users based on configured alarm settings.

To add an account to an Ethernet Device, Managed Device, or Menu Only Account Group:

Note: *In this section, we use the example of an Ethernet account.*

1. On the menu, select the account group.
2. Click the **Add Account** button at the bottom of the table. The following page opens:

Figure 8-43 Add New Accounts to Group - Configure Tab



3. Enter the following:

Table 8-44 Add New Account to Group - Configure Tab

Account Setting	Description
Name	User ID for logging into the SLM. Must be alphanumeric, start with an alpha, and may include an underscore (_).
Password and Retype	User's password for logging in to the SLM.
Email	User's email address.
Allow Password Change	Select to allow the user to change passwords. Selected by default.
Password Never Expires	Select to allow the user to use the current password indefinitely. Disabled by default.
Change Password on Next Login	Select to require the user to change the password the next time the user logs in. (You may change this setting at any time.)

Account Setting	Description
Synchronize Password	When the Push Passwords check box on the Maintenance page is selected, the SLM uses the password on all accounts with Synchronize Password enabled to update accounts on remote SLMs, SLCs, SCSxx05/20s, and SLPs. The accounts must have access rights to and local user accounts on the devices. ***Note:*** *SLP password synchronization uses SSH and CLI commands not an SNMP command, so you must provide the sysadmin login and password in the SLP device page for SLP password synchronization to work.* *Rebooting the* SLM *for any reason causes it to ignore user account password changes made but not yet pushed.*
Enable Dial-Back	Once the SLM authenticates them, users with dial-back access can dial into the SLM and enter their login and password. Once the SLC authenticates them, the modem hangs up and dials them back.
Dial Back Number	Select the phone number the modem dials back on. It can be a fixed number or a number associated with their login. If you select **Fixed Number**, enter the number (in the format 2123456789).
Authentication	From the drop-down list, select how the user will be authenticated (**Local Only, Remote Only**, or **Local & Remote**). The default setting is **Local Only**.
Account Group (link)	Click the link to view the parent Account Group page.

4. To save, click the **Add** button. A confirmation message displays.
5. Click the account group name on the menu tree. The account displays in the list of accounts and in the list on the **Accounts** tab.

Updating or Deleting an Account

Administrators can edit the password, email information, and configuration permissions for an account and remove accounts from an account group (except for the sysadmin account from the Administrators Group).

Note: *In this section, we use the example of an Ethernet account.*

To update an account or remove it from an account group:

1. In the menu tree, click the account. The following page opens:

Figure 8-45 Manage Account - Configure Tab

2. To update the account:
   a. Make changes as desired.
   b. Click the **Update** button.
3. To remove the account from the account group:
   a. Click the **Delete** button.
   b. In response to the confirmation request, click **OK**. A message confirming the deletion displays.
   c. To verify the deletion, click the account group in the menu. The user is no longer listed.

Account Commands

Use the following commands to configure local accounts (including sysadmin) to authenticate users who login to the SLM by means of SSH, Telnet, the web, or the console port.

`set account add`

Syntax

```
set account add <User Name> group <Group Name|admin>> <parameters>
```

Parameters

```
[email <Email Address>]
[auth <local|remote|localremote|disable>]
[allowdialback <enable|disable>]
[dialbacknumber <dial-back number>]
[allowpwchange <enable|disable>]
[pwneverexpires <enable|disable>]
[changepwnextlogin <enable|disable>]
```

Description

Creates a new user account.

`set account delete`

Syntax

`set account delete <User Name>`

Description

Deletes a user account.

`set account edit`

Syntax

`set account edit <User Name> group <Group Name|admin> <parameters>`

Parameters

```
[email <Email Address|CLEAR>]
[auth <local|remote|localremote|disable>
[allowdialback <enable|disable>]
[dialbacknumber <dial-back number|CLEAR>]
[allowpwchange <enable|disable>]
[pwneverexpires <enable|disable>]
[changepwnextlogin <enable|disable>]
```

Description

Modifies a user account.

`set account password`

Syntax

`set account password <User Name>`

Note: *Administrators with permission to change passwords must enter the username. Other users may not enter a username (they are changing their own password).*

Description

Configures a user account's password for the SLM.

`show account`

Syntax

```
show account <User Name>
show account user <User Name>
```

Description

Displays account information by user name.

`show account all`

Syntax

```
show account all
show account
```

Description

Displays all account names and information.

`show account index`

Note: *Type* `show account all` *to display the index.*

Syntax

```
show account index <number>
```

Description

Displays accounts by index number.

```
show account search
```

Syntax

Note: *All searches are case insensitive.*

```
show account search name <name>
show account search email <email address>
```

Examples

```
show account search name sys
```

Description

Searches for accounts by name or email address.

9: Ethernet Device Management

The SLM device database contains information about SLCs and other Secure Lantronix Management devices (SLKs, SLPs, and other SLMs) connected on the network. It may also contain information about other Lantronix and even non-Lantronix devices on the network, but you may have limited ability to manage them.

Administrators can enter Secure Lantronix Management devices one at a time or, preferably, let the SLM auto-detect them. The SLM uses the Lantronix discovery protocol to auto-detect Secure Lantronix Management and other Lantronix devices, Lantronix SCS05/20 discovery protocol to auto-detect Lantronix SCS05/20 devices within a specified IP range, and SNMP to detect all other devices within a specified IP range.

Auto-Detecting Devices

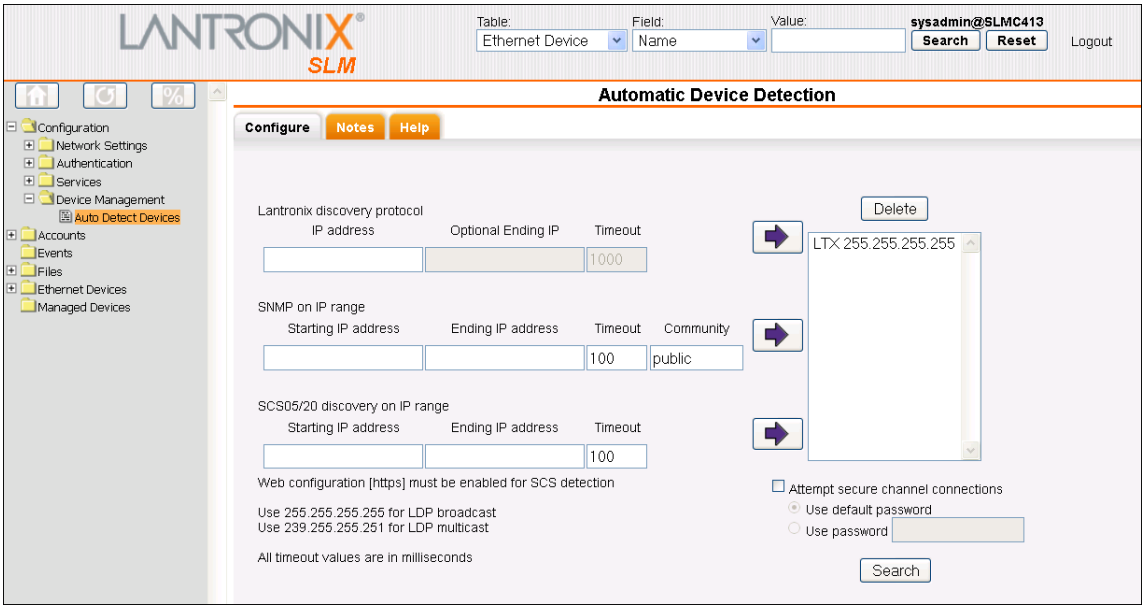
Auto-detect enables the SLM to search for and register Ethernet devices automatically. When the SLM detects an Ethernet device, it also scans the device for ports and port information. You only need to define search protocols and parameters once; they are saved for use in any future searches. When the SLM performs a device search, it uses all defined protocols simultaneously.

After performing an auto-detect search once, you need to run it again only if the search protocols change, or if new (undetected) devices are added to the network.

To add auto-detect devices:

1. On the menu, click **Configuration > Device Management > Auto-Detect Devices**. The following page opens.

Figure 9-1 Automatic Device Detection Page - Configure Tab



2. Enter the following information:

Notes: *The maximum range of IP addresses to enter is 64K entries. We strongly recommend that you break the intended discovery range into several smaller ranges, to speed up the discovery process.*

The discovery process may take up to 17 hours (1 second timeout for each entry) to complete for a full range of 64K IP entries; there is no option to cancel during discovery process.

Table 9-2 Automatic Device Detection - Configure Tab

Automatic Device Detection Setting	Description
Lantronix discovery protocol	This protocol discovers SLCs and other Lantronix-built devices on the network. ***Note:*** *To discover SLPs and SLKs, use SNMP; to discover SCSs, use SCS05/20 discovery. Use IP address 255.255.255.255 to discover all Lantronix-built devices on the local subnet, and use a remote subnet broadcast address if the routers in the network forward subnet broadcast packets.* The Lantronix IP multicast address is 239.255.255.251. Any device can join the 239.255.255.251 multicast group by notifying or registering to its subnet router. SLM then sends out a single discovery request, which is delivered to all devices in that multicast group by routers on different subnets. Once SLM gets a discovery response from members, it queries each individual device for further information. ***Note:*** *See [RFC1112] for a description of the basic IGMP protocol.* **IP address**: Specify the subnet (e.g., 255.255.255.255) to be searched, or if specifying a range of IP addresses, the IP address at the beginning of the range in which the SLM is to detect devices. **Optional Ending IP**: If specifying a range of addresses, enter the IP address at the end of the range. **Timeout**: Number of milliseconds the SLM will continue to look for a device before moving on. The default is 1000. ***Note:*** *You may specify more than one protocol search definition before the search.*
SNMP on IP range	Simple Network Management Protocol (SNMP) is a set of protocols for managing complex networks. Enter the following to discover all devices within one or more ranges of IP addresses on the network. SNMP requires that you specify a range of IP addresses. **Starting IP Address**: The IP address at the beginning of the range in which the SLM is to detect devices. **Ending IP Address**: The IP address at the end of the range in which the SLM is to detect devices. **Timeout**: Number of milliseconds the SLM will continue to look for a device before moving on. The default is 100. **Community**: An SNMP community is the group to which devices and management stations running SNMP belong. The default setting is public.

Automatic Device Detection Setting	Description
SCS05/20 discovery on IP range	To locate Lantronix SCS05/20 products on the network, specify: **Starting IP Address**: The IP address at the beginning of the range in which the SLM is to detect devices. **Ending IP Address**: The IP address at the end of the range in which the SLM is to detect devices. **Timeout**: Number of milliseconds the SLM will continue to look for a device before moving on. The default is 100. ***Note:*** *Web configuration must be enabled on an SCS device for the* SLM *to discover it.*
Attempt secure channel connections	To establish a secure channel connection to discovered SLC and SLM devices, select the check box and one of the following options: **Use default password**: If you select this option, the SLM attempts to set up a secure channel to discovered SLCs and SLMs using the default sysadmin password of PASS. This is the default option. **Use password**: Enter a password to use for secure channel connections to discovered SLCs and SLMs. If the password has been changed, the user must manually establish secure channels on the device pages (using the appropriate password) later.

3. To add an entry to the current search list, click the **right arrow.**
4. To remove an entry from the current search list, select the entry and click the **Delete** button.
5. After defining all the searches, click the **Search** button.
6. If desired, check the progress of the search by clicking the **Progress** button above the menu. The table shows how far along the search is towards completion.

   Note: *You can continue working while the auto-detect process takes place in the background.*
7. To add the detected devices to the menu tree, click the **Reload** button. When you open the device groups, the devices display in the proper place on the menu tree.

Note: *When you first auto-detect devices, all devices that respond are entered into the SLM database. You may decide to change the names of these devices (and ports) to something more meaningful than "SLC" or "Port-1." If you then auto-detect again, and auto-detect notices these devices again, the SLM retains the names you assigned. If you want to rename a device back to its original name, change the device name to ? before running the auto-detect. If auto-detect finds a device with the name ?, the SLM updates the name to the value the device returns.*

Auto-Detect Commands

`admin autodetect filter delete`

Syntax

`admin autodetect filter delete`

The command displays an index of current filters. Type the index number of the filter you want to delete and press Enter.

Description

Deletes one of the current auto-detect search filters.

```
admin autodetect filter ltrx
```

Syntax

```
admin autodetect filter ltrx <IP range> [timeout <number of
milliseconds>]
```

Example

```
IP range: 192.168.0.1-192.168.0.155 timeout 1500
timeout: default is 1000 ms; range is 1000-60000 ms
```

Description

Sets Lantronix discovery protocol search filters. The ending IP address is optional.

```
admin autodetect filter scs
```

Syntax

```
admin autodetect filter scs <IP range> [timeout <number of
milliseconds>]
```

Example

```
IP range: 192.168.0.1-192.168.0.155
timeout: default is 100 msec; range is 100-60000 msec
```

Description

Sets SCS discovery protocol search filters.

```
admin autodetect filter show
```

Displays the current auto-detect search filters.

Syntax

```
admin autodetect filter show
```

Description

Displays the current auto-detect search filters.

```
admin autodetect filter snmp
```

Syntax

```
admin autodetect filter snmp <IP range> [community <name>] [timeout
<number of milliseconds>]
```

Example

```
IP range: 192.168.0.1-192.168.0.155
name: public (default)
timeout:default is 100 msec; range is 100-60000 msec
```

Description

Sets SNMP protocol search filters.

```
admin autodetect start
```

Syntax

```
admin autodetect start <one or more parameters>
```

Parameters

```
[securechannel <default|password>]
[option <ltrxonly|delnonltrx>}
```

`ltrxonly` detects only Lantronix devices

`delnonltrx` detects only Lantronix devices and removes existing non-Lantronix devices.

Examples

```
admin autodetect start securechannel default
```

Attempts secure channel using the default password

```
admin autodetect start securechannel mypass option delnonltrx
```

Attempts secure channel using password `mypass`. Detects only Lantronix devices and removes existing non-Lantronix devices.

Description

Starts the SLM auto-detect device process, using the protocol and filters configured.

```
show progress
```

Syntax

```
show progress
```

Description

Shows the progress of background tasks.

Ethernet Devices

The SLM enables you to list all devices, groups of devices, and individual devices in the SLM database. These devices have been auto-detected or added manually. This section shows how the Administrator and Ethernet Device Account groups add devices manually, edit device settings, and delete devices.

Listing Devices

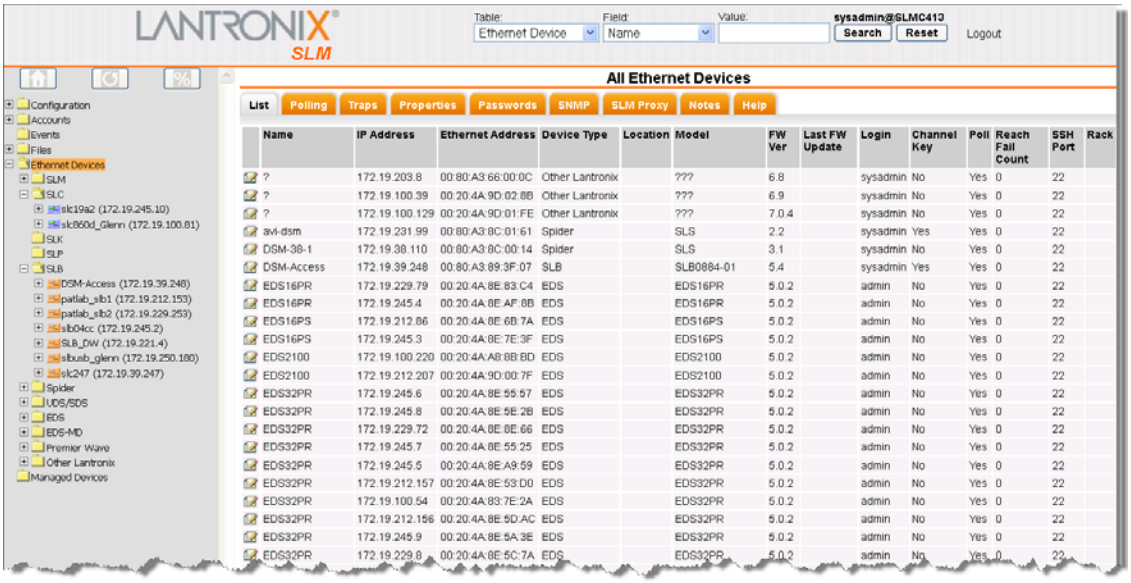
You can view a list of all devices in the SLM database. The list may include other Lantronix-built devices and even non-Lantronix devices.

Note: *The examples in this section show SLCs. You can perform similar actions on all other Ethernet devices.*

To list all devices on the network:

1. To view all of the detected devices, click **Ethernet Devices** on the menu. The All Ethernet Devices page displays all devices in the database.

Figure 9-3 All Ethernet Devices Page - List Tab

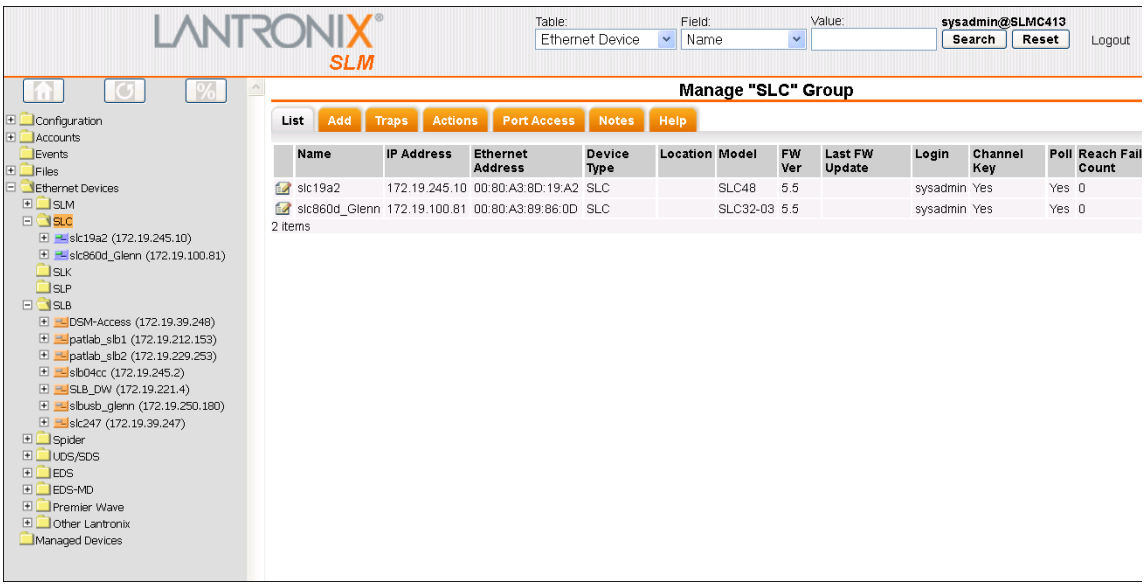


Note: *You can sort tables in SLM by clicking the text in the column header by which you want to sort. For example, to sort by name, click Name. Click the same header again to change between ascending and descending order. If there is more data in a table than fits on the screen, scroll forward and backward through the data.*

To list all Ethernet devices of a specific type:

- To list all SLCs managed by the SLM, click **Ethernet Devices > SLC** on the menu tree. The following page opens:

Figure 9-4 Manage Group Page - List Tab



- To list devices in any other device group (e.g., SLK, SLP, or Other Lantronix), click **Ethernet Devices** and the name of the device group on the menu tree.

Adding a Device Manually

If you know there is a new device on the network, or for some reason, the SLM does not auto-detect a device, the administrator can manually add it.

To add a device:

Note: *Ethernet device pages may differ slightly, depending on the type of device. The procedure below the examples notes these differences.*

1. On the menu tree, click **Ethernet Devices** and then the type of device you are adding (e.g., SLC, SLK, Spider, or Other Lantronix).
2. Click the **Add** tab. Depending on the device type, one of the following pages or a similar page displays.

Note: *The connection buttons on the right are inactive until the Ethernet device has been added to the system. See Connecting to Ethernet and Managed Devices (on page 224) for instructions on using the buttons. The **TN3270** button is inactive for all Lantronix devices.*

Figure 9-5 Add SLM Device Page - Configure Tab

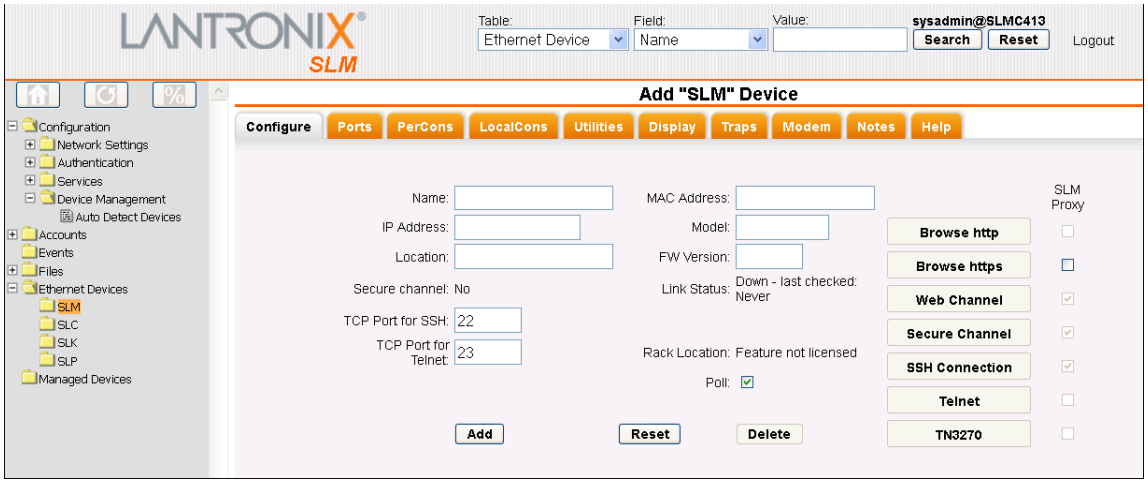


Figure 9-6 Add SLC Device Page - Configure Tab

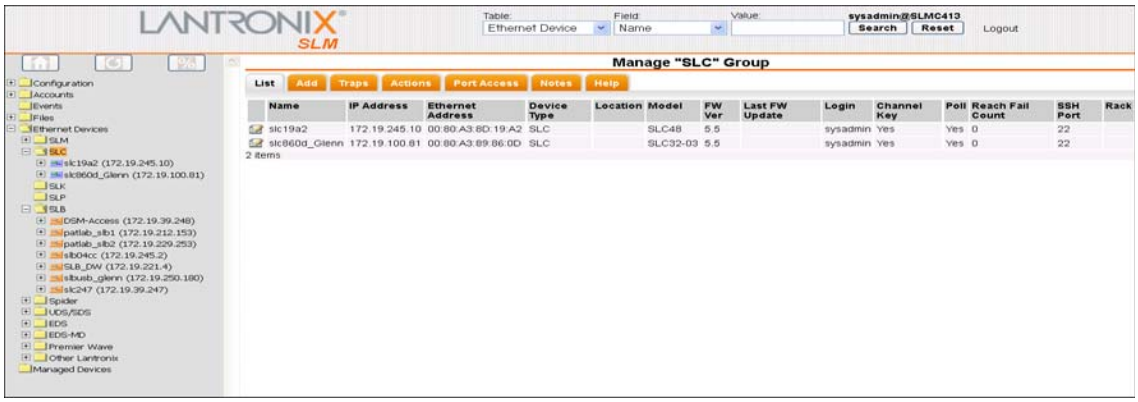


Figure 9-7 Add SLK Device Page - Configure Tab

Figure 9-8 Add SLP Device Page - Configure Tab

Figure 9-9 Add Spider Device Page - Configure Tab

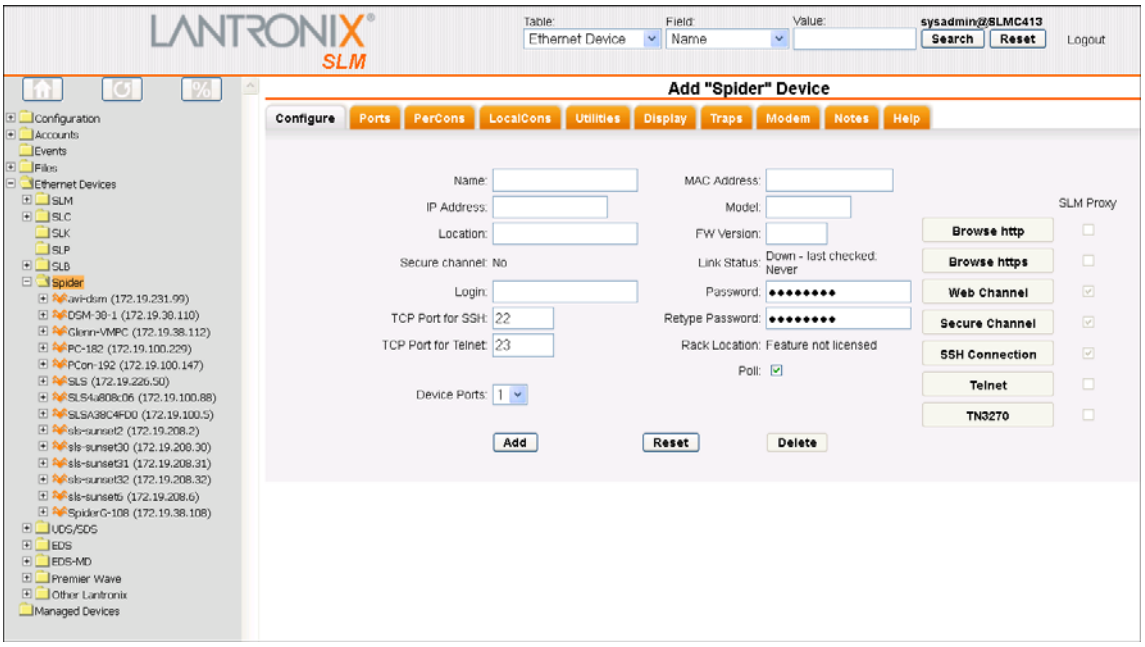


Figure 9-10 Add Other Lantronix Device Page - Configure Tab

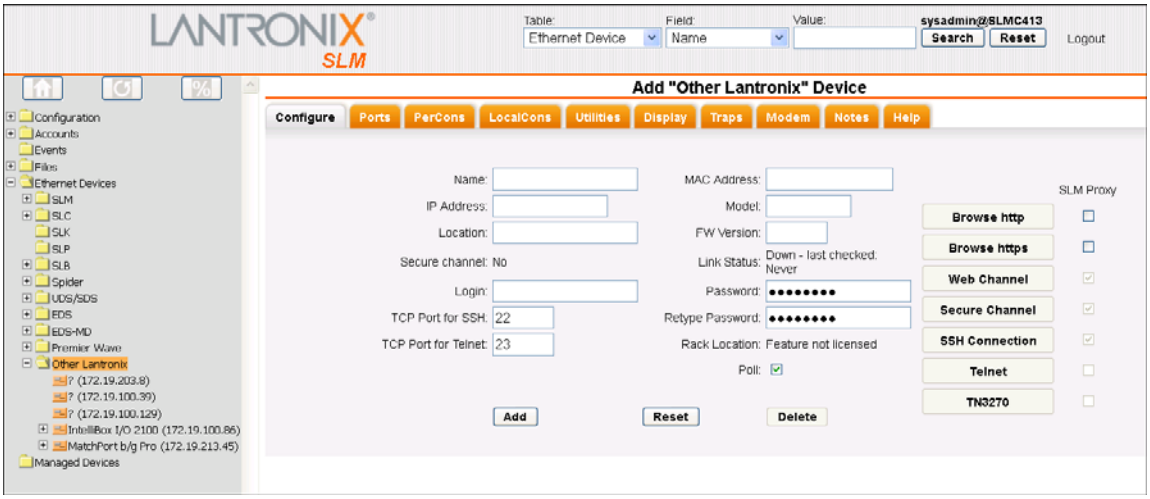
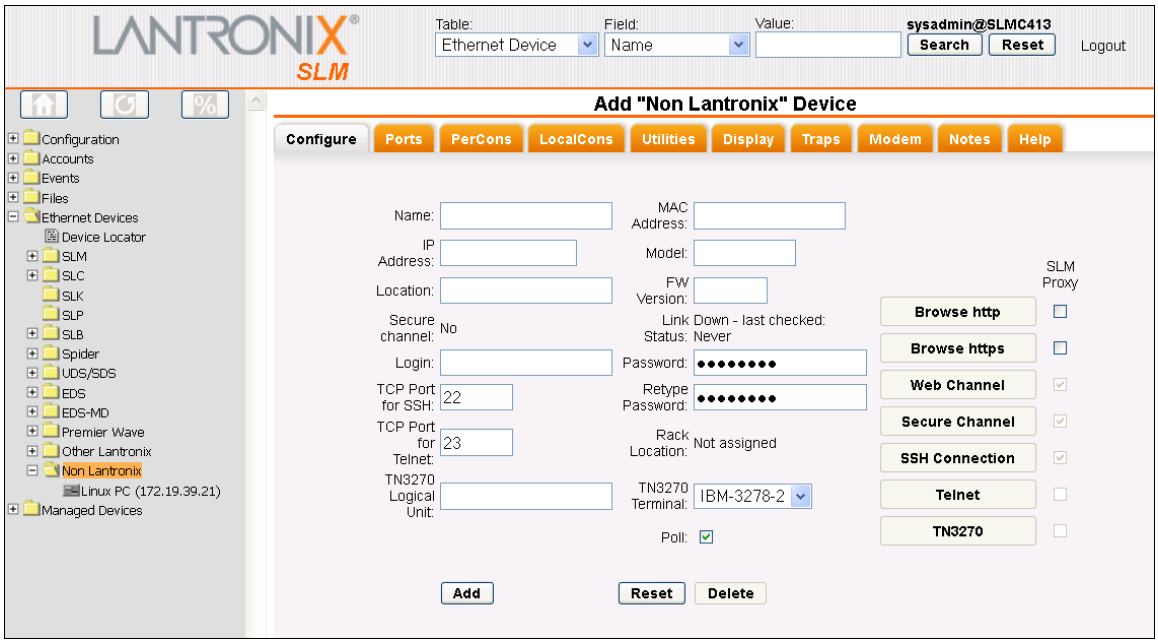


Figure 9-11 Add Non Lantronix Device Page - Configure Tab



3. Enter the following as required by the device type:

Table 9-12 Manually Added New Device Details

New Device Setting	Description
Name (required)	Name that identifies the device.
MAC Address (required)	Network (Ethernet) number of the device (on the device label). ***Note:*** *Enter all Ethernet addresses in hexadecimal, colon-separated format (e.g., 12:34:56:AB:CD:EF).*
IP Address (required)	IP address that uniquely identifies the device on the network. There is no default. ***Note:*** *Enter all IP addresses in dot quad notation.*
Model	Model number of the device. Required for both SCS05/20 and SLB.
Location	Place where the device is installed (e.g., city, building, or room).
FW Version	Release number of the firmware.
Secure Channel (view only)	Indicates whether the SLM has a Lantronix secure channel connection from the web interface to the command line interface of an SLC and its ports. The default is **No**.
Link Status (view only)	Indicates whether or when the SLM polled the connection from the SLM to the device.
Login (not on SLM)	User name for logging into any Ethernet device that can be logged into using http or https.
Password and Retype Password (not on SLM)	Password for logging into any Ethernet device that can be logged into using http or https.
TCP Port for SSH	Number of the port for establishing an SSH connection to the device or its ports. The default setting is 22.
TCP Port for Telnet	Number of the port for establishing a Telnet connection to the device or its ports. The default setting is 23 for all devices except WiBox and UDS, which use 9999.

New Device Setting	Description
TN3270 Logical Unit	Used by devices that support TN3270 connections.
SNMP Read Community (SLC, SLB, SLP only)	An SNMP community is the group to which devices and management stations running SNMP belong. The default setting is public..
SNMP Write Community (SLC, SLB, SLP only)	A string that acts like a password for an SNMP manager to modify data where permitted.
SNMP Trap Community (SLC, SLB, SLP only)	A string that is sent along when a trap is broadcast. Only management devices that are listening for that value process the trap. Management devices that are not listening for that trap community ignore the trap.
Current load (SLB and SLP - view only)	Displays the current voltage on the SLB or SLP.
Synchronized (SLC and SLB only)	If you make a change to an SLC or SLB configuration but only save the change to the local database, this field displays No. It will change to Yes if you push the configuration to the physical device or read or write information to make the database match the physical device.
Poll	If selected, the SLM will include this device when performing periodic polling of Ethernet devices. Selected by default.
Device Ports	Select the number of device ports on the Ethernet device.

4. Click the **Add** button.
5. Click **Ethernet Devices** and then the device group (e.g., SLC) to which you added the device. The added device displays at the end of the list and on the menu tree.

Updating or Deleting Ethernet Device Settings

The Administrator and Ethernet Device Account groups can edit settings for Secure Lantronix Management devices (SLCs, SLBs, SLKs, SLPs, SLBs, Spiders, and other SLMs) and other Ethernet devices. They can also delete a device from the SLM database so that the SLM will no longer manage it.

To update an Ethernet device:

1. On the All Ethernet Devices or the Manage Group page, click the **Edit** icon to the left of the desired device,

OR

On the menu tree, click the name of the desired device. The Configure tab for the device opens.

Note: *An example of the Configure tab for updating an SLC is shown below.*

Figure 9-13 Update SLC Device Page - Configure Tab

Note: *See Connecting to Ethernet and Managed Devices (on page 224) for instructions on how to use the active connect buttons.*

2. Add or update information as desired. In addition to the fields described on *Configuring a Managed Device (on page 207)*, enter the following for SLCs, SLBs, SCSs, SLMs, and SLPs:

Table 9-14 SLC Device Settings

Device Setting	Description
Managed Device	If desired, create a managed device from the Ethernet device. For more information, see *Creating Individual Managed Devices (on page 197)*. ***Note:*** *This field is unavailable if no Managed Device Groups exist in the system.*

Device Setting	Description
Read info from device	If selected, the SLM will attempt to update its internal database by interrogating the physical device. The SLM must have a Secure Channel established to the Ethernet device (or provide the sysadmin login and password of the Ethernet devices) for this function to work. Currently, the SLM can read the following information: **SLC**: SLC host name, firmware version, device port names, device port parameters (e.g. baud, flow control), and the SLM logging parameters for each port **SCSxx05/20**: SCS host name and the port names SLM: SLM host name and firmware version **SLP**: SLP outlet names and outlet IDs **SLB**: SLB host name, firmware version, device port names, device port parameters (e.g. baud, flow control), and the SLM logging parameters for each port
Write info to device	If selected, the SLM will attempt to update the physical device using the values currently in its internal database. The SLM must have a Secure Channel established to the Ethernet device (or provide the sysadmin login and password of the device) for this function to work. Currently, the SLM can write the following information: **SLC**: SLC host name, device port names, device port parameters (e.g. baud, flow control), and the SLM logging parameters for each port **SCSxx05/20**: SCS port names **SLM:** SLM host name **SLP**: SLP outlet name **SLB**: SLB host name, device port names, device port parameters (e.g. baud, flow control), and the SLM logging parameters for each port.

2. Click the **Update** button. When the update is complete, a confirmation message displays.

To delete the device:

1. Click the **Delete** button.
2. In response to the request for confirmation, click **OK**. A blank device page opens.
3. Click **Ethernet Devices** on the menu tree. The deleted device is no longer on the menu tree or listed on the Device Group page.

Device Locator

Note: *Use of Device Locator is not included with your SLM installation. Please contact Lantronix Sales at 800-422-7055 for additional information on enabling Device Locator.*

At times it is desirable for the user to know the physical location of Ethernet devices that are being managed by the SLM. Device Locator takes advantage of the SLM device management to assign a specific Row, Cluster and Rack Position to any device in the SLM database. Once the physical location of the device has been entered into the device record (or determined during the discovery process for SLC/SLB), users can:

- Immediately determine where the device is located on a map representation of the machine room
- Check the names and types of all devices in a specific rack

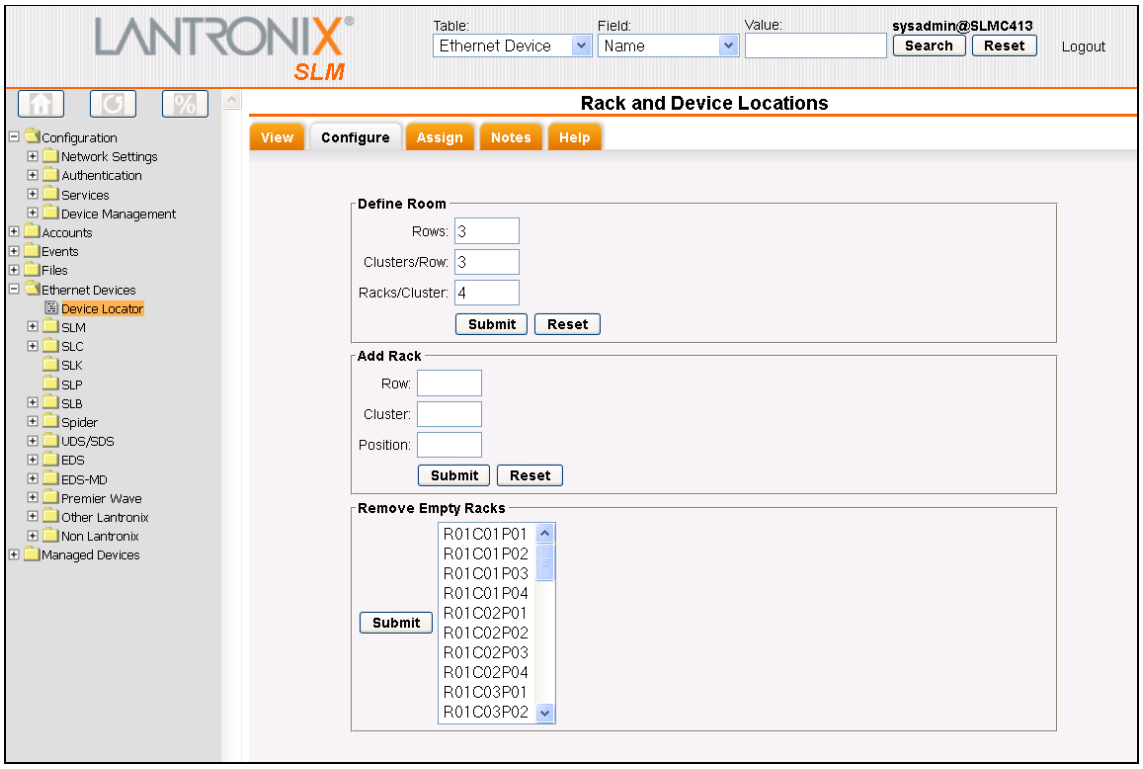
- Access any device using any valid protocol with a single mouse click

To take advantage of this feature, the user must first determine the physical makeup of the machine room to be managed. How many rows of racks are there? How many clusters exist within each row (may be 1)? And, finally, how many racks are there in each cluster? The user should use the actual number or rows, the maximum number of clusters, and the average number of racks, as these can be added to or deleted from later.

Configuring Device Racks

Click on the **Device Locator** icon in the tree pane, directly below Ethernet Devices, then click on the Configure tab. You will be presented with:

Figure 9-15 Device Locator - Configure Tab



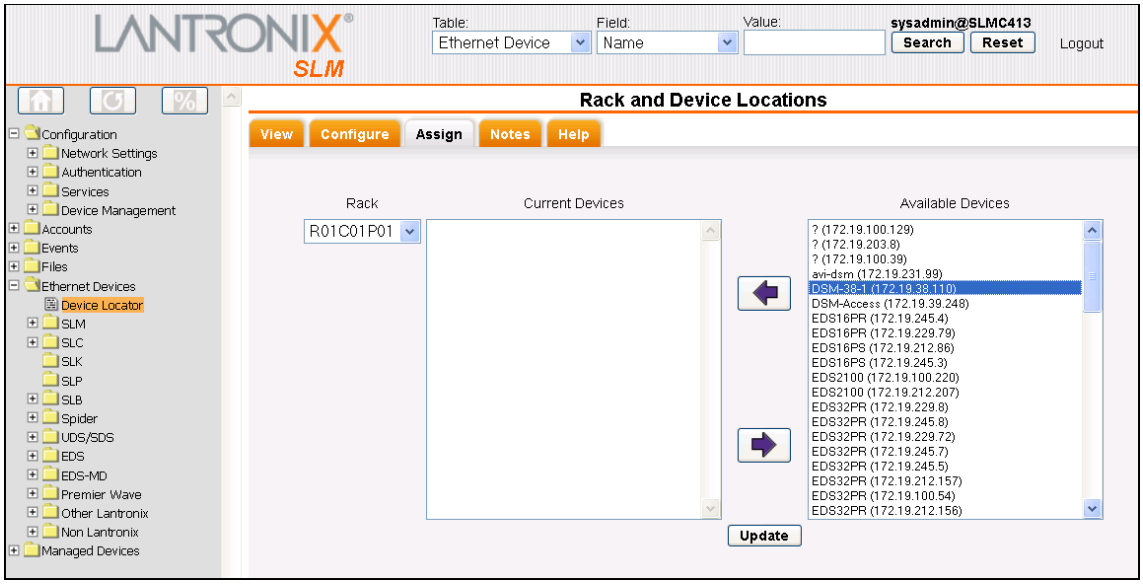
Enter these values in the "Define Room" section and presses "Submit". The racks are all created and assigned names based upon their location. For instance, if the machine room is defined with 3 rows, 2 clusters per row, and 5 racks per cluster, then 30 rack objects will be added to the database. Each rack object will be assigned a name in the format "RrrCccPpp" where "rr" is the row number, "cc" is the cluster and "pp" is the position within the cluster. Additional racks may be added at this time should some clusters contain more racks than typical, and empty racks may also be removed. Note that if a rack is removed from the end of a cluster, then the other racks are "enlarged" to physically fill out the cluster. If a rack is removed from the middle of a cluster, then a "hole" is shown in the cluster to indicate an available space.

Assigning Devices to Racks

Once the racks have been configured, you may now assign the Ethernet devices to their respective racks.

Click on the **Assign** tab. The Ethernet device assignment page shows:

Figure 9-16 Device Locator - Assign Tab

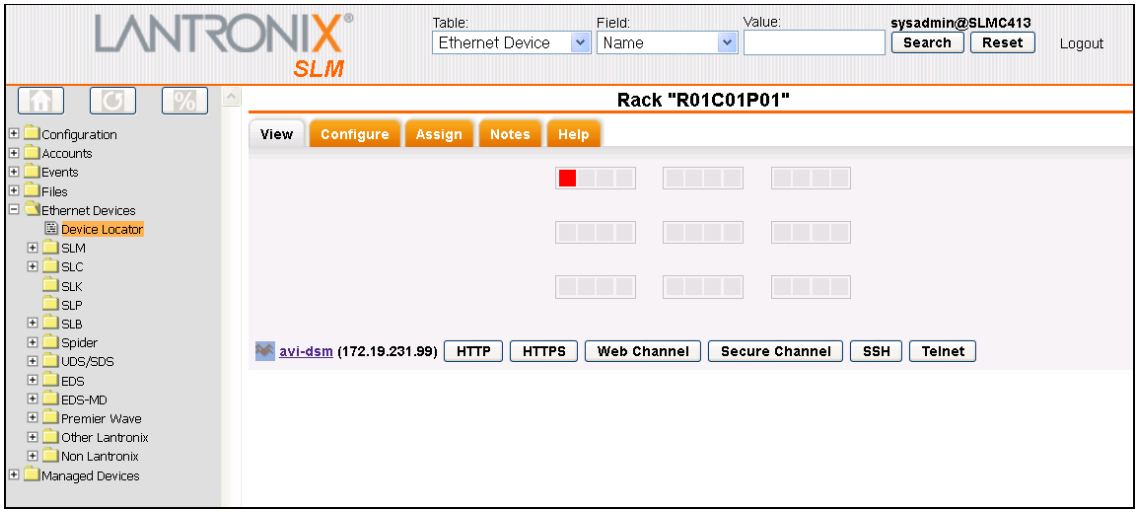


On the left is a dropdown list of all racks in the database. To assign one or more Ethernet devices to a given rack, first select the rack from the drop down (note Row, Cluster and Position number), then select one or more of the Available Devices in the rightmost list and use the left pointing arrow to move them to the Current Devices list. Finally, click on the **Update** button to send these changes to the database. Note that devices may be moved between the Current Devices list and Available Devices list one or more at a time by using Ctrl-click or Shift-click to select multiple devices. Also note that devices may be "removed" from a rack and placed back in the "Available Devices" pool by use of the right pointing arrow. Repeat this action to populate more racks.

Viewing Ethernet Device and Rack Locations

To take advantage of your newly defined machine room, click on the **View** tab:

Figure 9-17 Device Locator - View Tab



Note that racks that are populated a rendered in a pale yellow, rather than the gray of an empty rack. Use the mouse pointer to hover over one of these populated racks and a tool tip appears giving the name of the rack, along with the device type, name and IP address of all Ethernet devices in the rack. Furthermore, by clicking on the rack, that rack is highlighted in red and the bottom of the window is populated with a table containing an entry for each device in the rack. Each entry contains the icon for the device type (hover over the icon to see the device type in a tool tip), the name of the device (along with a link to that devices's configuration page), the IP address of the device, and a series of connection buttons, one for each valid connection that the SLM can make to that device (note that due to actual configuration settings, some of these connections may not complete.)

One additional note: once a device has been "placed" in a rack, a link appears on that device's configuration page. By clicking on that link, the Device Locator View page is brought up, with its rack highlighted in red and all devices in that rack populated in the table below.

Persistent Connections

Persistent connections are permanent connections made between the SLM and an Ethernet device (e.g., an SLC or SLP) that include connection capability for up to five simultaneous users.

Note: *The number of concurrent users may be increased up to a maximum of 25 users. Please contact Lantronix Sales at 800-422-7055 for additional information.*

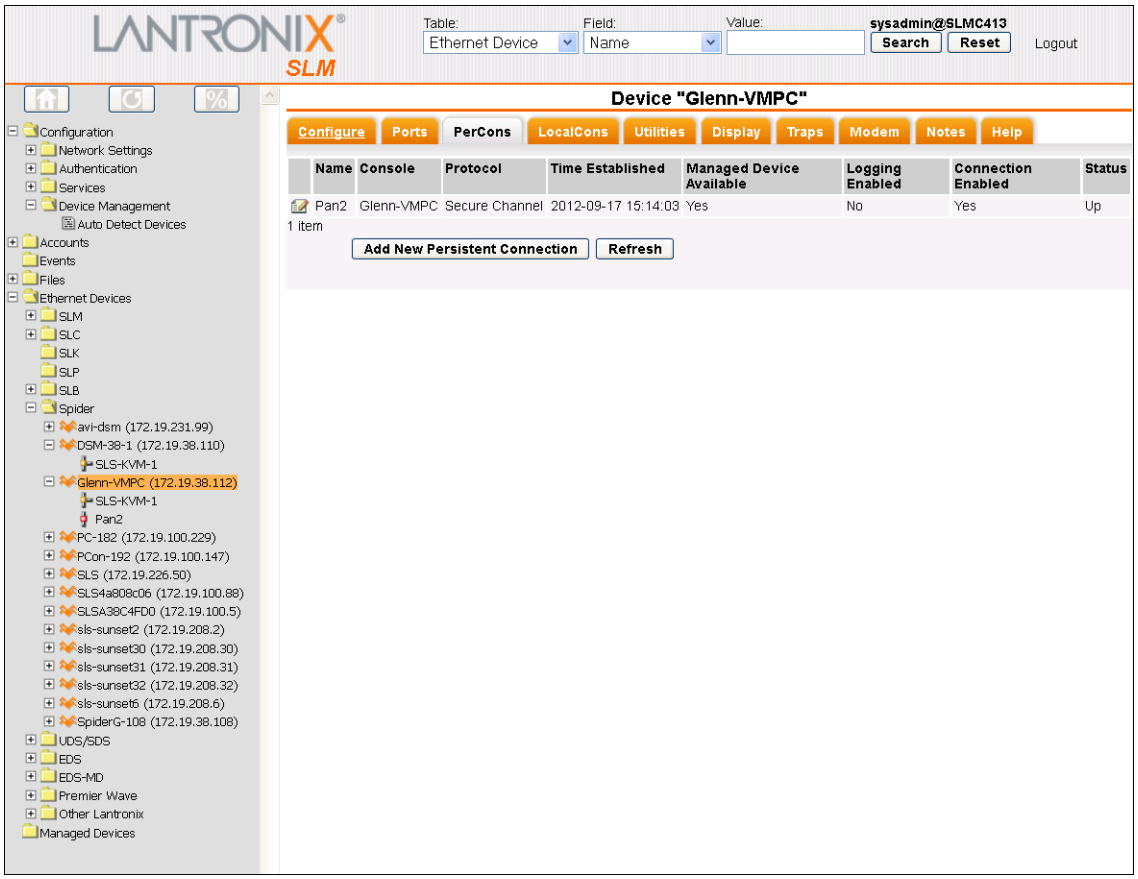
Some users may have read-only access and may only view all traffic on the connection. Other users may have read/write access and can type into the connection from the SLM side. Should a persistent connection fail (e.g., inadvertently closed by user or a network problem), the SLM will detect this condition and attempt to reestablish the connection. All traffic on the connection may be logged to the SLM.

To list existing persistent connections to a device:

1. On a specific device page, click the **PerCons** tab. A list of existing persistent connections displays.

Note: *You may view all Persistent Connections to which you have rights by performing a search.*

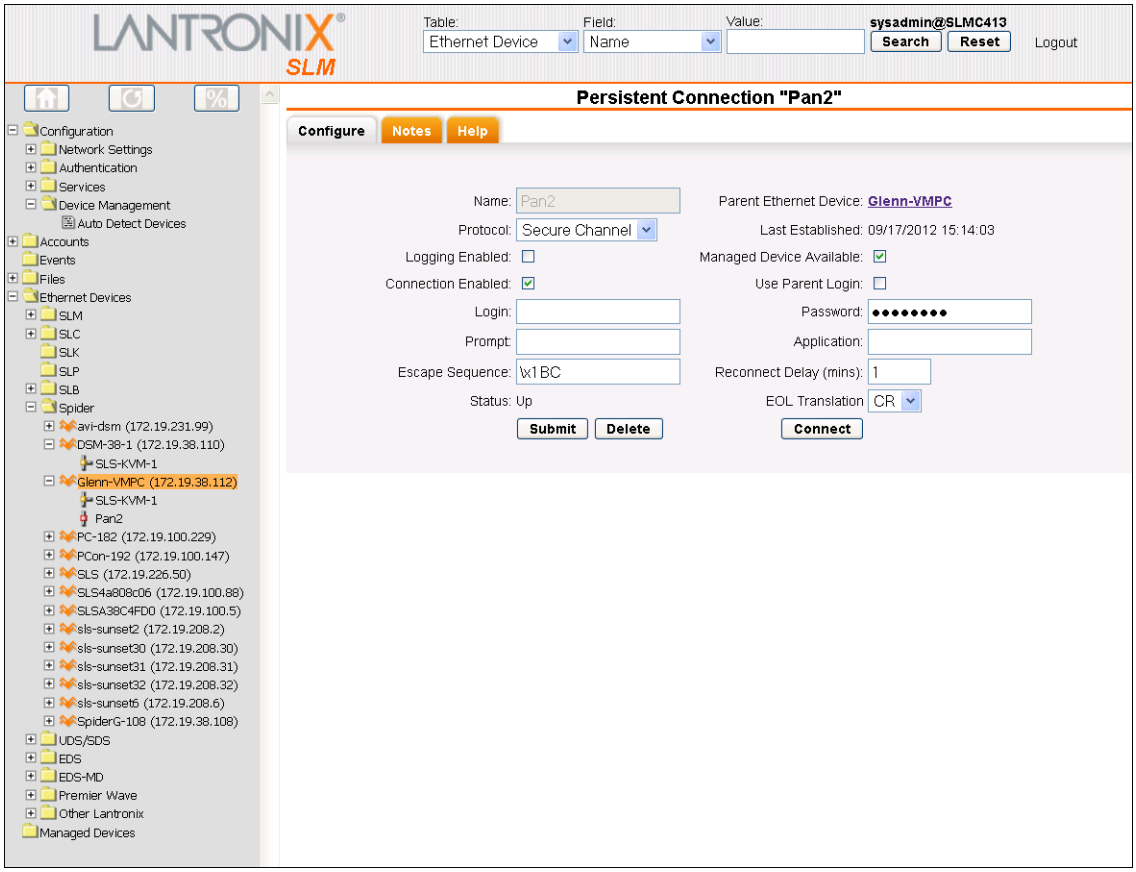
Figure 9-18 Device Page - PerCons Search



To view a specific persistent connection to a device:

1. On a specific device page, click the **PerCons** tab (see *Figure 9-18*).
2. click the **Edit** icon to the left of the connection. The PerCons page opens.

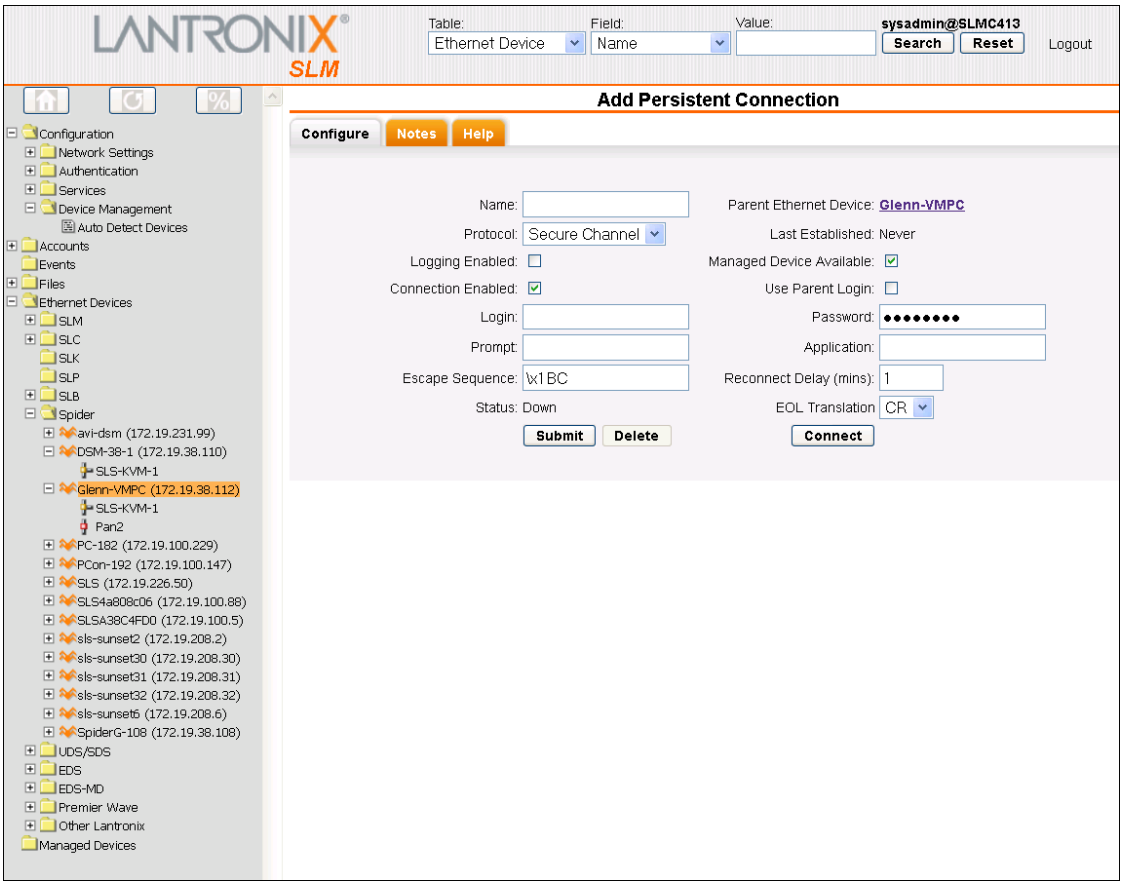
Figure 9-19 Device Page - Persistent Connection



To add a persistent connection to a device:

1. On the PerCons list page, click the **Add New Persistent Connection** button. The Add Persistent Connection page displays.

Figure 9-20 Add Persistent Connection



2. Enter the following information:

Table 9-21 Add Persistent Connection - Configure Tab

Persistent Connection Setting	Description
Name (required)	Name that identifies the persistent connection.
Protocol	From the drop-down list, select the protocol used to make the persistent connection. The options available depend on the type of Ethernet device. **Secure Channel**: SLC, SLB, Spider, and SLM only **SSH** **Telnet** **TN3270**: A special Telnet program that connects to mainframes. It is only available if the Ethernet Device is of type Non-Lantronix. No Lantronix devices use this protocol.
Logging Enabled	Select to enable the SLM to log the persistent connection.

Persistent Connection Setting	Description
Connection Enabled	Clear this box to define the persistent connection, but not to initiate it. Later, when you want to activate the connection, return and select this box.
Login	If specified, this is the account the SLM will use for logins when establishing the persistent connection. If you select the **Use Parent Login** box, this **Login** field is disabled. If this field is left empty and the **Use Parent Login** box is not checked, the user will be prompted for the login name when the connection is first established.
Prompt	Prompt that displays on the CLI when you log into the connection.
Escape Sequence	A series of one to ten characters that cause the user to exit the connection. A suggested value is **Esc+C** (escape key followed by an uppercase "C"), specified as **\x1BC** (default).
Status (view only)	Indicates whether the connection is active.
Parent Ethernet Device (view only)	Name of the Ethernet device to which the persistent connection is made.
Last Established (view only)	Indicates when the persistent connection was made.
Managed Device Available	If the parent Ethernet device of this persistent connection is being managed as part of a managed device, then users with access to that managed device will also be able to connect into this persistent connection.
Use Parent Login	If selected, you can log in using the userid and password for the Ethernet device. The **Login** and **Password** fields become inactive.
Password	Password for logging into the Ethernet device. (Inactive if you select **Use Parent Login**.)
Application	When the connection is made, the application will start automatically and keep running as long as the connection is active. An example is a program that monitors a system function such as throughput and sends unusual values to the screen. The application is available to anyone who attaches to the persistent connection and can be logged.
Reconnect Delay (min)	If the connection drops by mistake, the number of minutes to wait between attempts to reconnect.
EOL Translation	Specifify LF or CR for the end-of-line character

3. Click the **Submit** button. A confirmation message displays, and the persistent connection displays below the list of the Ethernet device's ports on the menu tree.

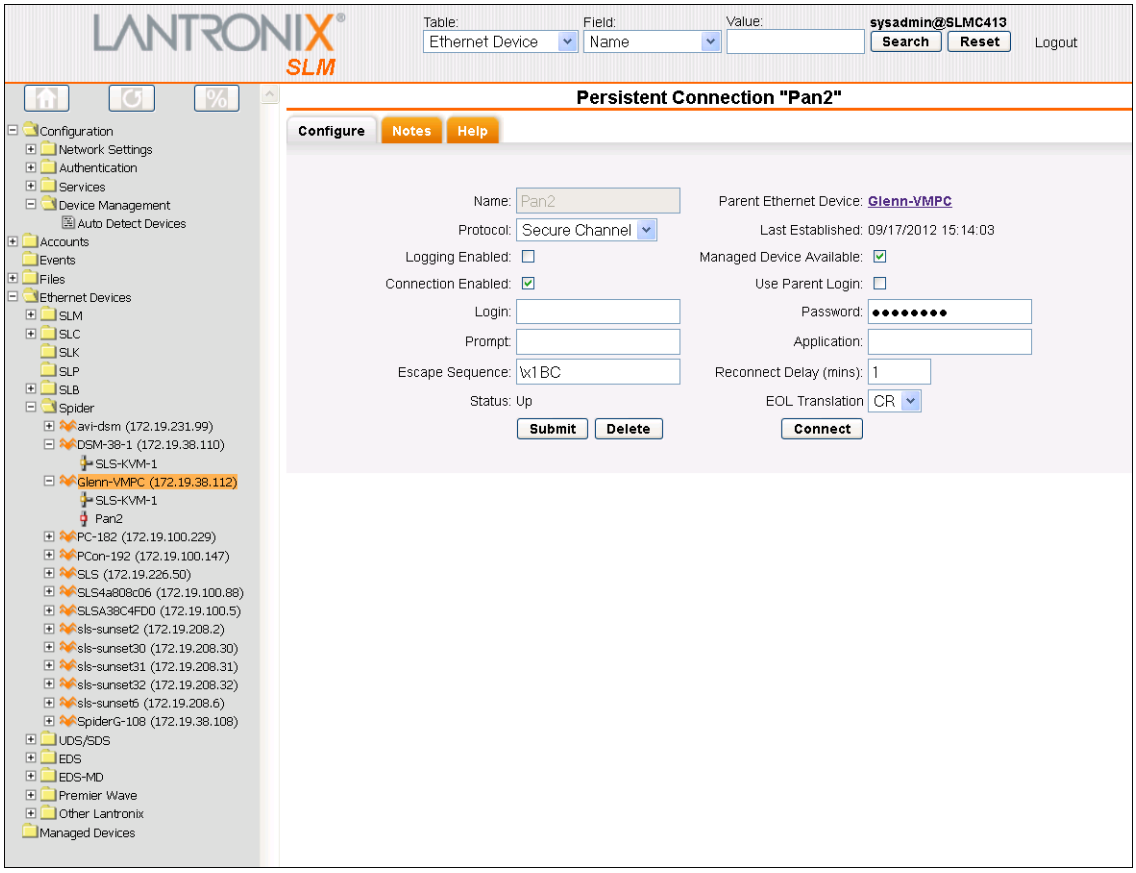
To update a persistent connection to a device:

1. On the PersCon tab, click the **Edit** icon to the left of the desired connection,

OR

On the menu tree, click the name of the desired connection (below the list of ports for a device). The PersCon page displays.

Figure 9-22 Edit Persistent Connection



2. Add or update the information as desired.
3. Click the **Submit** button.

To delete a persistent connection to a device:

1. On the PersCon tab, click the **Edit** icon the left of the desired connection,

OR

On the menu tree, click the name of the desired connection (at the end of the list of ports for a device). The PersCon page displays.

2. Click the **Delete** button.

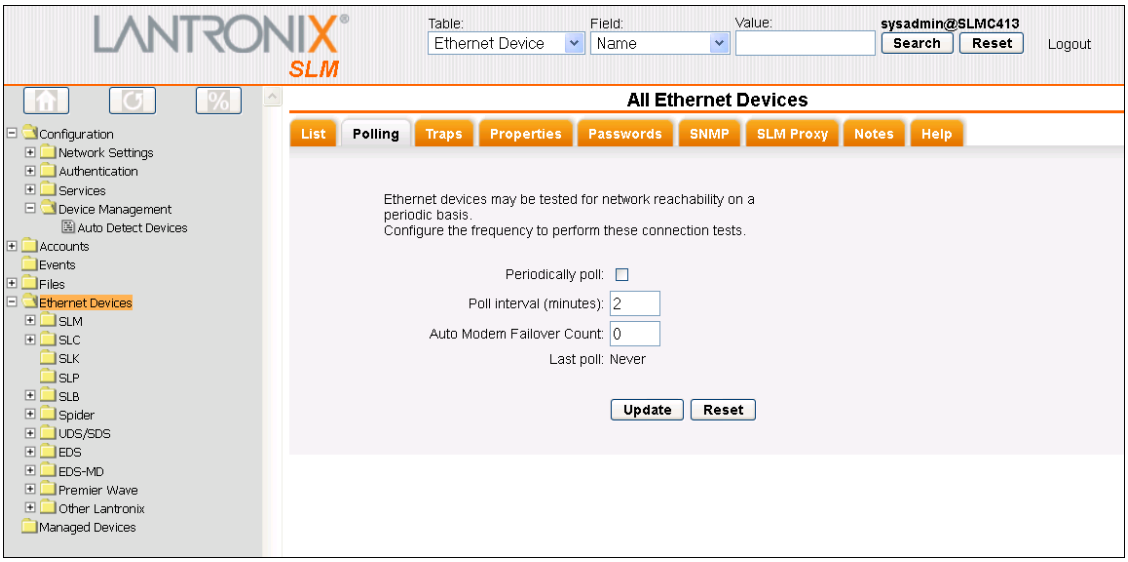
Polling

Only administrators with **Allow Device Management** set on their account page can access the global polling page. Any administrator or Ethernet device user with rights to an Ethernet device can change the "poll flag" for the device. This poll flag enables and disables polling on a device-by-device basis. The poll flag of a device is enabled by default, but if not selected, even if polling is turned on, that device will not be polled.

To poll Ethernet devices on the network:

1. On the menu, click **Ethernet Devices**. The All Ethernet Devices page opens.
2. Click the **Polling** tab. The following page opens.

Figure 9-23 All Ethernet Devices -- Polling Tab



3. Enter the following information:

Table 9-24 Poll Settings

Ethernet Device Setting	Description
Periodically poll	Select to have the SLM poll Ethernet devices on the network at regular intervals. Disabled by default. If you select this option, then any Ethernet device that has its "poll" flag set but fails to respond to Auto Connection Fail Count consecutive polling attempts displays with a vertical red stripe in its icon on the menu tree. ***Note:*** *You can disable polling on a per device basis by clearing the poll flag on an individual device's page.*
Poll interval (minutes)	Number of minutes the SLM should wait between polls.

Ethernet Device Setting	Description
Auto Connection Fail Count	The following conditions are required for the SLM to automatically connect to the SLC through a modem: ◆ Ethernet device polling is enabled. ◆ The SLC device has polling enabled for itself. ◆ The SLC has a modem connection and phone number configured. ◆ The SLC has reached the maximum polling failure count (see below). ◆ There is an available modem on the SLM. Enter the number of consecutive times the system must fail to reach the SLC before the SLM will connect through a modem. Enter 0 (zero) to disable this feature. Once the connection is established, it will remain connected until after either a successful Ethernet poll or a manual disconnect of the modem by an SLM user.
Last poll (view only)	Time the last poll was performed.

4. To save, click the **Update** button. A confirmation message displays.

SLC/SLB Local Connections

SLC/SLB serial connections may be monitored and terminated directly from the SLM. On the device page for an SLC/SLB, simply click on the LocalCons tab. That page opens to reveal

Figure 9-25 Device Page - LocalCons Tab

This table shows the connection ID, the type of connection (SSH, Console, etc), the flow direction, the Service, the username and how long the connection has been up in hours:minutes:seconds.

To terminate one or more of these connections on the SLC/SLB, check the connection's box (the **Refresh** button changes to **Terminate selected connections** button) and click on the **Terminate** button.

The window will refresh to show the selected connections no longer active.

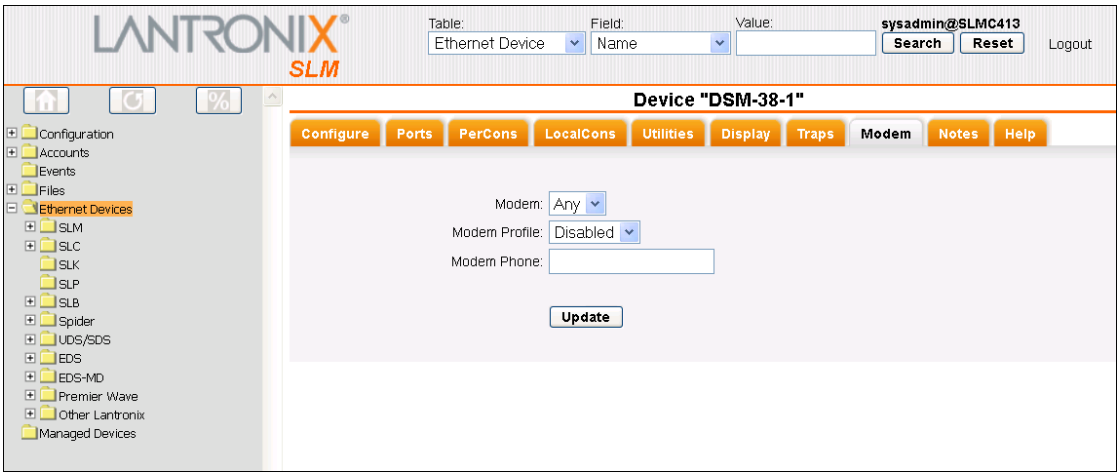
Device Modem

The Modem tab allows you to define modem connectivity between the SLM and the Ethernet device. This can included a PPP profile definition for the SLM to use to communicate with the device if the Ethernet connection should become severed, or a text profile to be used in call back mode, where the SLM calls the SLC/SLB, the SLC/SLB hangs up and then calls the SLM back (this for security purposes).

Note: *The phone number of the modem on the SLM and call back mode must be configured on the SLC/SLB.*

1. On the All Ethernet Devices or the Manage Group page, click the **Edit** icon to the left of the desired device and click the **Modem** tab in the device page which appears.

Figure 9-26 Device Page - Modem Tab



2. Enter the following information:

Table 9-27 Device - Modem Tab

Device Setting	Description
Modem	From the drop-down list, select a specific modem for the Ethernet device to use. The default is **Any**. For PPP connections, if you leave **Any**, the SLM will choose any available modem to use. For text connections (call back), specify which modem the SLC is expected to call back on. If you leave **Any**, the SLM will choose the first available modem, and if the SLC calls back on another modem, the connection will fail. If there is only one modem, then it does not matter whether it is specified or not in text mode.
Modem Profile	From the drop-down list, select profile to be used with the connection. The default setting is **Disabled**.
Modem Phone	The phone number of the Ethernet device that will be contacted.

3. Click the **Update** button. A Modem Connect or, in the case of an SLC/SLB, a **Call Back** button may display.
   - The **Call Back** button allows you to open a window to the SLC/SLB, view the connection, and type commands.

- The **Modem Connect** button establishes a PPP connection between the SLM and the remote Ethernet device. It is used when there is a network interruption and the SLM needs to contact the Ethernet device. Click this button to establish the connection manually.

Note: *The **Modem Connect** button only displays if a modem is present on the system, a PPP profile is configured on the Ethernet device, the Ethernet device references a defined SLM PPP profile, and a telephone number is defined for the Ethernet device.*

Viewing Session & Audit Log Files, Ping and SNMP Walk

On the Device page, you can view all session log files for the device.

To view session log files:

1. On the Device page, click the **Utilities** tab. The following page opens:

Figure 9-28 Device Page - Utilities Tab

Device session log file names have the following format:

`<hostname>_<host_mac_address>-<device_port_number>=<username>=<connection_type>-<date_and_time>.log`, where:

Table 9-29 Device Session Log File Name Components

Device Setting	Description
`<hostname>`	Up to the first 8 characters of the hostname of the Ethernet device. If the hostname is shorter than 8 characters, the hostname section is padded with ~ characters to reach this length.
`<host_mac_address>`	MAC Address of the Ethernet device. This is used by the SLM to correlate log files to their corresponding Ethernet devices.
`<device_port_number>`	Device port number connected to for this session. This field is set to 0 "00" for direct connections to the Ethernet device.
`<username>`	The SLM user ID that initiated this session.

Device Setting	Description
<connection_type>	Session connection type: tnt for telnet, ssh for ssh, or scc for secure channel.
<date_and_time>	Date and time string in the format YYMMDD_HHMMSS

2. From the **Device Session** drop-down list, select the log you want to view.
3. Click the **View** button. The contents of the log display on the Display tab.
4. To view an SLC or SLB audit log, select the audit log from the **SLC/SLB** drop-down list and click the **View** button. The contents of the log display on the Display tab.
5. To Ping a device, click on the **Ping-V4** button. A pop-up window will appear to display the resuts of the ping operation.
6. To perform an SNMP walk on a device, select the SNMP version, and if version 3 is selected, set the v3 Auth, the v3 Encrypt, the v3User and the Auth Passphrase, then click on the **SNMP Walk** button and the resulting output will appear in the Display tab. Not all devices support this operation or have it enabled.

Note: *For information about a global option for enabling both device session logging and SLC port session logging, see* *Logging in to the SLM (on page 288).*

Traps

Traps are notifications of events sent from one device to another. The traps listed below are those sent by other devices (SLMs, SLCs, SLPs, and SLKs) and received by the SLM. This feature is applicable when you select Enable Traps Reception on the SNMP Agent page. Examples of traps the SLM can receive include:

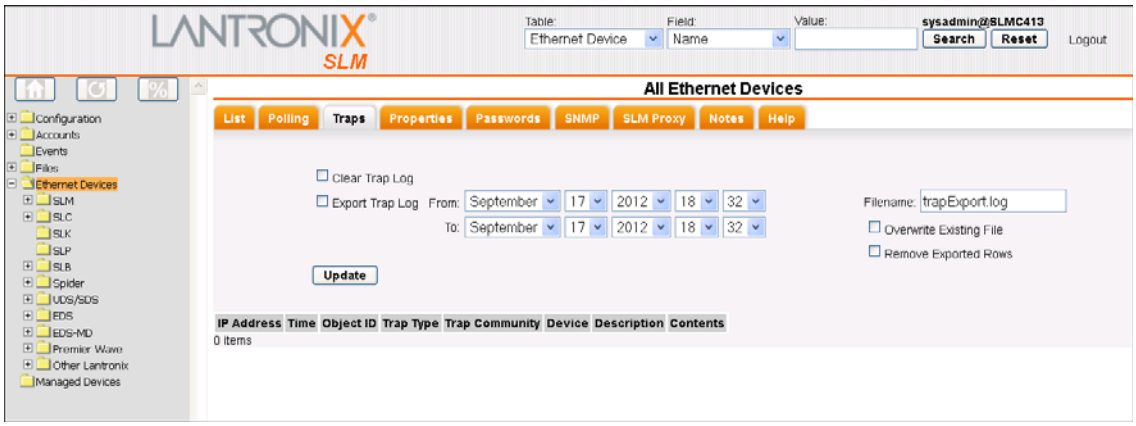
- SNMP Generic Traps:
  - Cold Start
  - Warm Start
  - Ethernet Link Down
  - Ethernet Link Up
  - Authentication Failure
  - EGP Neighbor Loss
- SLM Custom Traps (specified in SLM custom MIBs)
- SLC Custom Traps (specified in SLC custom MIBs)
- SLP Custom Traps (specified in SLP custom MIBs)
- SLK Custom Traps (specified in SLK custom MIBs)

Note: *You can view traps on three levels: All Ethernet devices, Ethernet device group, and individual Ethernet device.*

To view traps for devices listed on the All Ethernet Devices page:

1. On the menu, click All **Ethernet Devices**, the Ethernet device group, or the individual device, and then click the **Traps** tab. The following page opens.

Figure 9-30 All Ethernet Devices Page -- Traps Tab



2. Review the following information:

Table 9-31 Trap Settings

Ethernet Device Setting	Description
IP Address	IP address of the Ethernet device generating the trap.
Time	Time the Ethernet device generated the trap.
Object ID	Uniquely identifies the trap among all possible traps from all SNMP-capable devices; it is derived from the trap.
Trap Type	Category of trap, for example, device cold/warm start, device Ethernet link up/down, device authentication failure; it is derived from the trap.
Trap Community	Community value.
Device	Name of the device sending the trap; it is derived by associating the sender's IP address to a device name in the SLM database.
Description	Message text in the trap.
Contents	The entire contents of the SNMP trap.

To clear or export a trap log:

1. On the top part of the page, enter the following:

Table 9-32 Clear or Export Trap Log Settings

Trap Log Setting	Description
Clear Trap Log	Select the check box to clear the trap log.
Export Trap Log	To export a trap log, select the check box and enter the range of dates the log you want to export should cover.
Filename	Enter the name of the log file to export and select one or both of the following options: **Overwrite Existing File**: Replace an existing log file with the one being exported. **Remove Exported Rows**: Removes exported rows of Trap data from the database so they will not be perceived as new traps in future viewings.

2. Click the **Update** button.
3. To clear the table, click the **Clear Trap Table** button.

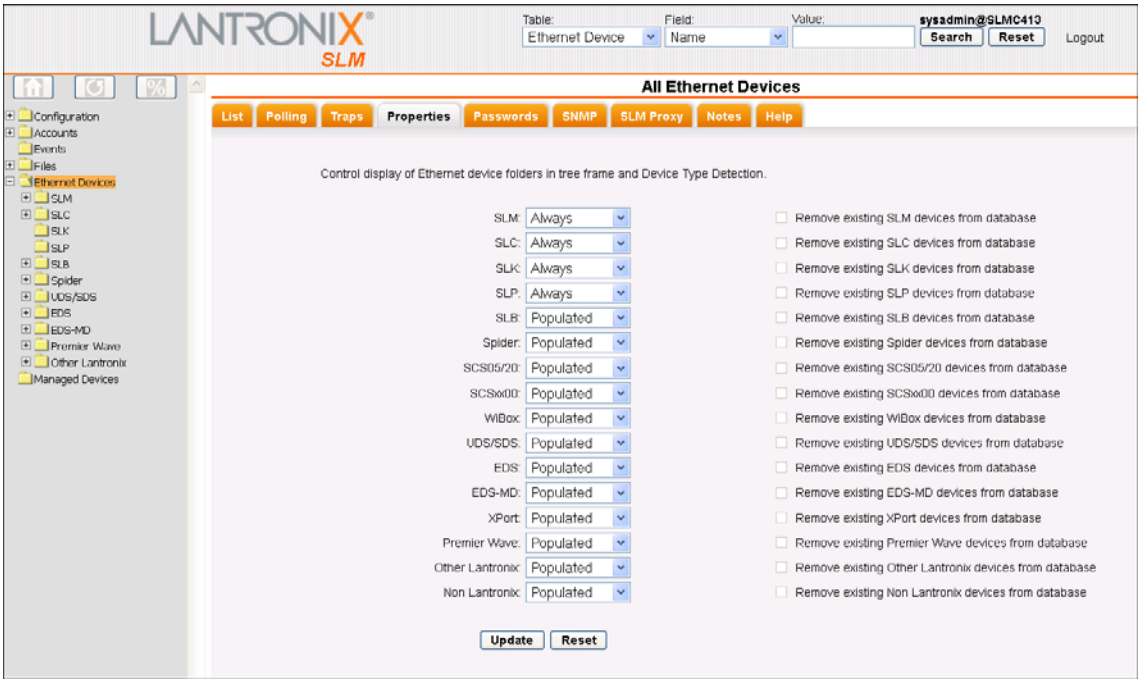
Properties (Ethernet Device Menu Tree)

The system administrator can control the display of Ethernet device folders in the tree menu.

To configure the Ethernet device menu tree:

1. On the menu, click **Ethernet Devices**, then click the **Properties** tab. The following page opens:

Figure 9-33 All Ethernet Devices Page -- Properties Tab



2. Enter the following:

Table 9-34 All Ethernet Devices - Properties Tab

Ethernet Device Setting	Description
Ethernet Device Groups	For each device group, select one of the following options from the drop-down list: **Always**: Device folder displays whether populated or not. This is the default setting for the SLM, SLC, SLK, and SLP folders. **Never**: Device folder does not display, even if populated. **Populated**: Device folder displays only when populated. This is the default setting for the SCS05/20, SCSxx00, SLB, Spider, WiBox, UDS/SDS, EDS, EDS-MD, Xport, Premier Wave, Other Lantronix, and Non Lantronix folders. **Don't Detect**: Prevents devices of this type from being auto detected.

3. To remove all devices of a type currently in the SLM database, select its checkbox.

Note: *Check boxes are active only if you change the display mode to* ***Don't Detect****.*

4. To save, click the **Submit** button.

Port Access

The Port Access tab is available for SLCs, SLBs, SLPs, Spiders and UDS/SDSs and provides the following:

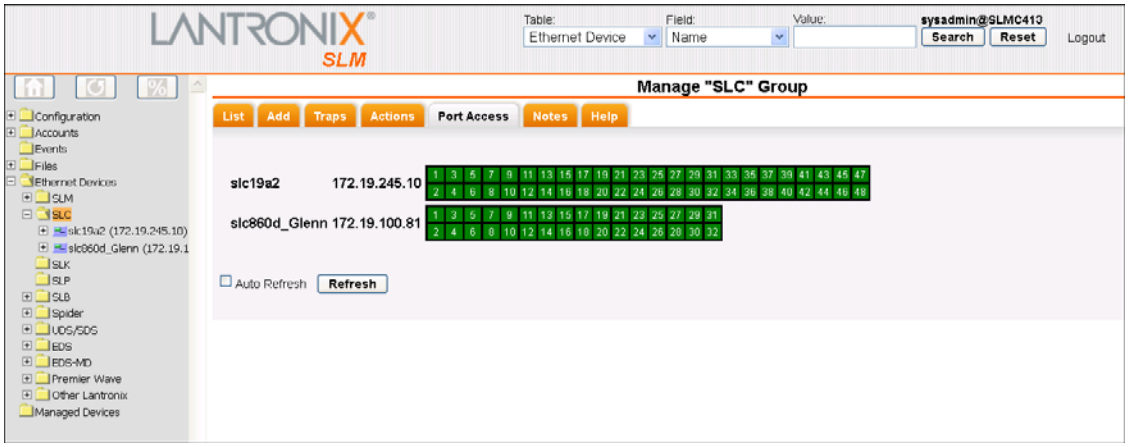
- **SLCs**: Connection to serial ports.
- **SLBs**: Connection to serial ports and access to the port page for power ports.
- **SLPs**: Access to the port page for power ports.
- **Spiders**: KVM access to devices connected to a Spider.
- **UDS/SDS**: Manage connections between UDS/SDS ports.

To connect to an SLC port:

1. On the menu, click **Ethernet Devices > SLC**. The Manage SLC Group page opens.
2. Click the **Port Access** tab. A list of all SLCs displays, along with all of their ports. Numbered squares represent the ports.

   Note: *Hovering over a port reveals the port name.*

Figure 9-35 Manage SLC Group -- SLC Tab



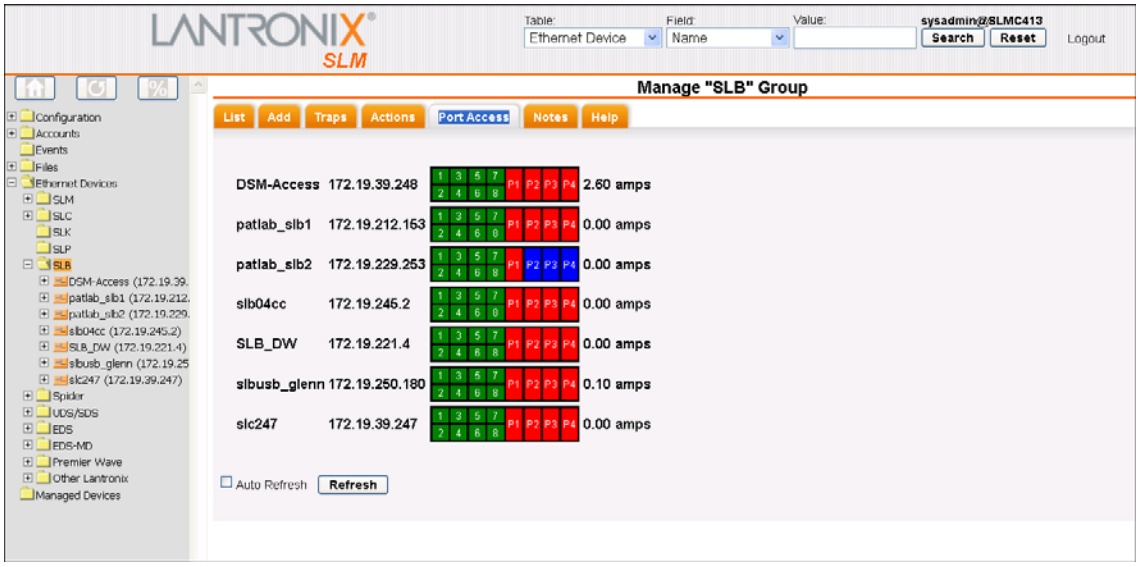
3. Click the SLC port to open a Secure Channel connection.

To connect to an SLB port or access its port page:

1. On the menu, click **Ethernet Devices > SLB**. The Manage SLB Group page displays:
2. Click the **Port Access** tab. A list of all SLBs and their IP addresses displays, along with all of their ports and the power load of each port.

   Note: *Hovering over a port reveals the port name.*

Figure 9-36 Manage SLB Group - Port Access Tab



Color-coded numbered squares represent the ports:

- **Green** = serial ports
- **Red** = power port on
- **Blue** = power port off
- **Gray** = power port state unknown (the device may not be responding)

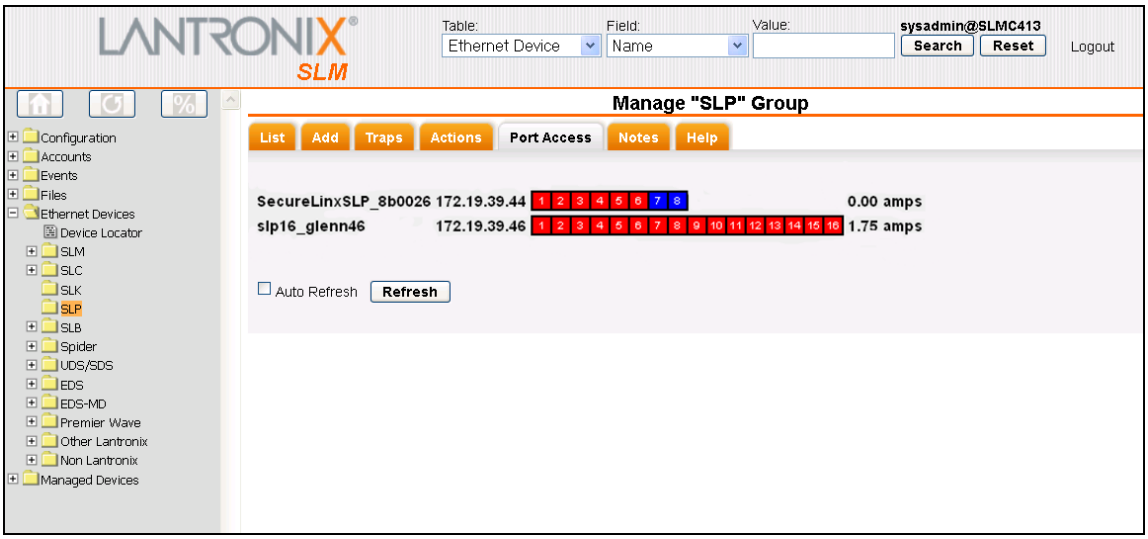
3. You have the following options:
   - To open a Secure Connection with a serial port, click the corresponding green square.
   - To open an SLB port page, click the corresponding red or blue square.

To access an SLP port page:

1. On the menu, click **Ethernet Devices > SLP**. The Manage SLP Group page displays:
2. Click the **Port Access** tab. A list of all SLPs displays, along with all of their ports and the power load of each port.

   Note: *Hovering over a port reveals the port name.*

Figure 9-37 Manage SLP Group - Port Access Tab



Color-coded numbered squares represent the ports:

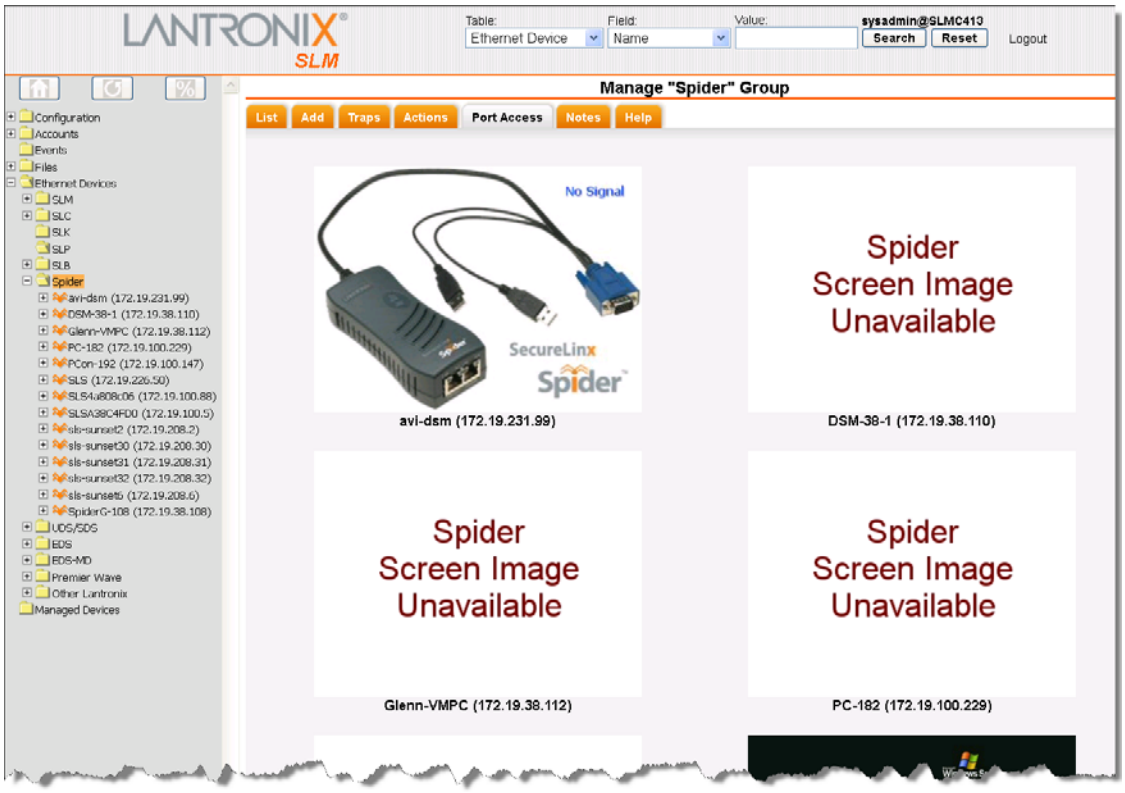
- **Blue** = power port off
- **Red** = power port on
- **Grey** = power state unknown (device may not be responding)

3. Click the port whose port page you want to open.

To gain KVM access to a device connected to a Spider:

1. On the menu, click **Ethernet Devices > Spider.** The Manage Spider Group page displays.
2. Click the **Port Access** tab. All Spiders in the system display as boxes with IP addresses. Some boxes may display the current view of the device the Spider is controlling.

Figure 9-38 Manage Spider Group - Port Access Tab



3. Click the screen image to open a Spider KVM session to that device.

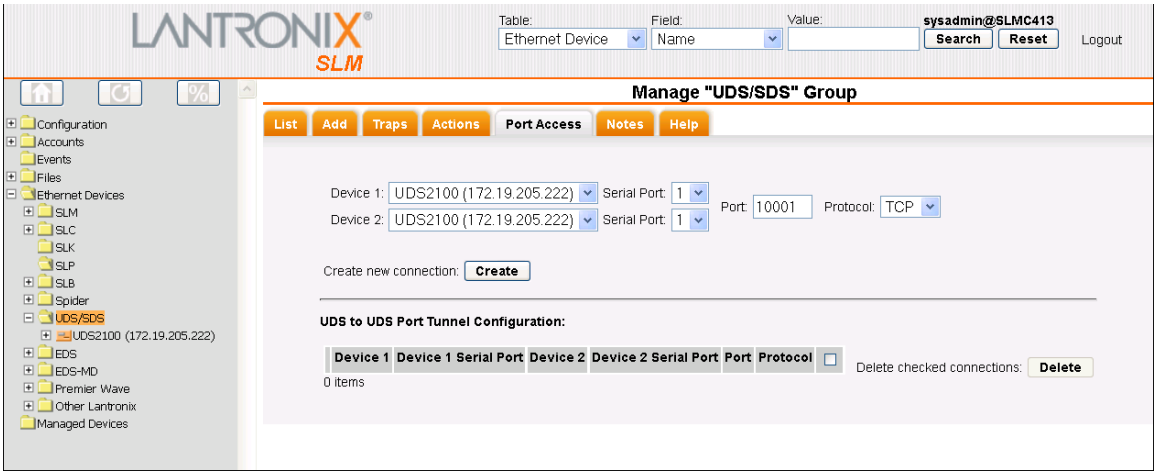
To refresh the Port Access tab:

1. You have two options:
   - To refresh the port information automatically every two minutes, select the **Auto Refresh** check box and click the **Refresh** button.
   - To refresh the port information once, clear the **Auto Refresh** check box and click the **Refresh** button.

To manage UDS/SDS port connections:

1. On the menu, click **Ethernet Devices > UDS/SDS**. The Manage UDS/SDS Group page opens.
2. Click the **Port Access** tab. A list of all current UDS and SDS port connections displays, along with drop down lists of the unmanaged UDS/SDS ports.

Figure 9-39 Manage UDS/SDS Group - Port Access Tab



To have the SLM connect two UDS/SDS ports automatically:

1. Select Device 1 from the drop down list.
2. Select the Serial Port for Device 1.
3. Select Device 2 from the drop down list.
4. Select the Serial Port for Device 2.
5. Choose the port for the connection (defaults to 10001).
6. Select the Protocol (TCP or UDP).
7. Click on the **Create** button.

The SLM will attempt to log into both UDS/SDS devices and set up the requested connection. SLM Management will be offered in a future release.

To delete a connection, check the box to the right of the connection to be terminated and click on the **Delete** button.

Updating Passwords in Bulk

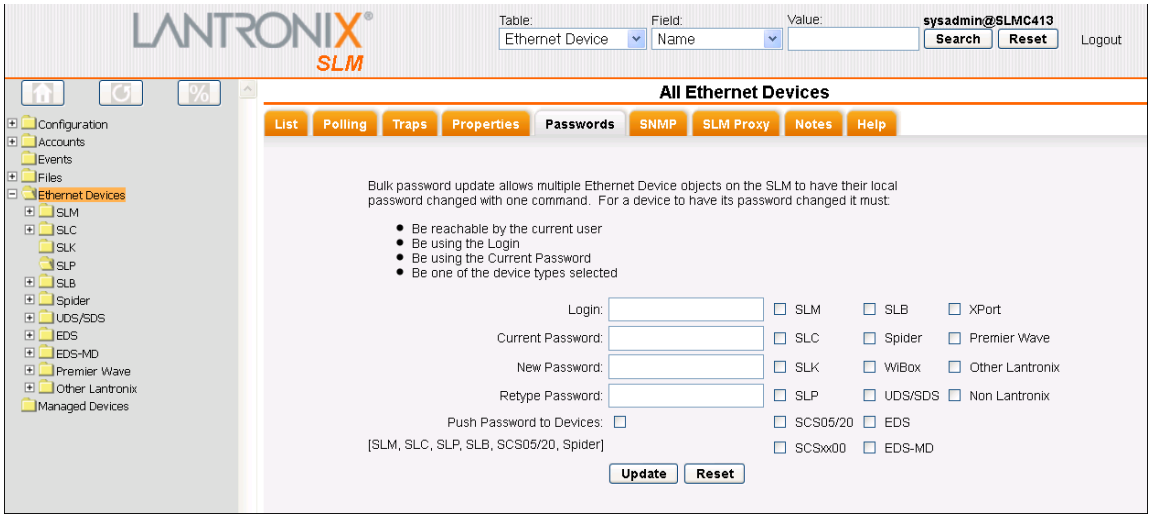
The administrator and Ethernet device users can perform bulk password updates on multiple devices in the local database. These changes can also be pushed to remote SLM, SLC, SLP, and SCS05/20 devices.

- The user has access to the device.
- The current user ID on the device matches the Login field.
- The current password on the device matches the Current Password field.
- The device type matches one of the types selected on the page described below.

To perform a bulk password update:

1. On the menu, click **Ethernet Devices** and then the **Passwords** tab. The following page opens:

Figure 9-40 All Ethernet Devices Page - Passwords Tab



2. Enter the following:

Table 9-41 Settings to Update Passwords in Bulk

Password Setting	Description
Login	Enter the login currently used by the devices whose password you want to change.
Current Password	Enter the password currently used by the devices whose password you want to change.
New Password and Retype Password	Enter a new password for accessing the devices.
SLM, SLC, SLK, SLP, SCS05/20, SCSxx00, SLB, Spider, WiBox, UDS/SDS, EDS, EDS-MD, XPort, Premier Wave, Other Lantronix, Non Lantronix	Select the check box for each type of device whose password you want to change.
Push Passwords to Devices	Select the checkbox when you want to push the password change to remote SLM, SLC, SLP, and SCS05/20 devices.

3. Click the **Update** button. A confirmation message displays.

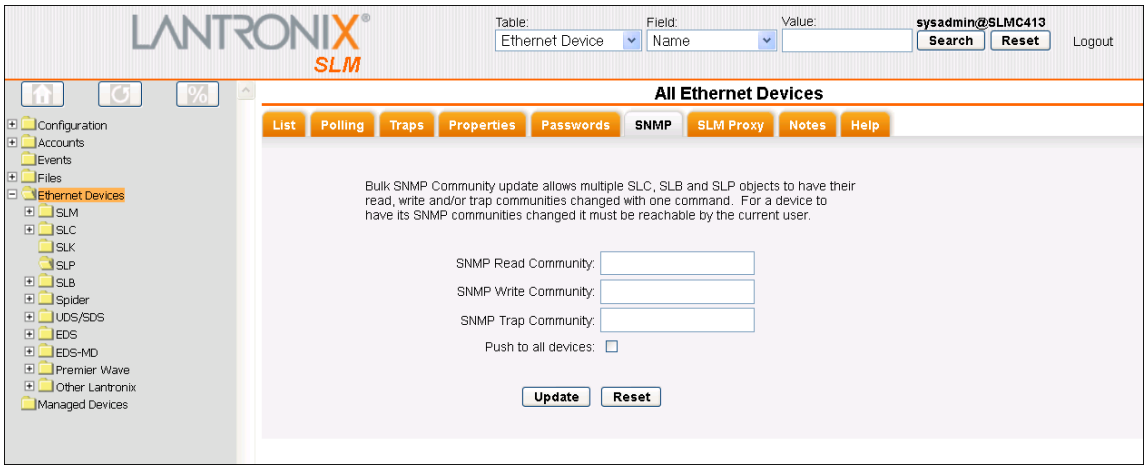
Changing SNMP Settings for SLC, SLB and SLPs in Bulk

For security reasons, some companies change SNMP communities frequently. The administrator can change the SNMP communities for multiple devices at the same time. To change the SNMP communities of an SLC, SLB or SLP, the current user must be able to access it.

To perform a bulk SNMP update:

1. On the menu, click **Ethernet Devices** and then the **SNMP** tab. The following page opens:

Figure 9-42 All Ethernet Devices Page - SNMP Tab



2. Enter the following:

Table 9-43 Settings to Update SNMPs in Bulk

SNMP Setting	Description
SNMP Read Community	An SNMP community is the group to which devices and management stations running SNMP belong. The default setting is public. Because SSH-to-SLP authentication may take a long time, this setting allows the user to choose SNMP support, which is faster.
SNMP Write Community	A string that acts like a password for an SNMP manager to modify data where permitted.
SNMP Trap Community	A string that is sent along when a trap is broadcast. Only management devices that are listening for that value process the trap. Management devices that are not listening for that trap community ignore the trap.
Push to all devices	Select this check box to upload these SNMP settings to all devices of the same type (SLC, SLP, pr SLB) in the

3. Click the **Update** button. A confirmation message displays.

Note: *To clear all values before saving, click the **Reset** button.*

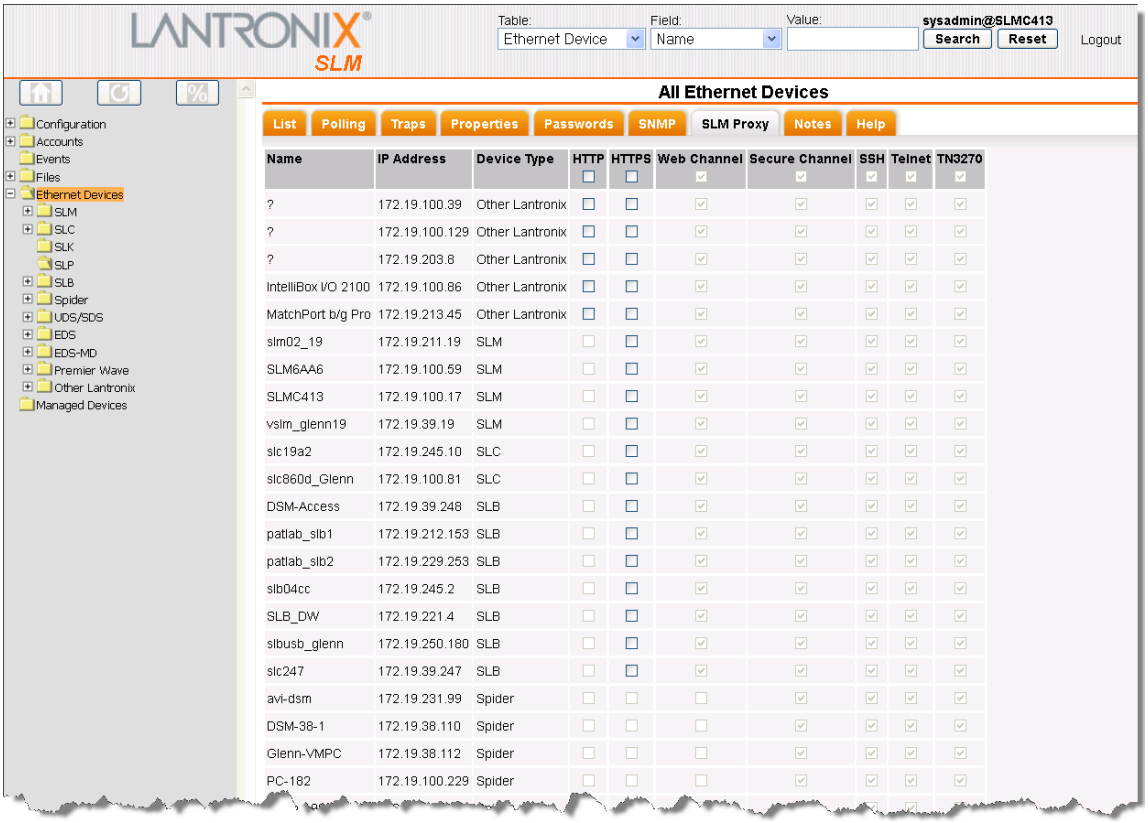
SLM Proxy

The SLM can act as a proxy server, allowing users outside the internal network to connect to devices securely through the SLM. You can set most devices to connect through the SLM. The SLM proxy feature is not limited to connections between the SLM's two Ethernet ports; the remote device can even be located on the same subnet as the client browser.

To use the SLM as a proxy server:

1. On the menu, click **Ethernet Devices**. The All Ethernet Devices page displays.
2. Click the SLM **Proxy** tab. The tab displays a list of all the Ethernet Devices with a column for each method of connection.

Figure 9-44 All Ethernet Devices - SLM Proxy Tab



Three types of check boxes display on the page:

- Active check boxes in the HTTP and HTTPS columns
- Inactive selected check boxes indicate devices that are automatically set for proxy
- Inactive unselected check boxes indicate devices that cannot be set for proxy

3. To enable a device to use the SLM as a proxy in conjunction with HTTP or HTTPS, select the appropriate checkbox.

Note: *You may select **Proxy** in conjunction with these protocols and others on the configuration page for an individual device.*

Ethernet Device Commands

set ethernetdevice assign

Syntax

```
set ethernetdevice assign <ethernetDevice|IP> group
<ethernetAccoutGroup> [remove]
```

Description

Assigns or removes permissions for an Ethernet device by name.

set ethernetdevice config

Syntax

```
set ethernetdevice config <Device Name or IP Address> <one or more
parameters>
```

Parameters

```
[delete]
[dialout <Dial Account Name|enable|disable> phonenumber <phone number>]
[disconnect modem]
[name <Device Name>]
[ipaddr <IP Address>]
[location <Location>]
[login <Loginname>]
[model <Model>]
[readinfo]
[sshport <TCP Port for SSH>]
[tnport < TCP Port for Telnet>
[tn3270lu <Logical Unit>
[version <Version>]
```

Description

Finds Ethernet devices by device name or IP address and modifies device parameters.

set ethernetdevice config

Syntax

```
set ethernetdevice config <Device Name or IP Address> <one or more
parameters>
```

Parameters

```
[name <Device Name>]
[ipaddr <IP Address>]
[location <Location>]
[login <Loginname>]
[model <Model>]
[sshport <TCP Port for SSH>]
[version <Version>]
```

Description

Finds Ethernet devices by device name or IP address and modifies device parameters.

set ethernetdevice port

Syntax

```
set ethernetdevice port <Device Name or IP Address> portnumber <Port Number> <one or more parameters>
```

Parameters

```
[name <New Port Name>]
```

```
[state <on|off|cyclepower>]
```
(available for SLP, SLB and Spider Duo only)

Powers Ethernet device port on or off.

Examples

To power up SLP outlet 2:

```
set eth port slp-sunset po 2 state on
```

You may specify a comma separated outlet list to control multiple outlet at once.

To power up SLP outlet port list 1-3,6,8-14:

```
set eth port slp-sunset po 1-3,6,8-14 state on
```

Description

Finds a port by device name or IP address with the port number and modifies port parameters.

```
set ethernetdevice sync
```

Syntax

```
set ethernetdevice sync <Device Name or IP Address> action <read|write>
```

Description

Finds an Ethernet device using device name or IP address and synchronizes device information.

```
show device
```

Note: *Entries are not case sensitive.*

Syntax

```
show device <device name>
```

Description

Searches for and displays Ethernet or managed devices by device name.

```
show device all
```

Syntax

```
show device all
show device
```

Description

Displays all Ethernet and managed devices.

```
show ethernetdevice account
```

Syntax

```
show ethernetdevice account <accountName>
```

Description

Displays all Ethernet devices viewable by the specified user account.

```
show ethernetdevice accountgroup
```

Syntax

```
show ethernetdevice accountgroup <accountGroup>
```

Description

Displays all Ethernet devices viewable by users whose accounts belong to the specified account group.

```
show ethernetdevice all
```

Syntax

```
show ethernetdevice all
```

Description

Displays all Ethernet device information.

```
show ethernetdevice config
```

Syntax

```
show ethernetdevice config <Device Name or IP Address>
```

Description

Finds an Ethernet device using device name or IP address and displays device information.

```
show ethernetdevice firmware
```

Syntax

```
show ethernetdevice firmware
```

Description

Displays firmware versions of all Ethernet devices managed by the SLM.

```
show ethernetdevice group
```

Syntax

```
show ethernetdevice group <Group Name> [firmware]
group name: SLM, SLC, SLK, SLP, SCS, SCSX, SLB, SPDR, WiBox, UDS, EDS,
EDSMD, Xport, PWave, other, non
```

Note: *Ethernet device group names are not case sensitive.*

Description

Displays Ethernet devices by device group.

show ethernetdevice index

Syntax

```
show ethernetdevice index <number>
```

Description

Displays Ethernet devices by index.

```
show ethernetdevice port
```

Syntax

```
show ethernetdevice port <Device Name or IP Address> all
show ethernetdevice port <Device Name or IP Address> portnumber
<Port Number>
```

Description

Finds an Ethernet device using device name or IP address and displays port information.

```
show ethernetdevice search device
```

Syntax

```
show ethernetdevice search device <one or more parameters>
```

Parameters

```
[name <Device Name>]
[ipaddr <IP Address>]
[location <location>] [firmware <version number>]
```

Note: *Search entries are not case sensitive.*

Example

```
show ethernetdevice search device name slc firmware 4
```

Description

Displays all devices that match the criteria entered. For example, if you specify `name slc`, the SLM searches for all devices whose name starts with `slc`.

Persistent Connection Commands

```
set persistent add
```

Syntax

```
set persistent add <persistentConnectionName> ethernetdevice
<ethernetDeviceName|IP> <one or more parameters)
```

Parameters

```
[protocol <Secure|SSH|Telnet|TN3270>] (default SSH)
[logging <enable|disable>] (default disable)
[managed <enable|disable>] (default enable)
[active <enable|disable>] (default enable)
[parentlogin <enable|disable>] (default disable)
[login <loginAccount>]
[password <loginPassword>]
[prompt <promptString>]
[application <applicationName>]
[escapesequence <escapeString>] (default is '\x1BC')
[reconnectdelay <1-999>] (default is 1)
```

```
[eoltranslation <cr | lf>]
```

Description

Creates a new persistent connection

```
set persistent edit
```

Syntax

```
set persistent edit <persistentConnectionName> <one or more parameters)
```

Parameters

```
[ethernetdevice <ethernetDeviceName|IP>]
[protocol <Secure|SSH|Telnet|TN3270>]
[logging <enable|disable>]
[managed <enable|disable>]
[active <enable|disable>]
parentlogin <enable|disable>]
[login <loginAccount>]
[password <loginPassword>]
[prompt <promptString>]
[application <applicationName>]
[escapesequence <escapeString>]
[reconnectdelay <1-999>]
[eoltranslation <cr | lf>]
```

Note: *For the edit command, the ethernetdevice parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

Description

Modifies an existing persistent connection.

```
set persistent delete
```

Syntax

```
set persistent delete <persistentConnectionName> [ethernetdevice
<ethernetDeviceName|IP>]
```

Note: *For the delete command, the* `ethernetdevice` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

Description

Deletes a persistent connection.

```
show persistent
```

Syntax

show persistent [[name] <persistentConnectionName>][device <devname|IP>][all]

Notes:

- *The* `device` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

- *The* `<devname>` *following* `device` *may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.*

Description

Displays one or more persistent connections

`connect persistent`

Syntax

`connect persistent <persistentConnectionName> [device <devname|IP>]`

Notes:

- *The device parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*
- *The <devname> following device may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.*

Description

`Connect to an existing persistent connection.`

Trap Commands

`show traplog index`

Syntax

`show traplog [index <number>]`

Description

Displays all current trap log information. The index number displays detailed information about a selected traplog.

`show traplog device`

Note: *Type* `show traplog` *to display the index.*

Syntax

`show traplog device <Device Name or IP address> [index <number>]`

Description

Displays the current trap log information for an Ethernet device using device name, IP address, or index number. `show traplog group`

`show traplog group`

Note: *Type* `show traplog group` *to display the index.*

Syntax

```
show traplog group <Device Group Name> [index <number>]
Group name: SLM, SLC, SLK, SLP, SCS, SCSX, SLB, SPDR, WiBox, UDS, EDS,
EDSMD, Xport, PWave, other, non
```

Description

Displays the current trap log information for an Ethernet device group by index number.

show traplog index

Syntax

```
show traplog index <number> <parameters>
```

`index` is the number of lines of the log specified by `lastminutes` and `date`. If you specify 0 at number of lines, all lines display.

Parameters

```
[top <number of lines>]
[tail <number of lines>]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
[loglastminutes <minutes>]
[logdate <MMDD>]
[logdate <MMDD-MMDD>]
```

If you specify both the date and time, the SLM ignores the date.

Description

Displays the specified part of the traplog by index.

Examples

```
show traplog
```

Lists traplog files.

```
show traplog lastminutes 5
```

Lists traplog files modified in the last 5 minutes.

```
show traplog date 0205
```

Lists traplog files last modified on 0205.

```
show traplog date 0205-0209
```

Lists traplog files last modified between 0205 and 0209.

```
show traplog index 3
```

Displays index 3 from the top.

```
show traplog index 3 top 10
```

Displays the first 10 lines of index 3 from the top.

```
show traplog index 3 tail 15
```

Displays the last 15 lines of index 3 from the tail.

```
show traplog index 3 lastminutes 5
```

Displays the lines in index 3 from the last 5 minutes of.

```
show traplog index 3 date 0205
```

Displays the audit log in index 3 for the date 0205.

```
show traplog index 3 date 0205-0209
```

Displays the traplog by the index 3 between the dates 0205 to 0209.

```
show traplog index 3 top 10 lastminutes 5
```

Displays the first 10 lines of index 3 of the traplog from the last 5 minutes.

```
show traplog index 3 tail 0 lastminutes 5
```

Displays all lines of the traplog in index 3 from the tail.

```
show traplog index 3 lastminutes 5 logminutes 10
```

Displays the part of traplog in index 3 times tamped in the last 10 minutes.

```
show traplog index 3 date 0205
```

Displays the part of traplog in index 3 times stamped on 0205.

Ports

Administrators and Ethernet device users with rights to an Ethernet device can list, add, update, delete, and interact with its ports. Managed Device users can only interact with managed devices (which may manage one or more ports, and/or a local Ethernet device) that they have permissions on.

Note: *Port pages may differ slightly, depending on the type of Ethernet device. The procedures below note these differences.*

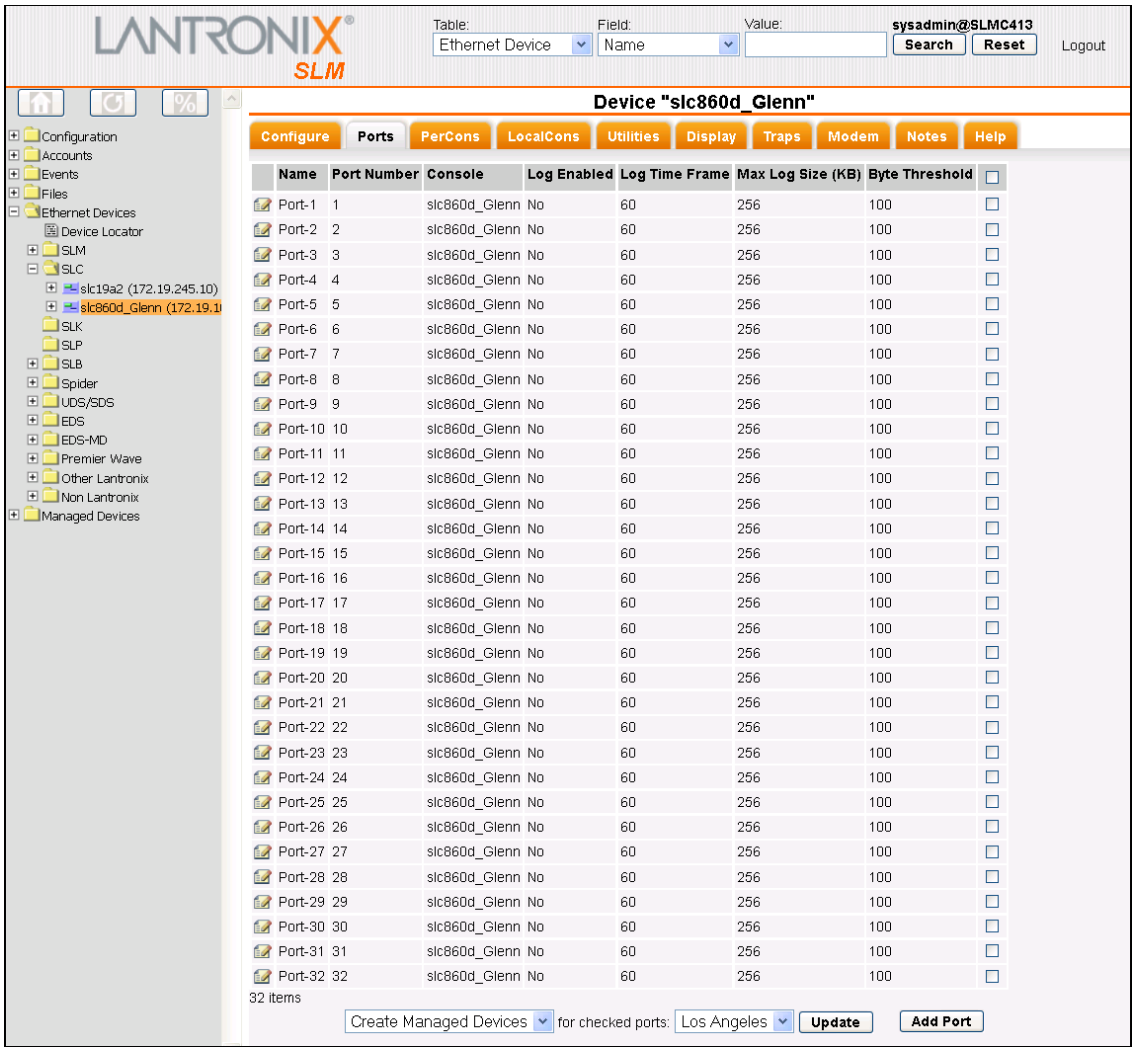
Viewing a List of Ports

You can view a list of all ports on any Ethernet device that has ports (e.g., SLC, SLK, SLP, etc).

To view port information:

1. On the Device page for the Ethernet device, click the **Ports** tab. The following page opens.

Figure 9-45 Device -- Ports Tab



2. View the following information about each port:

Table 9-46 Device - Ports Tab

Port Setting	Description
Name	Name of the Ethernet device port.
Port Number	Number of the Ethernet device port (e.g., a number between 1 and 48 for the SLC 48).
Console	Name of the parent Ethernet device.

Port Setting	Description
Log Enabled	Indicates whether logging has been enabled for this port. ***Note:*** *To enable or disable port logging for one or more ports, select the check box for each affected port, and select* ***Enable Port Logging*** *or* ***Disable Port Logging*** *from the drop-down list at the bottom of the page.* Only SLC devices that have established a secure channel connection can have ports with logging enabled.
Log Time Frame	**For SLC v3.1 and later v3.x (but not v4.0):** The maximum time frame in hours before a new log file is created. The default setting is 1 hour. **For SLC v4.0 and later:** The maximum time frame in seconds before the SLC sends data to the SLM. The default is 30 seconds.
Max Log Size (KB)	Maximum size of each log file in kilobytes. Once it is reached, a new log file is created. The default setting is 256 KB.
Byte Threshold	**For SLC v4.0 and later:** The number of bytes the SLC device port receives before it forwards them to the SLM. For example, a threshold preset at 128 characters means that as soon as the SLC receives 128 bytes of data on this particular device port, it captures log data and sends it to the SLM. The minimum byte threshold is **1**, and the default is **1024**.
Port Status (SLP and SLB only)	Indicates whether the port's power is on or off.

Adding a Port

Administrators and Ethernet device users with rights to a device may add ports to that device. This is useful when a device does not automatically report port information.

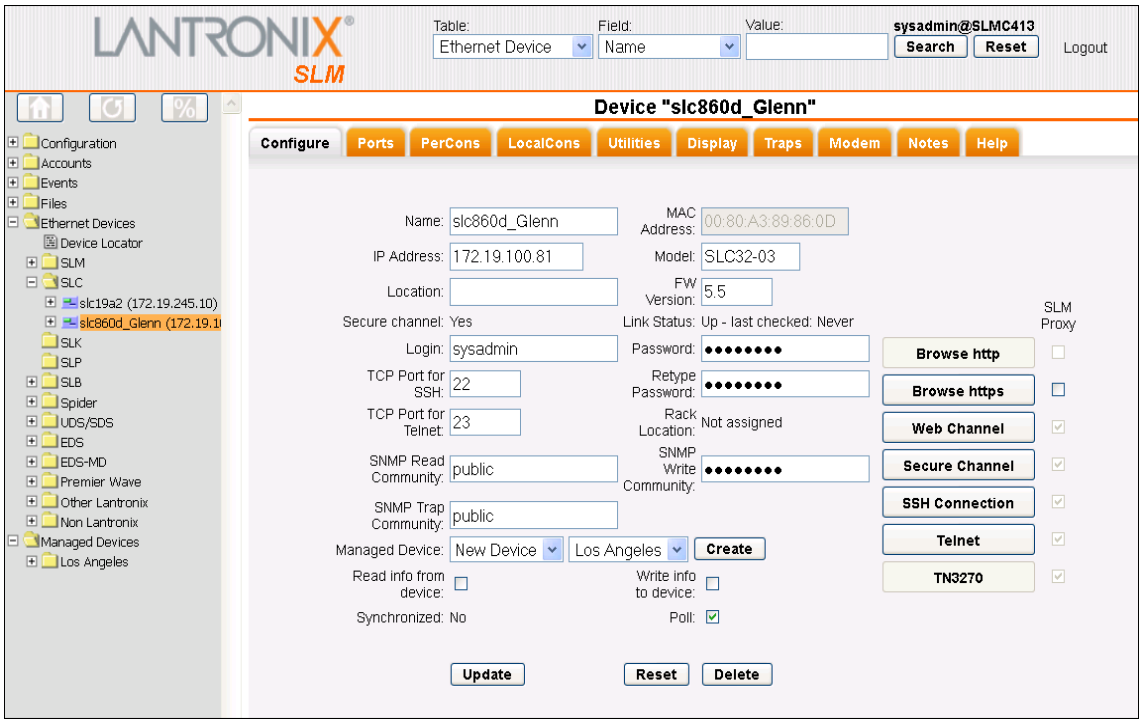
To add a port:

Notes:

- *The example below shows how to add an SLC port. Ports on other devices do not require extra port information such as baud and flow control).*
- *During auto detect, if an SLC device does not have SNMP enabled, it will not retrieve these extra SLC port parameters. Then this SLC device is marked with an internal flag to indicate that those port parameters are incorrect. When this flag is set, the user cannot perform a "Write info to device" as this would push incorrect port settings back to the SLC device. This flag is cleared if the user did a "Read info from device" or manually modified one of the SLC device port settings. After this flag is cleared, the user can perform "Write info to device."*

1. On the **Ports** tab of the Device page, click the **Add Port** button at the bottom. The following page opens:

Figure 9-47 New SLC Port Page - Configure Tab



Note: *The connection buttons on the right are inactive until you save the port. See* *Connecting to Ethernet and Managed Devices (on page 224)* *for instructions on using the buttons.)*

2. Enter the following information:

Table 9-48 New Port - Configure Tab

Port Setting	Description
Port Number	Number of the Ethernet device's port (e.g., a number between 1 and 48 for the SLC 48). The system offers all unassigned ports up to 16 above the current highest port number.
Parent Ethernet Device (view only)	Name of the Ethernet device.
Name	Name of the port (e.g., name of the device to which it is attached).
Parent Device Type (view only)	Ethernet device type (e.g., SLC, SLM, SLK).
Log Enabled	Indicates whether logging is enabled on the port. Disabled by default. ***Note:*** *To enable or disable port logging for one or more ports, select the check box for each affected port, and select Enable Port Logging or Disable Port Logging from the drop-down list at the bottom of the page.* *Only SLC/SLB devices that have established a secure channel connection can have ports with logging enabled.*

Port Setting	Description
Log Time Frame	**For SLC v3.1 and later v3.x (but not v4.0):** The maximum time frame in hours before a new log file is created. The default setting is **1** hour. **For SLC v4.0 and later:** The maximum time frame in seconds before the SLC sends data to the SLM. The default setting is **30** seconds.
Max Log Size (KB)	Maximum size of each log file in kilobytes. Once it is reached, a new log file is created. The default setting is **256** KB.
Byte Threshold	**For SLC v4.0 and later:** This is the number of bytes the SLC device port receives before it forwards them to the SLM. For example, a threshold preset at 128 characters means that as soon as the SLC receives 128 bytes of data on this particular device port, it captures log data and sends the received data regarding this device port to the SLM. The minimum byte threshold is 1, and the default is **1024**.
Receiving SLM (s)	An SLC port can log its port data to one, two, or three SLMs at the same time. This field shows the IP address(es) of any SLM(s) that are receiving log data from this particular SLC port. These IP addresses need not necessarily include the SLM that you are looking at.
Break Sequence	A series of one to ten characters users can enter on the command line interface to send a break signal to the external device. A suggested value is **Esc+B** (escape key, then uppercase "B" performed quickly but not simultaneously). You would specify this value as **\x1bB**, which is hexadecimal **(\x)** character 27 (**1B**) followed by a **B**.
Managed Device	Not active when you are adding a port.

Table 9-49 New Port - Configure Tab - Data Settings

Data Setting	Description
Baud	The speed with which the device port exchanges data with the attached serial device. From the drop-down list, select the baud rate. Most devices use 9600 for the administration port, so the device port defaults to this value. Check the equipment settings and documentation for the proper baud rate.
Data Bits	Number of data bits used to transmit a character. From the drop-down list, select the number of data bits. The default is 8 data bits.
Stop Bits	The number of stop bit(s) used to indicate that a byte of data has been transmitted. From the drop-down list, select the number of stop bits. The default is **1**.
Parity	Parity checking is a rudimentary method of detecting simple, single-bit errors. From the drop-down list, select the parity. The default is **none**.
Flow Control	A method of preventing buffer overflow and loss of data. The available methods include none, xon/xoff (software), and RTS/CTS (hardware). The default is none.
Enable Logins	For serial devices connected to the device port, displays a login prompt and authenticates users. Successfully authenticated users are logged into the command line interface. Disabled is the default and is the correct setting if the device port is the endpoint for a connection.

Table 9-50 New Port - Configure Tab - Hardware Signal Triggers

Hardware Signal Trigger Setting	Description
Check DSR on Connect	If this setting is enabled, the device port only establishes a connection if DSR (Data Set Ready) is in an asserted state. DSR should already be in an asserted state, not transitioning to, when a connection attempt is made. Disabled by default unless dial-in, dial-out, or dial-back is enabled for the device port.
Disconnect on DSR	If a connection to a device port is currently in session, and the DSR signal transitions to a de-asserted state, the connection disconnects immediately. Disabled is the default unless dial-in, dial-out, or dial-back is enabled for the device port.

Table 9-51 New Port - Configure Tab - IP Settings

IP Setting	Description
Enable Telnet In	Enables access to this port through Telnet. Disabled by default.
Enable SSH In	Enables access to this port through SSH. Disabled by default.
Enable TCP in	Enables access to this port through a raw TCP connection. Disabled by default. ***Note:*** *When using raw TCP connections to transmit binary data, or where the break command (escape sequence) is not required, clear the* ***Break Sequence*** *of the respective device port.*
Port	Automatically assigned Telnet, SSH, and TCP port numbers. You may override this value, if desired.
Authenticate	If selected, the SLM requires user authentication before granting access to the port.
Terminal Rows	Value to use when creating a terminal window (by Java applet) to that port.
Terminal Columns	Value to use when creating a terminal window (by Java applet) to that port.

2. Click the **Add** button. A confirmation message displays, and the port is now listed below the Ethernet device on the menu tree.

Updating or Deleting a Port

Administrators and permitted Ethernet Device Account groups can update or delete a port.

To delete a port:

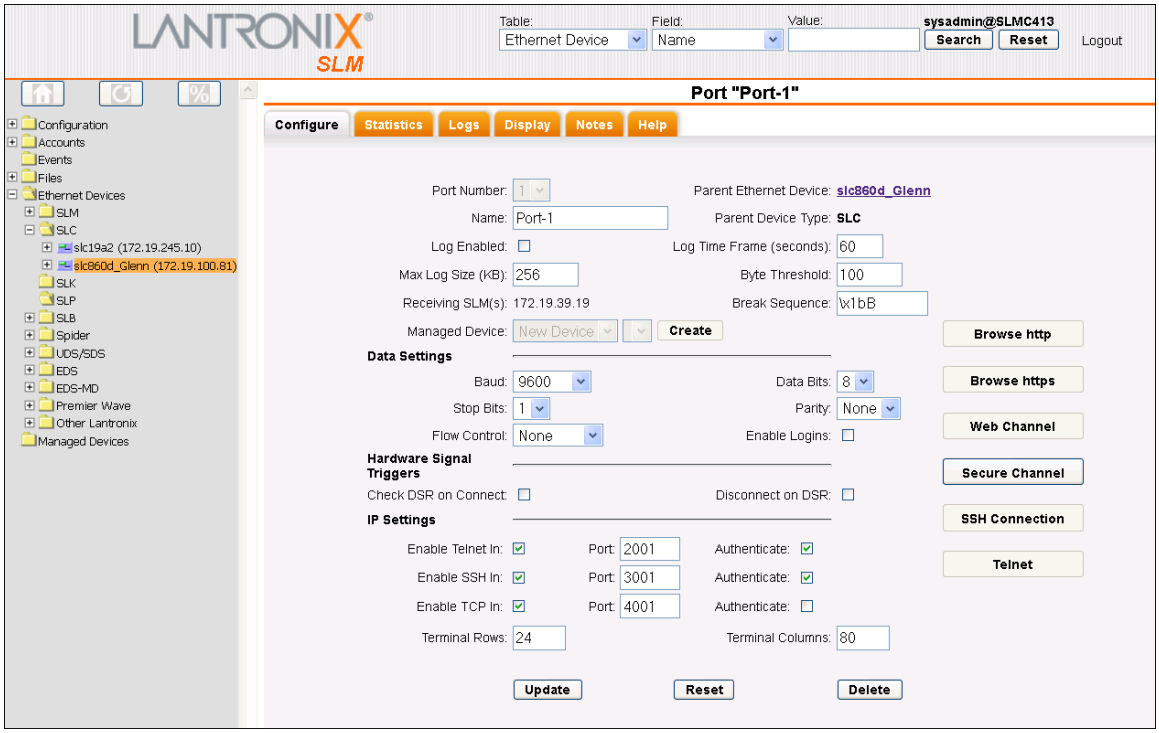
1. On the device's **Ports** tab, click the **Edit** icon to the left of the port name,

OR

On the device's menu tree, select the port.

The following page opens:

Figure 9-52 Port Page - Configure Tab



Note: *The page below shows and SLC port. Devices other than the SLC do not display as much information.*

2. Click the **Delete** button.
3. In response to the request for confirmation, click **OK**. A message confirming the deletion displays.

   The deleted port is no longer listed on the Ethernet device's menu tree or on the device's **Ports** tab.

To update a port:

1. Add or update information as desired. In addition to the fields completed when adding a port, complete the following fields:

Table 9-53 Port - Configure Tab

Port Setting	Description
Managed Device	If desired, create a managed device from the port. See *Creating Individual Managed Devices (on page 197)*. ***Note:*** *This field is unavailable if no Managed Device Groups exist in the system.*
TCP Port for Terminal (SCS and SLP)	Port number to use when establishing a Telnet connection via that port. A value of zero means use the default port (which is 23); otherwise use the entered value.

2. Click the **Update** button. When the update is complete, a confirmation message displays.

Note: *Port configuration fields differ depending on the parent device type.*

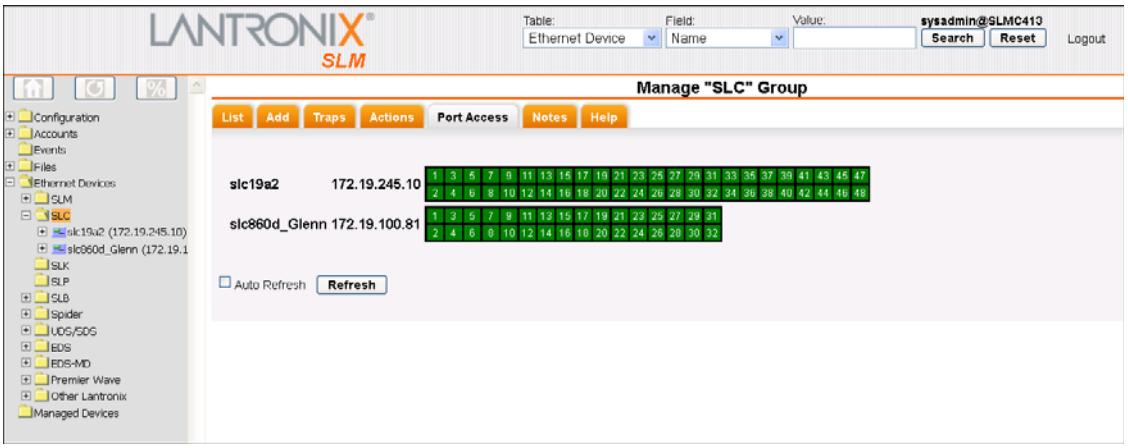
Connecting Directly to the Port of an SLC or SLB

You can get quick secure channel access to any port on any SLC (or SLB).

To gain quick secure channel access to an SLC port:

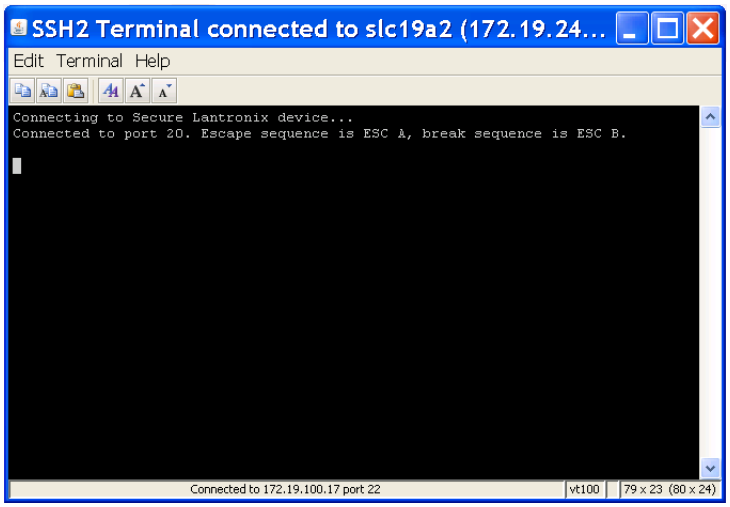
1. On the Manage SLC Group Page, click the **Port Access** tab. The following page displays:

Figure 9-54 Manage SLC Group Page - Port Access Page



2. Click the desired port on the specific SLC. The following page displays:

Figure 9-55 Connection to Selected SLC Port



Statistics

Users authorized to view or interact with the port may view status and statistics about it.

To view port status and statistics:

1. On the Port page, click the **Statistics** tab. The following page opens:

Figure 9-56 Port Page -- Statistics Tab

The page displays port status and counters.

2. To see the current statistics, click the **Refresh** button.
3. To clear the port counters, select the **Clear** port counters check box and click the **Refresh** button.

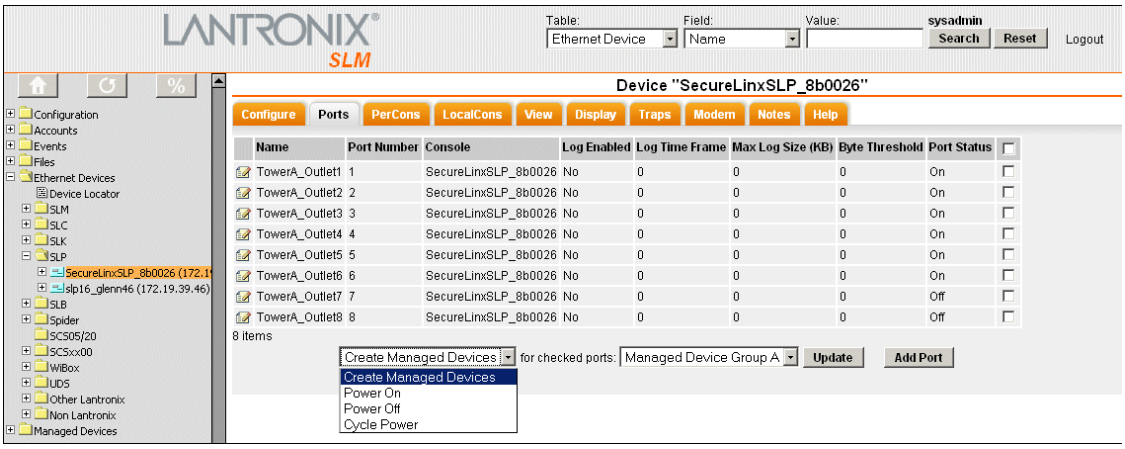
Applying Power to SLP Ports on a Single Device

You can power on, power off, or cycle power on multiple ports on an SLP.

To manage power on multiple ports of an SLP:

1. On the SLP's Device page, click the **Ports** tab. The following page opens:

Figure 9-57 SLP's Device Page -- Ports Tab



2. Select the ports whose power you want to power on, power off, or cycle.

3. From the drop-down list at the bottom of the page, select the action you want to take (**Power On, Power Off**, or **Cycle Power**).

4. Click the **Update** button.

Viewing Port Logs

Depending on the type of device, you can view one or more port and session logs on the Port page.

To view logs:

1. On the Port page, click the **Logs** tab. The following page displays:

Figure 9-58 Port Page - Logs Tab

2. To view a log, select the log from the appropriate drop-down list:

Note: *The SLC enables you to view three types of logs, while other devices enable you to view only the current session.*

Table 9-59 Port - Logs Tab

Port Log Setting	Description
SLC/SLB Portlog	Select the log of this particular SLC or SLB device port.
SLC/SLB Port Active	Select the log of a currently active SLM user session to the port.
SLC/SLB Port Saved	Select a session log of a saved SLM user session to the port.

3. Click the **View** button. The log displays on the **Display** tab.

Port Commands

`set ethernetdevice port`

Syntax

```
set ethernetdevice port <Device Name or IP Address> portnumber <Port
Number> <one or more parameters>
```

Parameters

`[name <Port Name>]`

`[<on|off|cyclepower>]` (available for SLP only)

Powers Ethernet device port on or off.

Example

To power up SLP outlet 2:

```
set eth port slp-sunset po 2 state on
```

Description

Finds a port by device name or IP address along with the port number and modifies port parameters.

`show ethernetdevice port`

Syntax

```
show ethernetdevice port <Device Name or IP Address> all
show ethernetdevice port <Device Name or IP Address> portnumber
<Port Number>
```

Description

Finds an Ethernet device using device name or IP address and displays port information.

`show ethernetdevice search port`

Syntax

```
show ethernetdevice search port <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
[portnumber <Port Number>]
```

Examples

```
show ethernetdevice search port name waimea-port
show ethernetdevice search port name waimea portnumber 2
```

Description

Displays all ports that match the criteria entered.

```
show port
```

Syntax

```
show port <name>
```

Type `show port all` to display index.

Example

`show port slc` displays all Ethernet ports whose name starts with "slc."

Description

Searches Ethernet ports by port name and displays port information.

```
show port all
```

Syntax

```
show port all
show port
```

Displays all Ethernet ports.

```
show port index
```

Note: *Type* `show port all` *to display index.*

Syntax

```
show port index <number>
```

Description

Displays Ethernet ports by index.

10: Managed Devices

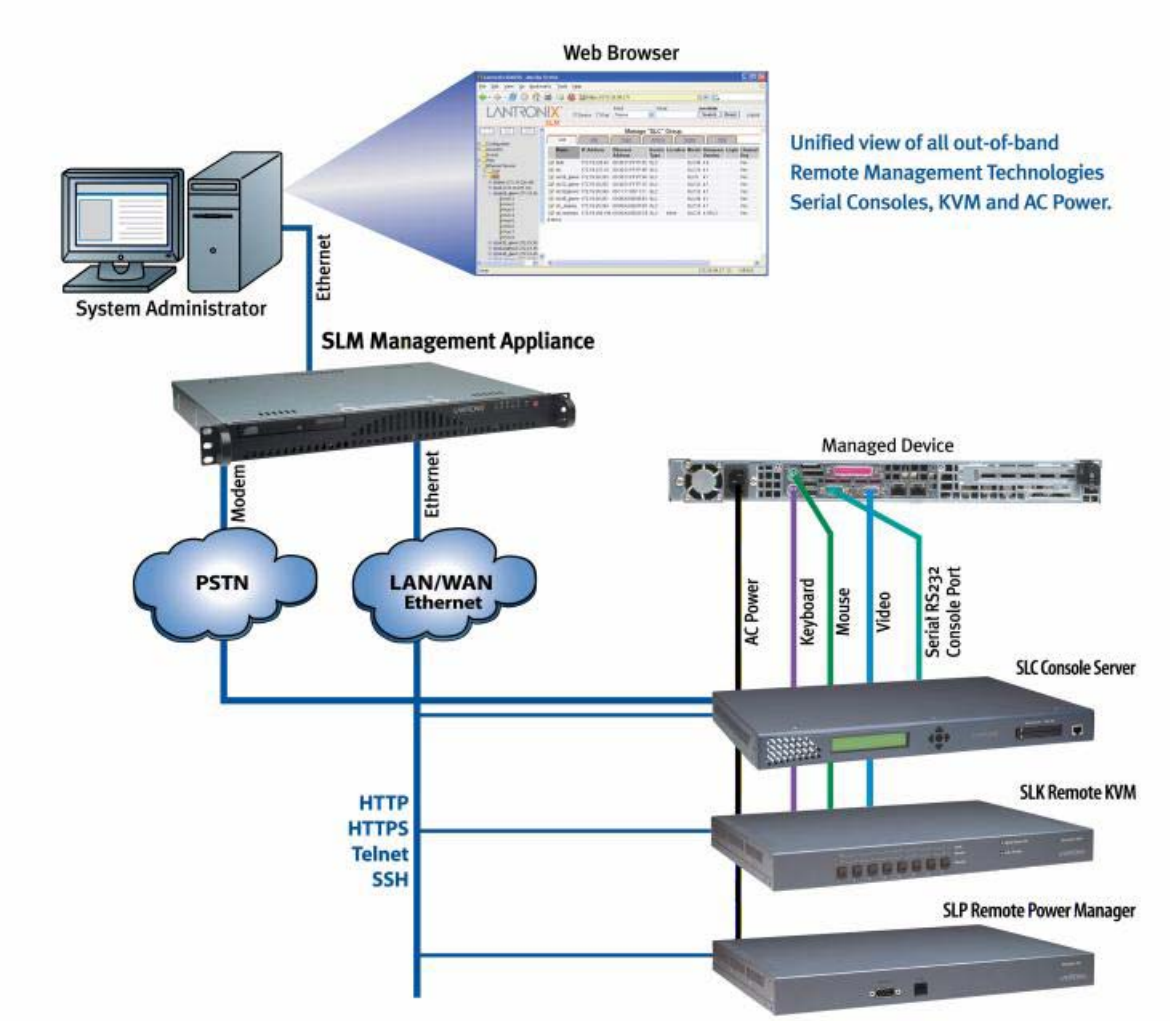
The SLM can treat any device connected to a port or connected to the local network as a managed device. Furthermore, multiple managed device objects in the system may be fused into a single managed device to streamline managed device operations and access.

For example, a single device (e.g., a UNIX server) may be connected to an SLC by a serial port, to an SLP by a power connector, and to an SLK by a KVM port. You could manage these three individual managed devices separately. However, if you fuse the individual managed devices into one virtual managed device, you can then manage the SLC, SLP, and SLK connections from a single SLM web page.

Each virtual managed device in the SLM system can include a connection to:

- 1 SLC or SLB serial port
- 1 SLK or Spider KVM port
- 2 SLP or SLB power ports
- 1 local Ethernet device

Figure 10-1 Virtual Managed Device



To create individual managed devices and fuse individual devices into a virtual managed device, you have the following options:

- **On the Port or Device Page:** Create a new managed device or fuse a new managed device into an existing managed device.
- **On the Ports Page:** Create one or more managed devices at the same time.
- **On the Managed Device Group Page:** Select two or more individual managed devices and fuse them to create a virtual managed device.

Managed Device Groups

Managed devices are assigned to Managed Device Groups so that users can easily locate them.

Administrators, authorized Ethernet Device Account group users, and authorized Managed Device Account Group users can organize the devices attached to Ethernet ports into groups. For example, an administrator may want to create groups by location, type of device, or user. A Managed Device Group may include devices attached to the ports of several different Ethernet devices.

The administrator creates custom groups of managed devices and then assigns individual devices to the groups. For example, a group called Lab 1 might include all devices attached to the ports of Ethernet devices being tested. The administrator and permitted users can delete a Managed Device Group.

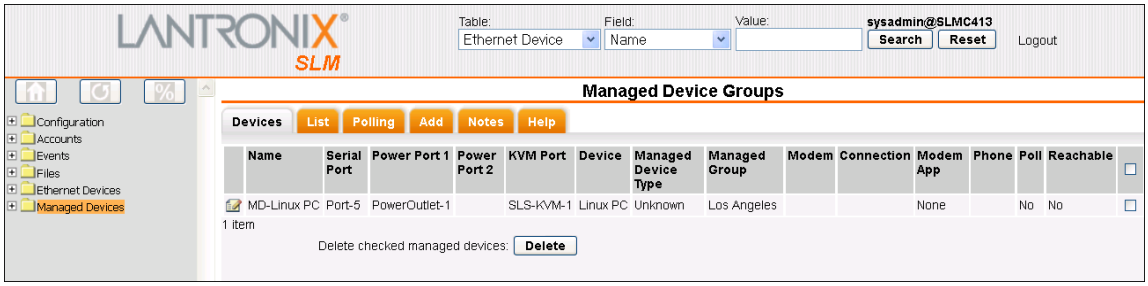
Viewing All Managed Devices

You can view a list all managed devices in the system.

To view all managed devices:

1. On the menu, click **Managed Devices**. The Devices tab on the Managed Device Groups page opens.

Figure 10-2 Managed Device Groups Page - Devices Tab



2. View the following information about each managed device:

Table 10-3 Managed Device Groups - Devices Tab

Managed Device Setting	Description
Name	Name of the managed device.
Serial Port	Name of an SLC or SCS serial port that is connected to this managed device.

Managed Device Setting	Description
Power Port 1	Name of an SLP power port that is connected to this managed device.
Power Port 2	Name of an SLP power port that is connected to this managed device.
KVM Port	Name of an SLK port that is connected to this managed device.
Device	Name of a local Ethernet device.
Managed Device Type	Type of managed device (e.g., Solaris Server or Linux Server). ***Note:*** *If the managed device type is set to Windows, a* ***Remote Desktop*** *option becomes available. If set to Linux Server, the a* ***VNC*** *option becomes available.*
Managed Group	Name of the Managed Device Group to which the managed device belongs.
Modem	Name of the modem (if any) to be used when connecting to the managed device.
Connection	Name of the connection to be used with modem access.
Modem App	Application to invoke for the connection (e.g., Secure Channel, SSH, Telnet).
Phone	Telephone number of the modem on the managed device.
Poll	Indicates whether to check the managed device for modem connectivity during modem polling testing.
Reachable	Indicates whether a connection to the modem on this managed device was successful the last time it was tested.

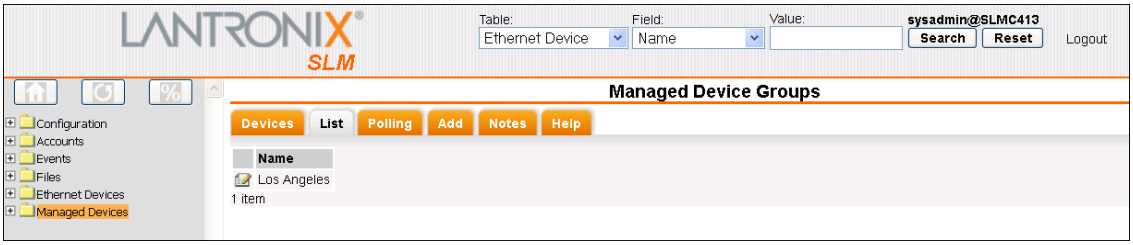
Viewing Managed Device Groups

You can view a list of all the Managed Device Groups and view devices by group.

To view a list of Managed Device Groups:

On the menu, click a device under **Managed Devices**, and then click the **List** tab. The following page opens:

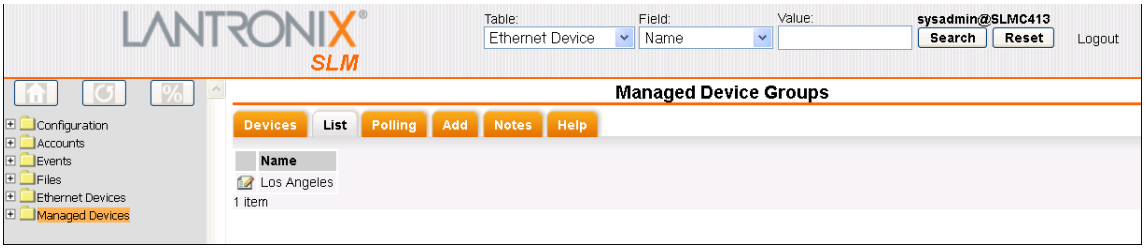
Figure 10-4 Managed Device Groups Page - List Tab



To view a list of devices belonging to a Managed Device Group:

1. On the menu tree, click the name of the device group. The following page opens:

Figure 10-5 Managed Device Group Page - List Tab



2. View the information about each device:

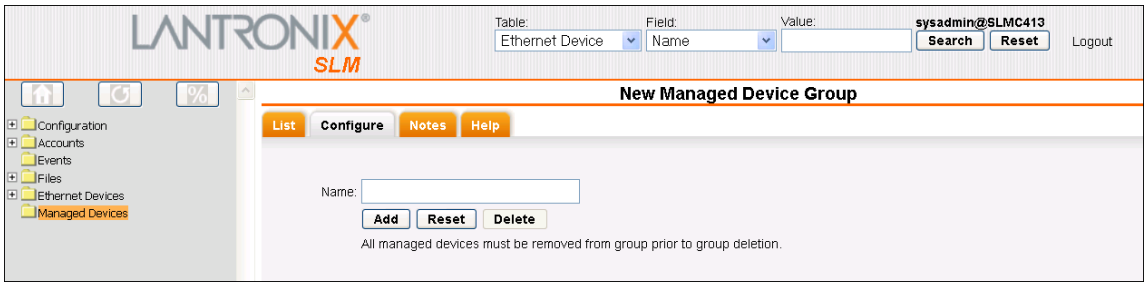
Adding a Managed Device Group

The administrator creates custom groups of managed devices and then assigns individual devices to the groups. For example, a group might include all devices attached to the ports of Ethernet devices being tested.

To add a Managed Device Group:

1. On the menu, click **Managed Devices**, and then click the **Add** tab. The following page opens:

Figure 10-6 New Managed Device Group Page - Configure Tab



2. In the **Name** field, enter the name of the Managed Device Group.
3. Click the **Add** button.
4. Expand **Managed Devices** on the menu tree. The custom group displays as a folder.

Note: *A managed device may belong to only one Managed Device Group.*

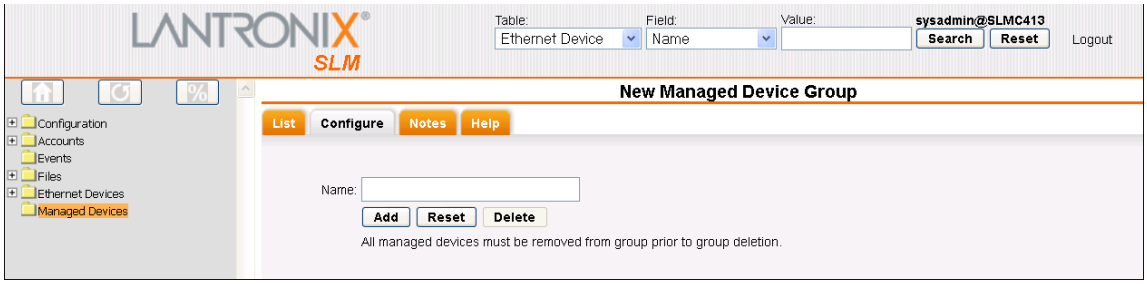
Updating or Deleting a Managed Device Group

The administrator can update or delete a Managed Device Group.

To update or delete a Managed Device Group:

1. On the menu, click the **Managed Device Group** and then the **Configure** tab. The following page opens:

Figure 10-7 Managed Device Group Page - Configure Tab



To update a Managed Device Group:

1. Change the name of the group and click the **Update** button. A confirmation message displays.

To remove the Managed Device Group:

Note: *You can only delete a Managed Device Group that has no devices assigned to it*

1. Click the **Delete** button.
2. In response to the confirmation request, click **OK**. A message confirming the deletion displays. The menu no longer displays the Managed Device Group.

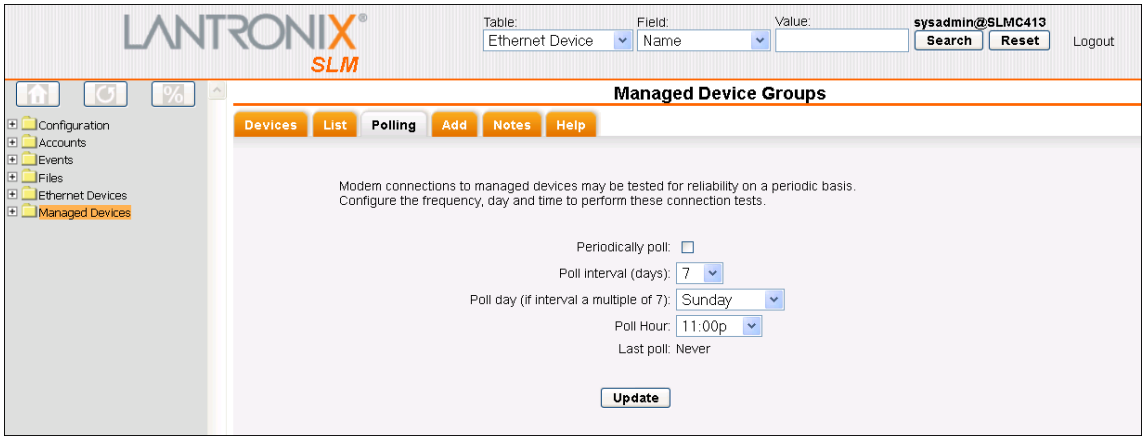
Configuring Polling Settings

The system administrator or permitted user can specify polling settings for the Managed Device Group. The SLM polls the Managed Device Group's connections according to these settings.

To configure polling settings:

1. On the menu, click **Managed Devices**, and then click the **Polling** tab. The following page opens:

Figure 10-8 Managed Device Groups - Polling Tab



2. Enter the following information:

Table 10-9 Managed Device Groups - Polling

Polling Setting	Description
Periodically poll	Select the check box to enable periodic polling of the Managed Device Group's connections. Disabled by default.
Poll interval (days)	From the drop-down list, select the number of days between polls. The range is between 1 and 30. The default is 7.
Poll day	
(if interval a multiple of 7)	If the poll interval is a multiple of 7, from the drop-down list, select the day of the week on which the SLM should poll the connections. Default is Sunday.
Poll Hour	Enter the time of day at which the SLM should poll the connections. Default is 11:00p.

3. To save the settings, click the **Update** button.

Managed Device Group Commands

`show manageddevice all`

Syntax

```
show manageddevice all
show manageddevice
```

Description

Displays information about all managed devices.

`show manageddevice group`

Syntax

`show manageddevice group <Group Name> group name`

Description

Displays all managed devices by Managed Device Group.

`show manageddevice groupnames`

Syntax

`show manageddevice groupnames`

Description

Displays all Managed Device Group names

Connecting to a Managed Device

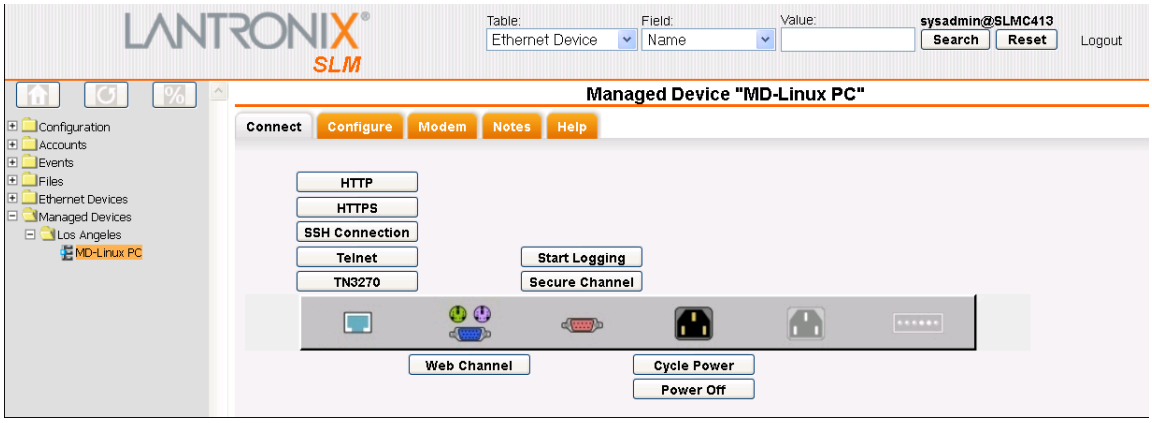
The **Connect** tab on the Managed Device page provides various methods of connecting directly to a managed device. The method depends on the type of Lantronix device server or modem connected to the managed device. The ability to connect also depends on the user's permissions.

To view connection methods to a managed device:

1. On the menu, select the managed device. The following page opens:

Note: *This example shows multiple connections being managed.*

Figure 10-10 Managed Device Page -- Connect Tab



An icon bar contains a series of icons representing the types of connections the SLM can make to managed devices. Buttons above or below the icons enable you to connect directly to the managed device. Icons for options not configured into the device are unavailable.

In the example above, the button below the **SLK** icon enables you to connect to the managed device through a KVM port on an SLK.

Note: *For more information about connection methods, see* *Connecting to Ethernet and Managed Devices (on page 224)**.*

Table 10-11 Connection Icons and Buttons on the Connect Tab

Icon	Connection Buttons	Description
		**Network connection:** Enables the SLM to connect to a managed device directly by means of HTTP, HTTPS, Secure Channel, Web Channel, SSH Connection, or Telnet. ***Note:*** *If the managed device incorporates a local Ethernet device, and that device type is set to Windows, then a* ***Remote Desktop*** *button displays. If the managed device type is set to Linux Server, a* ***VNC*** *button displays.*
		**KVM HTTP** connection: Enables the SLM to connect to the managed device through a port on an SLK or Spider using a nonsecure web connection. **KVM HTTPs** connection: Enables the SLM to connect to the managed device through a port on an SLK or Spider using a secure web connection.

Icon (continued)	Connection Buttons	Description
	Start Logging Secure Channel	**SLC Serial Connection:** Enables the SLM to connect to the managed device through an SLC serial port by secure channel and to cause the managed device to start logging to an SLC. SLCs display the **Secure Channel** button. SCSs as well as Other Lantronix and Non-Lantronix devices display the **SSH Connection** button for the serial port. ***Note:*** *If logging is on, the **Stop Logging** button displays instead of the **Start Logging** button, and vice versa.*
	Cycle Power Power On Power Off	**Power connection:** Enables the SLM to control power on the managed device through an SLP port. Two power connections are available. ***Note:*** *If the* SLM *detects that the power is on, then only the **Power Off** and **Cycle Power** buttons display. If the* SLM *detects that the power is off, only the **Power On** button displays. If the state of the power connection is not known, all buttons display (but you also get a message letting you know that the state was not detectable).*
	Connect Call Back	Modem: Enables the SLM to connect to the managed device through the telephone network. The **Connect** button displays when no session has been established and during session negotiation. Refresh the page after establishing a session, and this button reads “Disconnect”. If you click the **Disconnect** button, be sure to refresh the page as the session may not have terminated when the new page was rendered. The **Call Back** button displays under the following conditions: ◆ The SLM is connected to a modem. ◆ The Managed Device is managing either an SLC or SLB Ethernet device. ◆ The SLC or SLB is configured for call back operations. This means that on the **Modem** tab for that Ethernet device, **Modem Connection** is **Text**, and there is a modem telephone number. Also, on the **Modem Connection** page, **Call Back** is selected.

2. To identify the port or device on the device server to which the managed device is connected, move the pointer over the icon.
3. To go directly to the port or device page, click the icon.

Note: *A drop-down list of persistent connections may display below the icon bar. Use the **Connect** button to the right of the list to connect to the managed device through the selected persistent connection.*

Creating Individual Managed Devices

The administrator and permitted users can create individual managed devices in the following ways:

- From a port
- From a list of ports
- From a device

From a Port

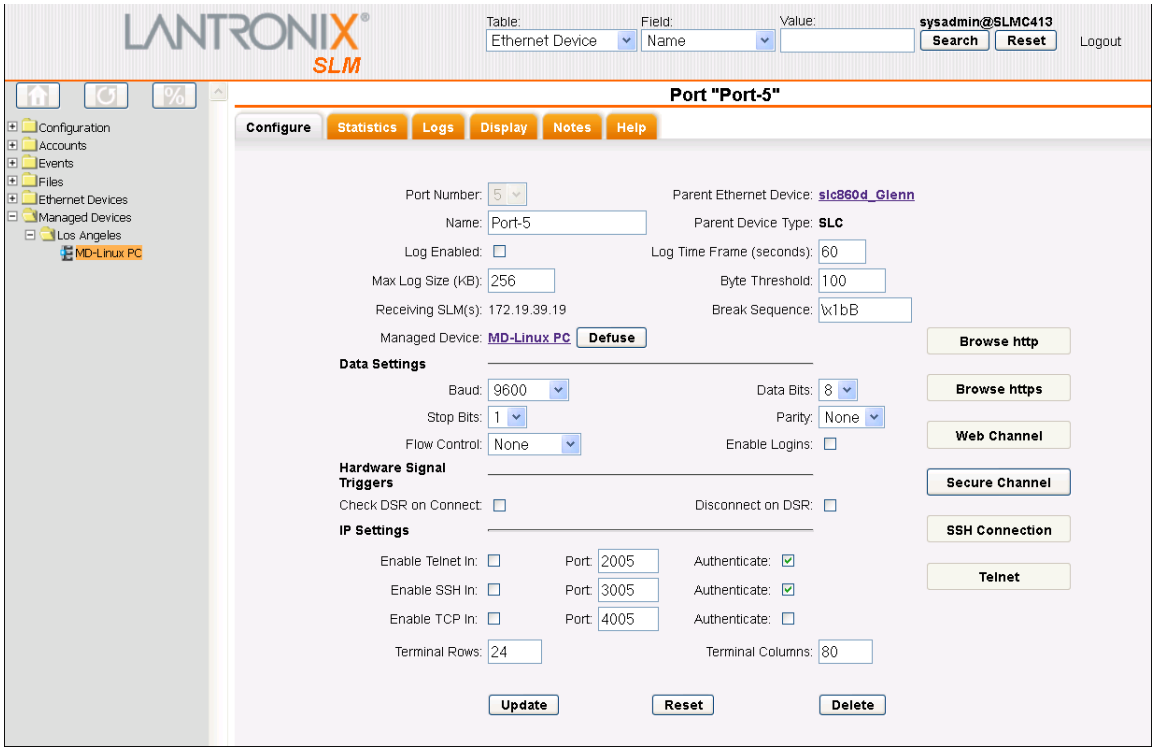
You can create a managed device from a port on a Lantronix device server such as an SLC, SLK, SLP, SCS05/20, or SCSxx00. The managed device represents the physical device connected to the port.

To create a managed device from a port:

1. On the menu, click **Managed Devices > (specific managed group) > (specific managed device) > Configure tab > Serial Port**. The Port page opens.

Note: *In this example, we show a port on an SLC.*

Figure 10-12 Port Page - Configure Tab



2. Leave **New Device** in the **Managed Device** drop-down list, and select the Managed Device Group to which the new device will belong.
3. Click the **Create** button.

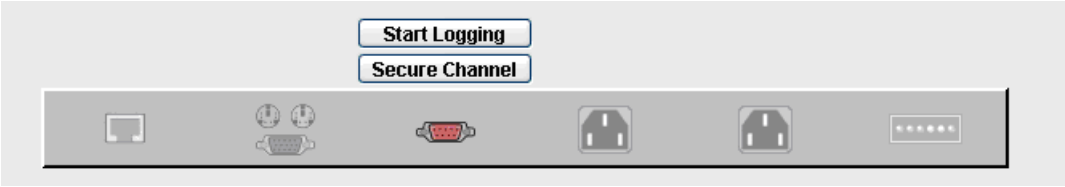
The managed device field displays as a link to the managed device's configuration page, and the menu tree lists the new managed device in the assigned Managed Device Group.

A **Defuse** button displays to the right of the link. Click the button to remove this port from the managed device. If the port was the only component of the managed device, the **Defuse** button removes the managed device itself from the system.

Figure 10-13 Link to a Managed Device Page - Configure Tab

4. On the menu, click the name of the new managed device. The Managed Device page Connect tab displays the available connection buttons for the serial connection.

Figure 10-14 Managed Device Page - Connect Tab



In a similar manner, you can create individual managed devices from SLP ports and SLK connectors.

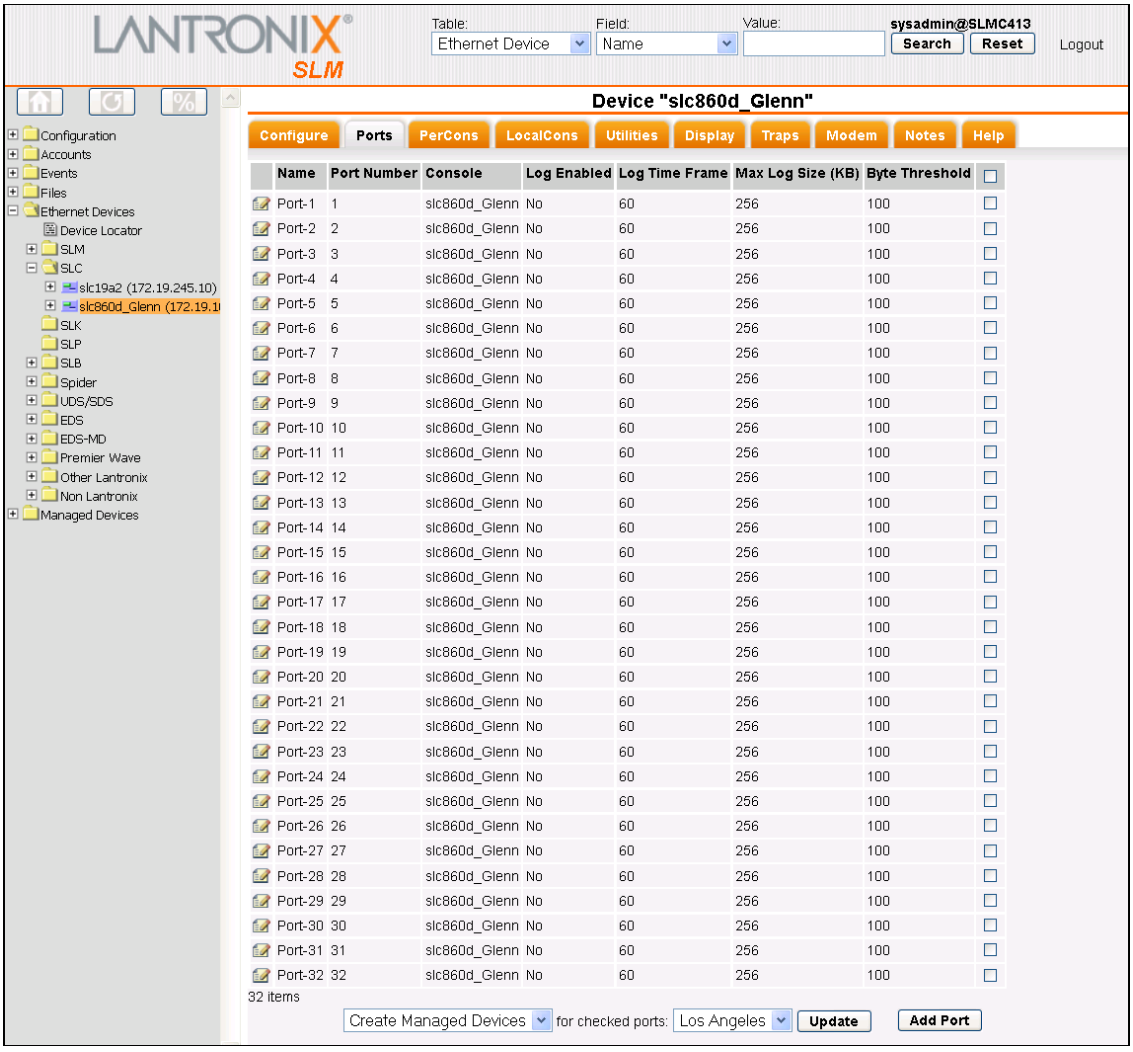
From a Ports List

You can create one or more managed devices from an Ethernet device's ports list. In this example, we show ports on an SLC.

To create one or more managed devices on the Ports page:

1. On the Device page, click the **Ports** tab. The following page opens:

Figure 10-15 Device Page - Ports Tab



2. Select the check box for one or more ports on the SLC that will be connected to serial devices.
3. From the drop-down list box at the bottom of the page, select **Create Managed Devices**.
4. From the **for checked ports** drop-down list box, select the Managed Device Group to which the selected managed device(s) will belong.
5. Click the **Update** button.
6. Ine response to the confirmation request, click **OK**. The menu tree displays the new managed device(s) in the assigned Managed Device Group.
7. If desired, repeat *step 2* through *step 6* above to create managed devices and assign them to other Managed Device Groups.

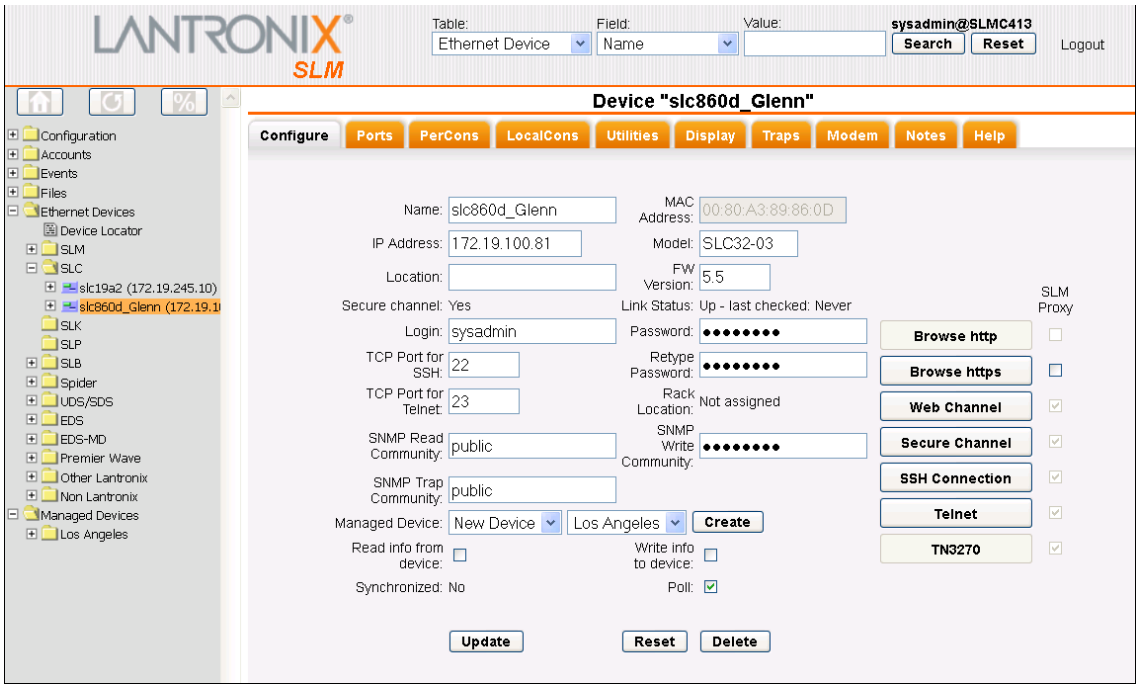
From an Ethernet Device

Administrators and permitted users can create a managed device from any auto-discovered or manually added Ethernet device, such as a server or a switch, and assign it to a Managed Device Group.

To create a managed device from an Ethernet device:

1. On the menu, click the name of the device (in this example, an SLC). The following page opens:

Figure 10-16 Device Page for an SLC



2. In Managed Device, leave New Device and from the Group drop-down list, select the Managed Device Group to which the new managed device will belong.
3. Click the **Create** button. When the page redisplays, the Managed Device field displays as a link to the new managed device, and the assigned Managed Device Group in the menu lists the new managed device. A **Defuse** button displays to the right of the link.
4. Click the **Defuse** button to remove this device from the managed device, as desired. If the device was the only component of the managed device, the **Defuse** button removes the managed device itself from the system.
5. To view the Connect tab for the managed device, click the name of the managed device on the menu. Above the network icon are buttons for connecting to the device through the network.

Note: *For more information about connection methods, see* *Connecting to Ethernet and Managed Devices (on page 224)**.*

Fusing Managed Devices

While the SLM can communicate with a device connected to a port of a Lantronix device server (e.g., an SLC, SLK, or SCS05/2) individually, it is often more convenient to communicate from a single web page to a virtual managed device composed of more than one connection to the device. The process of creating the virtual managed device from individual managed devices is called fusing. One convenient application is to fuse the SLC, SLK, and SLP port connections that manage a single Ethernet device such as a server or a switch.

Methods of Fusing

There are two methods of fusing individual managed devices together:

- On the Port or Device page, fuse a new managed device with an existing one.
- On the Managed Device Group page, fuse several existing managed devices at once.

Guidelines

Follow the guidelines below when fusing managed devices:

- The managed devices must be in the same Managed Device Group.
- A virtual managed device can consist of only one device (local), one SLC port, one SLK or Spider port, two SLP ports, and one modem.

Fusing a Port with an Existing Managed Device

The Port Configure tab provides an opportunity to merge a single port with an existing managed device. Previously, we showed an example of creating a managed device from an SLC port.

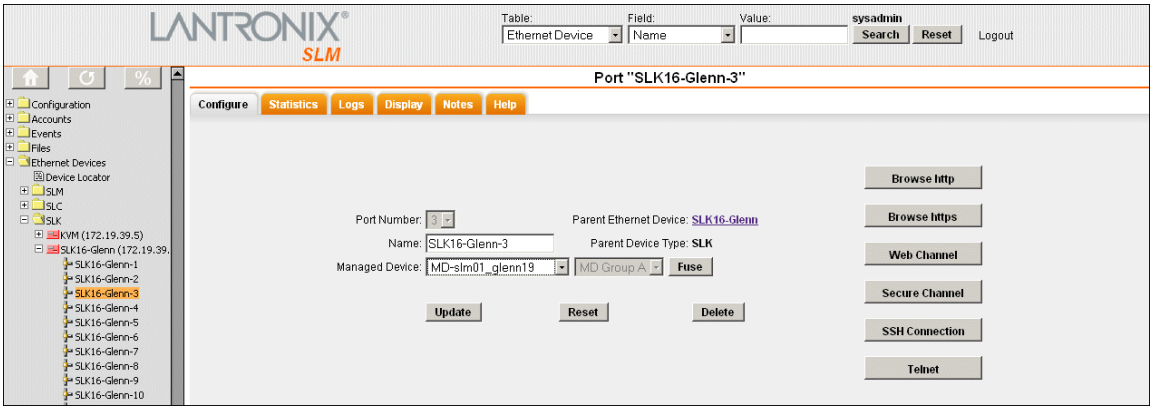
In the following example, as we configure an SLK port, we fuse it with the SLC port managed device.

To fuse a port with an existing managed device:

1. On the menu tree of an Ethernet device such as an SLC or SLK, select the port.

   The following page opens:

Figure 10-17 Fusing on a Port Page - Configure Tab



2. From the Managed Device drop-down list, select the existing managed device.
3. Click the **Fuse** button (changed from the **Create** button).

The Managed Device field now displays as a link to the virtual managed device, which has the name of the original managed device.

A **Defuse** button displays to the right of the link. Click the button to remove this port from the managed device. If the port was the only component of the managed device, the **Defuse** button removes the managed device itself from the system.

4. To view the **Connect** tab, click the name of the virtual managed device in the menu.

Figure 10-18 Virtual Managed Device Page with Two Connections

There are four connection buttons above the Ethernet icon and one below the KVM icon , enabling you to connect to the physical managed device through the network and the SLK connection.

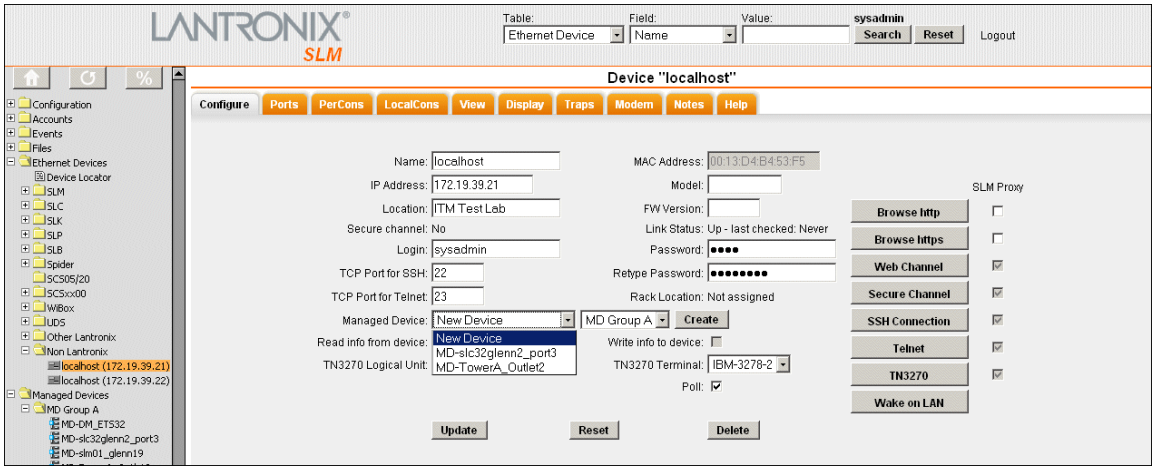
Fusing an Ethernet Device with an Existing Managed Device

The physical device to which a Lantronix device server or a modem is connected may be fused with an existing managed device.

To fuse a device with an existing managed device:

1. On the menu, click the name of the Ethernet device. In this example, we use a switch.

Figure 10-19 Fusing a Managed Device on the Device Page



2. From the Managed Device drop-down list, select the existing managed device.
3. Click the **Fuse** button (changed from the **Create** button).

   The Managed Device field now displays as a link to the virtual managed device, which has the

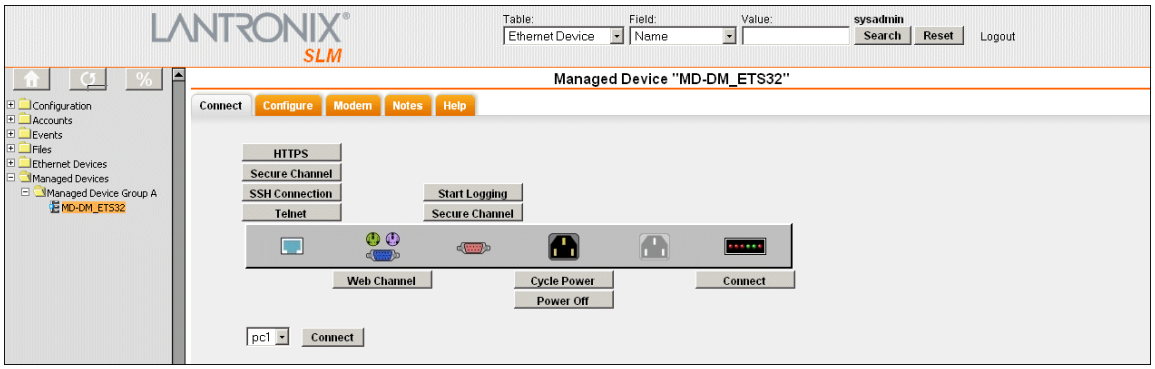
name of the original managed device. The virtual managed device has taken the name of the existing managed device and still displays in the Managed Device Group.

A **Defuse** button displays to the right of the link. Click the button to remove this device from the managed device. If the device was the only component of the managed device, the **Defuse** button removes the managed device itself from the system.

Continuing the One-at-a-Time Fusion Process

If you continue in this manner, fusing a new serial port managed device and then a new power managed device into the original managed device in the examples above, the Connect tab would look like this:

Figure 10-20 Virtual Managed Device on Managed Device Page - Connect Tab



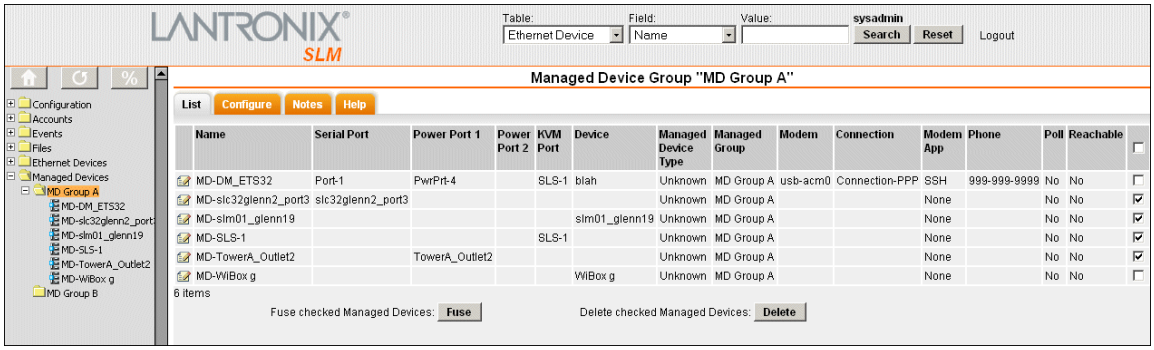
Fusing Managed Devices on the Managed Device Group Page

Another place to fuse individual managed devices is on the Managed Device Group page. Here you use a single web page to fuse multiple managed devices at the same time.

To use the Managed Device Group page to fuse managed devices:

1. On the menu, click the name of the Managed Device Group that includes the managed devices you want to fuse. This page that opens displays a table listing all the managed devices within the group.

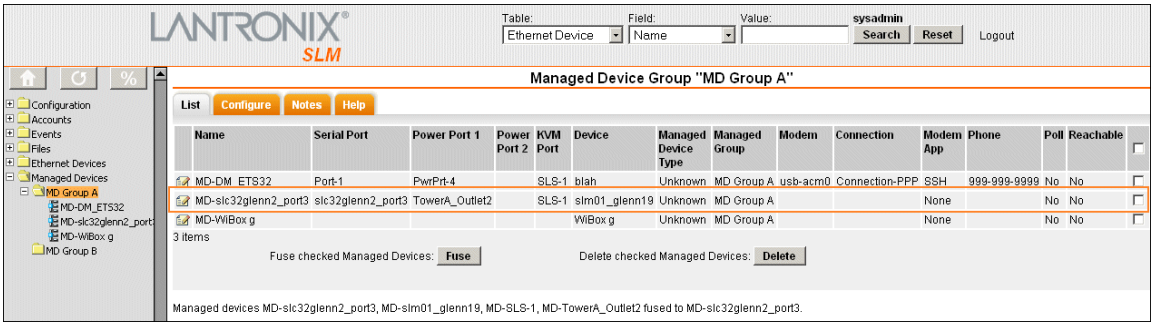
Figure 10-21 Managed Device Group - List Tab



2. Select the check box for each managed device you want to fuse.
3. Click the **Fuse** button.

4. In response to the confirmation request, click **OK**. The page redisplays:

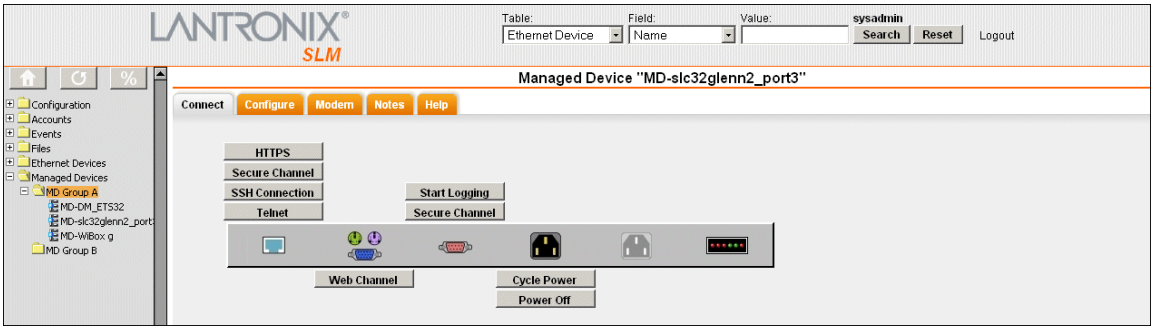
Figure 10-22 Managed Device Group Page - List Tab (After Fusion)



The components of the virtual managed device now display on the same row, and a message in the message area confirms the fusion. The virtual managed device takes the name of the individual managed device that was in the highest row. In the Managed Device Group on the menu, that name remains, but the other fused components do not.

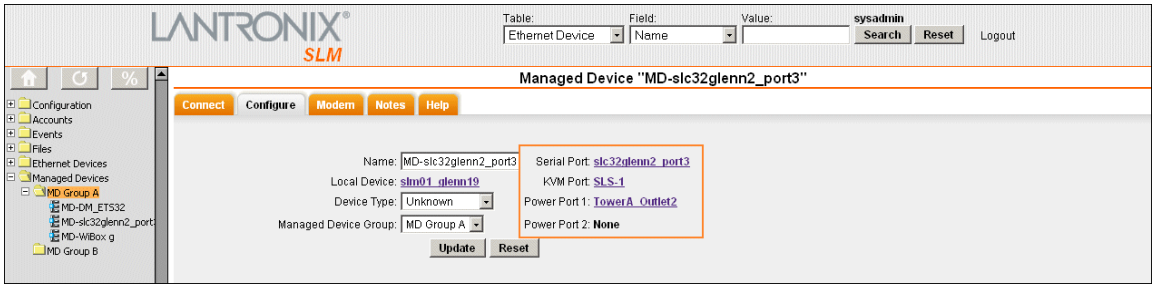
5. On the menu, click the virtual managed device. The Connect tab displays the components of the virtual managed device, each with the button(s) for connecting directly to each component.

Figure 10-23 Virtual Managed Device after Fusion



6. Click the **Configure** tab to see the list of managed devices that make up the virtual managed device.

Figure 10-24 Managed Device Page - Configure Tab



Note: *You can change the name of the virtual managed device, identify the device type if a local device is a component of the virtual device, and change the Managed Device Group to which the virtual managed device belongs.*

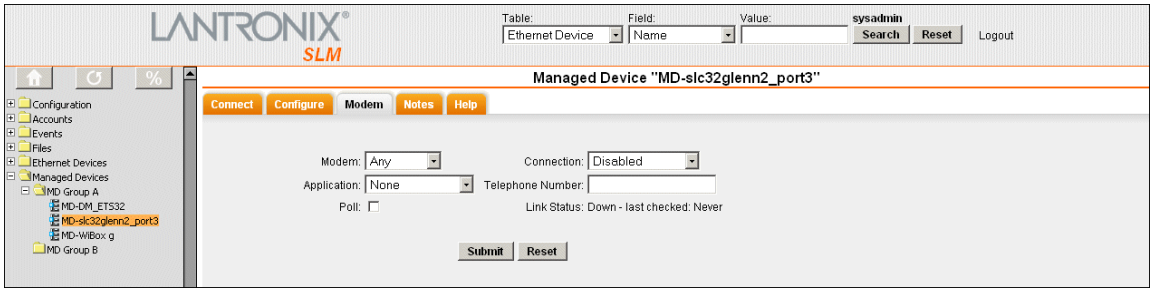
Configuring a Modem Connection to a Managed Device

It is useful to enable the SLM to connect over the telephone should a network connection fail. This is possible if, for example, the SLM has an internal or a physically connected modem, and a managed device such as a UNIX server on the network is connected to a modem .You can connect to an SLC through a modem if you configure the SLC as a managed device. Then the SLM can connect to the SLC's attached devices through the modem.

To configure a managed device to use a modem:

1. On a Managed Device page, click the **Modem** tab: The following page opens:

Figure 10-25 Managed Device Page -- Modem Tab



2. Enter the following information:

Table 10-26 Managed Device - Modem Tab

Modem Connection Setting	Description
Modem	From the drop-down list, select the modem, or set to Any to allow the SLM to choose the modem.
Connection	From the drop-down list, select the type of modem connection. Disabled by default. For information about types of modem connections, see on *Modem Management (on page 86)*.
Application	From the drop-down list, select the application for connecting to the managed device. The default setting is None. For example, if you select Telnet, the Telnet program launches to connect to the remote system after a PPP connection is established. If you select None, a set of buttons (Secure Channel, SSH, Telnet, HTTP, and HTTPS) displays, enabling you to select a connection method.
Telephone Number	Telephone number of the modem on the managed device
Poll	Select the check box to enable polling of the modem connection Disabled by default. See *Configuring Polling Settings (on page 194)*.
Link Status (display only)	Indicates whether the modem connection is active.

3. Click the **Submit** button. A message in the message area indicates that the managed device has been updated.

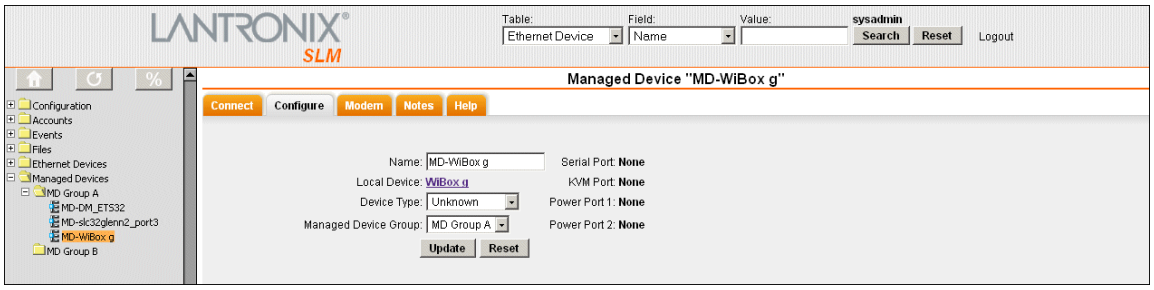
Configuring a Managed Device

The administrator and permitted users can configure a managed device.

To configure a managed device:

1. On the menu, click the name of the managed device, and then click the **Configure** tab. The following page opens:

Figure 10-27 Managed Device Page - Configure Tab



2. Edit the following information as desired:

Table 10-28 Managed Device - Configure Tab

Managed Device Setting	Description
Name	A name to identify the managed device.
Local Device	Name of an optional local Ethernet device that is being managed.
Device Type	From the drop-down list, select the type of device. Examples are **Cisco IOS, EMS, Firewall, Solaris Server**, and **Switch. Unknown** is the default. ***Note:*** *If you set the type to Windows, the **Remote Desktop** button displays on the **Connect** Tab. If the type is set to Linux Server, then a **VNC** button is offered.*
Managed Device Group	To change the group to which the managed device belongs, select the group from the drop-down list.

3. View the connection information in the column on the right:

Table 10-29 Managed Device - Configure Tab (View Only)

Connection Setting	Description
Serial Port	Indicates whether the managed device is connected to a serial port on an SLC, SLB or SCS.
KVM Port	Indicates whether the keyboard, video, mouse connector of the managed device is connected to a port on an SLK or Spider.
Power Point 1 and 2	Indicates whether the managed device is connected to a power port on an SLP or SLB.

4. To save any changes, click the **Update** button.

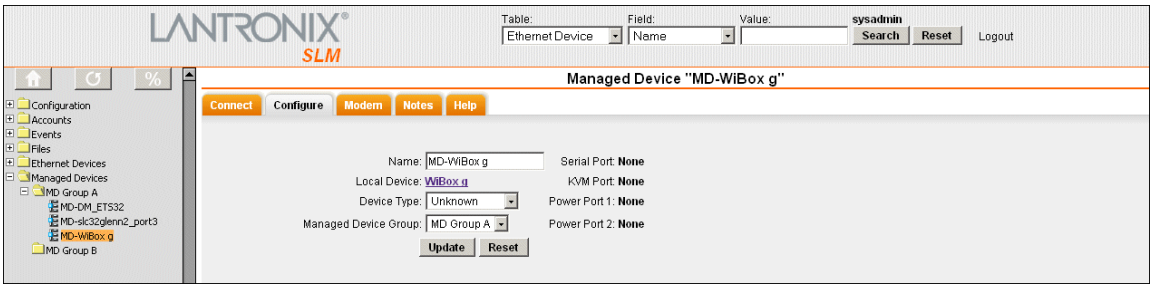
Updating or Deleting a Managed Device

The administrator and permitted users can update or delete a managed device.

To update a managed device:

1. On the menu, click the managed device. The following page opens:

Figure 10-30 Managed Device - Configure Tab



2. Add or change the entries and click the **Update** button.

To delete a managed device:

1. On the menu, click **Managed Devices**. The **Managed Devices - List** tab displays.
2. Check the managed devices that you wish to delete, and click **Delete** button at the bottom of the page.

Managed Device Commands

Administrators, Ethernet Account Users and Menu Only Users

`set manageddevice add`

Syntax

```
set manageddevice add <managedDeviceName> group <ManagedDeviceGroup>
<parameters>
```

Parameters

```
ethernetdevice <ethernetDevice|IP>
[port <portName|portNumber>]
```

Description

Create a new managed device from the specified Ethernet device or port.

set manageddevice assign

Syntax

```
set manageddevice assign <managedDeviceName> group <managedDeviceGroup>
[write|remove]
```

Description

Assigns or removes permissions for a managed device.

set manageddevice config

Syntax

```
set manageddevice config <Device Name> <one or more parameters>
```

Parameters

```
name <New Name>
powerport <1|2> state <on|off|cyclepower>]
[dialout <Dial Account Name|enable|disable>
modem <Modem Name>
```

To set modem parameters, you must specify the dial-out option.

```
disconnect modem
delete
phonenumber <phone number>]
application <ssh|telnet|http|none>]
```

Examples

```
set ma config port-1 name waimea-port-1
```

Specifies a managed device name (port-1) and renames it to waimea-port-1.

```
set ma config slp-sunset-port1 state off
```

Specifies a managed device name (slp-sunset-port1) and turns the power off.

Description

Finds a managed device-by-device name and modifies device parameters.

```
set manageddevice defuse
```

Syntax

```
set manageddevice defuse <managedDeviceName>
device|serial|power1|power2|kvm
```

Description

Defuses an Ethernet device or port from an existing managed device.

```
set manageddevice fuse
```

Syntax

```
set manageddevice fuse <managedDeviceName> ethernetdevice
<ethernetDevice|IP> [port <portName|portNumber>]
```

Description

Fuses an Ethernet device or port to an existing managed device.

```
set manageddevice index
```

Note: *Type show manageddevice all to display index.*

Syntax

```
set manageddevice index <number> <one or more parameters>
```

Parameters

```
assign group <managedDeviceGroup> [write|remove]
```

Assigns or removes permissions.

```
name <New Name>
powerport <1|2> state <on|off|cyclepower> (SLP, SLB and Spider Duo only)
delete
dialout <Dial Account Name|enable|disable>
modem <Modem Name>
```

To set modem parameters, you must specify the dial-out option.

```
disconnect modem
phonenumber <phone number>
application <ssh|telnet|http|none>
```

Examples

```
set ma config port-1 name waimea-port-1
set ma config slp-sunset-port1 powerport 1 state off
set ma index 1 delete
set ma index 1 dialout myaccount modem pci-s4 phone 3334444
```

If you set `dialout myaccount first` and then decide to set `modem` and `phonenumber` later, you still must specify `dialout myaccount` or `dialout enable`.

```
set ma index 1 dialout myaccount
set ma index 1 dialout enable modem pci-s4 phone 3334444
set ma index 1 disconnect modem
```

Description

Finds managed device by index and modifies device parameters.

```
set manageddevice index n defuse
```

Syntax

```
set manageddevice index n defuse device|serial|power1|power2|kvm
```

Description

Defuses an Ethernet device or port from an existing managed device.

set mgroup add <newManagedGroupName>

Syntax

set mgroup add <newManagedGroupName>

Description

Creates a new managed device group.

```
set mgroup delete <existingManagedGroupName>
```

Syntax

```
set mgroup delete <existingManagedGroupName>
```

Description

Deletes an existing managed device group. The group must be empty.

`show device`

Syntax

show device <device name>

Note: *Entries are not case sensitive.*

Description

Searches for and displays Ethernet or managed devices by device name. For example, if you specify `name slc`, the SLM searches for all Ethernet and managed devices whose name starts with `slc`.

`show device all`

Syntax

```
show device all
show device
```

Description

Displays all Ethernet and managed devices.

`show manageddevice account`

Syntax

`show manageddevice account <accountName>`

Description

Displays all managed devices viewable by a user account.

`show manageddevice accountgroup`

Syntax

`show manageddevice accountgroup <accountGroupName>`

Description

Displays all managed devices viewable by an account group.

`show manageddevice all`

Syntax

```
show manageddevice all
show manageddevice
```

Description

Displays information about all managed devices.

`show manageddevice config`

Syntax

`show manageddevice config <Device Name>`

Description

Displays the configuration of a managed device.

```
show manageddevice index
```

Note: *Type show manageddevice all to display index.*

Syntax

```
show manageddevice index <number>
```

Description

Displays managed devices by index.

```
show manageddevice list
```

Syntax

```
show manageddevice list
```

Description

Displays all managed devices in short form.

```
show manageddevice search
```

Syntax

```
show manageddevice search <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
```

Example

```
show manageddevice search name waimea-port
```

Description

Displays all ports that match the criteria entered.

Managed Device Users

```
set manageddevice config
```

Syntax

```
set manageddevice config <Device Name> <one or more parameters>
```

Parameters

```
[name <New Name>]
```

```
[state <on|off|cyclepower>]
```
(available for SLP, SLB and Spider Duo only)

Powers managed device on or off.

Examples

```
set ma config port-1 name waimea-port-1
```

Specifies a managed device name (port-1) and renames it to waimea-port-1.

```
set ma config slp-sunset-port1 state off
```

Specifies a managed device name (slp-sunset-port1) and turns the power off.

Description

Finds a managed device-by-device name and modifies device parameters.

set manageddevice index

Note: *Type* `show manageddevice` *all to display index.*

Syntax

```
set manageddevice index <number> <one or more parameters>
```

Parameters

`name <New Name>`

`powerport <1|2> state <on|off|cyclepower>]` (SLP, SLB and Spider Duo only)

Example

```
set ma port slp-sunset po 2 state on
```

Description

Finds managed device by index and modifies device parameters.

```
set manageddevice config <Device Name> disconnect modem
```

Syntax

```
set manageddevice config <Device Name> disconnect modem
```

Description

Finds managed device by name and disconnects modem.

```
set manageddevice index <number> disconnect modem
```

Note: *Type show manageddevice all to display index.*

Syntax

```
set manageddevice index <number> disconnect modem
```

Example

```
set ma index 2 disconnect modem
```

Description

Finds a managed device by index number and disconnects modem.

11: Operation and Maintenance

Depending on permissions, the typical user employs SLM to:

- Search for SLCs and other Ethernet devices, ports, and managed devices.
- Connect by browser, SSH, or secure channel to Secure Lantronix Management devices and to the managed devices connected to their ports.
- Access notes and logs about the Ethernet devices and their ports.

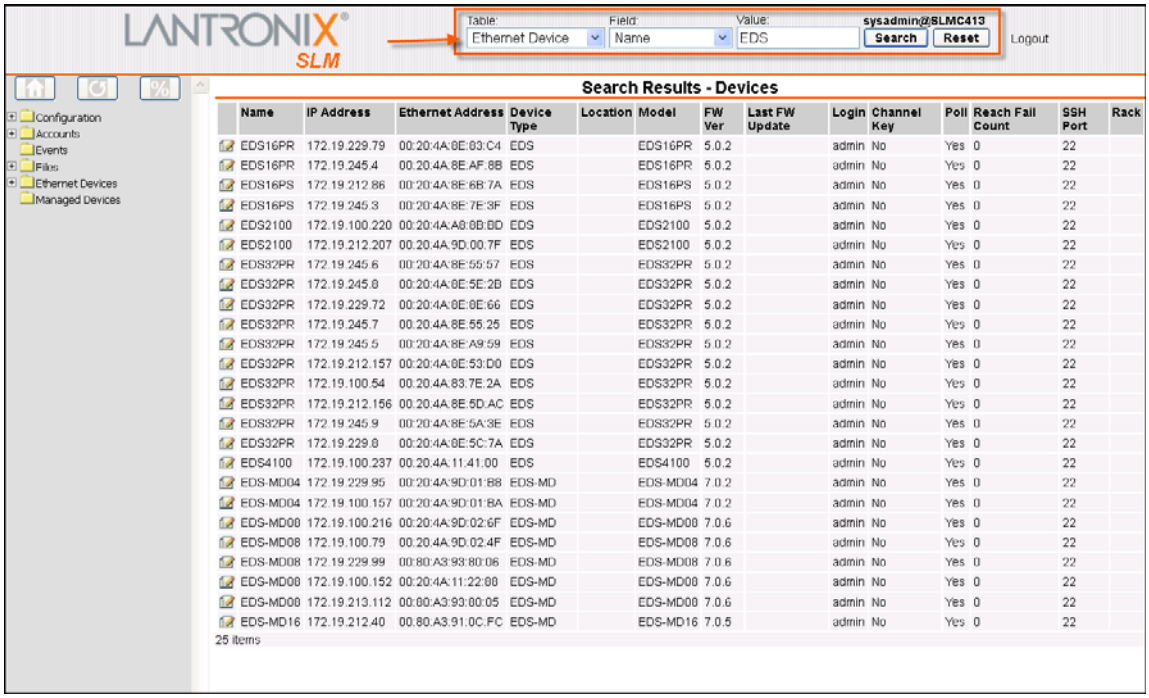
The administrator performs the following maintenance activities:

- Update SLM firmware and configurations
- Configure and manage log files
- Configure an SNMP agent
- View events
- Update SLC firmware

Searching for Ethernet Devices, Ports, Persistent Connections, Managed Devices, and Users

All pages in the web interface have three search fields at the top. Administrators and Ethernet Device Account groups can search by Ethernet device, port, and managed devices. Administrators with account rights can also search by user. Managed Device Account Groups can only search by managed device.

Figure 11-1 Search Fields



To view or make changes to any item returned in a search, click the **Edit** icon in the leftmost column. (If the search returns the item, you have rights to edit it.)

To clear the search fields, click the **Reset** button. To re-sort the list (e.g., alphabetically by name), click the header of the column you want to sort by.

All searches are case insensitive.

Search for an Ethernet Device

There are several criteria to use to search for an Ethernet device.

To search for Ethernet devices on the network:

1. From the Table drop-down list at the top of any page, select Ethernet Device.

2. From the Field drop-down list, select one of the following search fields and enter the corresponding Value. If you omit the value, the search returns all devices.

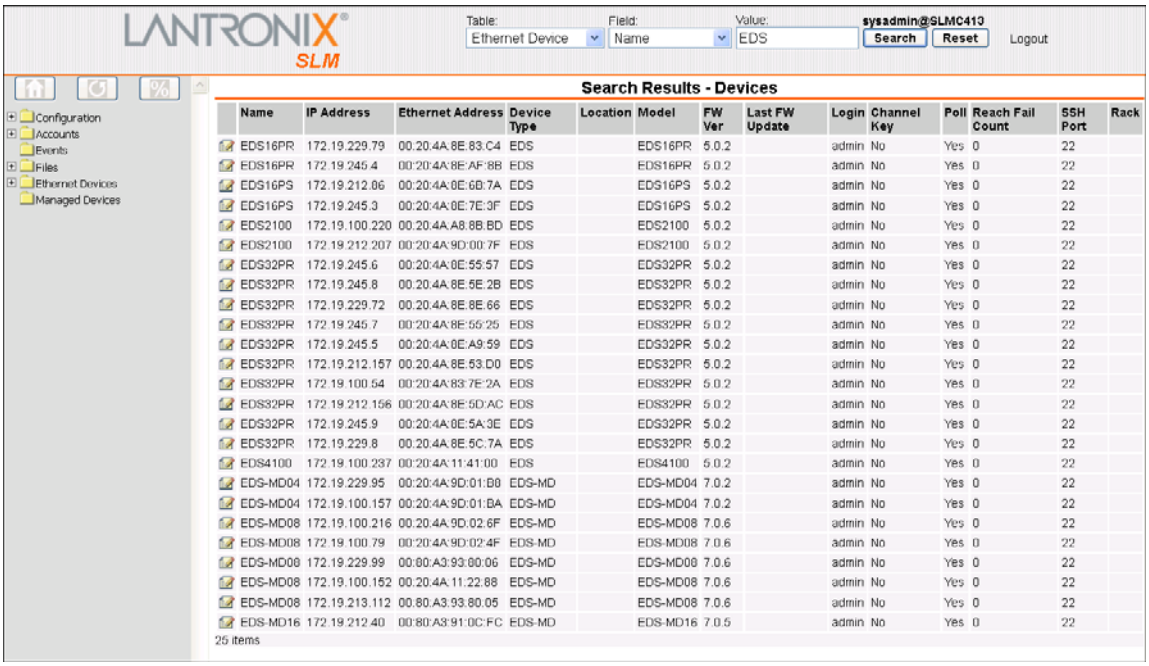
Note: *Searches are not case sensitive.*

Table 11-2 Available Search Fields

Ethernet Device Setting	Description
Device Fields	**Name**: The name of the device for which you are searching. You need type only as many characters as will identify the device. For example, **s** returns all devices with names starting with **s**. **IP Address**: The IP address of the device for which you are searching. You need enter only as many octets as will identify the device or group of devices. **Location**: The location of the device (or devices), for example, a room or building. You need type only as many characters as will identify the location. Thus, Irv returns all devices with locations starting with Irv, for example, Irvine. Case insensitive. **Model**: Model name of the device(s) (e.g., SLC16, SLM 2.0). **Firmware**: Version of the device's firmware (e.g., 4.0).

2. Click the **Search** button. The Search Results - Devices page opens, listing all devices that meet the search criteria that you have permission to see.

Figure 11-3 Example of a Search by "EDS" Ethernet Device



The following information (if available) displays for each device retrieved by the search:

Table 11-4 Device Search Results

Device Setting	Description
Name	Name of the device (e.g., SLC 4.0).
IP Address	IP address of the device.
Ethernet Address	Hardware or MAC address.
Device Type	SLC, SLM, Spider, etc.
Location	Place at the site, such as a room or a closet, where the unit is installed.
Model	Model name of the device (e.g., SLC48).
Firmware Version	Firmware release number (e.g., 2.1).
Last FW Update	Date of the last firmware update for the device.
Login	User name for accessing the device.
Channel Key	Yes indicates that a secure channel has been established between the SLM and the device. The Channel Key does not indicate whether or not there is an active secure channel communication session, but instead indicates whether or not a secure channel was established to the device in the past, enabling the SLM to connect to the device without using a password. ***Note:*** *Behind the scenes, the secure channel uses SSH keys for authentication.*
Poll	Yes indicates that the device may be polled.
Reach Fail Count	During polling, the SLM keeps track of the number of consecutive failures. If that count exceeds the threshold specified in Auto Connection Fail Count (on the Polling tab of the Ethernet Devices page), the icon for that device shows a red stripe. If that device is configured for auto-modem connect, the SLM will attempt to connect to that device over telephone lines.

Device Setting	Description
SSH Port	Port assigned for SSH access, if applicable.
Rack	The name of the rack (RrrCccPpp, where rr = row, cc = cluster and pp = position) in the form of a link that will take you to the Device Locator page.

The Search Results - Devices page opens, listing all devices that meet the search criteria that you have permission to see.

Search for Ports

To search for a port, you can use two criteria.

To search for a port:

1. From the **Table** drop-down list at the top of any page, select **Port**.
2. From the **Field** drop-down list, select one of the following and enter the corresponding **Value**. If you omit the value, the search returns all ports.

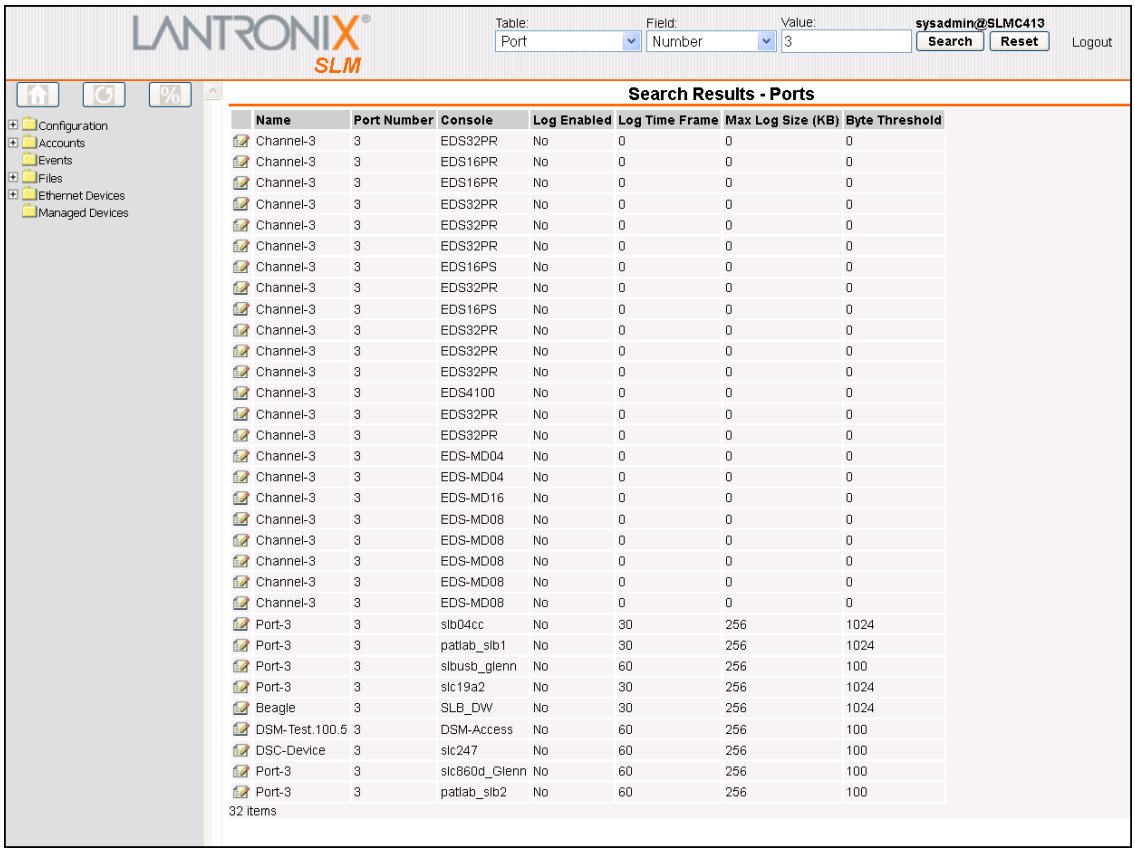
Note: *All searches are case insensitive.*

Table 11-5 Search by Port

Port Setting	Description
Port Fields	**Name**: The name of the port for which you are searching. You need type only as many characters as will identify the port. For example, s returns all devices with names starting with s. **Number**: Number of the port for which you are searching.

3. Click the **Search** button. The Search Results - Ports page opens, listing all ports that meet the search criteria that you have permission to see.

Figure 11-6 Example of a Search by Port



The following information (if available) displays for each port retrieved by the search that you have permission to see:

Table 11-7 Search Results - Ports

Port Setting	Description
Name	Name of the device connected to the port.
Port Number	Number of the port.
Console	Name of the Ethernet device.
Log Enabled	For SLC/SLB devices shows logging status.
Log Time Frame	**For SLC v3.1 and later v3.x (but not v4.0):** The maximum time frame in hours before a new log file is created. The default setting is 1 hour. **For SLC v4.0 and later:** The maximum time frame in seconds before the SLC sends data to the SLM. The default setting is 30 seconds.
Max Log Size (KB)	Maximum size of each log file in kilobytes. Once it is reached, a new log file is created.
Byte Threshold	The number of bytes of data the port receives before the Ethernet device captures log data and sends a notification regarding this port.

4. The Search Results - Ports page opens, listing all ports that meet the search criteria that you have permission to see.

Search for Persistent Connections

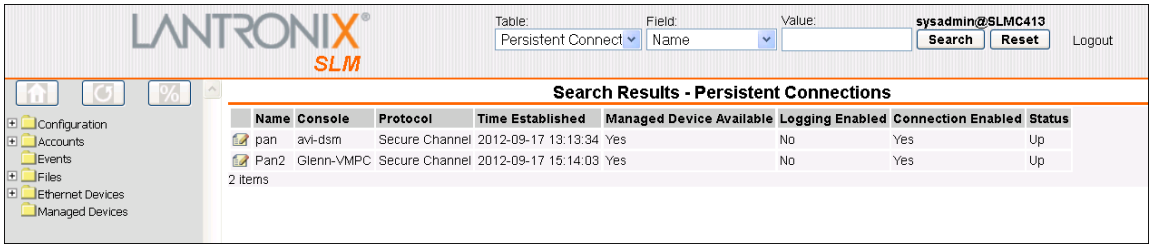
You can search for persistent connections to which you have rights. To search for persistent connections:

1. From the **Table** drop-down list at the top of any page, select **Persistent Connection**.
2. From the **Field** drop-down list, select **Name** and the corresponding **Value** (name of the connection). If you omit the value, the search returns all persistent connections.

Note: *All search fields are case insensitive.*

3. Click the **Search** button. The Search Results - Persistent Connections page lists all persistent connections that meet the search criteria and that you have permission to see.

Figure 11-8 Example of a Search by Persistent Connection



Note: *To clear the search fields, click the **Reset** button. To re-sort the list (e.g., alphabetically by name), click the header of the column you want to sort by.*

The following information (if available) displays for each persistent connection:

Table 11-9 Search by Persistent Connection

Persistent Connection Setting	Description
Name	Name of the persistent connection.
Console	Ethernet device to which the SLM is connected.
Protocol	Protocol used to make the persistent connection.
Time Established	Time the persistent connection was initiated.
Managed Device Available	If the parent Ethernet Device on this persistent connection is being managed as part of a managed device, users with access to the managed device also have access to this persistent connection.
Logging Enabled	Indicates whether the SLM is enabled to log the persistent connection.
Connection Enabled	Indicates whether the connection has been enabled and ready to activate.
Status	Indicates whether the connection is active.

Search for Managed Devices

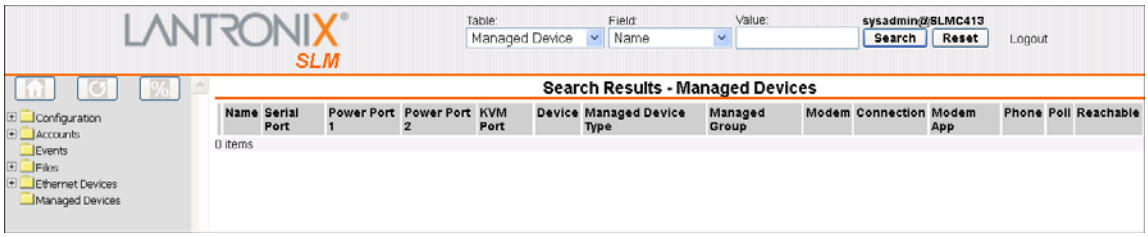
To search for a managed device, Administrators, Ethernet Device Account group members, and Managed Device Account Group members can search by name.

To search for managed devices on the network:

1. From the **Table** drop-down list at the top of any page, select **Managed Device**.

2. From the **Field** drop-down list, select **Name** and the corresponding **Value**. If you omit the value, the search returns all managed devices.
3. Click the **Search** button. The Search Results - Devices page opens, listing all managed devices that meet the search criteria that you have permission to see.

Figure 11-10 Example of a Search by Managed Device



The following information (if available) displays for each managed device retrieved by the search that you have permission to see:

Table 11-11 Search by Managed Device

Device Setting	Description
Name	Name of the managed device.
Serial Port	Number or name of the Ethernet device's serial port (e.g., a number between 1 and 48 for the SLC 48) that is connected to the managed device's console port.
Power Port 1	Number or name of an SLP's power port that is connected to the managed device's power connector.
Power Port 2	Number or name of an SLP's second power port that is connected to the managed device's power connector.
KVM Port	Number or name of an SLK (KVM) port that is connected to the managed device's KVM port.
Device	Name of the Ethernet device.
Managed Device Type	Type of managed device (e.g., Solaris Server or Linux Server).
Managed Group	Name of the Managed Device Group to which the managed device belongs.
Modem	Name of the modem to be used when connecting to the managed device.
Connection	Type of connection to make when using the modem.
Modem App	Application to invoke for the connection (e.g., Secure Channel, SSH, Telnet).
Phone	Telephone number of the modem on the managed device.
Poll	Indicates whether to check the managed device for modem connectivity during modem polling testing.
Reachable	Indicates whether a connection to the modem on this managed device was successful the last time it was tested.

Search for Users

To search for users, administrators with account rights can search using two criteria.

To search for users on the network:

1. From the **Table** drop-down list at the top of any page, select **User**.

2. From the **Field** drop-down list, select one of the following search fields and enter the corresponding **Value**. If you omit the value, the search returns all devices.

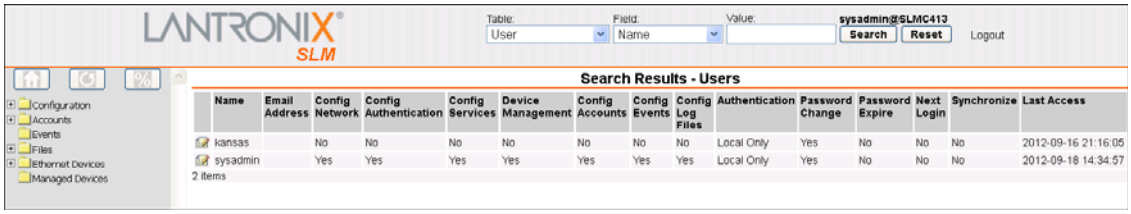
Note: *Searches are not case sensitive.*

Table 11-12 Search for Users

User Setting	Description
User Fields	**Name**: The name of the user for whom you are searching. You need type only as many characters as will identify the user. For example, s returns all users with names starting with s. **E-Mail**: E-mail address of the user for whom you are searching.

3. Click the **Search** button. The Search Results - Users page opens, listing all users who meet the search criteria.

Figure 11-13 Example of a Search by User



The following information (if available) displays for each user retrieved by the search.

Table 11-14 Search Results - Users

User Setting	Description
Name	The user name for logging in to the SLM.
Email Address	User's email address; may be used for event notification.
Config Network	**Yes** indicates the user can open the Network Settings page and configure network settings.
Config Authentication	**Yes** indicates the user can select and prioritize authentication methods and related settings.
Config Services	**Yes** indicates the user can configure services such as date and time and SNMP Agent & syslog and update SLCs to which the user has access.
Device Management	**Yes** indicates the user can configure settings for auto-detecting devices and ports and for managing alternate SLMs.
Config Accounts	**Yes** indicates the user can add, update, and delete all accounts and grant account permissions.
Config Events	**Yes** indicates the user can set alarms and triggers.
Config Log Files	**Yes** indicates the user can view, copy, and delete various log files.
Authentication	Indicates whether authentication for this user is **Local Only**, **Remote Only**, **Local & Remote**, or **Disabled**.
Password Change	**Yes** indicates that the user can use the current password indefinitely. Selected by default.

User Setting	Description
Password Expire	**No** allows the user to keep a password indefinitely.
Next Login	**Yes** requires the user to change the password the next time the user logs in. (You may change this setting at any time.)
Synchronize	**Yes** indicates that if the user's password has changed since the last synchronization, the SLM will update that new password on all SLMs, SLCs, SCSxx05/20s, and SLPs.
Last Access	Date and time the user last logged into the SLM, or the date and time of account creation if the user has never logged in.

Using Wildcards

You can use SQL wildcards when conducting a search:

- Use the percent sign (%) to match zero or more instances of any character.
- Use the underscore (_) to match any one character.

Note: *The SLM search automatically appends a percent sign to the end of all search strings, so you do not need to put one there. All searches are case insensitive.*

Table 11-15 Searching with Wildcards

A search for _abc will find:	A search for %abc will find:	A search for s___2 (three underscores) will find:
Aabc BABCdef AabCghi bAbC but not aaabcdc	aaaaaaaabCccccc ABCccccccccccccc jjjjjjjjjjjabc but not Aaaaaaaabbcccccc Bccccccccccccc Jjjjjjjjjjjab	SLM32_device Sxx32 s2232_system *but not* SLM332_device sAB16 Dev_2232

Search Commands

```
show account search email
```

Syntax

show account search email <email address>

Example

```
show account search email sys
```

Displays all accounts whose email address starts with "sys."

Description

Displays accounts that match the email address entered.

```
show account search name
```

Syntax

```
show account search name <user name>
```

Examples

```
show account search name sys
```

Displays all accounts whose name starts with "sys."

Description

Displays accounts that match the name entered.

```
show ethernetdevice search device
```

Syntax

```
show ethernetdevice search device <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Device Name>]
[ipaddr <IP Address>]
[location <location>] [firmware <version number>]
```

Example

```
show ethernetdevice search device name slc firmware 4
```

Description

Displays all devices that match the criteria entered. For example, if you specify `name slc`, the SLM searches for all devices whose name starts with `slc`.

```
show ethernetdevice search port
```

Syntax

```
show ethernetdevice search port <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
[portnumber <Port Number>]
```

Example

```
show ethernetdevice search port name waimea-port
show ethernetdevice search port name waimea portnumber 2
```

Description

Displays all ports that match the criteria entered.

```
show manageddevice search
```

Syntax

```
show manageddevice search <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
```

Example

```
show manageddevice search name waimea-port
```

Description

Displays all ports that match the criteria entered.

Connecting to Ethernet and Managed Devices

Connections Overview

From the SLM, you can connect to Secure Lantronix Management and other Ethernet devices just as you would if you logged into the device directly. You can also connect to Managed Devices.

Permissions set on the SLM for Ethernet devices and managed devices, in addition to granting access to device information in the SLM database, determine whether an account group can manage or just listen to the device.

Connection methods offered on a Managed Device depend on what is being managed, as well as the device types doing the management. For instance, if a Linux Server is being managed, then a VPN connection button displays. If a Windows box is being managed, then Remote Desktop is offered. Other connection methods are offered according to the device type specified in the table above.

Note: *Some buttons on Device and Port pages may be inactive, depending on the type of device. On the Managed Device page, only active buttons display.*

Ethernet Devices - Connection Methods

The table below shows the methods available for connecting to an Ethernet device.

Table 11-16 Methods of Connecting to Ethernet Devices

Ethernet Device	Browse HTTP	Browse HTTPS	Secure Channel	Web Channel	SSH	Telnet	TN3270
SLM	X	X	X		X	X	
SLC		X	X	X	X	X	
SLK	X	X				X	
SLP	X	X			X	X	
SLB		X	X	X	X	X	

Ethernet Device	Browse HTTP	Browse HTTPS	Secure Channel	Web Channel	SSH	Telnet	TN3270
Spider	X	X	X	X	X	X	
SCS05/20		X			X	X	
SCSxx00	X	X			X	X	
WiBox	X					X	
UDS/SDS	X					X	
EDS	X	X			X	X	
EDS-MD	X	X			X	X	
XPort	X	X			X	X	
Premier Wave	X	X			X	X	
Other Lantronix	X	X			X	X	
Other Devices (Non-Lantronix)	X	X			X	X	X

Managed Devices - Connection Methods

The following table shows the methods available for connecting to a managed device.

Table 11-17 Methods of Connecting to Managed Devices

Managed device connected to:	Connection Methods
Non-Lantronix, SCS05/20, SCSxx00, Other Lantronix	By means of SSH when connected by serial; when a local Ethernet device is being managed, then HTTP, HTTPS, SSH, Secure Channel, Telnet, and Remote Desktop may be offered, depending on the type of Ethernet device.
Spider	HTTPS; Web Channel
SLK	HTTP or HTTPS
SLC, SLB and SLM	Secure Channel; also Web Channel for SLC/SLB

Browsing to an Ethernet or Managed Device's Web Page

Users can browse directly to the home page of a Secure Lantronix Management or other discovered Ethernet device.

Note: *If the **Login** and **Password** fields in the device record have been completed, the SLM uses them for an automatic login when you browse to secure devices. However, if you use Microsoft Internet Explorer on the client machine, you must change the registry to use this feature. Firefox does not have this problem. You can change the Windows registry with the file, iefix.reg, which can be downloaded under the Secure Lantronix Management Appliance SLM product group at the Lantronix website:* www.lantronix.com/support/downloads*. You must run this file on the client machine that runs IE. Further,*

some non-Lantronix devices (notably the Avocet DSR1022) require IE 7 to support the browsing feature (from SLM to other device).

To access the Ethernet device's web page interface:

1. On the Device page, click the **Browse http** or **Browse https** button.
2. If required, enter the user name and password for accessing the device. The device's home page opens.
3. Configure or manage the device as directed by the device's User Guide or online Help.

Making a Secure Channel Connection to an SLC, SLM, or SLB

You can use a Lantronix secure channel connection from the web interface to the command line interface of another SLM or an SLC and its ports and managed devices.

Secure channel is actually a special form of SSH connection. If you use the secure channel, you need only supply the password when logging into the SLM. If you use SSH, you have to supply the password every time.

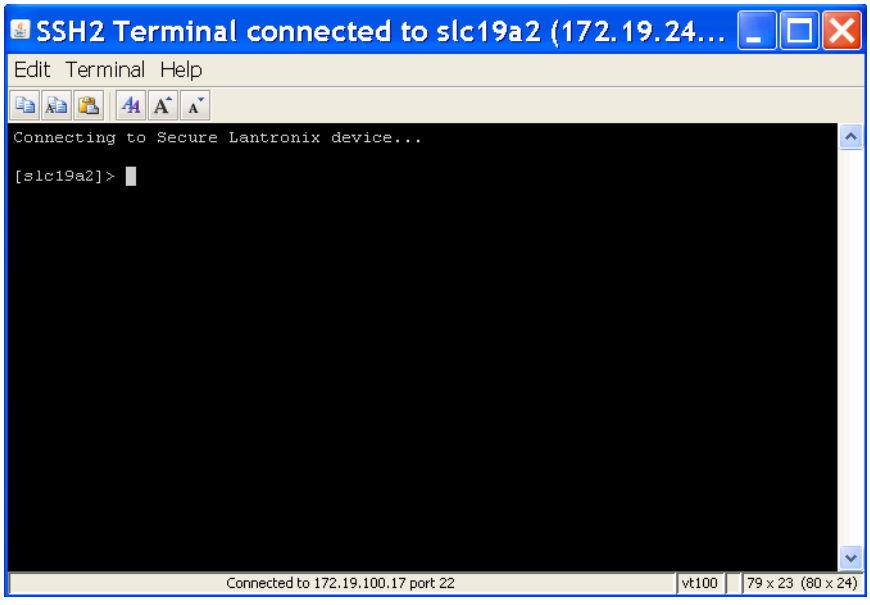
Before connecting to an SLC or to another SLM through the secure channel, the administrator must first establish the secure channel connection to the Ethernet device (SLC or SLM only). The administrator attempts to connect to the Ethernet device through the SLM secure channel connection and supplies the sysadmin password for the SLC. After this, any authenticated user who has permission to connect to the Ethernet device can connect to it through the SLM secure channel without further authentication.

Configure or manage the device as directed by the product's User Guide or online Help.

To make a secure channel connection to an SLC or SLM:

1. To log in to the SLC, SLB, or SLM, click the **Secure Channel** button on its Ethernet device page. A Java applet runs, and then the "Connected to SLM" message displays.

Figure 11-18 Secure Channel Connection to an SLC



2. If prompted to enter a key, type `Yes` to continue.

3. If prompted, enter your current sysadmin password for the SLC.
4. Configure or manage the device as directed by the product's User Guide or online Help.

Following is a list of error codes that may display:

Table 11-19 Secure Channel Error Codes

Major Code	Minor Code	Description
1	**40**	Could not connect to SLC
1	**41**	Network connection to SLC broken during login
1	**50**	Error opening secure channel key
1	**51**	Error reading secure channel key
3	**62**	Error removing old secure channel key from SLC
3	**64**	Error importing secure channel key to SLC
4	**68**	Error importing secure channel key to SLC
4	**80**	Error assigning user permissions
6	**81**	Timeout connecting to device port
6	**101**	Error connecting to device port (the port may already be in use)
6	**102**	Error listening to device port. (the port may not be connected)
8	**200**	Error getting key data from SLC
8	**202**	Error establishing secure channel session to SLC
8	**203**	Error establishing connection to SLC
10	**204**	Error updating secure channel status
11	**205**	Error setting user permissions (for a connection to a device port)
X	**207**	Error exiting device port access
X	**301**	Error exiting listen mode
X	**600**	Error setting user permissions (for a connection to the CLI)
X	**800**	Error clearing command history on SLC
Note: *Error codes display in the format: <Major Code>,<Minor Code>. An* ***X*** *indicates a variable major code.*		

Making an SSH Connection to an Ethernet or Managed Device

Users can use SSH from the web page of a Java-enabled web browser to connect to the command line interface of any Secure Lantronix Management or other discovered Ethernet device.

SSH is a connection protocol that requires all data sent to be encrypted. SSH accomplishes this by using public and private keys generated by the client and the server. Both sides have a pair of keys. The private key encrypts the data being sent; for the receiver to decrypt the received encrypted data, it must have the sender's public key.

The received host key is saved in a file called known_hosts in the SSH directory of users. Upon reconnection to the same host, the receiver compares the newly received host key to the previously received key that was stored in the known_host file.

If the newly received host key matches the key in the known_host file, then the authentication process (login and password) continues.

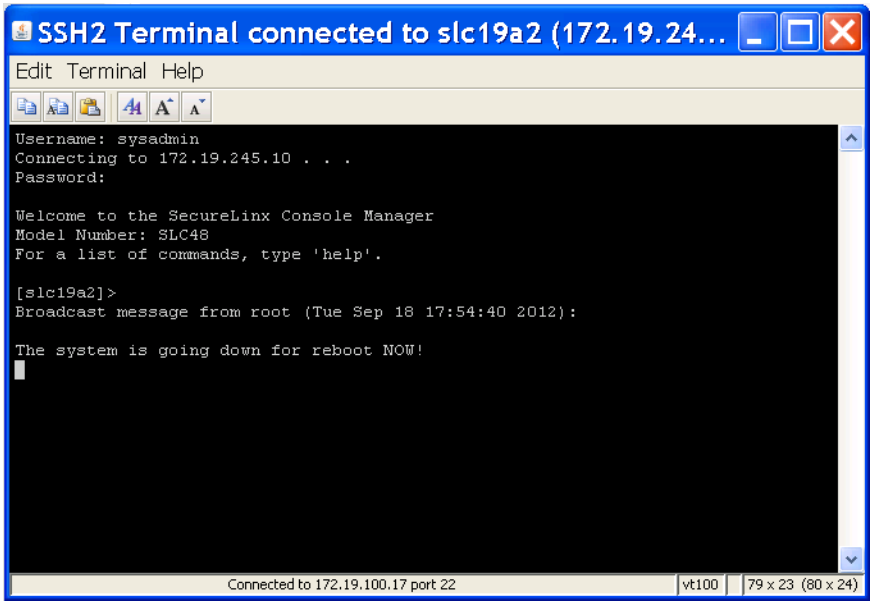
If the newly received host key does not match the key in the known_host file, then the user receives a warning that they do not match and is asked whether to replace the old host key information with the new key. (There could be someone trying to impersonate the known host.)

If the newly received host key does not exist in the known_host file, the device warns the user that the host does not exist (first-time connection) and asks the user if it should add the new key to the known_host file.

To make an SSH connection to the device CLI:

1. To log in to a Virtual Secure Lantronix Management device using SSH, click the **SSH Connection** button. A Java applet runs.
2. In response to the prompts, enter the user name and password for the device.

Figure 11-20 SSH Login to SLC



3. Configure or manage the device as directed by the device's User Guide or online Help.

Making a Web Channel Connection to an SLC

The web channel feature uses the existing secure channel key to the SLC to authenticate through the web interface. This enables an SLM user to connect to the web interface on an SLC without having to enter a username and password. The web connection to the SLC filters through the SLM. The **Web Channel** button is only active for SLCs that already have a secure channel. No other device types currently support this feature.

To make a web channel connection:

1. On an SLC that has been set up for a secure channel, click the **Web Channel** button. The SLC Web Home Page displays.

Figure 11-21 Web Channel Connection to an SLC

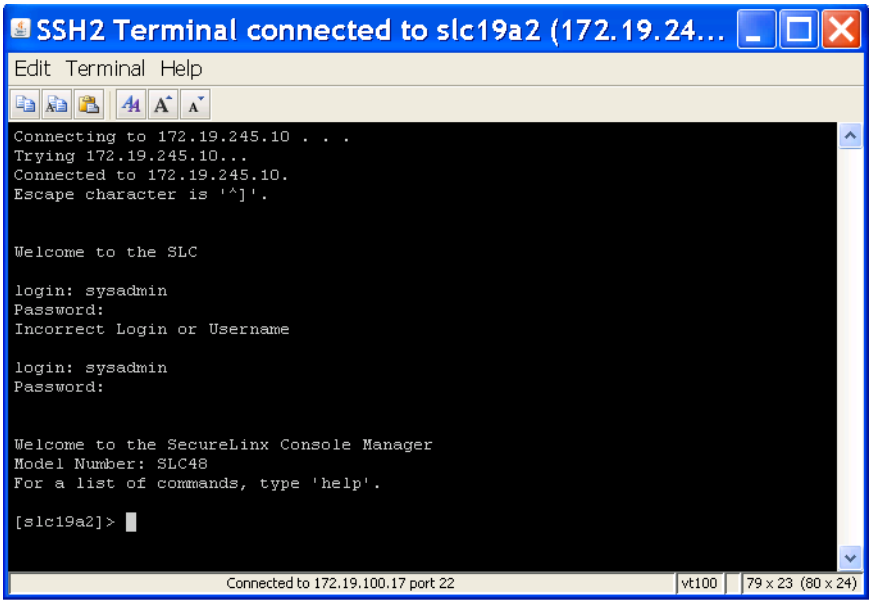
Making a Telnet Connection to an Ethernet device

You can make a Telnet connection to the command line interface of any discovered Ethernet device.

To make a Telnet connection:

1. Click the **Telnet** button. A Java applet runs, and then the Telnet command line interface displays.

Figure 11-22 Telnet Connection



2. Configure or manage the device as directed by the device's User Guide or online Help.

Connection Commands

Administrators, Ethernet Users and Menu Only Users

`connect device`

Syntax

```
connect device <Device Name or IP Address> <one or more parameters>
```

Parameters

```
[<secure|ssh|telnet|tn3270|serial|modem|modemssh|modemtelnet>
modemcallback>] [port <port>]
```

Specify `secure` to connect through a secure channel. Secure channel is the default method of connection for SLC/SLB, SLC ports, and SLM, and SSH is the default for other devices.

`Port` is the number of a physical port on the SLC.

SLC48 has ports 1 to 48.

Modem connection is available for managed devices only.

With the `modemssh` option, the SLM dials out to the managed device in PPP, and then connects it via SSH.

With `modemtelnet` option, the SLM dials out to the managed device in PPP, and then connects it via Telnet.

With the `modemcallback` option, when the SLM user calls an SLC and logs in, the SLC hangs up and calls the user back. The SLM then logs in again. This feature is currently available in text mode only.

Examples

```
connect device slc-waimea
connect device slc-waimea-port-1
connect device slc-waimea ssh
connect device slc-waimea port 4
connect device slc-waimea modemssh
connect device slc-waimea modemcallback
```

Description

Connects to an Ethernet device, managed device, or device port.

`connect index <number>`

Note: *Type show device all to display the index.*

Syntax

```
connect index <number>
<secure|ssh|telnet|serial|modem|modemssh|modemtelnet| modemcallback>]
```

Description

Connects a device by index number.

`connect persistent`

Syntax

```
connect persistent <persistentConnectionName> [device <devname|IP>]
```

Notes: *The* `device` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

The <`devname`> *following* `device` *may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.*

Description

Connect to an existing persistent connection.

`connect ssh`

Syntax

`connect ssh <IP Address> [tcpport <TCP Port>] [<SSH flags>]`

Parameters

`<SSH flags>` is one or more of:

`user <Login Name>`

`version <1|2>`

`escape <Character>`

The `TCP PORT` parameter is the TCP port number; the default is **22**.

Description

Connect to any machine/device using standard SSH V1 or V2 protocol.

`connect telnet`

Syntax

connect telnet <IP Address> [tcpport <TCP Port>] [user <Login Name>]

tcpport is the TCP port number; the default is 23.

Description

Connects to a device by means of standard Telnet.

`show connection list`

Syntax

`show connection list`

Description

Displays the active user connections in short form.

Managed Device Users

`connect device`

Syntax

```
connect device <Device Name>
[<secure|ssh|telnet|serial|modem|modemssh|modemtelnet|
modemcallback>] [port <port>]
```

Specify `secure` to connect through a secure channel. Secure channel is the default method of connection for SLC/SLB, SLC ports, and SLM, and SSH is the default for other devices.

Port is the number of a physical port on the SLC.

SLC48 has ports 1 to 48.

Modem connection is available for managed devices only.

With the `modemssh` option, the SLM dials out to the managed device in PPP, and then connects it via SSH.

With `modemtelnet` option, the SLM dials out to the managed device in PPP, and then connects it via Telnet.

With the `modemcallback` option, when the SLM user calls an SLC and logs in, the SLC hangs up and calls the user back. The SLM then logs in again. This feature is currently available in text mode only.

Examples

```
connect device slc-waimea
connect device slc-waimea-port-1
connect device slc-waimea ssh
connect device slc-waimea port 4
connect device slc-waimea modemssh
connect device slc-waimea modemcallback
```

Description

Connects to a managed device through a secure channel.

```
connect index
```

Note: *Type* `show managedevice` *all to display the index.*

Syntax

```
connect index <number>
<secure|ssh|telnet|serial|modem|modemssh|modemtelnet| modemcallback>]>
```

Description

Connects to a device by index number.

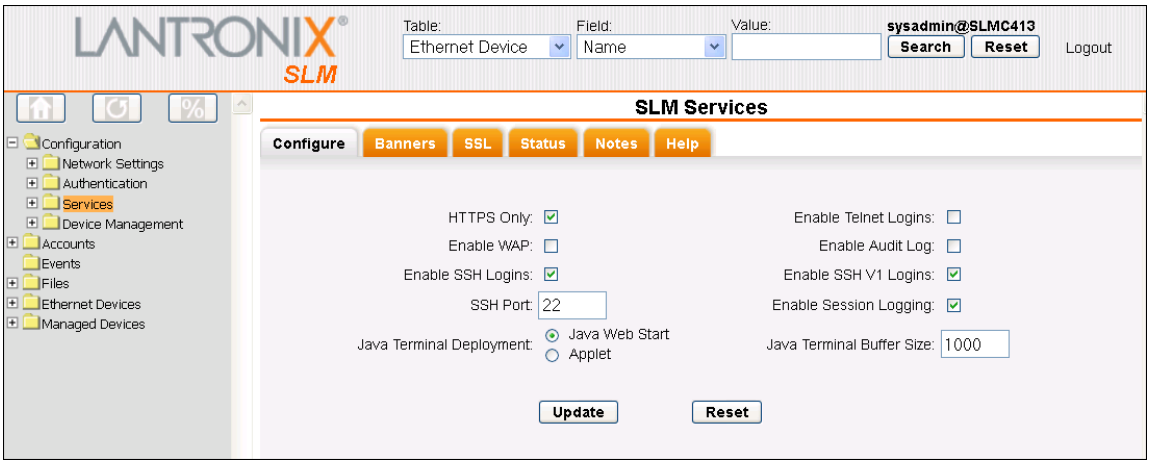
Services

The SLM Services page allows administrators to define ways to access the SLM, to configure the banner for the CLI, and to enable an audit log of the SLM.

To configure services:

1. On the menu, click **Configuration > Services**. The following page opens:

Figure 11-23 SLM Services Page



2. Enter the following information:

Table 11-24 SLM Services - Configure Tab

SLM Service Setting	Description
HTTPS Only	If selected, allows access to the SLM through HTTPS only and disallows access through HTTP. Requires a reboot to take effect. Selected by default.
Enable Telnet Logins	If selected, allows access to the SLM through Telnet. Disabled by default.
Enable WAP	If selected, allows you to access the system through a cell phone. For more information about WAP, see *Using the SLM Mobile Browser (on page 288)*.
Enable Audit Log	If selected, enables the SLM to log all actions that have changed the configuration of the SLM. Disabled by default.
Enable SSH Logins	If selected, enables the SLM to allow users to access the CLI using SSH. Enabled by default.
Enable SSH v1 Logins	If selected, enables the SLM to allow users to access the CLI using SSH version 1.
SSH Port	Allows you to change the SSH TCP port to a value in the range of 1 - 65535. The default is **22**.
Enable Session Logging	If selected, enables the SLM to log data going back and forth between the user and a device or port.
Java Terminal Deployment	When starting Java, should the SLM use Java Web Start (stand alone) or a Java Applet?
Java Terminal Buffer Size	Number of lines in the Java terminal buffer

3. Click the **Update** button.

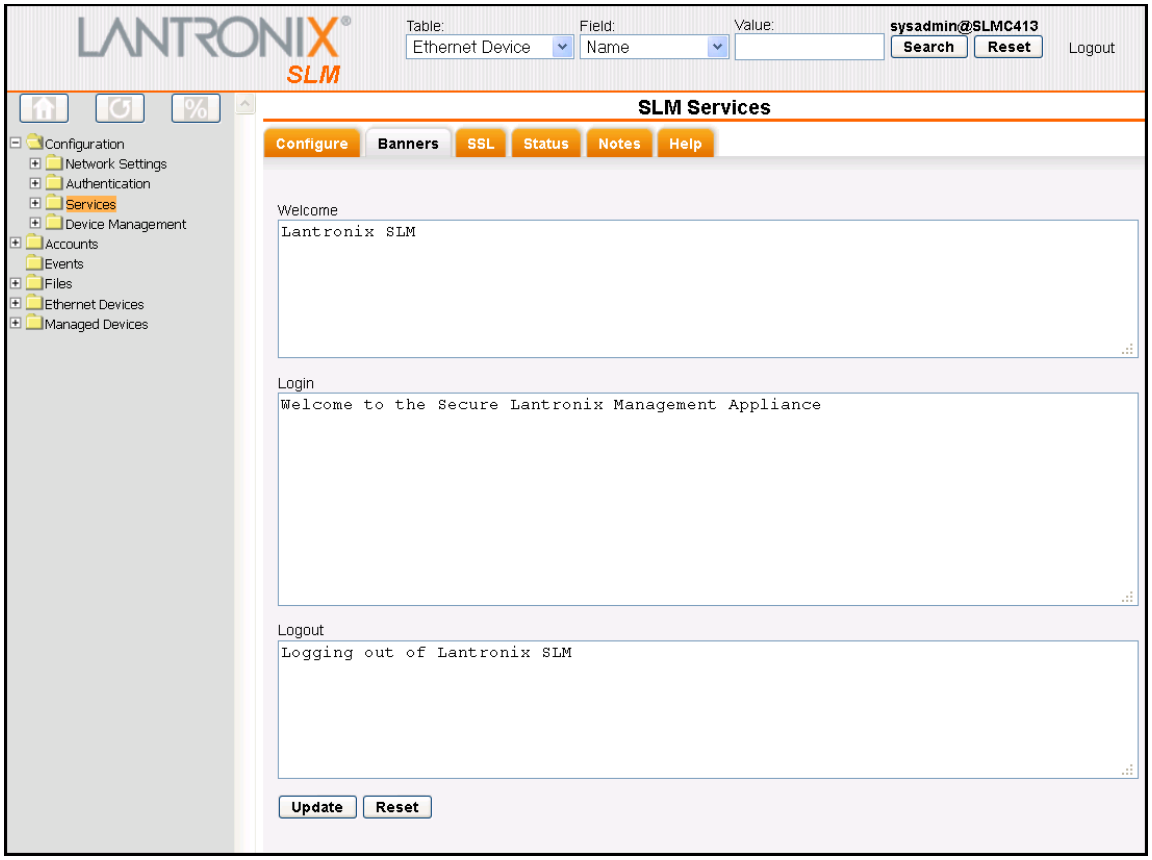
Banners

You can maintain text that is used for the CLI.

To enter banner text:

1. On the Services page, click the **Banners** tab. The following page displays:

Figure 11-25 Services Page - Banners Tab



2. Enter the following information:

Table 11-26 SLM Services - Banners

SLM Service Setting	Description
Welcome	Enter the text to display at CLI connection.
Login	Enter the text to display upon successful login to the CLI.
Logout	Enter the text to display upon logout from the CLI.

3. Click the **Update** button.

Note: *Use the **Reset** button to clear the entries.*

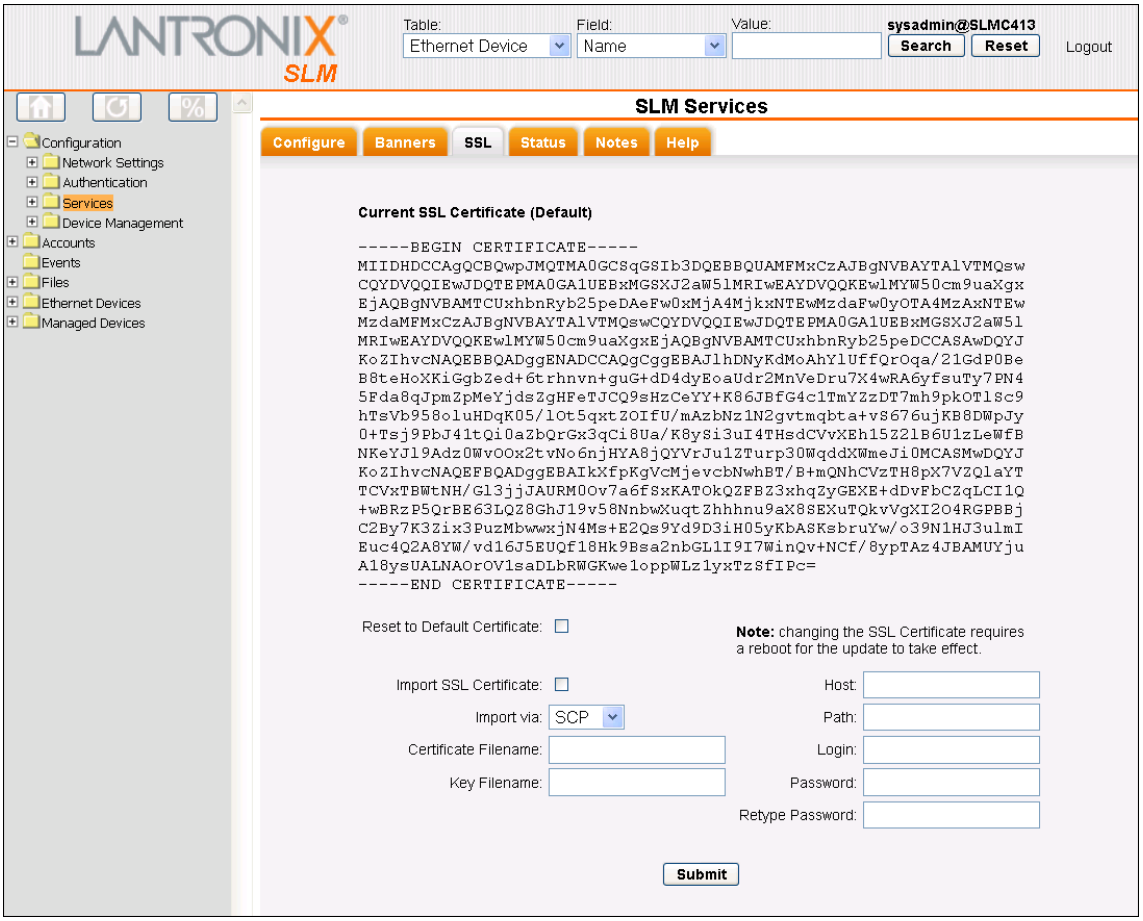
SSL

The SLM has a default Secure Socket Layer (SSL) certificate. The SSL tab enables administrators to view and update SSL certificate information. The SSL certificate, consisting of a public/private key pair used to encrypt HTTP data, is associated with the web server. You can import a site-specific SSL certificate, if desired.

To view, reset, import, or change an SSL Certificate:

1. On the Services page, click the **SSL** tab. The current certificate displays.

Figure 11-27 Services - SSL Tab



2. Enter the following:

Table 11-28 SLM Services - SSL Tab

SSL Certificate Setting	Description
Reset to Default Certificate	To reset to the default certificate, select the checkbox to reset to the default certificate. Unselected by default.
Import SSL Certificate	To import your own SSL Certificate, select the checkbox. Unselected by default.
Import via	From the drop-down list, select the method of importing the certificate (SCP or SFTP). The default is **SCP**.

SSL Certificate Setting	Description
Certificate Filename	Filename of the certificate.
Key Filename	Filename of the private key for the certificate.
Host	Host name or IPaddress of the host from which to import the file.
Path	Path of the directory where the certificate will be stored.
Login User	User ID to use to SCP or SFTP the file.
Password & Retype Password	Password to use to SCP or SFTP the file.

3. Click the **Submit** button.

Note: *You must reboot the SLM for the update to take effect.*

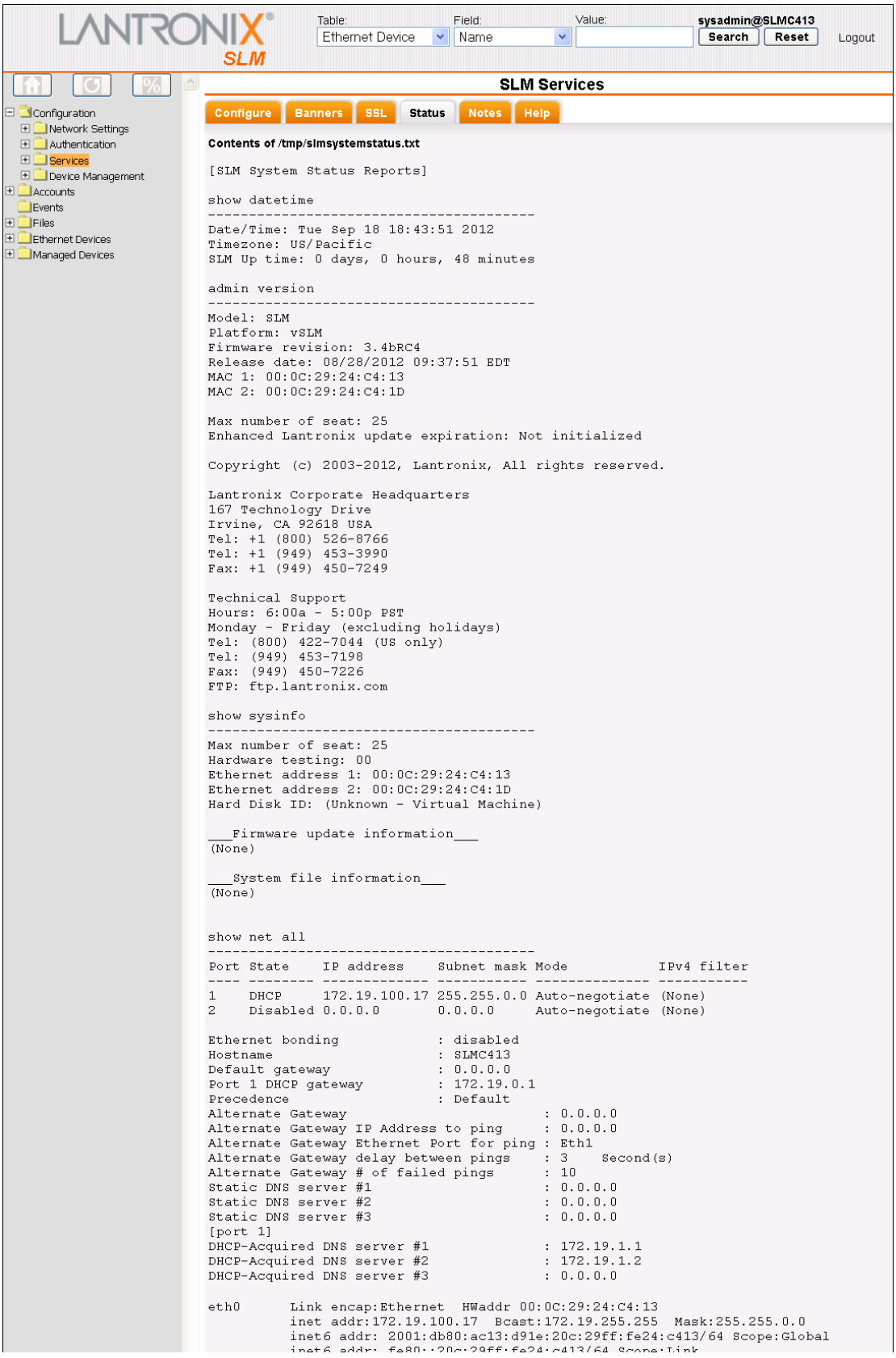
Status

Administrators can view the system status on the Status tab, and if they desire, email it to another person.

To view or email the system status:

1. On the Services page, click the **Status** tab. The following page displays the status information.

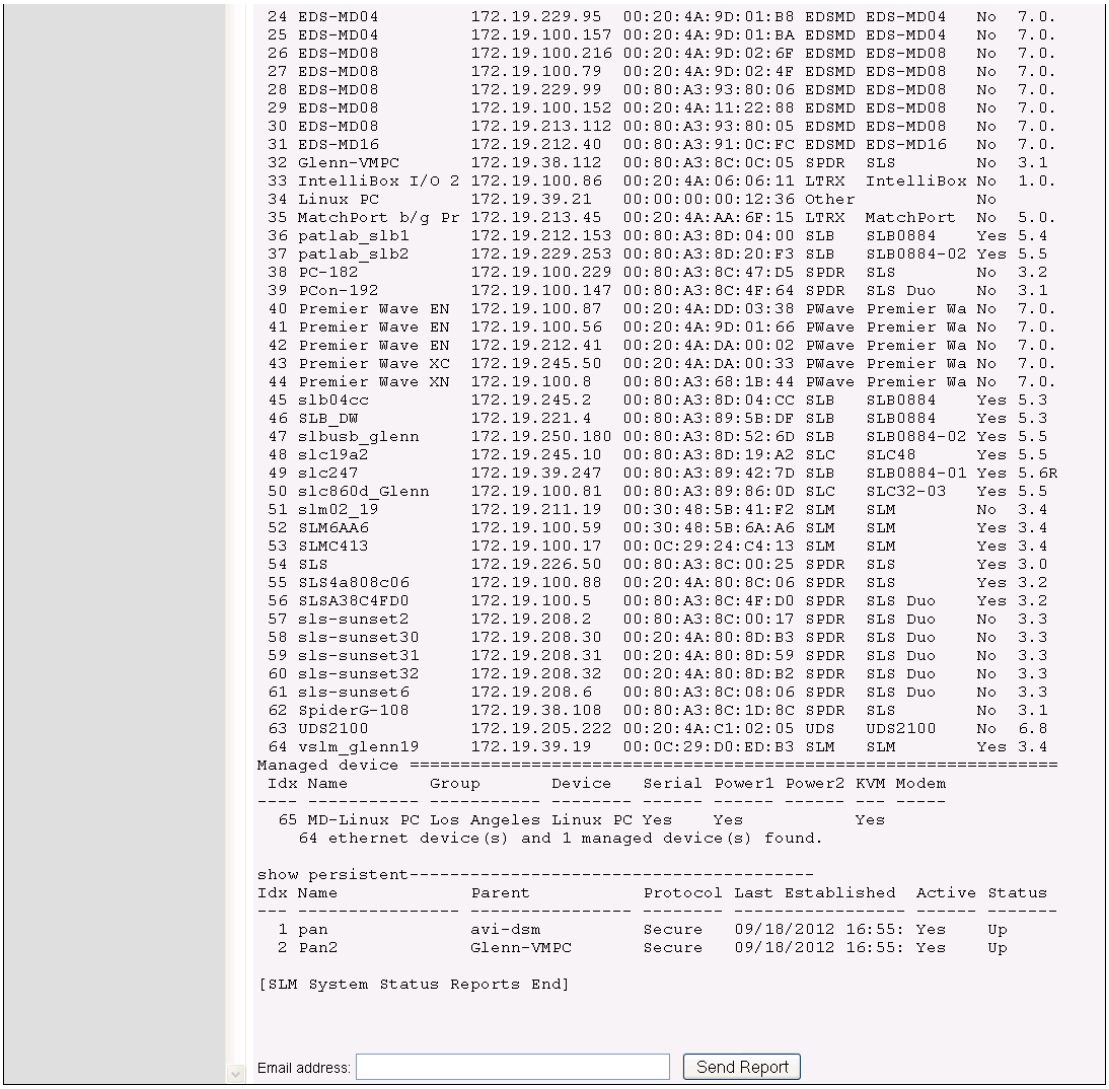
Figure 11-29 Services Page - Status Tab



Continuation of *Figure 11-29* (part 2 of 3)

```
          inet6 addr: fe80::20c:29ff:fe24:c413/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:32413 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1834 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2876580 (2.7 MiB)  TX bytes:816861 (797.7 KiB)
          Interrupt:17 Base address:0x1080

eth1      Link encap:Ethernet  HWaddr 00:0C:29:24:C4:1D
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Interrupt:18 Base address:0x1800


show service
----------------------------------------
Audit log: Disabled
Session log: Disabled
Telnet login: Disabled
SSH login: Enabled
SSH version 1 login: Enabled
WAP access: Disabled
HTTPS only: Yes

Open SSH Version: 4.3p2
Open SSL Version: 0.9.8a
Linux Version: 2.6.15-1.2054_FC5smp
Server Version: Apache/2.2.3

show modem
----------------------------------------
    0 modem(s) found.

show account
----------------------------------------
Idx User name Email address Account group  Account group type Custom menu
--- --------- ------------- -------------- ------------------ -----------
  1 kansas                  Administrators Administrator      (None)
  2 sysadmin                Administrators Administrator      (None)
    2 users(s) found.

show connection
----------------------------------------
Max number of seat: 25
Inbound sessions                            Outbound sessions
ID Type User     Location       Idle Time ID Type   Destination   Uptime   MDev
-- ---- -------- -------------- --------- -- ------ ------------- -------- ----
 1 web  sysadmin 172.20.197.132 00:43:13
 2 web  sysadmin 172.19.100.41  00:00:02   1 web    172.19.245.10 00:13:47
                                           2 telnet 172.19.245.10 00:08:57
 3 cli  sysadmin Unknown        00:00:01
 4 cli  sysadmin Unknown        00:00:00
    4 inbound and 2 outbound connection(s) found.

admin showboot
----------------------------------------
Current Bank: bank 1    Next Boot Bank: bank 1.
Bank 1: 3.4bRC4
Bank 2: 3.4bRC4

show dev all
----------------------------------------
Ethernet device ====================================================================
Idx Name             IP address     Ethernet address  Group Model      SCC Ver.
--- ---------------- -------------- ----------------- ----- ---------- --- ----
  1 ?                172.19.203.8   00:80:A3:66:00:0C LTRX  ???        No  6.8
  2 ?                172.19.100.39  00:20:4A:9D:02:8B LTRX  ???        No  6.9
  3 ?                172.19.100.129 00:20:4A:9D:01:FE LTRX  ???        No  7.0.
  4 avi-dsm          172.19.231.99  00:80:A3:8C:01:61 SPDR  SLS        Yes 2.2
  5 DSM-38-1         172.19.38.110  00:80:A3:8C:00:14 SPDR  SLS        No  3.1
  6 DSM-Access       172.19.39.248  00:80:A3:89:3F:07 SLB   SLB0884-01 Yes 5.4
  7 EDS16PR          172.19.229.79  00:20:4A:8E:83:C4 EDS   EDS16PR    No  5.0.
  8 EDS16PR          172.19.245.4   00:20:4A:8E:AF:8B EDS   EDS16PR    No  5.0.
  9 EDS16PS          172.19.212.86  00:20:4A:8E:6B:7A EDS   EDS16PS    No  5.0.
 10 EDS16PS          172.19.245.3   00:20:4A:8E:7E:3F EDS   EDS16PS    No  5.0.
 11 EDS2100          172.19.100.220 00:20:4A:A8:8B:BD EDS   EDS2100    No  5.0.
 12 EDS2100          172.19.212.207 00:20:4A:9D:00:7F EDS   EDS2100    No  5.0.
 13 EDS32PR          172.19.245.6   00:20:4A:8E:55:57 EDS   EDS32PR    No  5.0.
 14 EDS32PR          172.19.245.8   00:20:4A:8E:5E:2B EDS   EDS32PR    No  5.0.
 15 EDS32PR          172.19.229.72  00:20:4A:8E:8E:66 EDS   EDS32PR    No  5.0.
 16 EDS32PR          172.19.245.7   00:20:4A:8E:55:25 EDS   EDS32PR    No  5.0.
 17 EDS32PR          172.19.245.5   00:20:4A:8E:A9:59 EDS   EDS32PR    No  5.0.
 18 EDS32PR          172.19.212.157 00:20:4A:8E:53:D0 EDS   EDS32PR    No  5.0.
 19 EDS32PR          172.19.100.54  00:20:4A:83:7E:2A EDS   EDS32PR    No  5.0.
 20 EDS32PR          172.19.212.156 00:20:4A:8E:5D:AC EDS   EDS32PR    No  5.0.
 21 EDS32PR          172.19.245.9   00:20:4A:8E:5A:3E EDS   EDS32PR    No  5.0.
 22 EDS32PR          172.19.229.8   00:20:4A:8E:5C:7A EDS   EDS32PR    No  5.0.
 23 EDS4100          172.19.100.237 00:20:4A:11:41:00 EDS   EDS4100    No  5.0.
```

Continuation of *Figure 11-29* (part 3 of 3)



```
 24 EDS-MD04          172.19.229.95  00:20:4A:9D:01:B8 EDSMD EDS-MD04   No  7.0.
 25 EDS-MD04          172.19.100.157 00:20:4A:9D:01:BA EDSMD EDS-MD04   No  7.0.
 26 EDS-MD08          172.19.100.216 00:20:4A:9D:02:6F EDSMD EDS-MD08   No  7.0.
 27 EDS-MD08          172.19.100.79  00:20:4A:9D:02:4F EDSMD EDS-MD08   No  7.0.
 28 EDS-MD08          172.19.229.99  00:80:A3:93:80:06 EDSMD EDS-MD08   No  7.0.
 29 EDS-MD08          172.19.100.152 00:20:4A:11:22:88 EDSMD EDS-MD08   No  7.0.
 30 EDS-MD08          172.19.213.112 00:80:A3:93:80:05 EDSMD EDS-MD08   No  7.0.
 31 EDS-MD16          172.19.212.40  00:80:A3:91:0C:FC EDSMD EDS-MD16   No  7.0.
 32 Glenn-VMPC        172.19.38.112  00:80:A3:8C:0C:05 SPDR  SLS        No  3.1
 33 IntelliBox I/O 2  172.19.100.86  00:20:4A:06:06:11 LTRX  IntelliBox No  1.0.
 34 Linux PC          172.19.39.21   00:00:00:00:12:36 Other            No
 35 MatchPort b/g Pr  172.19.213.45  00:20:4A:AA:6F:15 LTRX  MatchPort  No  5.0.
 36 patlab_slb1       172.19.212.153 00:80:A3:8D:04:00 SLB   SLB0884    Yes 5.4
 37 patlab_slb2       172.19.229.253 00:80:A3:8D:20:F3 SLB   SLB0884-02 Yes 5.5
 38 PC-182            172.19.100.229 00:80:A3:8C:47:D5 SPDR  SLS        No  3.2
 39 PCon-192          172.19.100.147 00:80:A3:8C:4F:64 SPDR  SLS Duo    No  3.1
 40 Premier Wave EN   172.19.100.87  00:20:4A:DD:03:38 PWave Premier Wa No  7.0.
 41 Premier Wave EN   172.19.100.56  00:20:4A:9D:01:66 PWave Premier Wa No  7.0.
 42 Premier Wave EN   172.19.212.41  00:20:4A:DA:00:02 PWave Premier Wa No  7.0.
 43 Premier Wave XC   172.19.245.50  00:20:4A:DA:00:33 PWave Premier Wa No  7.0.
 44 Premier Wave XN   172.19.100.8   00:80:A3:68:1B:44 PWave Premier Wa No  7.0.
 45 slb04cc           172.19.245.2   00:80:A3:8D:04:CC SLB   SLB0884    Yes 5.3
 46 SLB_DW            172.19.221.4   00:80:A3:89:5B:DF SLB   SLB0884    Yes 5.3
 47 slbusb_glenn      172.19.250.180 00:80:A3:8D:52:6D SLB   SLB0884-02 Yes 5.5
 48 slc19a2           172.19.245.10  00:80:A3:8D:19:A2 SLC   SLC48      Yes 5.5
 49 slc247            172.19.39.247  00:80:A3:89:42:7D SLB   SLB0884-01 Yes 5.6R
 50 slc860d_Glenn     172.19.100.81  00:80:A3:89:86:0D SLC   SLC32-03   Yes 5.5
 51 slm02_19          172.19.211.19  00:30:48:5B:41:F2 SLM   SLM        No  3.4
 52 SLM6AA6           172.19.100.59  00:30:48:5B:6A:A6 SLM   SLM        Yes 3.4
 53 SLMC413           172.19.100.17  00:0C:29:24:C4:13 SLM   SLM        Yes 3.4
 54 SLS               172.19.226.50  00:80:A3:8C:00:25 SPDR  SLS        Yes 3.0
 55 SLS4a808c06       172.19.100.88  00:20:4A:80:8C:06 SPDR  SLS        Yes 3.2
 56 SLSA38C4FD0       172.19.100.5   00:80:A3:8C:4F:D0 SPDR  SLS Duo    Yes 3.2
 57 sls-sunset2       172.19.208.2   00:80:A3:8C:00:17 SPDR  SLS Duo    No  3.3
 58 sls-sunset30      172.19.208.30  00:20:4A:80:8D:B3 SPDR  SLS Duo    No  3.3
 59 sls-sunset31      172.19.208.31  00:20:4A:80:8D:59 SPDR  SLS Duo    No  3.3
 60 sls-sunset32      172.19.208.32  00:20:4A:80:8D:B2 SPDR  SLS Duo    No  3.3
 61 sls-sunset6       172.19.208.6   00:80:A3:8C:08:06 SPDR  SLS Duo    No  3.3
 62 SpiderG-108       172.19.38.108  00:80:A3:8C:1D:8C SPDR  SLS        No  3.1
 63 UDS2100           172.19.205.222 00:20:4A:C1:02:05 UDS   UDS2100    No  6.8
 64 vslm_glenn19      172.19.39.19   00:0C:29:D0:ED:B3 SLM   SLM        Yes 3.4
Managed device ======================================================================
 Idx Name        Group       Device   Serial Power1 Power2 KVM Modem
---- ----------- ----------- -------- ------ ------ ------ --- -----
   65 MD-Linux PC Los Angeles Linux PC Yes    Yes           Yes
     64 ethernet device(s) and 1 managed device(s) found.

show persistent----------------------------------------
Idx Name              Parent           Protocol Last Established  Active Status
--- ----------------- ---------------- -------- ----------------- ------ -------
  1 pan               avi-dsm          Secure   09/18/2012 16:55: Yes    Up
  2 Pan2              Glenn-VMPC       Secure   09/18/2012 16:55: Yes    Up

[SLM System Status Reports End]


Email address:                                   Send Report
```

2. To email the status, enter the recipient's email address and click the **Send Report** button.

Services Commands

`set service auditlog`

Syntax

`set service auditlog <enable|disable>`

Description

Enables or disables audit logging.

`set service telnet`

Syntax

`set service telnet <enable|disable>`

Description

Enables or disables Telnet logging to the SLM.

```
set service ssh
```

Syntax

```
set service ssh <enable|disable> version <1|2>
```

Description

Enables or disables SSH logging to the SLM.

```
show service
```

Syntax

```
set service
```

Description

Displays service settings.

Maintenance

The SLM Maintenance page allows administrators to:

- Reboot or shut down the SLM.
- Save a snapshot of all database settings (configuration, configured users, and discovered devices) on the SLM or the user's client machine.
- Restore the configuration, either to a previously saved configuration or to the factory defaults.
- Update user passwords on selected SLMs/SLCs/SLBs/SLPs and SCS05/20s (password synchronization).
- View the firmware version on two boot banks, and select the bank to boot from.

To configure maintenance activities:

1. On the menu, click **Services > Maintenance**. The following page opens:

Figure 11-30 SLM Maintenance Page

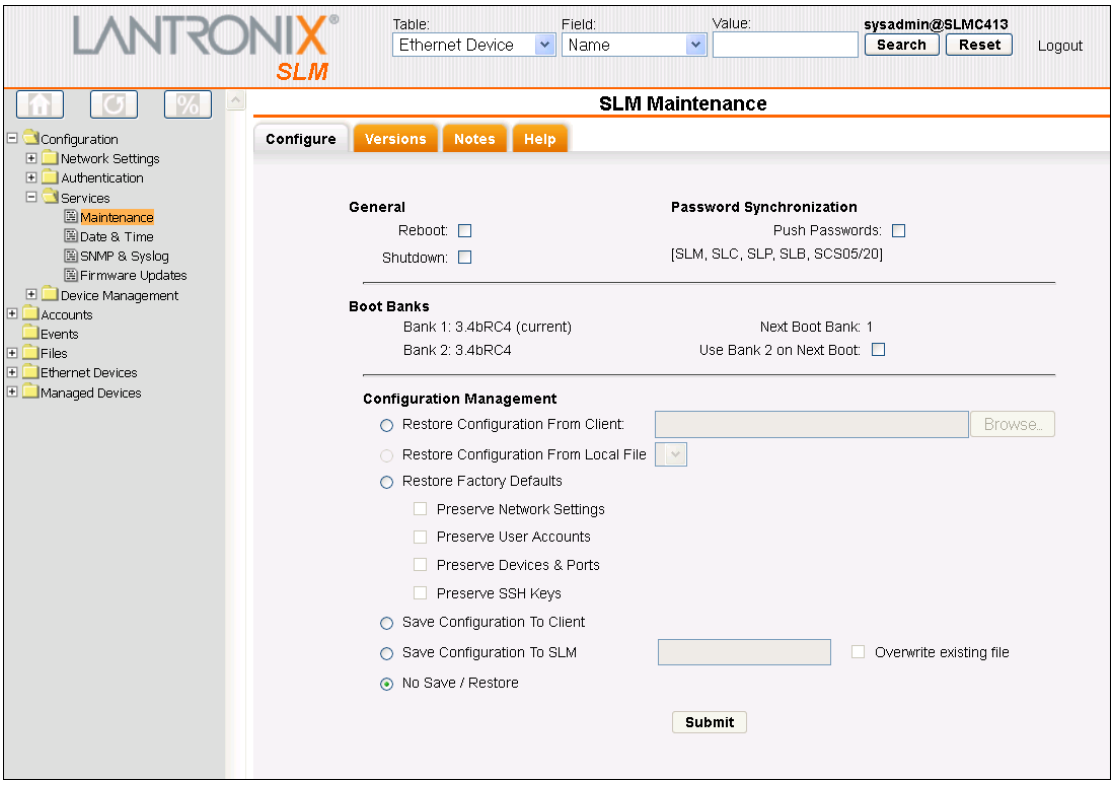


Table 11-31 SLM Maintenance - General Maintenance

General Maintenance Setting	Description
Reboot	Select this option to terminate all connections and reboot the SLM immediately.
Shutdown	Select this option to terminate all connections, shut down the SLM immediately, and turn off the power.

Note: *It is recommended that virtual SLMs be shutdown or restarted using the vSLM reboot and shutdown commands available via the web or CLI, rather than using the virtualization manager to shutdown or restart the vSLM.*

Table 11-32 SLM Maintenance - Password Synchronization

Password Synchronization Setting	Description
Push Passwords	When the Push Passwords check box on the Maintenance page is selected, the SLM uses the password on all accounts with Synchronize Password enabled to update accounts on remote SLMs, SLCs, SLBs, SLPs and SCSxx05/20s. The accounts must have access rights to and local user accounts on the devices. For the SCSxx05/20 and SLP, you must store the username and password for each target device in the SLM, enabling password(s) to be transferred by SSH.

Table 11-33 SLM Maintenance - Boot Banks

Boot Banks Setting	Description
Bank 1	Version of SLM firmware in bank 1. ***Note:*** *The word "current" displays next to the bank the SLM booted from.*
Bank 2	Version of SLM firmware in bank 2.
Next Boot Bank	Current setting for bank to boot from at next reboot.
Use Bank n on Next Boot	If desired, select the alternate bank to boot from at next reboot.

From the option list, select one of the following:

Table 11-34 SLM Maintenance - Configuration Management

Configuration Management Setting	Description
Restore Configuration from Client	Returns the SLM settings to a previously saved configuration. If you select this option, the SLM reboots after you apply the update. If you select this option, the **Browse** button becomes available. Browse to the saved configuration.
Restore Configuration from Local File	Restores the configuration to one saved on the SLM. Select the file from the drop-down list.
Restore Factory Defaults	Restores factory settings. If you select this option, the SLM reboots after you apply the update. To keep specific groups of settings rather than restoring defaults, select one or more of the following options: ◆ **Preserve Network Settings** This option preserves the settings on the Network Settings and the Services page. ◆ **Preserve User Accounts** ◆ **Preserve Devices & Ports** This option preserves Ethernet and managed devices and their groups. ◆ **Preserve SSH Keys** This option preserves existing SSH Keys in the database for use with the restored system. The four preserve options apply to any of the restore options. If you select a preserve option, then after restoration, all of the current "preserved" items are deleted, and the preserved items from before the restore are re-inserted. **Example:** You restore to a backup file but elect to preserve user accounts. The SLM is restored to the contents of the backup file, then all accounts (including any that were just restored) are deleted, and lastly, all the accounts, account groups, and notes about account groups that were present before the restore operation are added to the system. The same is true for devices and ports. If you preserve devices and ports, all associations with account groups are lost, even if both accounts and devices are preserved. ***Note:*** *If you select any of the three Restore operations, the SLM saves the current configuration in the SLM Configuration Files directory using the name autoConfigSaveYYMMDDHHMMSS.slm before performing the restore command.*

Configuration Management Setting	Description
Save Configuration to Client	Saves all settings to a file on the clientsystem, which you can back up to a location not on the SLM. The SLM sends the file containing the state of the system to the client machine for storage. The default file name is configsave.slm, but you may save it using any name. This is the file uploaded to the SLM upon system restore.
Save Configuration to SLM	Saves all settings to the SLM. If selected, enter the configuration file name. To overwrite the existing field with this configuration file, select the check box. Unselected by default.
No Save/Restore	Does not save or restore a configuration.

Maintenance Commands

`admin config`

Syntax

`admin config factorydefaults`

Description

Restores the SLM configuration and device database settings to factory defaults.

`admin config rebuilddatabase`

Syntax

`admin config rebuilddatabase`

Description

Removes and rebuilds the SLM configuration and database from scratch, in case of database corruption that cannot be fixed by the factory.

`admin config save file`

Syntax

`admin config save file <filename>`

Description

Saves the SLM configuration to the SLM Configuration Files directory.

`admin config showfiles`

Syntax

`admin config showfiles`

Description

Shows saved configuration files.

`admin locallog clear`

Syntax

```
admin locallog clear auditlog
admin locallog clear syslog
admin locallog clear traplog device <Device Name or IP Address>
```

```
admin locallog clear traplog group <group name>
group name: SLM, SLC, SLK, SLP, SCS, SCSx, SLB, SPDR, WiBox, UDS, EDS,
EDSMD, Xport, PWave, LTRX, or other
```

Description

Clears all of the entries in the auditlog, syslog, or traplog.

```
admin quicksetup
```

Syntax

```
admin quicksetup
```

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

```
admin reboot
```

Syntax

```
admin reboot
```

Description

Terminates all connections and reboots the SLM.

```
admin securechannel regenkey
```

Syntax

```
admin securechannel regenkey
```

Description

Regenerates the secure channel key.

Note: *With this command, you lose access to established secure channels; therefore, the SLM first requests confirmation that you want to regenerate the securechannel key.*

```
admin shutdown
```

Syntax

```
admin shutdown
```

Description

Terminates all connections, shuts down the SLM, and turns off the power.

```
admin version
```

Syntax

```
admin version
```

Description

Displays current application version information.

```
show progress
```

Syntax

```
show progress
```

Description

Shows the progress of background tasks.

```
show sysconfig
```

Syntax

```
show sysconfig [email <Email Address>]
```

Description

Displays a report of configurable parameters. The output can be emailed.

```
show sysinfo
```

Syntax

```
show sysinfo
```

Description

Displays general system information.

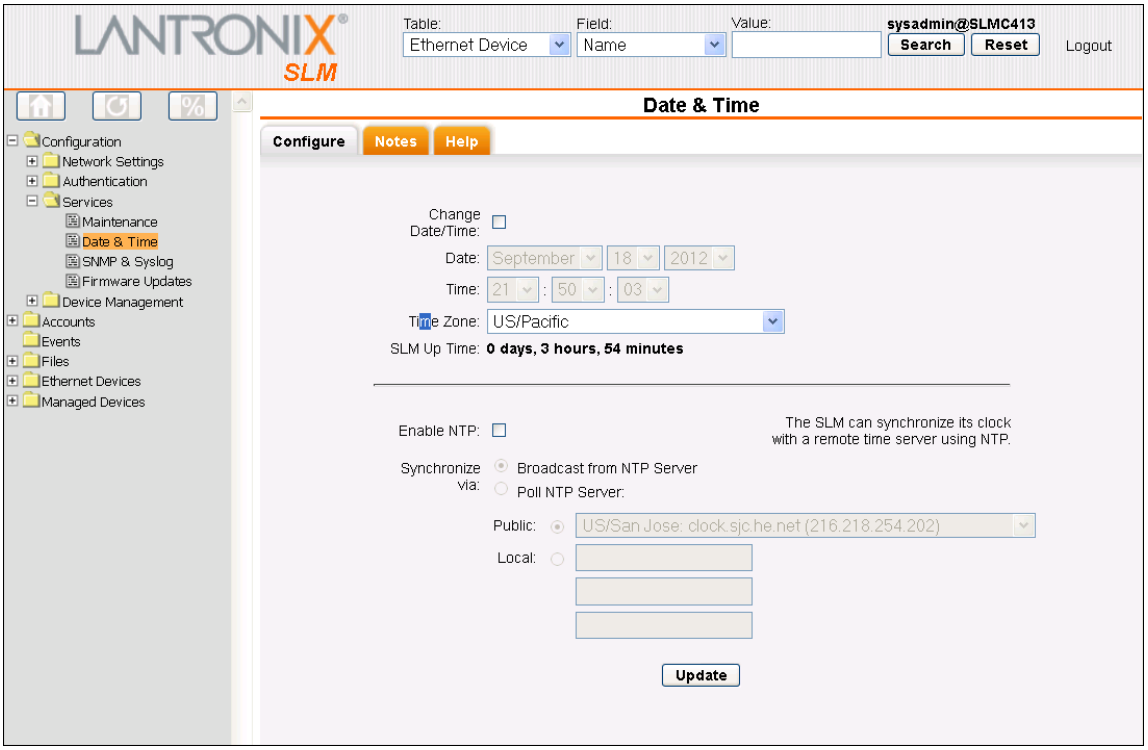
Date and Time

You can specify the current date, time, and time zone at the SLM's location, or the SLM can use NTP to synchronize with an NTP server on your network.

To set the local date, time, and time zone:

1. On the menu, click **Configuration > Services > Date & Time**. The following page opens:

Figure 11-35 Date & Time Page



2. Enter the following information:

Table 11-36 Date & Time - Configure Tab

Date & Time Setting	Description
Change Date/Time	Select the check box to manually enter the date and time at the SLM's location.
Date	From the drop-down lists, select the current month, day, and year.
Time	From the drop-down lists, select the current hour and minute.
Time Zone	From the drop-down list, select the appropriate time zone.
SLM Up Time	Indicates how long the SLM has been up and running.

3. To save, click the **Update** button. When the update is complete, a confirmation message displays.

To synchronize the SLM with a remote timeserver using NTP:

1. Enter the following:

Table 11-37 Date & Time - Configure NTP

Setting	Description
Enable NTP	Select the check box to enable NTP synchronization. NTP is disabled by default.
Synchronize via	Select one of the following: **Broadcast from NTP Server:** Enables the SLM to accept time information periodically transmitted by the NTP server. This is the default if you enable NTP. **Poll NTP Server:** Enables the SLM to query the NTP Server for the correct time. If you select this option, complete one of the following: ◆ **Public:** Select this option if you want to use a public NTP server, and select the address of the NTP server from the drop-down list. We do not recommend this because of the high load on many public NTP servers. All servers in the drop-down list are stratum-2 servers. (See www.ntp.org for more information.) ◆ **Local:** Select this option if the NTP server is on a local network, and enter the IP address of the NTP server. This is the default, and we highly recommend it.

2. To save, click the **Update** button. When the update is complete, a confirmation message displays.

Date and Time Commands

`set datetime`

Syntax

```
set datetime <one parameter>
```

Parameters

```
date <MMDDYYhhmm[ss]>
timezone <Time Zone>
```

Description

Sets the local date, time, and time zone (one parameter at a time).

Note: *If you type an invalid time zone, the system guides you through the process of selecting a time zone.*

```
show datetime
```

Syntax

```
show datetime
```

Description

Displays the local date, time, and time zone.

SNMP & Syslog

Administrators can configure a Simple Network Management Protocol (SNMP) agent to allow users read-only access to the system.

1. On the menu, click **Configuration > Services > SNMP & Syslog**. The following page opens:

Figure 11-38 SNMP & Syslog Page

2. Enter the following information:

Table 11-39 SNMP & Syslog - Configure

Setting	Description
SNMP Agent	Enables read-only access into the SLM. Disabled by default.

Setting	Description
Enable Trap Reception	Enables the SLM to receive traps from outside and to store and display them on the Traps page. Disabled by default. Traps are notifications of certain critical events. This feature is applicable when SNMP is enabled. When the SLC or other Secure Lantronix Management products (SLM, SLP, or SLK) configures the SLM as its NMS, the SLM receives these traps and displays them on the Traps page. The Traps page display has three levels: ◆ Level 1: Ethernet device ◆ Level 2: SLM/SLC/SLP/SLK ◆ Level 3: Individual device page
NMS	When SNMP is enabled, an NMS acts as a central server, requesting and receiving SNMP-type information from any computer using SNMP. The NMS can request information from the SLM and receive traps from the SLM. Enter the IP address of the NMS server. Required if you selected **SNMP Agent**.
Read Community	An SNMP community is the group to which devices and management stations running SNMP belong. The default setting is public. ***Note:*** *Because SSH-to-SLP authentication may take a long time, this setting allows the user to choose SNMP support, which is faster.*
Contact (optional)	Description of the person responsible for maintaining the SLM, for example, a name.
Trap Community	Only management devices that are listening for the specified trap community process the trap. Management devices that are not listening for that trap community ignore the trap.
V3 User	SNMP v3 is secure and requires user-based authorization to access SLM MIB objects. Enter a user name. No defaults.
V3 Password and Password Retype	Password for accessing the SNMP v3. No defaults.
Location (optional)	Physical location of the SLM. Useful for managing the SLM using SNMP.
Send Traps to Syslog	Enables the SLM to receive traps from outside and to display them in the syslog.
Authentication and Encryption	SLM settings for SNMP v3 protocol. (Read only)
SMTP Server	IP address of your network's Simple Mail Transfer Protocol (SMTP) relay server.
Remote Syslog Server	Select to indicate that the SLM will act as a remote syslog server to receive syslogs from other Ethernet devices (devices that have the SLM's IP Address specified as that device's syslog server).
Syslog Server 1 and Syslog Server 2	IP addresses of the main and secondary servers to which the SLM system logs are being forwarded.

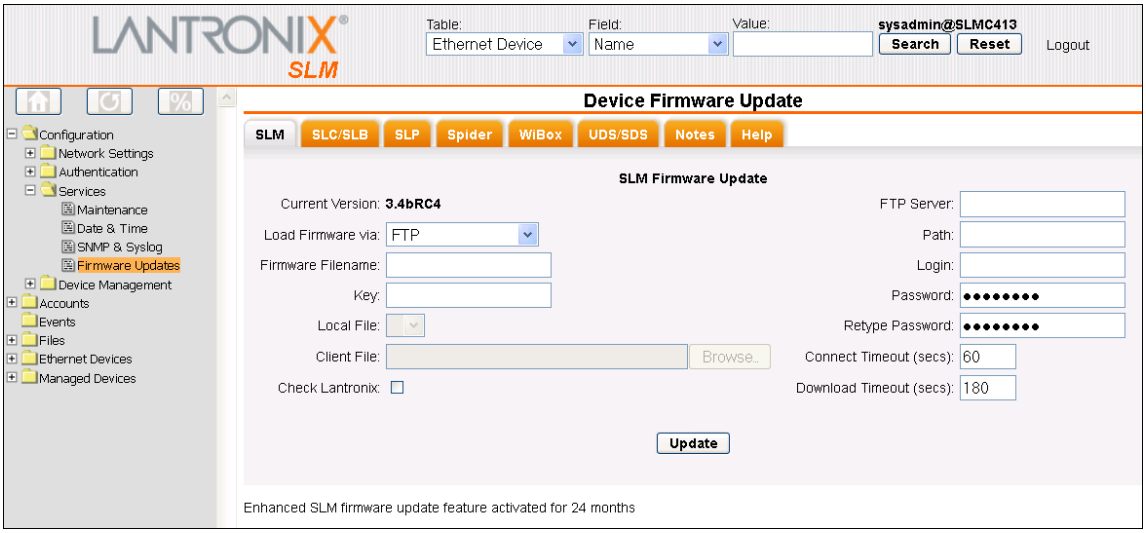
3. To save, click the **Update** button. When the update is complete, a confirmation message displays.

Device Firmware Updates

On these pages, you can update the firmware of Lantronix's Ethernet Devices.

1. On the main menu, click **Services > Firmware Updates**. The following page opens:

Figure 11-40 Device Firmware Update Page - SLM Tab



SLM Firmware

Note: *One year of Auto SLM Update comes with your SLM installation. This feature automatically facilitates new firmware updates from a Lantronix server to your SLM. Please contact Lantronix Sales at 800-422-7055 for additional information on enabling this feature after the first included year.*

To update SLM firmware:

1. Enter the following information:

Table 11-41 Device Firmware Update - SLM Tab

Setting	Description
Current Version (view only)	Number of the firmware release on the SLM.
Load Firmware via	From the drop-down list, select the method of loading the firmware. Options are **FTP**, **SFTP**, and **Local File**. FTP is the default. ***Note:*** *The Local File option is active only when at least one file exists in the SLM FW Upgrade Files directory.*
Firmware Filename	The name of the firmware update file downloaded from the Lantronix web site.
Key	If the user selects the firmware file from the SLM FW Upgrade Files directory, no entry is required. Otherwise, enter a key for validating the firmware file. Lantronix provides the key with the firmware file (32 hex characters).
Local File	From the drop-down list, select the firmware update (from the Files > SLM Upgrade Files directory).

Setting	Description
Client File	Enter or browse to the file where the update is stored.
Check Lantronix (Only displays for service plan holders)	If you have an active Lantronix service plan for your SLM, you can download update files directly from the Lantronix server onto your SLM. If you select this checkbox, and click the **Submit** button, the SLM will interrogate the Lantronix Server to see if a firmware update file is available for your system. If one is present, then an additional option, **Lantronix Server**, displays in the **Load Firmware via** drop-down list.

Table 11-42 Device Firmware Update - SLM Tab - FTP/SFTP Server

Setting	Description
FTP Server	The IP address or host name of the server used for obtaining updates. May have up to 64 alphanumeric characters and may include hyphens and underscores.
Path	The default path on the server for obtaining firmware update files. May be blank.
Login	The user name for accessing the FTP server.
Password and Confirm Password	The FTP user password.
Connect Timeout (secs)	The number of seconds after which the connection attempt times out. Default is **60**.
Download Timeout (secs)	The number of seconds after which the download attempt times out. Default is **180**.

2. Click the **Update** button.

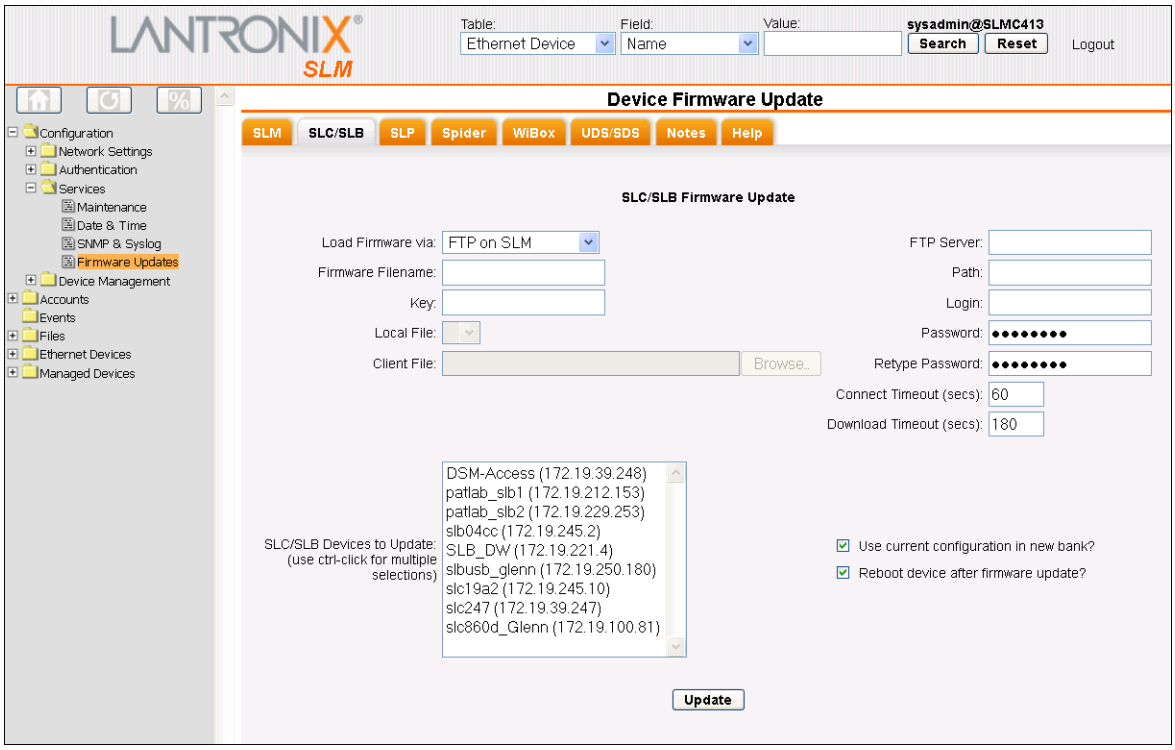
Note: *To check the progress of the update, click the* ***Progress***  *button above the menu.*

SLC/SLB Firmware

To update SLC/SLB firmware:

1. On the Device Firmware Updates page, click the **SLC/SLB** tab. The following page opens:

Figure 11-43 Device Firmware Update Page - SLC/SLB Tab



2. Enter the following information:

Table 11-44 Device Firmware Update - SLC/SLB Tab

Setting	Description
Load Firmware via	From the drop-down list, select the method of loading the firmware. You have the following options: **FTP on SLC/SLB, SFTP on SLC/SLB, and TFTP on SLC/SLB:** The SLM commands the SLC/SLB to download the SLC/SLB firmware file directly from a server to the SLC/SLB. **FTP on SLM and SFTP on** SLM**:** The SLM first checks to see whether the SLM firmware file already exists on the SLM local hard disk. If not, the SLM downloads it using FTP or SFTP. The SLM stores the firmware file locally, securely copies the file to the selected SLC/SLBs, and runs the firmware update on the SLC/SLBs. **HTTP From Client** ***Note:*** *The* ***Local File*** *option is active only when at least one file exists in the SLC/SLB FW Upgrade Files directory.*
Firmware Filename	The name of the firmware update file downloaded from the Lantronix web site.

Setting	Description
Key	If the user selects the firmware file from the SLC/SLB FW Upgrade Files directory, no entry is required. Otherwise, enter a key for validating the firmware file. Lantronix provides the key with the firmware file (32 hex characters).
Local File	From the drop-down list, select the firmware update (from the Files > SLC/SLB FW Upgrade Files directory.)
Client File	Enter or browse to the file where the update is stored.

Table 11-45 Device Firmware Update - SLC/SLB Tab - FTP/SFTP Server

Setting	Description
FTP Server	The IP address or host name of the server used for obtaining updates. May have up to 64 alphanumeric characters and may include hyphens and underscores.
Path	The default path on the server for obtaining firmware update files. May be blank.
Login	The user name for accessing the FTP server.
Password and Confirm Password	The FTP user password.
Connect Timeout (secs)	The number of seconds after which the connection attempt times out. Default is 60.
Download Timeout (secs)	The number of seconds after which the download attempt times out. Default is 180.
Apply firmware update to inactive bank?	Newer SLCs and SLBs use two partitions (should one fail, the user can fall back to the other). Check this option to apply the firmware update to the inactive partition.
Use current configuration in new bank?	If updating the inactive partition, this will take the configuration from the current (active) bank and apply it to the updated partition.
Reboot device after firmware update?	Use this option to force the SLC/SLB to reboot (and come up using the new firmware version).

3. In the **SLC/SLB Devices to Update** area, select one or more of the SLC/SLBs managed by the SLM. (Use Ctrl+click for multiple selections.)
4. To update the SLC/SLBs, click the **Update** button. When the update is complete, a confirmation message displays.

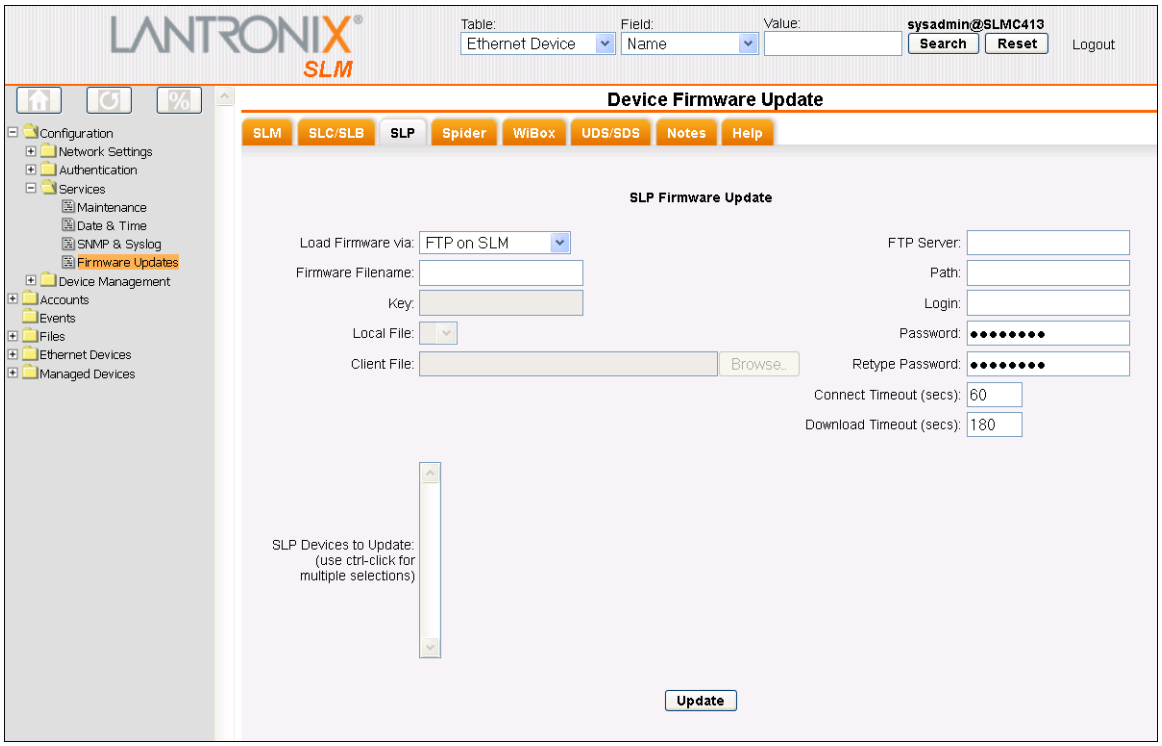
Note: *To check the progress of the update, click the* ***Progress*** *button above the menu.*

SLP Firmware

To update SLP firmware:

1. On the Device Firmware Update page, click the **SLP** tab. The following page opens:

Figure 11-46 Device Firmware Update - SLP Tab



2. Enter the following information:

Table 11-47 Device Firmware Update - SLP Tab

Setting	Description
Load Firmware via	From the drop-down list, select the method of loading the firmware. You have the following options: **Select FTP on SLP** for the SLM to command the SLP to download the SLP firmware file to the SLP directly from a server. **Select FTP on SLM or SFTP on** SLM for the SLM to first check to see whether the SLP firmware file already exists on the SLM local hard disk. If not, the SLM downloads it using FTP or SFTP. The SLM stores the firmware file locally; then the SLM serves as the FTP server and allows the SLP to download the firmware file from the SLM, and then runs the firmware update. **HTTP From Client** ***Note:*** *The Local File option is active only when at least one file exists in the SLP FW Upgrade Files directory.*
Firmware Filename	The name of the firmware update file downloaded from the Lantronix web site.

Setting	Description
Key	If the user selects the firmware file from the SLP FW Upgrade Files directory, no entry is required. Otherwise, enter a key for validating the firmware file. Lantronix provides the key with the firmware file (32 hex characters).
Local File	From the drop-down list, select the firmware update (from the Files > SLP Upgrade Files directory.)
Client File	Enter or browse to the file where the update is stored.

Table 11-48 Device Firmware Update - SLP Tab - FTP/SFTP Server

Setting	Description
FTP Server	The IP address or host name of the server used for obtaining updates. May have up to 64 alphanumeric characters and may include hyphens and underscores.
Path	The default path on the server for obtaining firmware update files. May be blank.
Login	The user name for accessing the FTP server.
Password and Confirm Password	The FTP user password.
Connect Timeout (secs)	The number of seconds after which the connection attempt times out. Default is **60**.
Download Timeout (secs)	The number of seconds after which the download attempt times out. Default is **180**.

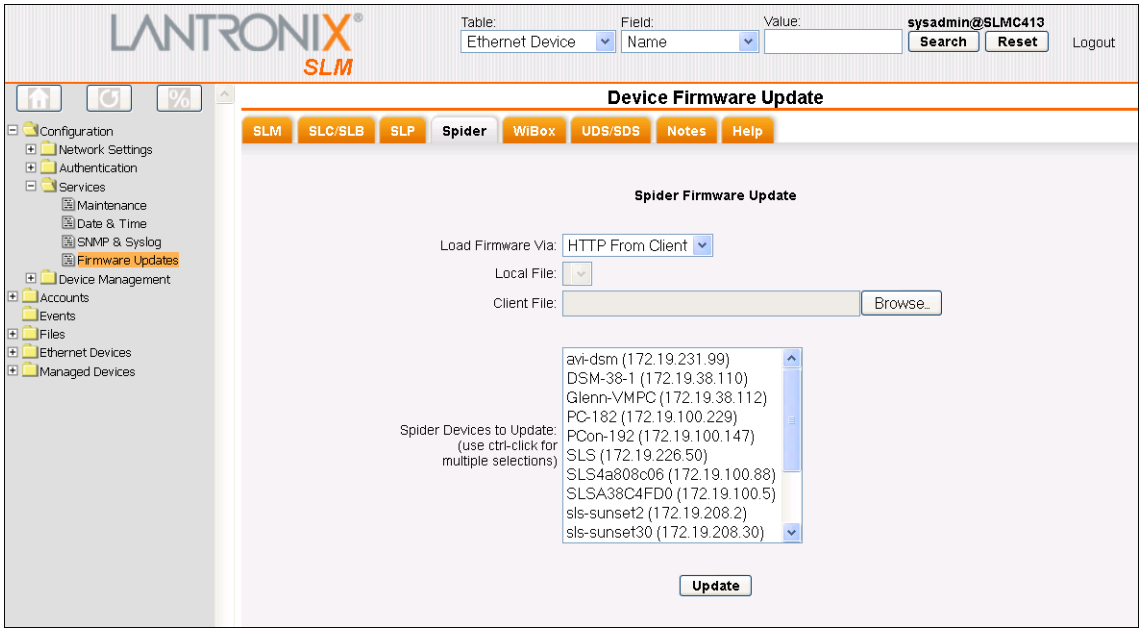
3. In the **SLP Devices to Update** area, select one or more of the SLPs managed by the SLM. (Use **Ctrl+click** for multiple selections.)
4. To update the SLPs, click the **Update** button. When the update is complete, a confirmation message displays.

Note: *To check the progress of the update, click the* **Progress**  button *above the menu.*

Spider Firmware

1. On the Device Firmware Updates page, click the **Spider** tab. The following page opens.

Figure 11-49 Device Firmware Update Page - Spider Tab



2. Enter the following information:

Table 11-50 Device Firmware Update - Spider

Setting	Description
Load Firmware via	From the drop-down list, select the method of loading the firmware. You have the following options: **HTTP From Client** ***Note:*** *The Local File option is active only when at least one file exists in the Spider FW Upgrade Files directory.*
Local File	From the drop-down list, select the firmware update file stored on the SLM.
Client File	Enter or browse to the file where the update is stored.

3. In the **Spider Devices to Update** area, select one or more of the Spiders the SLM is managing. (Use **Ctrl+click** for multiple selections.)
4. To update the Spiders, click the **Update** button. When the update is complete, a confirmation message displays.

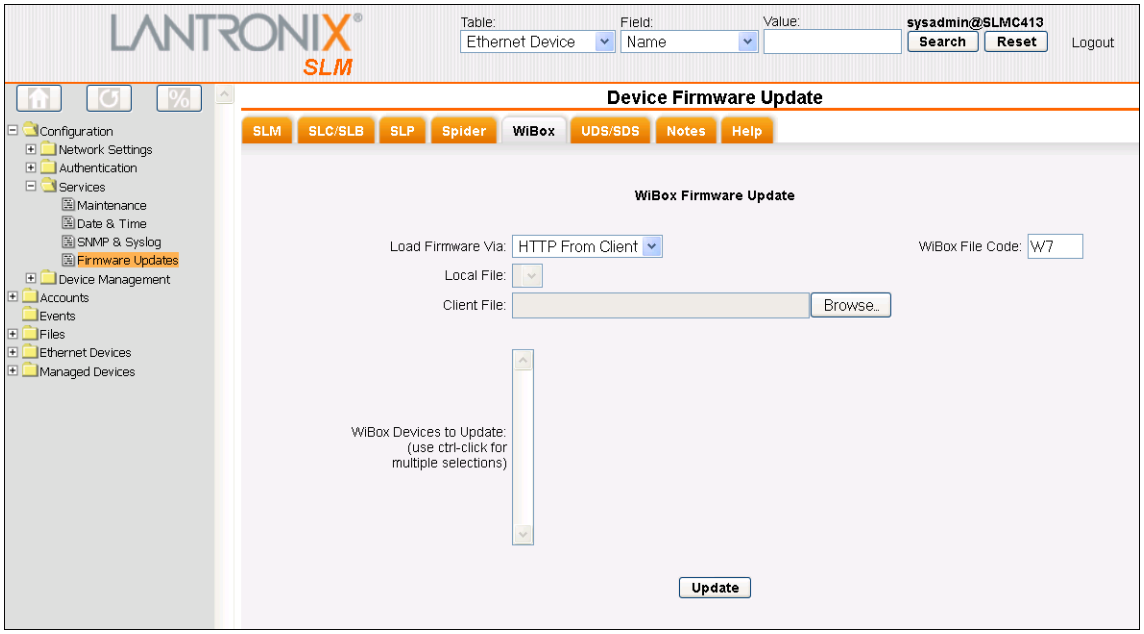
Note: *To check the progress of the update, click the* **Progress** button *above the menu.*

WiBox Firmware

To update firmware on a WiBox:

1. On the Device Firmware Updates page, click the **WiBox** tab.

Figure 11-51 Device Firmware Update Page - WiBox Tab



2. Enter the following information:

Table 11-52 Device Firmware Update - WiBox

Setting	Description
Load Firmware via	From the drop-down list, select the method of loading the firmware. You have the following options: **HTTP From Client** ***Note:*** *The Local File option is active only when at least one file exists in the WiBox FW Upgrade Files directory.*
Local File	From the drop-down list, select the firmware update file stored on the SLM.
Client File	Enter or browse to the file where the update is stored.
WiBox File Code	Enter the 2-character firmware code that matches your WiBox. ***Note:*** *Not all WiBox units share the same code. See the User Guide for your WiBox to find the correct code.*

3. In the **WiBox Devices to Update** area, select one or more of the WiBoxes the SLM is managing. (Use **Ctrl+click** for multiple selections.)
4. To update the WiBoxes, click the **Update** button. When the update is complete, a confirmation message displays.

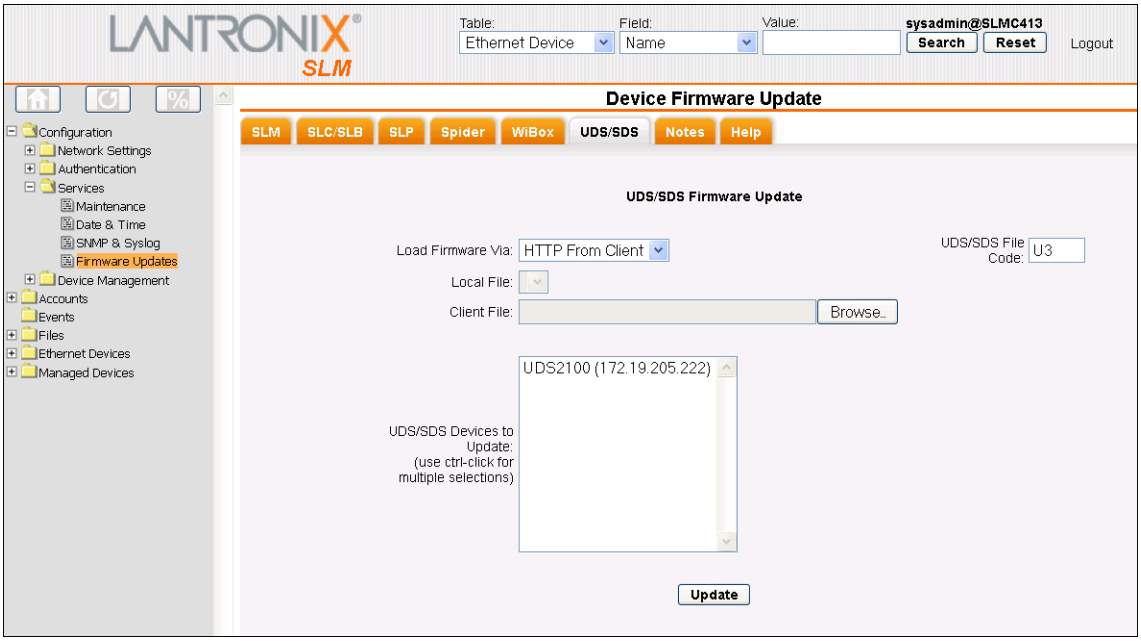
Note: *To check the progress of the update, click the* **Progress** button *above the menu.*

UDS/SDS Firmware Updates

To update firmware on a UDS/SDS:

1. On the Device Firmware Updates page, click the **UDS/SDS** tab. The following page opens:

Figure 11-53 Firmware Update Page - UDS/SDS Tab



2. Enter the following information:

Table 11-54 Device Firmware Update - UDS/SDS

Setting	Description
Load Firmware via	From the drop-down list, select the method of loading the firmware. You have the following options **HTTP From Client** ***Note:*** *The Local File option is active only when at least one file exists in the UDS/SDS FW Upgrade Files directory.*
Local File	From the drop-down list, select the firmware update file stored on the SLM.
Client File	Enter or browse to the file where the update is stored.
UDS/SDS File Code	Enter the 2-character firmware code that matches your UDS/SDS. ***Note:*** *Not all UDS/SDS units share the same code. See the User Guide for your UDS/SDS to find the correct code.*

3. In the UDS/SDS Devices to Update area, select one or more of the UDS/SDS units the SLM is managing. (Use **Ctrl+click** for multiple selections.)
4. To update the UDS/SDS units, click the **Update** button. When the update is complete, a confirmation message displays.

Note: *To check the progress of the update, click the* **Progress** button *above the menu.*

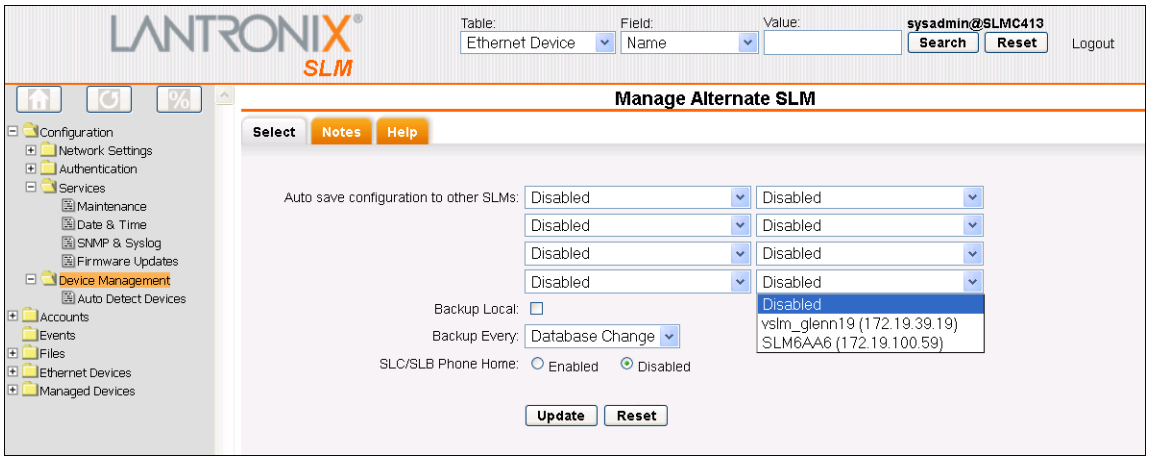
Managing Alternate SLMs

When **Auto save configuration to other SLMs** is enabled, the SLM immediately saves its own configuration to up to eight remote SLMs. After that, every time the SLM configuration has changed, it waits 60 minutes to make sure there are no more changes before saving another configuration to the remote SLMs. The remote SLMs keep the most recent 10 configuration files saved by auto save configuration.

To auto-save a configuration:

1. On the menu, click **Configuration > Device Management**. The following page opens:

Figure 11-55 Auto Saving a Configuration



2. Enter the following information:

Table 11-56 Manage Alternate SLM - Select Tab

Setting	Description
Auto save configuration to other SLMs	From the drop-down lists, select up to eight SLMs on which automatically saved configuration files will be stored. (Disabled by default.) ***Note:*** *For SLMs to populate the drop-down lists, they must have a secure channel connection with your SLM.*
Backup Local	When creating saved configuration files, copy one to the local machine as well.
Backup Every	From the drop-down list, select how often to back up the configuration(s). You can back up the configuration(s) every time there is a database change or at specific daily intervals, regardless of whether there was a change.
SLC/SLB Phone Home	Allow SLC/SLB devices to automatically insert themselves into the SLM database without a discovery operation performed.

3. To save, click the **Update** button. When the update is complete, a confirmation message displays.
4. To reset to original values, click the **Reset** button.

Managing Devices Through the Actions Tab

Administrators can reboot, shutdown, get log, status, and configuration files, restore configurations, and execute CLI commands.

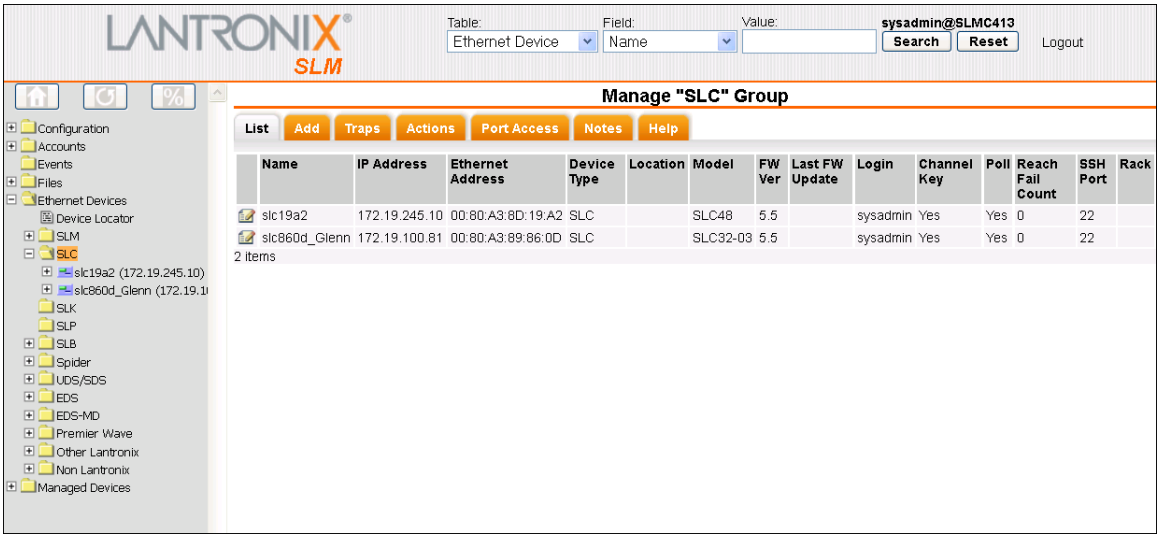
Depending on the device, different options will be offered.

Using the Actions Tab

The Actions tab is active for the SLC, SLB, Spider and UDS Group pages. It allows you to perform many tasks related to the discovered devices. You can perform only one action at a time on a single device, but you may perform the same action on multiple or all devices or different actions on multiple devices.

1. On the menu, click **Ethernet Devices** and select a specific device group. The Manage "selected device group" Group page opens.
2. Click the **Actions** tab. The following page opens for SLC/SLB. Note that this page will differ for Spider and UDS devices.

Figure 11-57 Manage "SLC" Group Actions Tab



3. To perform an action on all of the listed SLCs, select the check box in the column header,

OR

To perform an action on multiple SLCs, select the check box for each desired SLC.

Before performing an action on another group of devices, access the SLM auditlog or SLM syslog file.

Following are the available actions:

- Reboot
- Shutdown
- Get Syslogs
- Get Audit Log
- Get Config

- Get Sysconfig
- Restore Config
- Get SSH/Push SSH
- Read Info
- CLI Cmd (For CLI Cmd, you may specify any number of devices.)
- VIP (used to preserve Spider VIP settings during config restore)

4. Click the **Progress** button to view the status of your commands. For more details, view the SLM auditlog and SLM syslog.

Rebooting or Shutting Down

Use the Actions tab to reboot or shut down one or more SLCs.

To reboot or shut down:

1. To reboot an SLC, select the **Reboot** check box for the SLC,

OR

To shut down an SLC, select the **Shutdown** check box for the SLC.

2. Click the **Submit** button.

Getting a Log File

Use the **Actions** tab to get a syslog or audit log file from one or more SLCs.

Notes:

- *The SLM stores files in the Files directories. You can display a file from the appropriate Files directory.*
- *The file name format is*

  [first 8 characters of SLC host name] _[last 8 characters of MAC Address]-YYMMDD_hhmm-[type of logfile].

  For example, the syslog file retrieved from SLC 'slc32glenn2' (MAC address: 00:11:11:00:11:11) at 15:11 Nov 2, 2006 is

  'slc32gle_11001111-061102_1511-slcsyslog'.

To get a syslog or audit log file from an SLC:

1. To get the syslog from an SLC, select the type of syslog from the **Get Syslogs** drop-down list,

OR

To get the audit log from an SLC, select the G**et Audit Log** check box for the SLC.

2. Click the **Submit** button.

Getting or Restoring a Configuration File

Use the **Actions** tab to get a specific configuration file from one or more SLCs or to restore a configuration to one or more SLCs.

Note: *The SLM stores files in the Files directories. You can display a file from the appropriate Files directory.*

To get a configuration file from an SLC:

1. Select the **Get Config** check box for the SLC.
2. Click the **Submit** button.

To restore a configuration to an SLC:

1. From the **Config file** drop-down list at the top of the page, select the desired configuration file.
2. Select the **Restore Config** check box for the SLC.
3. Select the **Preserve** check boxes to retain the current configuration parameters after the configuration is restored. You may make multiple selections. (Options are Network, Services, Date/Time, Local Users, Device Ports, and **PC Care**.)
4. Click the **Submit** button.

Getting a Sysconfig File

Use the Actions tab to get a sysconfig file from one or more SLCs.

To get a sysconfig (system status) file:

1. Select the **Get Sysconfig** check box for the SLC.
2. Click the **Submit** button.

Getting or Pushing SSH Keys

Use the **Actions** tab to retrieve or export SSH keys from or to one or more SLCs.

Note: *To view SSH keys, click **Configuration > Authentication > SSH Keys** on the menu, and then click the **SLC Keys** tab.*

Get SSH key retrieves all the imported public SSH keys from the selected SLC and stores them in the database. **Push SSH key** exports the selected SSH keys to the selected SLCs.

When an SLC imports a public key (with a specific user and host name) from a host (could be an SLM or another PC), this SLC allows that particular user to access the SLC from that particular host. When you enable **Get SSH** keys from an SLC, the SLM retrieves all the imported public keys from that particular SLC and stores them in the SLM database. Then you can push those public keys retrieved from one SLC to other SLCs, allowing those particular users to access other SLCs from those particular hosts.

To get SSH keys:

Example: Following is an example of how the user may get and push SSH Keys.

SLC-1 has three imported public keys:

- key1: user-A@host-X

- key2: user-B@host-Y
- key3: user-C@host-Z

The user enables **Get SSH key** from SLC-1 on the SLM. As a result, the SLM database has the three keys above.

The user selects key1 and key3 on the SLC **Actions** tab on the SLM and enables **Push SSH Key** to SLC-20 and SLC-21.

Now SLC-20 and SLC-21 have both key1 and key3. This means that SLC-20 and SLC-21 allow user-A to access them from host-X, and allow user-C to access them from host-Z.

To push SSH keys:

1. To overwrite SSH keys with the same host and user name currently in the database, select the **Overwrite** check box at the top of the page.
2. Select the **Get SSH** check box for the SLC.
3. Click the **Submit** button.

To push SSH keys:

1. To overwrite SSH keys with same user name and host name on the SLC where you are exporting the SSH, select the **Overwrite** check box at the top of the page.
2. Select the **Push SSH** check box for the SLC.
3. Click the **Submit** button.

Reading Information

Use the **Actions** tab to update the SLM's database with SLC device and port information.

To read information from SLCs:

1. Select the checkboxes for the SLCs to read.
2. Click the **Submit** button.

Note: *This is the same as the **Read info from devices** check box on the SLC device page. On the **Actions** page, you can issue this action for multiple SLC devices at once.*

Add Applet

For UDS only.

To send an applet file to one or more UDS devices:

1. Select the applet file from the drop down list. This file is found in the SLM folder "UDS Applet Files" under Configuration in the Files area. This applet file must be previously placed in this folder.
2. Check the "Add Applet" box for one or more UDS devices.
3. Click the **Submit** button.

Note: *This applet file will be sent to page 0 of the UDS device. The ability to write to pages other than zero will be added to a future release.*

Issuing a CLI Command

Use the **Actions** tab to issue a CLI command to one or more SLCs.

Note: *Commands issued from the **Actions** tab are not interactive.*

The following command will not work, because the SLC CLI requires confirmation to continue with group configuration commands:

```
set device port 1-3 baud 19200
```

The following commands will not work, because the SLC CLI requires confirmation to continue with admin maintenance configuration commands:

```
admin reboot
admin shutdown
admin config
```

The following commands will not work because the SLC CLI does not send status "settings successfully updated", which lets the SLM know that the command was successful:

```
show [anything]
```

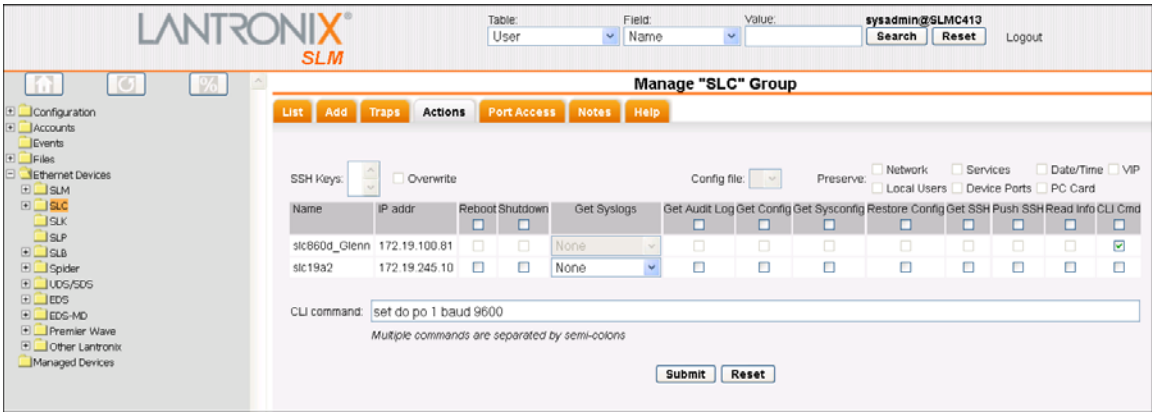
Examples of commands that do work are:

```
se de po 1 baud 9600
set cli terminallines disable
```

To issue a CLI command:

1. Select the **CLI Cmd** check box for the SLC.

Figure 11-58 Issuing a CLI Command



2. In the **CLI command** field at the bottom of the page, enter the command. You can issue multiple commands, separated by semicolons (;).
3. Click the **Submit** button.

Viewing Progress of Update FW and CLI Commands

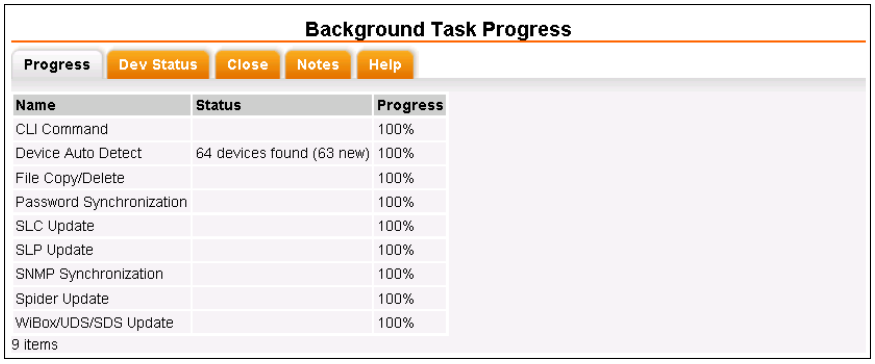
You use the **Progress** button to view the progress of the **Update FW** and **CLI CMD** actions described above.

Note: *For more detailed status, view the* SLM *auditlog in the Files folder.*

To view the progress of actions running in the background:

1. Click the **Progress** button. The following page opens:

Figure 11-59 Viewing Progress of Update FW and CLI Commands



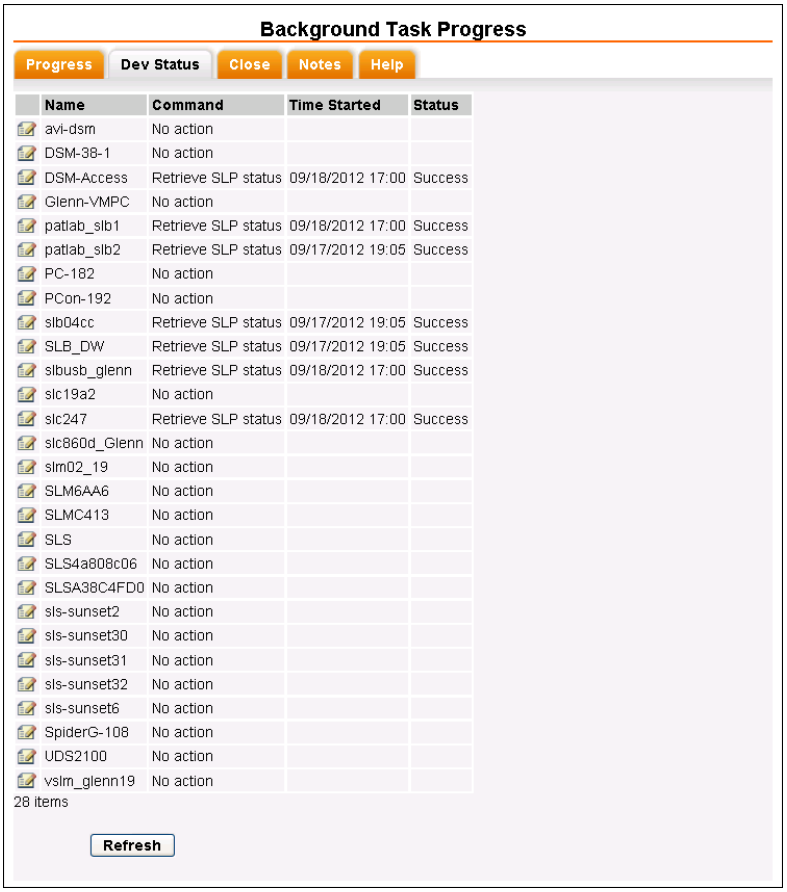
2. View the following information about each task.

Table 11-60 Manage "SLC" Group - Actions Tab

Setting	Description
Name	Name of the task.
Status	Informational text.
Progress	Percentage of the task that is complete.

3. To view details of the last device action status of the SLMs/SLCs/SLPs/SCS, click the **Dev. Status** tab. The following page opens:

Figure 11-61 Background Task Progress - Dev Status Tab



4. To close the Background Task Progress page, click the **Close** tab.

Events

Administrators can configure alarms, triggers, and events on the SLM. Examples of events are receiving an SNMP trap, a system event like network failure, or a text string match in a certain log. There are several types of logs in the SLM system: data logs (device port buffering), syslogs, event logs, access logs (user access), and audit logs. The alarm could send an email to a user, send an SNMP trap, or write to a log file (local syslog or remote syslog).

Event Management

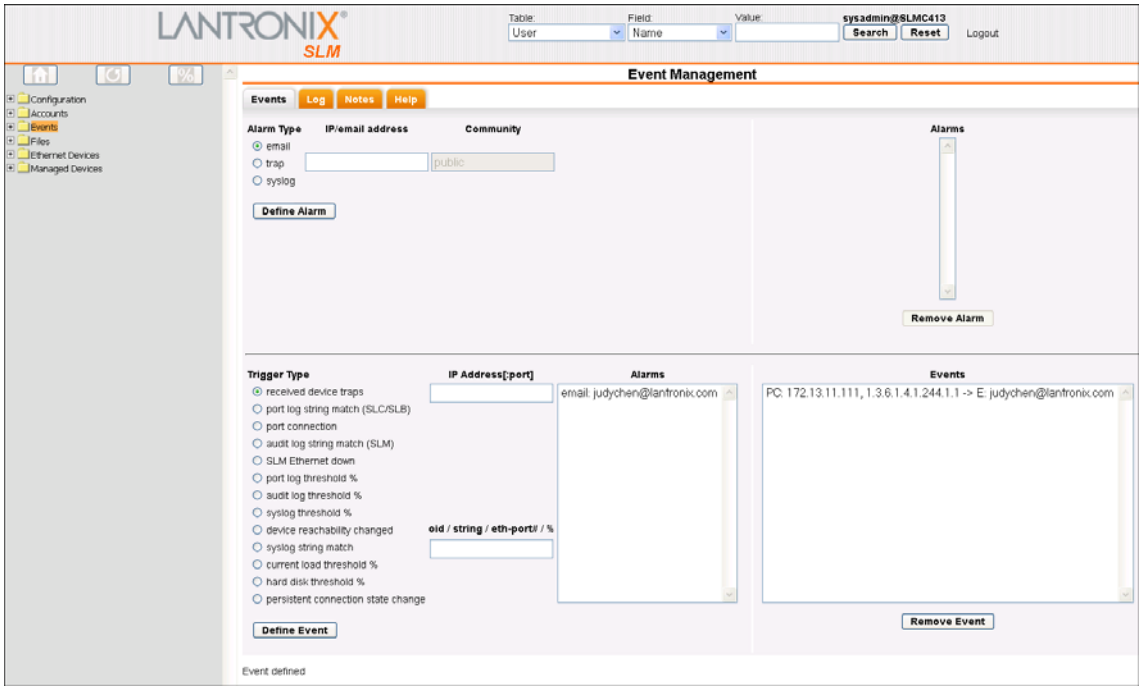
Administrators configure alarms and triggers. An alarm is a notification that may take the form of an email, trap, or syslog. A trigger is something that happens to set off an alarm assigned to that trigger. An event is a combination of a trigger and an alarm.

You can map one trigger to multiple alarms and/or multiple triggers to one alarm (saving you from having to define the same alarm repeatedly for each trigger).

To define alarms:

1. On the menu, click **Events**. The following page opens:

Figure 11-62 Event Management Page - Events Tab



2. Enter the following information:

Table 11-63 Event Management - Events Tab - Alarm Type

Setting	Description
Alarm Type	Select one of the following: **email:** Sends an email to the specified email address with details of the event that has been triggered. **trap:** Sends a notification of a critical event to a specified IP address. **syslog:** Writes an entry into the syslog with details of the event.
IP/email address	**For an Email alarm:** The email address where notifications go. **For a trap:** The IP address of the device to which notifications go. **For a syslog:** Leave blank.
Community	**For a trap:** The SNMP community of the device to which the trap is sent. The default is public. **Example:** If the alarm type is Trap, and the IP address is 172.19.100.123, the SNMP community name should be the SNMP community of the device 172.19.100.123. Otherwise the device will not receive the trap.

3. Click the **Define Alarm** button. The alarm displays in the **Alarm** list on the right.
4. Enter the following information:

Table 11-64 Event Management - Events Tab - Trigger Type

Setting	Description
Trigger Type	Select one of the following: **received device traps:** An incoming trap from a specified IP address. **port log string match (SLC/SLB):** A defined string matches a monitored device's port log. The string match for the port log could be either an exact string match, or a regular expression. See the string field for an example. **port connection:** A defined string matches a monitored device's port connection. **audit log string match (**SLM**):** A defined string matches an entry in the audit log. SLM **Ethernet down:** A defined ethernet port has failed (for example, eth-port: 2). **port log threshold %:** The SLC port log files have reached a defined percentage of the SLC Portlog directory's capacity. **audit log threshold %:** The SLM or SLC audit log files have reached a defined percentage of the SLM Auditlog directory's capacity. **syslog threshold %:** The SLM or SLC syslog files have reached a defined percentage of the SLM Syslog directory's capacity. **device reachability changed:** If you specify the device's IP Address with this trigger type, the SLM sets the trigger should polling fail on this device. If you do not specify the device's IP Address, the SLM sets the trigger on all the devices on which polling failed. When polling is enabled on a device (the Poll check box on the device page), the SLM constantly checks on the device to see if that device is reachable. **syslog string match:** Enter the text string for the string match in the oid / string / eth-port / % field. This is the trigger when a syslog string matches the specified string. This is a very powerful trigger because the SLM can act as a syslog server by receiving a syslog from SLCs and other devices. You can do a string match to all kinds of syslog messages (e.g., for all SLC events that will send a message to syslog). **current load threshold %:** Enter the IP address and port number (optional) of the SLP or SLB you want to monitor and its current load threshold %. If you specify a port number, the trigger is set when the current load (outletLoad) of the outlet # (port #) reaches the outletLoad theshold on that particular SLP or SLB. If you do not specify a port number, the trigger is set when the current load (infeedLoad) of the whole SLP or SLB reaches the infeedLoad threshold. **hard disk threshold %:** Enter the percentage of the hard disk threshold of the SLM. The SLM sends out the alarm when the hard disk usage reaches this threshold. **persistent connection state change:** A persistent connection that has changed from active to inactive or vice versa.
IP Address[:port]	For a trap, port log, or port connection: Enter the IP address followed by an optional port number 1-48, for example, 172.19.39.19:15. ***Note:*** *The brackets indicate that: port is not always required.*

Setting	Description
oid / string / eth-port /%	Depending on the trigger type selected, enter one or more of the following: **oid:** A unique identifier for an SNMP object. (An SNMP object is anything that can hold a value and can be read using an SNMP "get" action.) The OID consists of a string of numbers separated by periods (for example, 1.1.3.2.1). Each number is part of a group represented by the number on its left. **string:** Series of characters that match a monitored device's audit log, syslog, or port log. The OID string match supports partial match. The string match for a port log could be an exact string or a regular expression. For example: ◆ String "reboot" will match port logs containing "reboot." ◆ String "RE:abc[0-9]" will match port logs containing any string that matches the regular expression "abc[0-9]." ◆ OID .3.6.1.4.1.244.1.1 will match any SLC custom traps with OID: .3.6.1.4.1.244.1.1.0.1 to 1.3.6.1.4.1.244.1.1.0.4. **eth-port:** Ethernet port that is down (for example, 2). **%:** Defined percentage of the SLC port log file's capacity. For detailed instructions on completing the OID for a trap, see the Lantronix web site www.lantronix.com/support).

5. In the **Alarms** list to the right, select the alarm(s) to be associated with the selected trigger.
6. Click the **Define Event** button. The event displays in the format Trigger: Alarm in the Events list on the page. The trigger displays in the Events menu tree.

Figure 11-65 SNMP Trap Configuration (from Lantronix Tech Support FAQ)

SNMP trap configuration on an SLM

Published 08/03/2006 03:23 PM | Updated 01/21/2009 08:15 AM

How do I configure SNMP Trap Event Triggers on an SLM? Do I need to specify the full OID for every trap I want to use as a trigger?

This answer applies to SLM firmware v2.0 and higher.

On the SLM Events page, when you setup a "Trap" as an Event Trigger, you don't have to explicitly describe the OID down to the last digit.

Example 1:
If you define a trap as shown below:

```
Trigger Type
[v] Trap              IP Address: 172.19.237.10
                      OID: 1.3.6.1.4.1.244.1.1
```

It will match all SLC custom traps received from the specified IP address(172.19.237.10). These include:

```
1.3.6.1.4.1.244.1.1.0.1 (power supply)
1.3.6.1.4.1.244.1.1.0.2 (sysadmin password)
1.3.6.1.4.1.244.1.1.0.3 (shutdown)
1.3.6.1.4.1.244.1.1.0.4 (device port data)
```

Example 2:
If you define a trap as shown below:

```
Trigger Type
[v] Trap              IP Address: 172.19.237.10
                      OID: 1.3.6.1.6.3.1.1.5
```

It will match all generic **SNMP** traps received from the specified IP address(172.19.237.10). These include:

```
1.3.6.1.6.3.1.1.5.1     (cold start)
1.3.6.1.6.3.1.1.5.2     (warm start)
1.3.6.1.6.3.1.1.5.3     (link down)
1.3.6.1.6.3.1.1.5.4     (link up)
1.3.6.1.6.3.1.1.5.5     (auth failure)
1.3.6.1.6.3.1.1.5.6     (egpNeighborLoss)
```

Example 3:
If you define a trap as shown below:

```
Trigger Type
[v] Trap              IP Address: 172.19.237.10
                      OID: 1.3.6.1.4.1.244.1.1.0.1
```

This will only match SLC power supply trap received from the specified IP address(172.19.237.10).

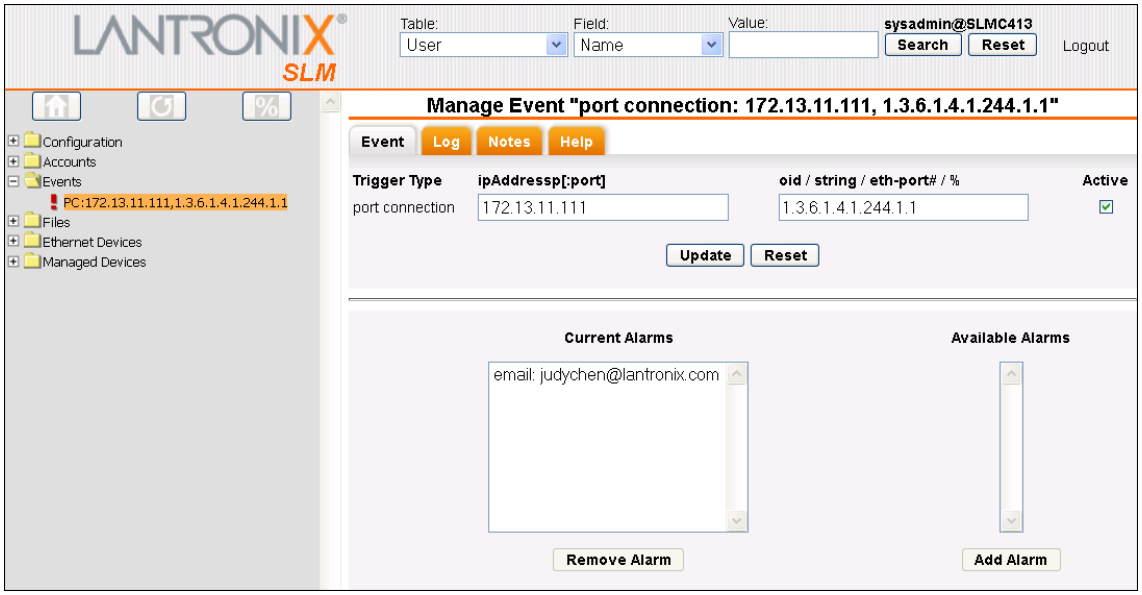
Updating and Deleting Events

Administrators and authorized users can update triggers and delete or add alarms for defined events.

To update information about the alarm, trigger, or event:

1. On the menu, open the **Events** menu tree and select the event to be managed. The following page opens:

Figure 11-66 Manage Event Page -Event Tab



2. Update the information about the alarm, trigger, or combination of alarm and trigger as desired.

Note: *If you deactivate an event, it remains in the system but will not send alarms until it is reactivated.*

3. Click the **Update** button.

To add an additional alarm:

You may add an alarm only if there are available alarms that are not already assigned to the trigger. You can add more alarms on the main Event Management page.

1. From the **Available Alarms** list, select another alarm.
2. Click the **Add Alarm** button. The alarm now displays in the Current Alarms list.

To delete an alarm:

On the Manage Event page you can remove an alarm only if there are more than two alarms to start with (you may not leave a trigger without an alarm).

1. Select the alarm from the **Current Alarms** list and click the **Remove Alarm** button. A confirmation message displays.
2. Click **OK**. The alarm is no longer in the **Alarms** list or in any events that use that alarm.

To delete an event:

1. Select the event from the **Events** list and click the **Remove Event** button. A confirmation message displays.
2. Click **OK**. The event is no longer in the **Events** list.

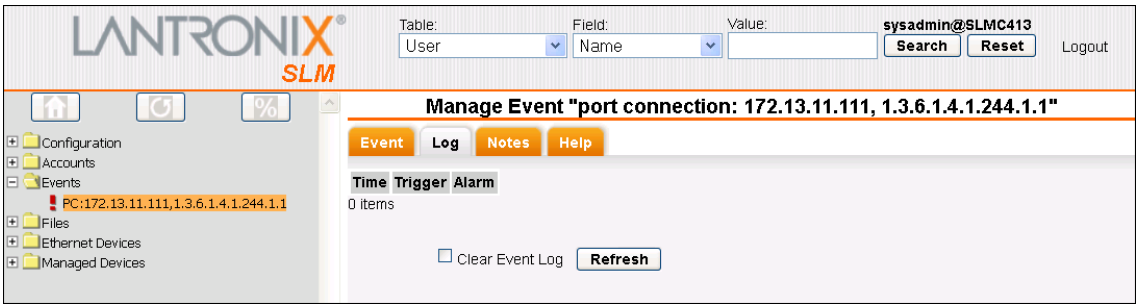
Viewing the Event Log

Administrators and authorized users view a list of all defined events.

To view all device events:

1. On the menu, click **Events** and then click the **Log** tab. The following page opens:

Figure 11-67 Event Management Page - Log Tab



Clearing the Event Log

Administrators can clear the event log.

To display current log information:

1. Click the **Refresh** button.

To clear the event log:

1. Click the **Clear Event Log** button. A message requesting confirmation displays.
2. In response to the confirmation message, click **OK**.

Files

Administrators can display and manage log, upgrade, configuration, session, and trap files of Ethernet devices.

Note: *To retrieve files from the SLC, use the Manage SLC Group Actions tab.*

File Types

You can view and store the following files in the SLM database. You can also import or export them by means of an NFS or CICS mount.

Firmware Upgrade

- **SLM FW Upgrade Files:** Files for upgrading the SLM's firmware.

- **SLC/SLB FW Upgrade Files:** Files for upgrading the SLC/SLB's firmware.
- **SLP FW Upgrade Files:** Files for upgrading the SLP's firmware.
- **Spider FW Upgrade Files:** Files for upgrading the Spider's firmware.
- **UDS/SDS FW Upgrade Files:** Files for upgrading the UDS's firmware.
- **WiBox FW Upgrade Files:** Files for upgrading the WiBox's firmware.

Note: *You can obtain the most up-to-date firmware and release notes for the unit from the Lantronix web site (www.lantronix.com) or by using anonymous FTP (ftp.lantronix.com).*

Configuration Files

- **SLM Configuration Files:** Contain all of the SLM's settings that have been saved to file. They can be backed up to a location that is not on the SLM.
- **SLC/SLB Configuration Files:** Contain all of the SLC's settings that have been saved to file. They can be backed up to a location that is not on the SLC.
- **SLC/SLB Sysconfig Files:** Contain status information about the SLC.
- **Spider Configuration Files:** Contains all of a Spider's settings saved in a file. This can be used to restore another Spider to the same settings, or backed up and later used to restore the original Spider.
- **Spider Sysconfig Files:** Viewable system configuration of SLM managed Spider devices.
- **UDS/SDS Sysconfig Files:** Viewable system configuration of SLM managed UDS devices.
- **UDS/SDS Applet Files:** Applet files for installation on UDS devices.

Log Files

- **SLM Syslog Files:** Contain information about all activity on the SLM (for example, login attempts, alarms, and diagnostics).
- **SLM Auditlog Files:** Every successful login, logout, and command on the command line interface and web is logged into a database table. The administrator reads this information from the CLI or web and creates an audit report for one or multiple users.
- **SLC/SLB Syslog Files:** Contain information about all activity on the SLC, for example, login attempts, alarms, and diagnostics.
- **SLC/SLB Auditlog Files:** Contain a log of all actions that have changed the configuration of the SLC.
- **SLC/SLB Portlog Files:** Contain a log of all actions and data on a specific port.
- **Persistent Log Files:** Contain data about the activity of persistent connections.

Session Files

- **SLC/SLB Port Active Files:** Contain session log files for currently active Secure Channel sessions to SLC device ports.
- **SLC/SLB Port Saved Files:** Contain archived session log files for Secure Channel sessions to SLC device ports. The files in the SLC/SLB Port Active Files directory move into the SLC/SLB Port Saved Files directory after the session ends.

- **SCS05/20 Port Session Files:** Contain session log files for SSH sessions to SCS05/20 device ports. There is no distinction between active and inactive sessions.
- **Device Session Files:** Contain session log files for Telnet/SSH/Secure Channel port sessions. There is no distinction between active and inactive sessions.

  Note: *Session log files can be accessed from the **Logs** tab of Ethernet devices and certain (SLC, SCS05/20) device ports, as well as through the appropriate folders under **Files>Session**.*

Trap Files

- **SLM Exported Trap Files:** Contains all or part of the trap log files as specified on the Traps tab of the All Ethernet Devices page.

File Format

The names of Device Session Files, SLC Port Saved Files, SCS05/20 Port Session Files, Device Session Files, and SLC Port Active Files have the following format:

`<hostname>_<host_mac_address>-<device_port_number>=<username>=<connection_type>-<date_and_time>.log`, where:

Table 11-68 File Format

Setting	Description
`<hostname>`	Up to the first 8 characters of the hostname of the Ethernet device. If the hostname is shorter than 8 characters, the hostname section is padded with ~ characters to reach this length.
`<host_mac_address>`	MAC Address of the Ethernet device. This is used by the SLM to correlate log files to their corresponding Ethernet devices.
`<device_port_number>`	Device port number connected to for this session. This field is set to 0 "00" for connections directly to the Ethernet device.
`<username>`	The SLM user ID that initiated this session.
`<connection_type>`	Session connection type: **tnt** for telnet, **ssh** for ssh, or **scc** for secure channel.
`<date_and_time>`	Date and time string in the format YYMMDD_HHMMSS

For edge device based logging, the filename is made up of only three of these fields:

`<hostname>_<host_mac_address>-<device_port_number>.log`

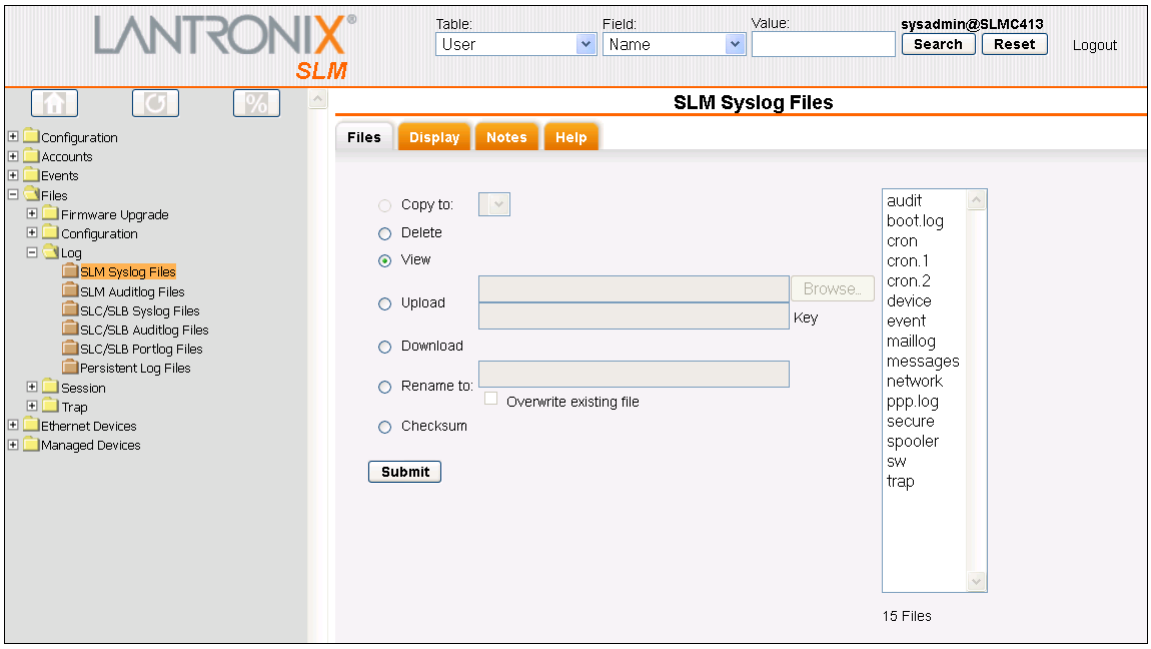
Viewing, Deleting, and Renaming Files

In this section, we show how to view, delete, and rename files. In our example, we use an SLM syslog file.

To view a file:

1. On the menu, click **Files** and then the file type you want to view. The following page opens:

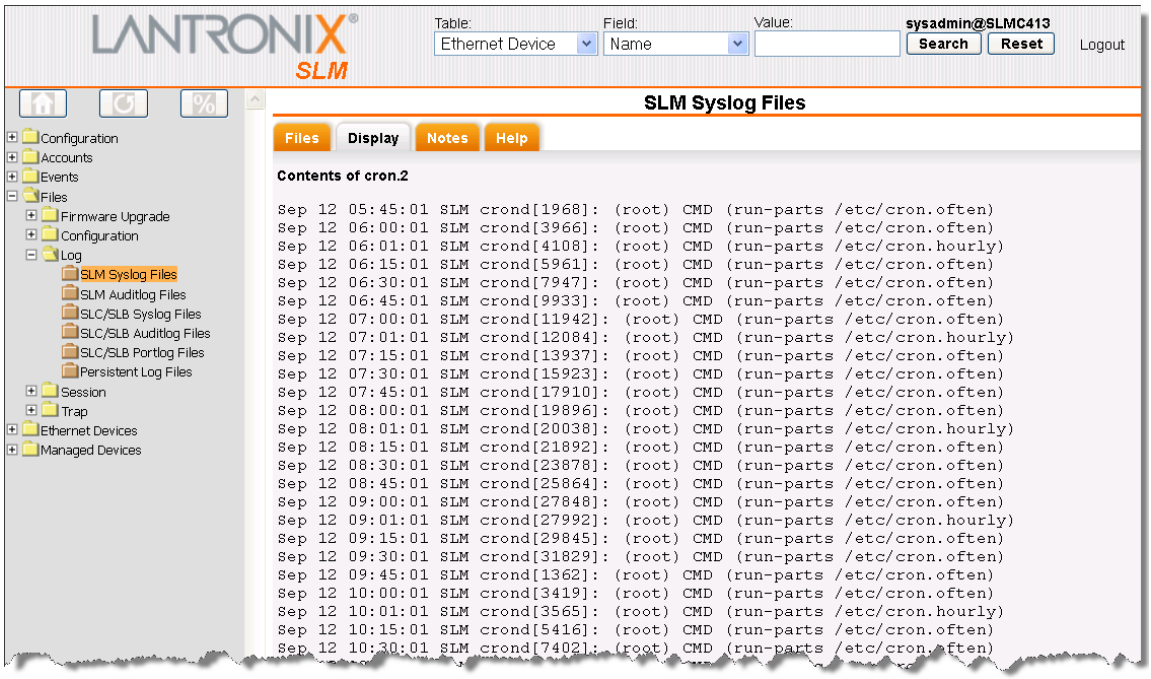
Figure 11-69 SLM Syslog Files Page - Files Tab



The available files (of the selected type) display in the list box.

2. Select **View** and then the file you want to view.
3. Click the **Submit** button. The **Display** tab opens and shows the contents of the selected file.

Figure 11-70 SLM Syslog Files Page - Display Tab



To delete a file:

Note: *You cannot delete an active syslog file.*

1. On the menu, click **Files** and then the type of file. The files of that type in the database display in the list box.
2. Select **Delete** and then the file you want to delete. To select multiple files, use **Shift+click** or **Ctrl+click**.
3. Click the **Submit** button.
4. In response to the request for confirmation, click **OK**. The file is no longer in the list.
5. To see the status of the copy process if you are deleting multiple files at the same time, click the **Progress** button above the menu.

To rename a file:

Note: *You cannot rename an active syslog file.*

1. On the menu, click **Files** and then the type of file you want to rename. The files of that type display in the list box.
2. Select **Rename** and then the file you want to rename.
3. To rename a file to a name already in use in the directory, select the **Overwrite existing file** check box.

   Note: *If you try to rename a file to a name already in use in that directory, the rename will fail unless you select Overwrite existing file check box.*
4. Click the **Submit** button. A confirmation message displays.

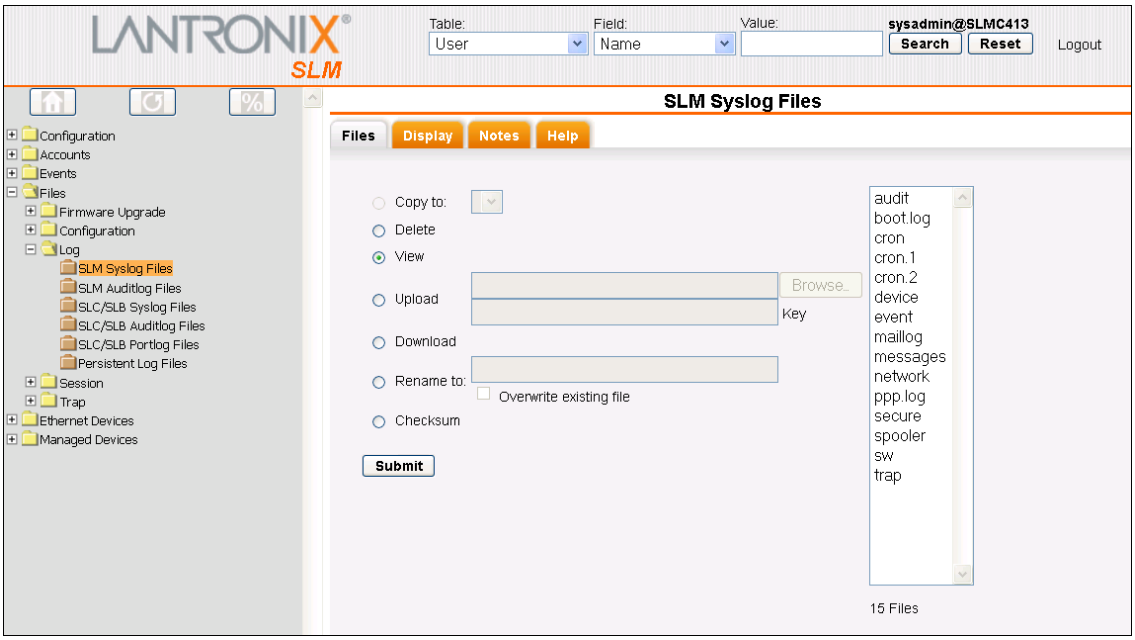
Exporting, Uploading, and Downloading Files

Administrators can export (copy), upload, and download files.

To open the Files page:

1. On the menu, click **Files** and then the file type you want to export. The following page opens:

Figure 11-71 Files Page



To export (copy) a file from the SLM to a mapped CIFS or NFS directory:

1. Select **Copy to**. The drop-down list box becomes active.

Note: ***Copy To*** *is only active if CIFS or NFS has been configured or if USB flash memory is installed.*

2. From the drop-down list, select the location of the file (NFS or CIFS).
3. From the list box to the right, select the destination directory for the file (CIFS or NFS), and click the **Submit** button. To select multiple files, use **Shift+click** or **Ctrl+click**. A confirmation message displays.
4. To see the status of the copy process if you are copying multiple files at the same time, click the **Progress** button above the menu.

To upload a file from the client machine to the SLM:

1. On the menu, click **Files** and then the file type you want to upload.
2. Select **Upload**.
3. Click the **Browse** button and locate the file on your client machine to upload.
4. If this is an SLM FW Upgrade or SLC FW Upgrade (which also handles SLB), enter the md5sum value for this file in the **Key** field.
5. Click the **Submit** button. The file displays in the list box.

To download a file from the SLM and to the client machine:

1. On the menu, click **Files** and then the file type you want to download.
2. Select **Download**.
3. Select the file to download from the files list.
4. Click the **Submit** button. A confirmation message displays.

5. If necessary, when requested by your browser, select the destination directory for the file on your client machine.

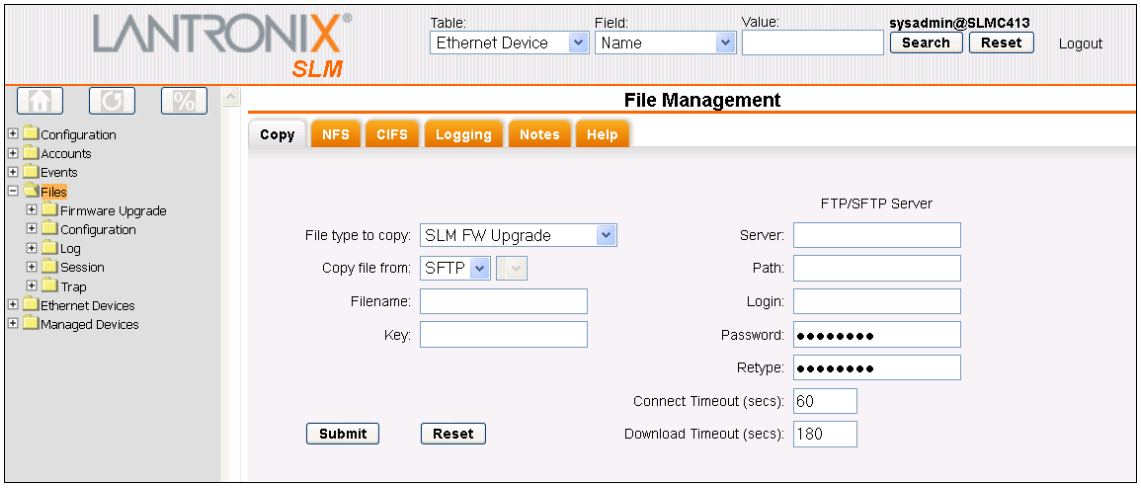
Copying Files

The administrator and other authorized users can download SLM and SLC firmware upgrade, configuration, and log files from an FTP/SFTP server.

To copy a file:

1. On the menu, click **Files**. The following page opens:

Figure 11-72 File Management Page - Copy Tab



2. Enter the following:

Table 11-73 File Management - Copy Tab

Setting	Description
File type to copy	From the drop-down list, select the type file to copy. The default setting is SLM **FW Upgrade**.
Copy file from	Select the type of server from which to copy. The default setting is SFTP. ***Note:*** *If you set up NFS and CIFS, or if a USB flash memory is installed, then they display in this list.*
Filename	Name of the firmware upgrade or configuration file.
Key	A key for validating the firmware file. The key comes with the firmware file (32 hex characters).

2. Enter the following information about the destination server:

Table 11-74 File Management - Copy Tab - FTP/SFTP Server

Setting	Description
Server	The IP address or host name of the server used for obtaining upgrades and saving or restoring configurations. May have up to 64 alphanumeric characters; may include hyphens and underscores.

Setting	Description
Path	The default path on the server for obtaining firmware upgrade files and getting and putting configuration save files.
Login	The user ID for accessing the FTP or SFTP server. May be blank.
Password and Retype	The FTP or SFTP user password.
Connect Timeout (secs)	The number of seconds after which the connection attempt times out. Default is 60.
Download Timeout (secs)	The number of seconds after which the download attempt times out. Default is 180.

3. To save, click the **Submit** button.
4. To see the status of the copy process if you are copying multiple files at the same time, click the **Progress** button above the menu.

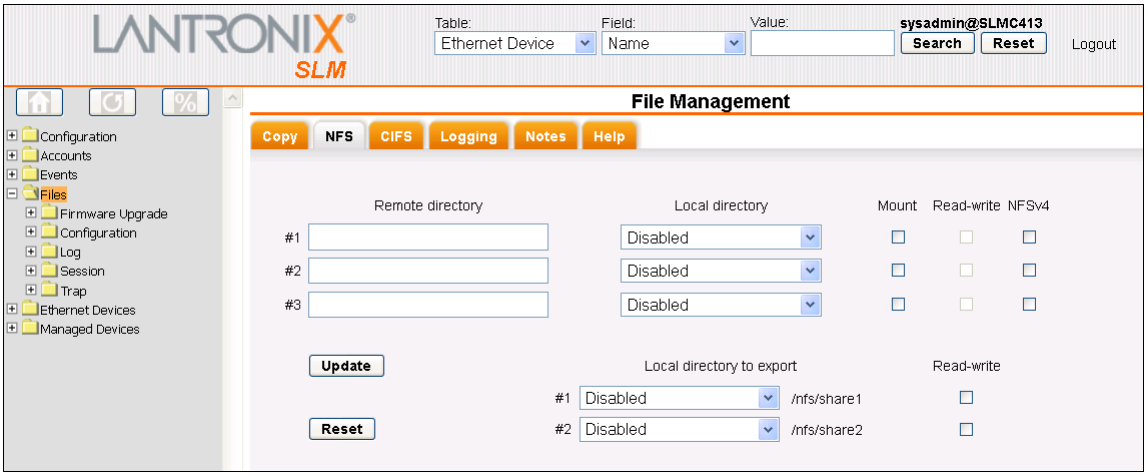
Setting up NFS

You can import files from or export files to a remote NFS server. The administrator defines the remote and local directories and read/write permissions.

To set up NFS:

1. On the menu, click **Files** and then the **NFS** tab. The following page opens:

Figure 11-75 File Management Page - NFS Tab



2. Enter the following information for importing a file:

Note: *The first three lines are for mounting remote NFS directories (the SLM functions as an NFS client). Once the directory is mounted, the SLM can import files from that share point.*

Table 11-76 File Management - NFS Tab - Remote Directory

Setting	Description
Remote directory	The remote NFS share directory in the format: `<nfs_server_hostname_or_ipaddr>:/<nfs_mount_point>` where `<nfs_mount_point>` is the path to the exported NFS directory on the remote NFS server.
Local directory	The local directory on the SLM on which to mount the remote directory. The SLM creates the local directory automatically.
Mount	Select the check box to enable the SLM to import the file by means of the NFS server. Disabled by default.
Read-write	If enabled, indicates that the user can read or write to the exported directory.
NFSv4	Use version 4 of NFS

3. Enter the following information about exporting a file from the SLM:

   Note: *This information is for exporting NFS shares (the SLM functions as an NFS server). This allows remote NFS clients to mount these shares and then view/update the files in the exported directories.*

Table 11-77 File Management - NFS Tab - Local Directory

Setting	Description
Local directory to export #1 and #2	From the drop-down list, select up to two directories to export. Disabled by default.
Read-write	If enabled, indicates that the user can read or write to the exported directory.

3. Click the **Update** button. When the update is complete, a confirmation message displays in the bottom part of the page.

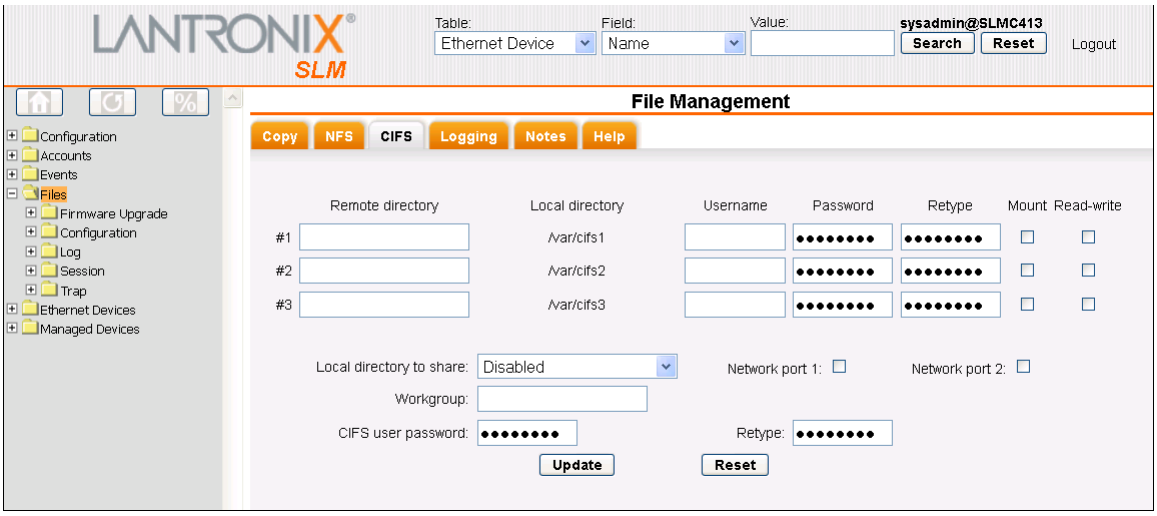
Setting up CIFS

Administrators can import files from or export files to a local or remote CIFS server. You define the remote and local directories, passwords, and read/write permissions.

To set up CIFS:

1. On the menu, click **Files** and then the **CIFS** tab. The following page opens:

Figure 11-78 File Management - CIFS Tab



2. Enter the following information for importing a file:

Note: *The first three entries are for mounting remote CIFS/Samba shares (the SLM acts as a CIFS client). The username and password are required to authenticate users on the remote CIFS server. The second section on this page is for the CIFS share that we can export (the SLM acts as a CIFS server).*

Table 11-79 File Management - CFS Tab - Remote Directory

Setting	Description
Remote directory	The remote directory to be imported, in the format: //<server_name_or_ip>/<sharepoint>.
Local directory	The local directory on the SLM on which to mount the remote directory. The SLM creates the local directory automatically.
Username	User name required to authenticate the user on the remote CIFS server.
Password and Retype	Password required to authenticate the user on the remote CIFS server.
Mount	Select the check box to enable the SLM to import the file from the CIFS server. Disabled by default.
Read-write	If enabled, indicates that the user can read and write to the imported directory. Disabled by default.

3. Enter the following information about exporting a file from the SLM.

   Note: *This information is for the CIFS share that we can export (the SLM acts as a CIFS server).*

Table 11-80 File Management - CFS Tab - Local Directory

Setting	Description
Local directory to share	From the drop-down list, select the directory you want the SLM to export. Disabled is the default setting.
Network port 1 and Network port 2	Select the network ports from which you can see the share. Normal usage is to make the share visible in both network ports, but the boxes are unchecked by default.
Workgroup	The Windows workgroup to which the PC importing the CIFS share belongs. Can have up to 15 characters.
CIFS user password and Retype	Only one special username (**cifsuser**) can access the CIFS share. Enter the CIFS user password in both password fields. The default user password is **CIFSPASS**. ***Note:*** *More than one user can access the share at the same time with the **cifsuser** user name and password.*

2. Click the **Update** button. When the update is complete, a confirmation message displays in the bottom part of the page.

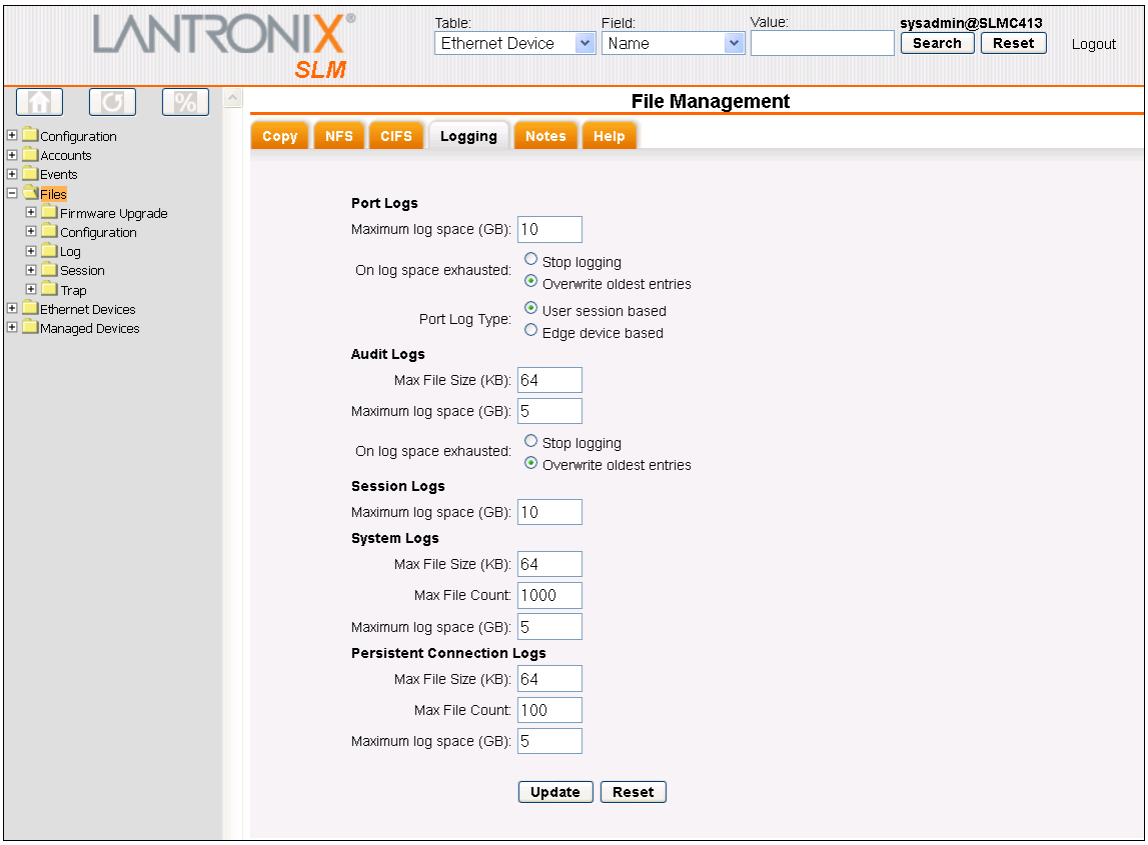
Setting up Log Properties

The administrator specifies the properties of log files.

To set up log properties:

1. On the menu, click **Files** and then the **Logging** tab. The following page opens.

Figure 11-81 File Management Page -- Logging Tab



2. Enter the following:

Table 11-82 File Management - Logging Tab - Port Logs

Setting	Description
Maximum log space (30 GB available)	Maximum space used for all session log files in gigabytes. It is 30 GB for SLM-01 and 60 GB for SLM-02.
On log space exhausted	Select one of the following actions the SLM should take when all port log space has been used: **Stop logging:** When log space is exhausted, logging stops. **Overwrite oldest entries:** When port log space is exhausted, logging overwrites the oldest entries.
Port Log Type	Select from these options: **User session based:** each connection will generate it's own log file, even if multiple users are connected to the same edge device. **Edge device based:** one log file will be created for each edge device, and all user interaction will be merged into a single log file, and individual user keystrokes will be identified.

Table 11-83 File Management - Logging Tab - Audit Logs

Setting	Description
Maximum File Size (KB)	Maximum size for each SLM audit log file in kilobytes. The default is 64.
Maximum log space (GB)	Maximum space used for all SLM audit log files in gigabytes. The default is 5.
On log space exhausted	Select one of the following actions the SLM should take when all audit log space has been used: **Stop logging:** When audit log space is exhausted, logging stops. **Overwrite oldest entries:** When audit log space is exhausted, logging overwrites the oldest entries.

Table 11-84 File Management - Logging Tab - Session Logs

Setting	Description
Maximum log space (GB)	Maximum space used for all SLC session files in gigabytes. The default is **10**.

Table 11-85 File Management - Logging Tab - System Logs

Setting	Description
Maximum File Size (KB)	Maximum size for each SLM system log file in kilobytes. The default is **64**.
Max File Count	Maximum number of system log files before the SLM starts to overwrite the old ones. The default is **1000**.
Maximum log space (GB)	Maximum space used for all SLM system log files in gigabytes. The default is **5**.

Table 11-86 File Management - Logging Tab - Persistent Connection Logs

Setting	Description
Maximum File Size (KB)	Maximum size for each persistent connection log file in kilobytes. The default is **64**.
Max File Count	Maximum number of persistent connection log files before the SLM starts to overwrite the old ones. The default is **100**.
Maximum log space (GB)	Maximum space used for all persistent connection log files in gigabytes. The default is **5**.

3. Click the **Update** button. When the update is complete, a confirmation message displays in the bottom part of the page.

Logging Commands

`admin locallog`

Syntax

```
admin locallog clear auditlog
admin locallog clear syslog
admin locallog clear traplog device <Device Name or IP Address>
admin locallog clear traplog group <group name>
group name: SLM, SLC, SLK, SLP, SCS, SLB, SPDR, WiBox, LTRX, or other
```

Description

Clears all of the entries in the auditlog, syslog, or traplog.

`show auditlog`

Syntax

`show auditlog`

Displays the audit log from the bottom.

`show auditlog tail`

Displays the audit log from the bottom (tail).

`show auditlog top`

Displays the audit log from the top.

Description

Displays the audit log. Default is tail.

`show portlog`

Syntax

`show portlog`

Lists all port log files.

`show portlog <parameters>`

Lists port log files as specified by parameters.

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists portlog files.

Examples

```
show portlog lastminutes 5
```

Lists portlog files modified in last 5 minutes.

```
show portlog date 0205
```

Lists portlog files last modified on 0205.

```
show portlog date 0205-0209
```

Lists portlog files last modified between 0205 and 0209.

```
show portlog file
```

Note: *Type* `show portlog` *to display index.*

Syntax

```
show portlog file <index>
```

Shows the port log from the top.

```
show portlog file <index> tail
```

Displays the port log from the bottom (tail).

```
show portlog file <index> top
```

Displays the port log from the top.

Description

Displays the contents of the portlog file by index. Default is top.

```
show portlog index
```

Syntax

Note: *Type* `show portlog` *to display index.*

```
show portlog index <number>
```

Displays part of portlog by index from the top.

Index is the number specified by lastminutes and date.

```
show portlog index <number> <parameters>
```

Parameters

```
[top <number of lines>]
```

Displays the part of portlog by index from the top.

```
[tail <number of lines>]
```

Displays the part of the portlog by index from the end.

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Displays the contents of the portlog file by index.

Note: *Index is the number specified by parameters* `lastminutes` *and* `date`*. If you specify* `0` *as number of lines, all lines display. If you specify both date and time, the SLM ignores the date option.*

Examples

```
show portlog index 3
```

Displays the specified portlog from top.

```
show portlog index 3 top 10
```

Displays the first 10 lines of specified portlog from top.

```
show portlog index 3 tail 15
```

Displays the last 15 lines of specified port log from tail.

```
show portlog index 3 lastminutes 5
```

Displays port log by the index '3'.

To get this index, type show portlog lastminutes 5.

```
show portlog index 3 date 0205
```

Displays port log by the index '3'.

To get this index, type show portlog date 0205.

```
show portlog index 3 date 0205-0209
```

Displays port log by the index '3'.

To get this index, type show portlog date 0205-0209.

```
show portlog index 3 top 10 lastminutes 5
```

Displays the first 10 lines of portlog by the index '3'.

To get this index, type show portlog lastminutes 5.

```
show portlog index 3 tail 0 lastminutes 5
```

Displays the portlog by the index '3' from tail.

To get this index, type show portlog lastminutes 5.

```
show portlog list
```

Syntax

```
show portlog list
show portlog list <parameters>
```

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists portlog files in short form.

```
show sessionlog
```

Syntax

```
show sessionlog type <sessiontype> <parameters>
sessiontype: <slcportactive|slcportsaved|scsport|device>
```

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists session log files.

Examples

```
show sessionlog
```

Lists device session log files.

```
show sessionlog type slcportsaved lastminutes 5
```

Lists archived SLC port session log files modified in last 5 minutes.

```
show sessionlog date 0205
```

Lists session log files last modified on 0205.

```
show sessionlog type scsport index 3
```

Displays the specified SCS05/20 port session log from the top.

```
show sessionlog type device index 3 top 10
```

Displays the first 10 lines of the specified device session log from the top.

```
show sessionlog type device index 3 tail 15
```

Displays the last 15 lines of specified device session log from the end.

```
show sessionlog type device index 3 lastminutes 5
```

Displays device session log by the index '3'.

To get this index, type show portlog lastminutes 5.

```
show sessionlog type slcportsaved index 3 date 0205
```

Displays archived SLC port sessionlog by the index '3'.

To get this index, type show sessionlog type slcportsaved date 0205.

```
show sessionlog type device index 3 date 0205-0209
```

Displays device session log by the index '3'.

To get this index, type show sessionlog type device date 0205-0209.

```
show sessionlog type device index 3 top 10 lastminutes 5
```

Displays the first 10 lines of device session log by the index '3'.

To get this index, type show sessionlog type device lastminutes 5.

```
show syslog
```

Syntax

```
show syslog
```

Shows the syslog information.

```
show syslog tail
```

Displays the syslog from the bottom (tail).

```
show syslog top
```

Displays the syslog from the top.

Description

Shows the syslog information. Default is tail.

```
show traplog index
```

Syntax

```
show traplog [index <number>]
```

Description

Displays all current trap log information. The index number displays detailed information about a selected trap log.

```
show traplog device
```

Note: *Type show traplog to display the index.*

Syntax

```
show traplog device <Device Name or IP address> [index <number>]
```

Description

Displays the current trap log information for an Ethernet device using name, IP address, or index number.

```
show traplog group
```

Note: *Type show traplog to display the index.*

Syntax

```
show traplog group <Device Group Name> [index <number>]
```

Group name: `SLM`, `SLC`, `SLK`, `SLP`, `SCS`, `LTRX`, or `other`

Description

Displays the current trap log information for an Ethernet device group by index number.

12: Using SLM on a Mobile Browser

SLM's WAP technology enables you to access the status of your SLM from your mobile phone. This chapter familiarizes you with how to do this. For more detailed information about the options, please see the other chapters in this User Guide.

Requirements

- To access SLM for mobile web browsers, your phone must meet the following minimum requirements:
- Your phone's web browser must be XHTML Mobile 1.0-compliant, which most mobile browsers are.
- If you want to access the SLM WAP site via SSL (https), your phone browser must support SSL. An example of such a browser is Opera Mini.
- Your phone's browser does not need to support cookies or JavaScript.
- Your wireless provider may charge you, Depending on your service plan, Check with your provider for more information about fees associated with accessing the Internet from your mobile phone.

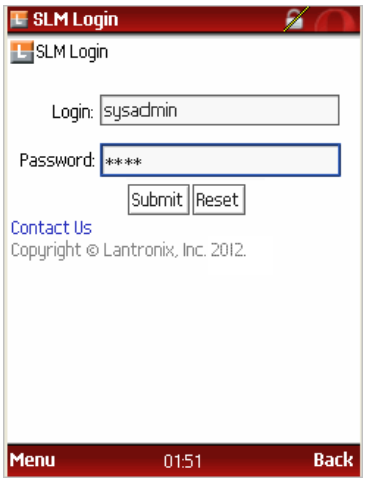
Using the SLM Mobile Browser

Logging in to the SLM

To log into the SLM:

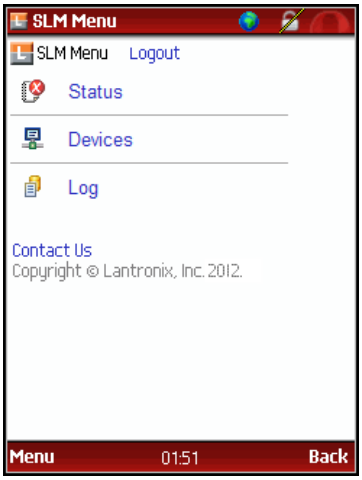
1. Enter `http://(SLM's IP address)/wap` or `https://(SLM IP address)/wap` in your phone's web browser to log in to SLM.

   The Login page displays.



2. Enter your SLM login name and password.
3. Move the cursor to the **Submit** button and select it.

The SLM main menu (Home page) displays a list of options:



Using Links to Select Options

To select an option:

1. Click the link (blue). For example, click **Log** on the Home page to display a menu of logs.

Using the Keypad to Select Options

Note: *Shortcut keys only work with a true WAP browser (not browsers such as IE or FireFox).*

1. When a number precedes an option, tap the number on the keypad to open the link.

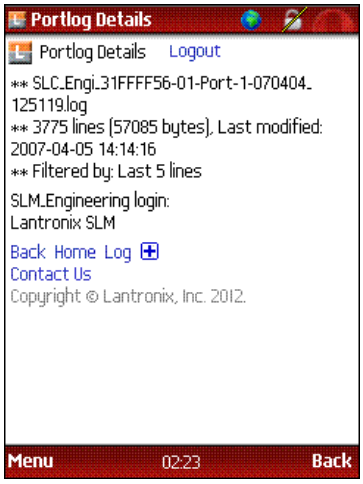
For example, to select **Managed Devices** in the example above, tap the **3** key.

Obtaining More Data

A **+** (plus) and/or a **-** (minus) button may display at the bottom of a page.

- If there is a **+**, select it or tap the ***** (star key) to advance to the next page of details.
- If there is - (minus), select it or tap the # (pound key) to return to the previous page.

For example, towards the bottom of the Portlog Details page, the **+** symbol displays.



If you select the **+**, further details display.

If you select the **-**, the previous page of details displays.

Logging Out

To log out of the SLM:

1. Select **Logout** (at the top right of each page).

Table 12-1 Navigation Summary

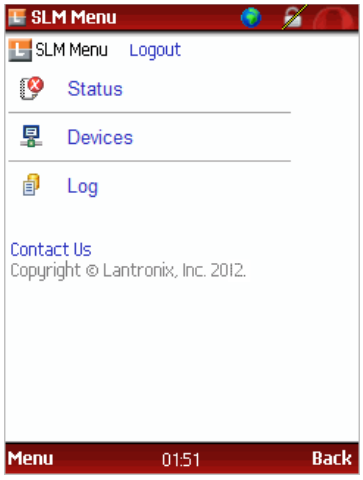
To	Select on the browser page	Tap on the keypad
Return to the Home page	Home (bottom of page)	**0** (zero)
Select menu option	Link (blue)	When a number precedes an option, the number on the keypad.
See more details (if available)	**+**	***** (star key)
Return to previous details	**-**	# (pound key)

To	Select on the browser page	Tap on the keypad
Return to the previous page	Back (bottom of page)	Back or its equivalent on your phone
Return to a menu	Name of menu (if at bottom of page)	
Log out	Logout (top of any page)	

Main Menu

To use the SLM Menu (main menu):

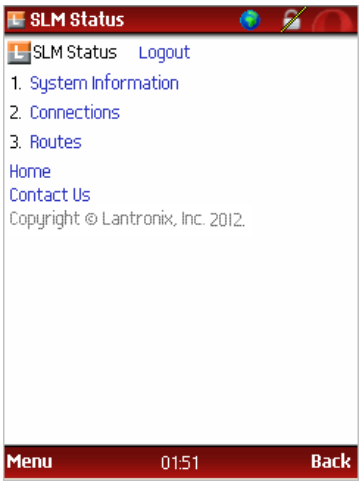
1. To use the main menu, select one of the following links:
   - **Status**: Displays the status of the SLM.
   - **Devices**: Displays information about Ethernet and Managed devices.
   - **Log**: Displays audit, port, system, and trap logs.



The menu for the selected category opens.

Status Menu

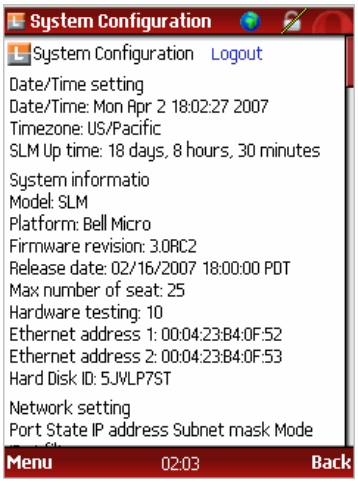
The SLM Status menu has three options: System Information, Connections, and Routes.



System Information

To view the status of the system:

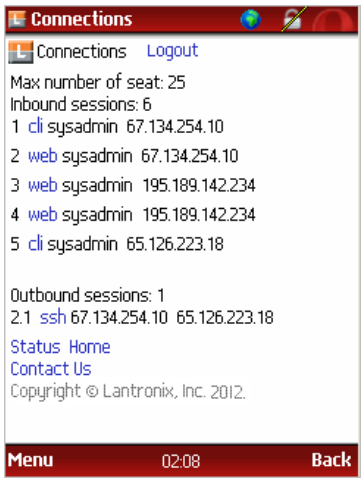
1. On the Status Menu, select **System Information** or tap the **1** key. The system configuration displays.



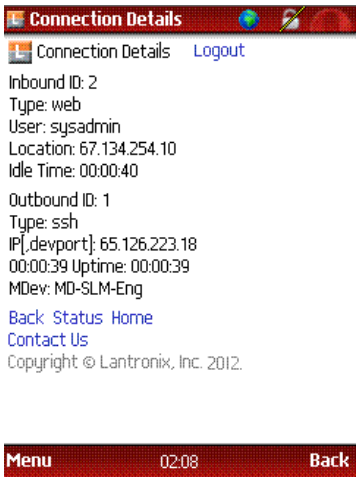
Connections

To view information about the SLM's connections:

1. On the Status Menu, select **Connections** or tap the **2** key. The Connections menu displays.



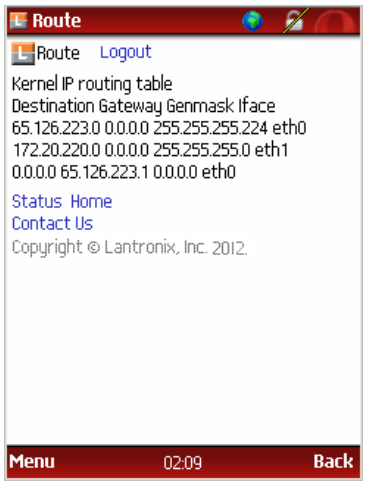
2. To view individual connections, click the blue link on the Connections menu or tap the key number displayed to the left of the option.



Route Information

To view SLM route information:

1. On the Status Menu, select **Routes**, or tap the **3** key.

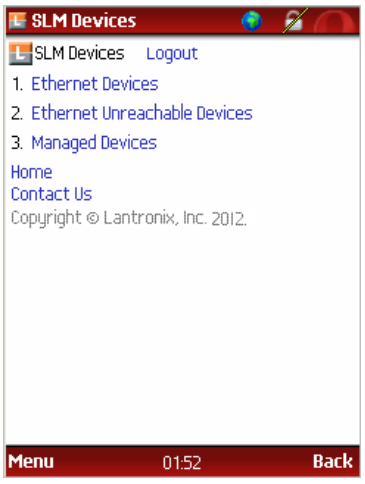


Device Menu

The Device Menu provides access to Ethernet devices, unreachable Ethernet devices, and Managed Devices.

To view information about the devices the SLM is managing:

1. On the Main menu, select **Devices**. The Devices menu displays.



Ethernet Devices

To view information about an Ethernet device:

1. From the Devices menu, select **Ethernet Devices**.

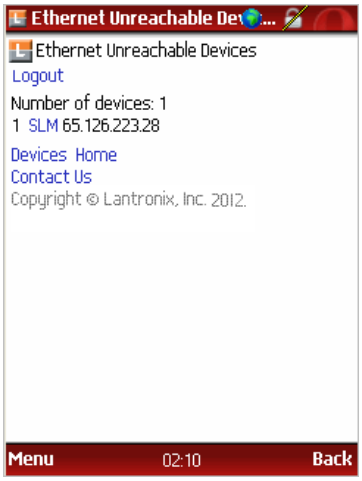
   The green icon to the right of a device indicates that the device is reachable; the red indicates that the device is unreachable.

2. Select the unit you want to view. Details about the device display.

Ethernet Unreachable Devices

To view Ethernet devices to which the SLM has not been able to connect:

1. On the Devices menu, select **Ethernet Unreachable Devices**. The Ethernet Unreachable Devices page displays a list of unreachable devices.



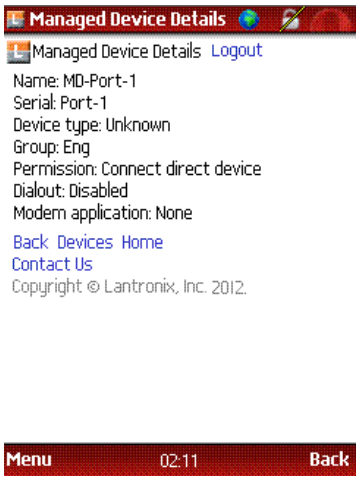
2. To view device details, select the device.

Managed Devices

To obtain information about managed devices:

1. Select **Managed Devices** on the Devices menu. The Managed Devices page displays a list of managed devices.

2. Select a managed device to view its details.



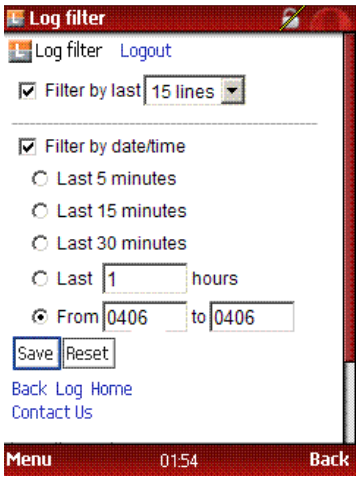
Log Menu

Filtering Logs

The Log filter page enables you to view logs matching specified criteria (number of lines and date/time). The settings are for the current session only. Once you save the filter, it applies for all log commands and is available as long as you are on the system (until logout or timeout).

To define a filter:

1. Click the **Filter** link at the bottom of the Log menu. The Log Filter page displays.



2. Select one or both of the following:

Table 12-2 Log Filter by Last and Date/Time

Setting	Description
Filter by last	Select the check box and from the drop-down list, select the number of lines at the end of the log you want to see.
Filter by date/time	Select the check box and time period you want to see.

3. Select the **Save** button.

Example:

If you set Filter by last to 5 in log filter page and enable the filter, only the last 5 lines of a log file displays.

When you select **+**, it displays 10 (2X5), if available

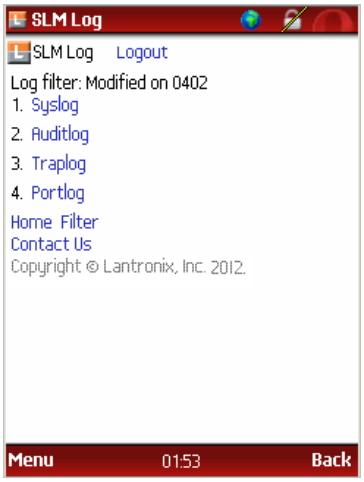
When a user select **+** again, it displays 15 (3X5), if available

Minus works in the other direction.

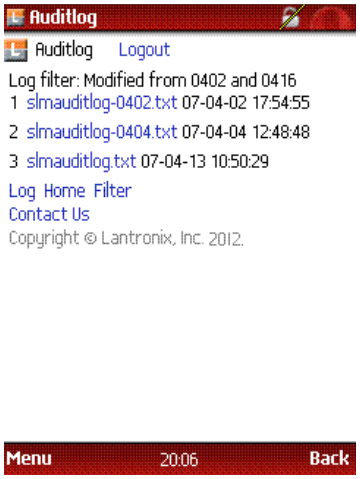
View Logs

To view audit, trap, system, or port logs:

1. Select **Log** on the Main menu. The SLM Log menu displays.



2. Select the type of log you want to see (e.g., tap **2** to see the SLM's audit logs).



3. Select the log to view details.

4. Select the **+** button to see more details.

5. Select the **+** to scroll to see more lines of details.

Note: *You can set the number of lines you see at a time on the Log filter page.*

Appendix A: Command Reference

After an introduction to using commands, this chapter lists and describes all of the commands available on the SLM command line interface accessed through SSH, secure channel (SLC only), Telnet, or a serial connection. The commands are in alphabetical order by category.

Introduction to Commands

Command Syntax

Commands have the following format:

`<action> <category> <parameter(s)>`

where

`<action>` is set, show, connect, diag, admin, or logout.

`<category>` is a group of related parameters you want to configure or view. Examples are devicegroup, account, and network.

`<parameter(s)>` is one or more name-value pairs in one of the following formats:

Table A-1 Command Syntax

	Description
`<parameter name> <aa bb>`	Specify one of the values (aa or bb) separated by a vertical line (|). The values are all lowercase and must be entered exactly as shown. Bold indicates a default value.
`<parameter name> <Value>`	Specify an appropriate value, for example, a device group name. This User Guide shows parameter values in mixed case to indicate they are case sensitive. For example, if you saved a device group name in mixed case, you must enter it in mixed case; if you saved it in lowercase, you must enter it in lowercase.
Square brackets [ ]	Indicate optional parameters.

Table A-2 Actions and Category Options

Action	Category
set	network | service | ipfilter | account | accountgroup | auth | nis | ldap | radius | kerberos | tacacs+ | secured | ethernetdevice | manageddevice | mgroup | datetime | cli | menu | sshkey | history | modem | dialaccount | persistent | ipmi | ilo
show	network | service | ipfilter | iptables | account | accountgroup | auth | nis | ldap | radius | kerberos | tacacs+ | secured | device | port | ethernetdevice | manageddevice | auditlog | syslog | portlog | traplog | eventlog | sessionlog | datetime | cli | menu | sshkey | history | connection | progress | sysconfig | sysinfo | modem | dialaccount | routing | persistent | ipmi | ilo

Action	Category
connect	device | remote | index | ssh | telnet | tn3270 | terminate | persistent | wakeonlan
diag	ping | ping6 | arp | traceroute | netstat | nettrace | internals
admin	autodetect | locallog | version | option | showoptions | config | quicksetup | securechannel | signature | banner | reboot | shutdown | showbootbank | switchbank | copybank | web
logout	Terminates CLI session.

Command Help

For general command help, type: `help`

For more information about a specific command, type `help` followed by the command, for example:

```
help set network
```

OR

type `?` after the command:

```
set network ?
```

Tips

- Type enough characters to identify the action, category, or parameter name uniquely. For parameter values, type the entire value. For example,

  ```
  set network port 1 state static ipaddr 122.3.10.1 mask 255.255.0.0
  ```

  can be shortened to:

  ```
  se net po 1 st static ip 122.3.10.1 ma 255.255.0.0
  ```

- Use the **Tab** key to automatically complete action, category, or parameter names. Type a partial name and press **Tab** to complete the name if only one is possible, or to display the possible names if more than one is possible.
- Should you make a mistake while typing, backspace by pressing the **Backspace** key or the **Delete** key, depending on how you accessed the interface. Both keys work if you use VT100 emulation in your terminal access program when connecting to the console port. Use the **left** and **right** arrow keys to move within a command.
- Use the up and down arrows to scroll through previously entered commands. If desired, select one and edit it. You can scroll through up to 100 previous commands entered in the session.
- When the number of lines displayed by a command exceeds the size of the window (the default is 20), the "`--Type 'm'(more) to see the next page-" message displays`. To display the next page, type more and press **Enter**. You can override the number of lines (or disable the feature altogether) with the `set cli` command.
- To clear an IP address, type `0.0.0.0`.

Authentication Commands

`set auth`

Syntax

```
set auth <one or more parameters>
```

Parameters

```
local <1-7>
nis <1-7>
ldap <1-7>
radius <1-7>
kerberos <1-7>
tacacs+ <1-7>
securid <1-7>
authusenextmethod <enable|disable>
limitsysadmin <enable|disable>
```

Description

Sets ordering of authentication methods and how authentication methods are used.

Authentication can occur using all methods, in the order of their precedence, until a successful authentication is obtained, or using only the first authentication method that responds (in the event that a server is down).

Note: *If SecurID is used, no other parameters can be used.*

Any methods omitted from the `set auth` command will be disabled if at least one method is selected

`set ldap`

Syntax

```
set ldap <one or more parameters>
```

Parameters

```
state <enable|disable>
server <IP Address or Name>
 port <TCP Port>
 base <LDAP Base>
 bindname <Bind Name>
 bindpassword <Bind Password>
 adsupport <enable|disable>
 encrypt <enable|disable>
```

Description

Configures the SLM to use LDAP to authenticate users who log in to the SLM via SSH, Telnet, the web, or the console port.

`set nis`

Syntax

```
set nis <one or more parameters>
```

Parameters

```
<enable|disable>
 domain <NIS Domain Name>
 broadcast <enable|disable>
 master <IP Address or Name>
 slave1 <IP Address or Name>
 slave2 <IP Address or Name>
 slave3 <IP Address or Name>
 slave4 <IP Address or Name>
 slave5 <IP Address or Name>
```

Description

Configures the SLM to use NIS to authenticate users who log in to the SLM via SSH, Telnet, the web, or the console port.

`set radius`

Syntax

```
set radius <one or more parameters>
state <enable|disable>
timeout <1-30 seconds>
server1 <IP Address or Name>
port1 <TCP Port>
secret1 <Secret>
server2 <IP Address or Name>
port2 <TCP Port>
secret2 <Secret>
```

Description

Configures the SLM to use RADIUS to authenticate users who login to the SLM via SSH, Telnet, the web, or the console port.

`set sshkey delete`

Syntax

`set sshkey delete keyuser <SSH Key User> keyhost <SSH Key Host>`

Description

Deletes an imported SSH key.

`set sshkey import`

Syntax

`set sshkey import <copypaste>`

Note: *RSA keys must be 1024 bits*

Description

Imports an SSH key.

`set ilo`

Syntax

`set ilo`

Parameters

```
led <on | off>
ipaddr <IP Address>
user <User Name>

[password <Password>]
```

Description

Control LED of HP iLO remote device.

```
show auth
```

Syntax

```
show auth
```

Description

Displays authentication methods in use.

```
show ldap
```

Syntax

```
show ldap
```

Description

Displays all LDAP information.

```
show nis
```

Syntax

```
show nis
```

Description

Displays all NIS information.

```
show radius
```

Syntax

```
show radius
```

Description

Displays all RADIUS information.

```
show sshkey import
```

Syntax

```
show sshkey import <one or more parameters>
```

Parameters

```
[keyuser <SSH Key User>]
[keyhost <SSH Key IP Address or Name>]
[viewkey <enable|disable>]
```

Description

Displays imported SSH keys.

```
show sysinfo
```

Syntax

```
show sysinfo
```

Description

Displays system file changes.

```
show ilo
```

Syntax

```
show ilo led status
show ilo health <sensor | fan | all>
```

Parameters

```
ipaddr <IP Address>
user <User Name>
[password <Password>]
```

Description

Display health status of HP iLO remote device.

Account Commands

Use the following commands to configure local accounts (including sysadmin) to authenticate users who login to the SLM by means of SSH, Telnet, the web, or the console port.

```
set account add
```

Syntax

```
set account add <User Name> group <Group Name|admin> <parameters>
```

Parameters

```
[email <Email Address>]
[auth <local|remote|localremote|disable>]
[allowdialback <enable|disable>]
[dialbacknumber <dial-back number>]
[allowpwchange <enable|disable>]
[pwneverexpires <enable|disable>]
[changepwnextlogin <enable|disable>]
```

Description

Creates a new user account.

```
set account delete
```

Syntax

```
set account delete <User Name>
```

Description

Deletes a user account.

```
set account edit
```

Syntax

```
set account edit <User Name> group <Group Name|admin> <parameters>
```

Parameters

```
[email <Email Address|CLEAR>]
[auth <local|remote|localremote|disable>
[allowdialback <enable|disable>]
[dialbacknumber <dial-back number|CLEAR>]
[allowpwchange <enable|disable>]
[pwneverexpires <enable|disable>]
[changepwnextlogin <enable|disable>]
```

Description

Modifies a user account.

```
set account password
```

Syntax

```
set account password <User Name>
```

Note: *Administrators with permission to change passwords must enter the username. Other users may not enter a username (they are changing their own password).*

Description

Configures a user account's password for the SLM.

```
show account
```

Syntax

```
show account <User Name>
show account user <User Name>
```

Description

Displays account information by user name.

```
show account all
```

Syntax

```
show account all
show account
```

Description

Displays all account names and information.

```
show account index
```

Note: *Type show account all to display the index.*

Syntax

```
show account index <number>
```

Description

Displays accounts by index number.

```
show account search
```

Syntax

Note: *All searches are case insensitive.*

```
show account search name <name>
show account search email <email address>
```

Examples

```
show account search name sys
```

Description

Searches for accounts by name or email address.

Account Group Commands

```
set accountgroup add
```

Syntax

```
set accountgroup add <Group Name> type <ethernet|managed|menu>
<parameters>
```

Parameters

```
[menu <Menu Name>]
```

Description

Creates a local account group. Group type is Administrators, Ethernet, Managed, or Menu User.

```
set accountgroup edit
```

Syntax

set accountgroup edit <Group Name> <one or more parameters>

Parameters

```
[name <new name>]
[menu <Menu Name|CLEAR>]
```

Description

Modifies an account group. Group type is Administrators, Ethernet User, Managed User, or Menu User. `CLEAR` removes the current menu assignment.

```
show accountgroup
```

Syntax

```
show accountgroup <Group Name>
show accountgroup name <Group Name>
```

Description

Displays account group information.

```
show accountgroup all
```

Syntax

```
show accountgroup all
show accountgroup
```

Description

Displays information about all account groups.

```
show accountgroup index
```

Note: *Type show accountgroup all to display the index.*

Syntax

```
show accountgroup index <number>
```

Description

Displays account groups by index number.

Administrative Commands

```
admin autodetect filter
```

Syntax

```
admin autodetect filter delete
```

Deletes one of the current auto-detect search filters. The command displays an index of current filters. Type the index number of the filter you want to delete and press Enter.

```
admin autodetect filter ltrx <IP subnet>
```

Sets Lantronix discovery protocol search filters.

```
admin autodetect filter scs <IP range> [timeout <number of
milliseconds>]
```

Sets SCS discovery protocol search filters.

Example

```
IP range: 192.168.0.1-192.168.0.155
timeout : 100ms (default)
```

```
admin autodetect filter snmp <IP range> [community <name>]
```

Sets SNMP protocol search filters.

Example

```
IP range: 192.168.0.1-192.168.0.155
name: public (default)
```

`admin autodetect filter show`

Displays the current auto-detect search filters.

Description

Configures or displays the protocol and filters.

`admin autodetect start`

Syntax

`admin autodetect start`

Description

Starts the SLM auto-detect device process, using the protocol and filters configured.

`admin banner`

Syntax

```
admin banner welcome <Banner Text>
admin banner login <Banner Text>
admin banner logout <Banner Text>
```

Description

Configures the banner displayed before login (welcome), after login, or after logout. To insert line feeds in the banner, use the '\\n' character sequence.

`admin banner show`

Syntax

`admin banner show`

Description

Displays the banner configuration.

`admin copybank`

Syntax

`admin copybank`

Description

Copies the SLM firmware running in the current bank to the other bank.

`admin config`

Syntax

`admin config factorydefaults`

Description

Restores the SLM configuration and device database settings to factory defaults.

`admin config rebuilddatabase`

Syntax

```
admin config rebuilddatabase
```

Description

Removes and rebuilds the SLM configuration and database from scratch, in case of database corruption that cannot be fixed by the factory default.

```
admin locallog
```

Syntax

```
admin locallog clear auditlog
admin locallog clear syslog
admin locallog clear traplog device <Device Name or IP Address>
admin locallog clear traplog group <group name>
group name: SLM, SLC, SLK, SLP, SCS, SLB, SPDR, WiBox, LTRX, or other
```

Description

Clears all of the entries in the auditlog or syslog or traplog.

```
admin option
```

Syntax

```
admin option <Option Name> value <Option Value>
```

Description

Adds license options.

```
admin quicksetup
```

Syntax

```
admin quicksetup
```

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

```
admin reboot
```

Syntax

```
admin reboot
```

Description

Terminates all connections and reboots the SLM.

```
admin securechannel regenkey
```

Syntax

```
admin securechannel regenkey
```

Description

Regenerates the secure channel key.

Note: *With this command, you lose access to established secure channels; therefore, the SLM first requests confirmation that you want to regenerate the secure channel key.*

```
admin showbootbank
```

Syntax

```
admin showbootbank
```

Description

Displays the SLM boot bank.

```
admin showoptions
```

Syntax

```
admin showoptions
```

Description

Display license options.

```
admin shutdown
```

Syntax

```
admin shutdown
```

Description

Terminates all connections, shuts down the SLM, and turns off the power.

```
admin switch bank
```

Syntax

```
admin swithchbank bank [1|2]
```

Description

Switches the SLM to the next boot bank.

```
admin signature restore
```

Syntax

```
admin signature restore
```

Description

Restores signature information to the system.

```
admin signature show
```

Syntax

```
admin signature show
```

Description

Displays signature information.

```
admin version
```

Syntax

```
admin version
```

Description

Displays current application version information.

```
admin web certificate
```

Syntax

```
admin web certificate reset
admin web certificate show
```

Description

Reset SSL web certificate to default.

Displays current SSL web certificate.

`show progress`

Syntax

`show progress`

Description

Shows the progress of background tasks.

`show sysconfig`

Syntax

`show sysconfig [email <Email Address>]`

Description

Displays a report of configurable parameters. The output can be emailed.

All Devices Commands

`show device`

Note: *Entries are not case sensitive.*

Syntax

`show device <device name>`

Description

Searches for and displays Ethernet or managed devices by device name. For example, if you specify `name slc`, the SLM searches for all Ethernet and managed devices whose name starts with `slc`.

`show device all`

Syntax

```
show device all
show device
```

Description

Displays all Ethernet and managed devices.

`show device index`

Note: *Type show device all to display the index.*

Syntax

```
show device index <number>
```

Description

Displays Ethernet or managed devices by index.

Auto-Detect Commands

```
admin autodetect filter delete
```

Syntax

```
admin autodetect filter delete
```

The command displays an index of current filters. Type the index number of the filter you want to delete and press Enter.

Description

Deletes one of the current auto-detect search filters.

```
admin autodetect filter ltrx
```

Syntax

```
admin autodetect filter ltrx <IP range> [timeout <number of
milliseconds>]
```

Example

```
IP range: 192.168.0.1-192.168.0.155 timeout 1500
timeout: default is 1000 ms; range is 1000-60000 ms
```

Description

Sets Lantronix discovery protocol search filters. The ending IP address is optional.

```
admin autodetect filter scs
```

Syntax

```
admin autodetect filter scs <IP range> [timeout <number of
milliseconds>]
```

Example

```
IP range: 192.168.0.1-192.168.0.155
timeout: default is 100 msec; range is 100-60000 msec
```

Description

Sets SCS discovery protocol search filters.

```
admin autodetect filter show
```

Displays the current auto-detect search filters.

Syntax

```
admin autodetect filter show
```

Description

Displays the current auto-detect search filters.

```
admin autodetect filter snmp
```

Syntax

```
admin autodetect filter snmp <IP range> [community <name>] [timeout
<number of milliseconds>]
```

Example

```
IP range: 92.168.0.1-192.168.0.155
name: public (default)
timeout:default is 100 msec; range is 100-60000 msec
```

Description

Sets SNMP protocol search filters.

```
admin autodetect start
```

Syntax

```
admin autodetect start <one or more parameters>
```

Parameters

```
[securechannel <default|password>]
[option <ltrxonly|delnonltrx>}
```

`ltrxonly` detects only Lantronix devices

`delnonltrx` detects only Lantronix devices and removes existing non-Lantronix devices.

Examples

```
admin autodetect start securechannel default
```

Attempts secure channel using the default password

```
admin autodetect start securechannel mypass option delnonltrx
```

Attempts secure channel using password `mypass`. Detects only Lantronix devices and removes existing non-Lantronix devices.

Description

Starts the SLM auto-detect device process, using the protocol and filters configured.

```
show progress
```

Syntax

```
show progress
```

Description

Shows the progress of background tasks.

CLI Commands

The following commands relate to the CLI itself.

`set cli terminallines`

Syntax

`set cli terminallines <disable|1-1000>`

Description

Sets the number of lines that display in a page for the auditlog, syslog, portlog, traplog, and device list. Default is **20**.

`set history clear`

Syntax

`set history clear`

Description

Clears the CLI command history.

`show cli`

Syntax

`show cli`

Description

Displays the terminal lines settings.

`show history`

Syntax

`show history`

Description

Displays the 100 most recent CLI commands.

Connection Commands

Administrators, Ethernet Users and Menu Only Users

`connect device`

Syntax

`connect device <Device Name or IP Address> <one or more parameters>`

Parameters

`[<secure|ssh|telnet|tn3270|serial|modem|modemssh|modemtelnet> modemcallback>] [port <port>]`

Specify `secure` to connect through a secure channel. Secure channel is the default method of connection for SLC/SLB, SLC ports, and SLM, and SSH is the default for other devices.

`Port` is the number of a physical port on the SLC.

SLC48 has ports 1 to 48.

Modem connection is available for managed devices only.

With the `modemssh` option, the SLM dials out to the managed device in PPP, and then connects it via SSH.

With `modemtelnet` option, the SLM dials out to the managed device in PPP, and then connects it via Telnet.

With the `modemcallback` option, when the SLM user calls an SLC and logs in, the SLC hangs up and calls the user back. The SLM then logs in again. This feature is currently available in text mode only.

Examples

```
connect device slc-waimea
connect device slc-waimea-port-1
connect device slc-waimea ssh
connect device slc-waimea port 4
connect device slc-waimea modemssh
connect device slc-waimea modemcallback
```

Description

Connects to an Ethernet device, managed device, or device port.

```
connect index <number>
```

Note: *Type* `show device all` *to display the index.*

Syntax

```
connect index <number>
[<secure|ssh|telnet|serial|modem|modemssh|modemtelnet| modemcallback>]
```

Description

Connects a device by index number.

```
connect persistent
```

Syntax

```
connect persistent <persistentConnectionName> [device <devname|IP>]
```

Notes: *The* `device` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

The <`devname`> *following* `device` *may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.*

Description

```
Connect to an existing persistent connection.
connect ssh
```

Syntax

```
connect ssh <IP Address> [tcpport <TCP Port>] [<SSH flags>]
```

Parameters

<SSH flags> is one or more of:

```
user <Login Name>
version <1|2>
escape <Character>
```

The TCP PORT parameter is the TCP port number; the default is **22**.

Description

Connect to any machine/device using standard SSH V1 or V2 protocol.

```
connect telnet
```

Syntax

```
connect telnet <IP Address> [tcpport <TCP Port>] [user <Login Name>]
```

tcpport is the TCP port number; the default is **23**.

Description

Connects to a device by means of standard Telnet.

```
show connection list
```

Syntax

```
show connection list
```

Description

Displays the active user connections in short form.

Managed Device Users

```
connect device
```

Syntax

```
connect device <Device Name>
[<secure|ssh|telnet|serial|modem|modemssh|modemtelnet|modemcallback>] [po
rt <port>]
```

Specify secure to connect through a secure channel. Secure channel is the default method of connection for SLC/SLB, SLC ports, and SLM, and SSH is the default for other devices.

Port is the number of a physical port on the SLC.

SLC48 has ports 1 to 48.

Modem connection is available for managed devices only.

With the modemssh option, the SLM dials out to the managed device in PPP, and then connects it via SSH.

With modemtelnet option, the SLM dials out to the managed device in PPP, and then connects it via Telnet.

With the modemcallback option, when the SLM user calls an SLC and logs in, the SLC hangs up and calls the user back. The SLM then logs in again. This feature is currently available in text mode only.

Examples

```
connect device slc-waimea
connect device slc-waimea-port-1
connect device slc-waimea ssh
connect device slc-waimea port 4
connect device slc-waimea modemssh
connect device slc-waimea modemcallback
```

Description

Connects to a managed device through a secure channel.

```
connect index
```

Note: *Type* `show managedevice all` *to display the index.*

Syntax

```
connect index <number>
[<secure|ssh|telnet|serial|modem|modemssh|modemtelnet| modemcallback>]>
```

Description

Connects to a device by index number.

```
connect remote
```

Syntax

```
connect remote show connections
connect remote terminate
```

Parameters

```
<Device Name or IP Address>
id <connectionid>
```

Description

Displays or terminates user connections on a remote Ethernet device. The specified device must exist in the SLM database.

```
connect wakeonlan
```

Syntax

```
connect wakeonlan
```

Parameters

```
Device <Device Name or IP Address>
[password <Password>]
```

Description

Send a Wake On LAN packet to an Ethernet device. The specified device must exist in the SLM database.

Date and Time Commands

`set datetime`

Syntax

```
set datetime <one parameter>
```

Parameters

```
date <MMDDYYhhmm[ss]>
timezone <Time Zone>
```

Description

Sets the local date, time, and time zone (one parameter at a time).

Note: *If you type an invalid time zone, the system guides you through the process of selecting a time zone.*

`show datetime`

Syntax

```
show datetime
```

Description

Displays the local date, time, and time zone.

Diagnostic Commands

`diag arp`

Syntax

```
diag arp
```

Description

Displays the ARP table for mapping IP addresses to hardware addresses.

`diag netstat`

Syntax

```
diag netstat [<tcp|udp|all>] [statistics]
```

Description

Displays output IP routing table, and optionally, network connections and statistics.

`diag nettrace`

Syntax

```
diag nettrace <one or more parameters>
```

Parameters

```
[ethport <1|2>]
[protocol <tcp|udp|icmp>]
[host <IP Address or Name>]
[numpackets <number of packets>] [snaplen <capture bytes>]
[verbose <0|1|2|3>]
```

Example

```
diag nettrace protocol udp verbose 2
```

Description

Displays all network traffic, applying optional filters.

```
diag ping
```

Syntax

```
diag ping <IP Address or Name> <one or more parameters>
```

Parameters

```
count <Number of Times to Ping>
```

Default is 5.

```
packetsize <Size in Bytes>
```

Default is 64.

Description

Verifies that the SLM can reach a host over the network.

```
diag ping6
```

Syntax

```
diag ping6 <IP Address or Name> <one or more parameters>
```

Parameters

```
interface <interface name>
count <Number of Times to Ping>
```

Default is 5.

```
packetsize <Size in Bytes>
```

Default is 64.

Examples

```
diag ping6 fe80::214:85ff:fec0:928e interface eth1
```

Description

Verifies that the SLM can reach a host over the network.

```
diag traceroute
```

Syntax

```
diag traceroute <IP Address or Name>
```

Description

Displays the route that packets take to get to a network host.

```
diag internals
```

Syntax

```
diag internals
```

Description

Displays information on the internal memory, storage and processes of the SLM.

Dial Account Commands

`set dialaccount add`

Syntax

```
set dialaccount add <Dial Account Name> <parameters>
```

Parameters

`modemmode <text|ppp>`

Note: *If you select* `text`*, all other parameters except* `timeout` *are ignored.*

```
localipaddr <negotiate|IP Address>
remoteipaddr <negotiate|IP Address>
auth <pap|chap>
username <User Name>
password <Password>
nat <enable|disable>
timeout <disable|1-30 minutes>
```

Default is `20`.

Description

Creates a new dial account.

`set dialaccount delete`

Syntax

```
set dialaccount delete <Dial Account Name>
```

Description

Delete a dial account.

`set dialaccount edit`

Syntax

```
set dialaccount edit <Dial Account Name> <parameters>
```

Parameters

```
modemmode <text|ppp>
localipaddr <negotiate|IP Address>
remoteipaddr <negotiate|IP Address>
auth <pap|chap>
username <User Name>
password <Password>
nat <enable|disable>
forcedialback <disable|enable> (applies only to text mode)
```

`dialbacknumber <dial-back number|CLEAR>` (applies only to text mode)

CLEAR removes the dial-back number.

`userprofile <disable|enable>` (apply only text mode)

Uses local user-defined dial-back configuration.

`timeout <disable|1-30 minutes>`

Description

Modifies a dial account's settings.

`set manageddevice config`

Syntax

```
set manageddevice config <Device Name> [dialout <Dial Account
Name|enable|disable> modem <Modem Name> phonenumber <phonenumber>]
application <ssh|telnet|http|none>]
```

Description

Configures modem and dial account settings for a managed device.

`set manageddevice index`

Note: *Type show manageddevice all to display index.*

Syntax

```
set manageddevice index <number> [dialout <Dial Account
Name|enable|disable> modem <Modem Name> phonenumber <phonenumber>]
application ssh|telnet|http|none>]
```

Description

Finds managed device by index and modifies dial account settings.

To set modem parameters, you must specify a dial-out option.

`set modem edit`

Syntax

```
set modem edit <Modem Name> dialin <Dial Account
Name|CLEAR|disable|enable>
```

Description

Modifies a dial-in account name.

`show dialaccount`

Note: *Type* `show dialaccount` *to display index.*

Syntax

`show dialaccount <parameters>`

Parameters

```
[name <Dial Account Name>]
[index <number>]
```

Examples

```
show dialaccount
show dialaccount name ppp-pap
show dialaccount index 2
```

Description

Displays dial account settings.

```
show dialaccount mapping
```

Syntax

```
show dialaccount mapping
```

Description

Shows dial account used by dial-in and dial-out.

Ethernet Device Commands

```
set ethernetdevice assign
```

Syntax

```
set ethernetdevice assign <ethernetDevice|IP> group
<ethernetAccoutGroup> [remove]
```

Description

Assigns or removes permissions for an Ethernet device by name.

```
set ethernetdevice config
```

Syntax

set ethernetdevice config <Device Name or IP Address> <one or more parameters>

Parameters

```
[delete]
[dialout <Dial Account Name|enable|disable> phonenumber <phone number>]
[disconnect modem]
[name <Device Name>]
[ipaddr <IP Address>]
[location <Location>]
[login <Loginname>]
[model <Model>]
[readinfo]
[sshport <TCP Port for SSH>]
[tnport < TCP Port for Telnet>
[tn3270lu <Logical Unit>
[version <Version>]
```

Description

Finds Ethernet devices by device name or IP address and modifies device parameters.

```
set ethernetdevice delete
```

Syntax

```
set ethernetdevice delete <Device Name or IP Address>
```

Finds Ethernet device using device name or IP address and deletes the device.

```
set ethernetdevice delete <Device Name or IP Address> portnumber <port number or port number range>
```

`port number range`, for example, 1-4

Finds a port by Ethernet device name or IP address with the port number and deletes the port.

Examples

```
set eth delete slc-waimea
set eth delete slc-waimea port 5
set eth delete slc-waimea port 1-5
set eth conf slc-waimea delete
```

Description

Finds Ethernet device or Ethernet device port and deletes it.

```
set ethernetdevice port
```

Syntax

```
set ethernetdevice port <Device Name or IP Address> portnumber <port number or list> <one or more parameters>
```

Parameters

```
[name <New Port Name>]
```

```
[state <on|off|cyclepower>]
```
(available for SLP only)

Powers Ethernet device port on or off.

Note: *Only SLP outlet action supports a port list.*

Examples

To power up SLP outlet 2:

```
set eth port slp-sunset po 2 state on
```

To power up SLP outlet port list 1-3,6,8-14

```
set eth port slp-sunset po 1-3,6,8-14 state on
```

Description

Finds a port by device name or IP address with the port number and modifies port parameters.

```
set ethernetdevice sync
```

Syntax

```
set ethernetdevice sync <Device Name or IP Address> action <read|write>
```

Description

Finds an Ethernet device-by-device name or IP address and synchronizes device information.

```
show device
```

Note: *Entries are not case sensitive.*

Syntax

```
show device <device name>
```

Description

Searches for and displays Ethernet or managed devices by device name.

```
show device all
```

Syntax

```
show device all
show device
```

Description

Displays all Ethernet and managed devices.

```
show ethernetdevice account
```

Syntax

```
show ethernetdevice account <accountName>
```

Description

Displays all Ethernet devices viewable by the specified user account.

```
show ethernetdevice accountgroup
```

Syntax

```
show ethernetdevice accountgroup
```

Description

Displays all Ethernet devices viewable by users whose accounts belong to the specified account group.

```
show ethernetdevice all
```

Syntax

```
show ethernetdevice all
```

Description

Displays all Ethernet device information.

```
show ethernetdevice config
```

Syntax

```
show ethernetdevice config <Device Name or IP Address>
```

Description

Finds an Ethernet device-by-device name or IP address and displays device information.

```
show ethernetdevice firmware
```

Syntax

```
show ethernetdevice firmware
```

Description

Displays firmware versions of all Ethernet devices managed by the SLM.

```
show ethernetdevice group
```

Syntax

```
show ethernetdevice group <Group Name> [firmware]
group name: SLM, SLC, SLK, SLP, SCS, SLB, SPDR, WiBox, UDS, EDS, EDSMD,
XPORT, PWAVE, LTRX, or other
```

Note: *Ethernet device group names are not case sensitive.*

Description

Displays Ethernet devices by device group.

```
show ethernetdevice index
```

Syntax

```
show ethernetdevice index <number>
```

Description

Displays Ethernet devices by index.

```
show ethernetdevice list
```

Syntax

```
show ethernetdevice list
```

Description

Displays all Ethernet devices in short form.

```
show ethernetdevice port
```

Syntax

```
show ethernetdevice port <Device Name or IP Address> all
show ethernetdevice port <Device Name or IP Address> portnumber
```

<Port Number>

Description

Finds an Ethernet device using device name or IP address and displays port information.

```
show ethernetdevice search device
```

Syntax

```
show ethernetdevice search device <one or more parameters>
```

Parameters

```
[name <Device Name>]
[ipaddr <IP Address>]
[location <location>] [firmware <version number>]
```

Note: *Search entries are not case sensitive.*

Example

```
show ethernetdevice search device name slc firmware 4
```

Description

Displays all devices that match the criteria entered. For example, if you specify `name slc`, the SLM searches for all devices whose name starts with `slc`.

`show ethernetdevice unreachablelist`

Syntax

`show ethernetdevice unreachablelist`

Description

Displays unreachable Ethernet devices in short form.

`show ethernetdevice unreachablelist index`

Note: *Type* `show ethernetdevice unreachablelist` *to display index.*

Syntax

`show ethernetdevice unreachablelist index <number>`

Description

Displays unreachable ethernet devices by index.

IPv4 Filter Commands

`set ipfilter delete`

Syntax

`set ipfilter delete <Name>`

Example

`set ipfilter delete MyFilter`

Description

Deletes IPv4 filter set by specified name.

`set ipfilter delete all`

Syntax

`set ipfilter delete all`

Description

Deletes all references to filters.

`set ipfilter delete interactive`

Syntax

`set ipfilter delete interactive`

Description

Deletes IPv4 filters by interactive mode.

`set ipfilter name delete`

Note: *Type show ipfilter name <Name> or show ipfilter index <number> to display the rule number.*

Syntax

```
set ipfilter delete name <Name> [rule <rule number>]
```

Example

```
set ipfilter delete MyFilter rule 3
```

Description

Deletes IPv4 filter rule by specified name and rule number.

```
set ip filter state
```

Syntax

```
set ipfilter state <enable|disable>
```

Description

Enables or disables IPv4 filters.

```
set ipfilter test
```

Syntax

```
set ipfilter test <number of minutes>
```

Description

Enables or disables IPv4 filter test mode.

```
show ipfilter
```

Note: *Type show ipfilter to display index.*

Syntax

```
show ipfilter <parameters>
```

Parameters

```
[name <Filter Name>]
[index <number>]
```

Examples

```
show ipfilter
show ipfilter name MyFilter
show ipfilter index 2
```

Description

Displays IPv4 filter information.

```
show iptables
```

Syntax

```
show iptables
```

Description

Displays all IP filtering rules for all chains.

Logging Commands

```
admin locallog
```

Syntax

```
admin locallog clear auditlog
admin locallog clear syslog
admin locallog clear traplog device <Device Name or IP Address>
admin locallog clear traplog group <group name>
group name: SLM, SLC, SLK, SLP, SCS, LTRX, SLB, SPDR, WiBox, or other
```

Description

Clears all of the entries in the auditlog, syslog, or traplog.

Audit Log

```
show auditlog
```

Syntax

```
show auditlog <parameters>
```

Parameters

```
[tail] (default)
[top]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists audit log files.

```
show auditlog list
```

Syntax

```
show auditlog list <parameters>
```

Parameters

```
lastminutes <minutes>
date <MMDD>
date <MMDD-MMDD>
```

Description

Lists auditlog files in short form.

```
show auditlog index
```

Syntax

```
show auditlog index <number> <parameters>
```

`index` is the number of lines of the log specified by `lastminutes` and `date`. If you specify 0 at number of lines, all lines display.

Parameters

```
[top <number of lines>]
[tail <number of lines>]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
[loglastminutes <minutes>]
[logdate <MMDD>]
[logdate <MMDD-MMDD>]
```

If you specify both the date and time, the SLM ignores the date.

Description

Displays the specified part of the auditlog by index.

Examples

```
show auditlog
```

Lists auditlog files.

```
show auditlog lastminutes 5
```

Lists auditlog files modified in the last 5 minutes.

```
show auditlog date 0205
```

Lists auditlog files last modified on 0205.

```
show auditlog date 0205-0209
```

Lists auditlog files last modified between 0205 and 0209.

```
show auditlog index 3
```

Displays index 3 from the top.

```
show auditlog index 3 top 10
```

Displays the first 10 lines of index 3 from the top.

```
show auditlog index 3 tail 15
```

Displays the last 15 lines of index 3 from the tail.

```
show auditlog index 3 lastminutes 5
```

Displays the lines in index 3 from the last 5 minutes of.

```
show auditlog index 3 date 0205
```

Displays the audit log in index 3 for the date 0205.

```
show auditlog index 3 date 0205-0209
```

Displays the auditlog by the index 3 between the dates 0205 to 0209.

```
show auditlog index 3 top 10 lastminutes 5
```

Displays the first 10 lines of index 3 of the auditlog from the last 5 minutes.

```
show auditlog index 3 tail 0 lastminutes 5
```

Displays all lines of the auditlog in index 3 from the tail.

```
show auditlog index 3 lastminutes 5 logminutes 10
```

Displays the part of auditlog in index 3 times tamped in the last 10 minutes.

```
show auditlog index 3 date 0205
```

Displays the part of auditlog in index 3 time- stamped on 0205.

Event Log

```
show eventlog
```

Syntax

```
show eventlog
```

Description

Lists the event log files.

Port Log

```
show portlog
```

Syntax

```
show portlog
```

Lists all port log files.

```
show portlog <parameters>
```

Lists port log files as specified by parameters.

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists portlog files.

Examples

```
show portlog lastminutes 5
```

Lists portlog files modified in last 5 minutes.

```
show portlog date 0205
```

Lists portlog files last modified on 0205.

```
show portlog date 0205-0209
```

Lists portlog files last modified between 0205 and 0209.

```
show portlog file
```

Note: *Type* `show portlog` *to display index.*

Syntax

```
show portlog file <index>
```

Shows the port log from the top.

```
show portlog file <index> tail
```

Displays the port log from the bottom (tail).

```
show portlog file <index> top
```

Displays the port log from the top.

Description

Displays the contents of the portlog file by index. Default is `top`.

```
show portlog index
```

Syntax

Note: *Type* `show portlog` *to display index.*

```
show portlog index <number>
```

Displays part of portlog by index from the top.

Index is the number specified by lastminutes and date.

```
show portlog index <number> <parameters>
```

Parameters

```
[top <number of lines>]
```

Displays the part of portlog by index from the top.

```
[tail <number of lines>]
```

Displays the part of the portlog by index from the end.

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Displays the contents of the portlog file by index.

Note: *Index is the number specified by parameters* `lastminutes` *and* `date`*. If you specify* `0` *as number of lines, all lines display. If you specify both date and time, the SLM ignores the date option.*

Examples

```
show portlog index 3
```

Displays the specified portlog from top.

```
show portlog index 3 top 10
```

Displays the first 10 lines of specified portlog from top.

```
show portlog index 3 tail 15
```

Displays the last 15 lines of specified port log from tail.

`show portlog index 3 lastminutes 5`

Displays port log by the index '3'.

To get this index, type `show portlog lastminutes 5`.

`show portlog index 3 date 0205`

Displays port log by the index '3'.

To get this index, type `show portlog date 0205`.

`show portlog index 3 date 0205-0209`

Displays port log by the index '3'.

To get this index, type `show portlog date 0205-0209`.

`show portlog index 3 top 10 lastminutes 5`

Displays the first 10 lines of portlog by the index '3'.

To get this index, type `show portlog lastminutes 5`.

`show portlog index 3 tail 0 lastminutes 5`

Displays the portlog by the index '3' from tail.

To get this index, type `show portlog lastminutes 5`.

`show portlog list`

Syntax

```
show portlog list
show portlog list <parameters>
```

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists portlog files in short form.

Session Log

`show sessionlog`

Syntax

```
show sessionlog type <sessiontype> <parameters>
sessiontype: <slcportactive|slcportsaved|scsport|device>
```

Parameters

```
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists session log files. Note: edge device log files do not use the date as part of the filename makeup.

Examples

`show sessionlog`

Lists device session log files.

`show sessionlog type slcportsaved lastminutes 5`

Lists archived SLC port session log files modified in last 5 minutes.

`show sessionlog date 0205`

Lists session log files last modified on 0205.

`show sessionlog type scsport index 3`

Displays the specified SCS05/20 port session log from the top.

`show sessionlog type device index 3 top 10`

Displays the first 10 lines of the specified device session log from the top.

`show sessionlog type device index 3 tail 15`

Displays the last 15 lines of specified device session log from the end.

`show sessionlog type device index 3 lastminutes 5`

Displays device session log by the index '3'.

To get this index, type `show portlog lastminutes 5.`

`show sessionlog type slcportsaved index 3 date 0205`

Displays archived SLC port sessionlog by the index '3'.

To get this index, type `show sessionlog type slcportsaved date 0205.`

`show sessionlog type device index 3 date 0205-0209`

Displays device session log by the index '3'.

To get this index, type `show sessionlog type device date 0205-0209.`

`show sessionlog type device index 3 top 10 lastminutes 5`

Displays the first 10 lines of device session log by the index '3'.

To get this index, type `show sessionlog type device lastminutes 5.`

System Log

`show syslog`

Syntax

`show syslog <parameters>`

Parameters

```
[tail] (default)
[top]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists syslog files.

```
show syslog list
```

Syntax

```
show syslog list <parameters>
```

Parameters

```
lastminutes <minutes>
date <MMDD>
date <MMDD-MMDD>
```

Description

Lists syslog files in short form.

```
show syslog index
```

Syntax

```
show syslog index <number> <parameters>
```

`index` is the number of lines of the log specified by `lastminutes` and `date`. If you specify `0` at number of lines, all lines display.

Parameters

[top <number o`f lines>]

`[tail <number of lines>]`

`[lastminutes <minutes>]`

`[date <MMDD>]`

`[date <MMDD-MMDD>]`

`[loglastminutes <minutes>]`

`[logdate <MMDD>]`

`[logdate <MMD`D-MMDD>]

If you specify both the date and time, the SLM ignores the date.

Description

Displays the specified part of the syslog by index.

Examples

```
show syslog
```

Lists syslog files.

```
show syslog lastminutes 5
```

Lists syslog files modified in the last 5 minutes.

```
show syslog date 0205
```

Lists syslog files last modified on 0205.

```
show syslog date 0205-0209
```

Lists syslog files last modified between 0205 and 0209.

```
show syslog index 3
```

Displays index 3 from the top.

```
show syslog index 3 top 10
```

Displays the first 10 lines of index 3 from the top.

```
show syslog index 3 tail 15
```

Displays the last 15 lines of index 3 from the tail.

```
show syslog index 3 lastminutes 5
```

Displays the lines in index 3 from the last 5 minutes of.

```
show syslog index 3 date 0205
```

Displays the audit log in index 3 for the date 0205.

```
show syslog index 3 date 0205-0209
```

Displays the syslog by the index 3 between the dates 0205 to 0209.

```
show syslog index 3 top 10 lastminutes 5
```

Displays the first 10 lines of index 3 of the syslog from the last 5 minutes.

```
show syslog index 3 tail 0 lastminutes 5
```

Displays all lines of the syslog in index 3 from the tail.

```
show syslog index 3 lastminutes 5 logminutes 10
```

Displays the part of syslog in index 3 time- stamped, in the last 10 minutes.

```
show syslog index 3 date 0205
```

Displays the part of syslog in index 3 time stamped, on 0205.

Trap Log

```
show traplog
```

Syntax

```
show traplog <parameters>
```

Parameters

```
[tail] (default)
[top]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
```

Description

Lists traplog files.

```
show traplog group
```

Note: *Type* `show traplog group` *to display the index.*

Syntax

```
show traplog group <Device Group Name> [index <number>]
Group name: SLM, SLC, SLK, SLP, SCS, SLB, SPDR, WiBox, LTRX, or other
```

Description

Displays the current trap log information for an Ethernet device group by index number.

```
show traplog list
```

Syntax

show traplog list <parameters>

Parameters

```
lastminutes <minutes>
date <MMDD>
date <MMDD-MMDD>
```

Description

Lists traplog files in short form.

```
show traplog index
```

Syntax

```
show traplog index <number> <parameters>
```

`index` is the number of lines of the log specified by `lastminutes` and `date`. If you specify `0` at number of lines, all lines display.

Parameters

```
[top <number of lines>]
[tail <number of lines>]
[lastminutes <minutes>]
[date <MMDD>]
[date <MMDD-MMDD>]
[loglastminutes <minutes>]
[logdate <MMDD>]
[logdate <MMDD-MMDD>]
```

If you specify both the date and time, the SLM ignores the date.

Description

Displays the specified part of the traplog by index.

Examples

```
show traplog
```

Lists traplog files.

```
show traplog lastminutes 5
```

Lists traplog files modified in the last 5 minutes.

```
show traplog date 0205
```

Lists traplog files last modified on 0205.

```
show traplog date 0205-0209
```

Lists traplog files last modified between 0205 and 0209.

```
show traplog index 3
```

Displays index 3 from the top.

```
show traplog index 3 top 10
```

Displays the first 10 lines of index 3 from the top.

```
show traplog index 3 tail 15
```

Displays the last 15 lines of index 3 from the tail.

```
show traplog index 3 lastminutes 5
```

Displays the lines in index 3 from the last 5 minutes of.

```
show traplog index 3 date 0205
```

Displays the audit log in index 3 for the date 0205.

```
show traplog index 3 date 0205-0209
```

Displays the traplog by the index 3 between the dates 0205 to 0209.

```
show traplog index 3 top 10 lastminutes 5
```

Displays the first 10 lines of index 3 of the traplog from the last 5 minutes.

```
show traplog index 3 tail 0 lastminutes 5
```

Displays all lines of the traplog in index 3 from the tail.

```
show traplog index 3 lastminutes 5 logminutes 10
```

Displays the part of traplog in index 3 times tamped in the last 10 minutes.

```
show traplog index 3 date 0205
```

Displays the part of traplog in index 3 times stamped on 0205.

Maintenance Commands

```
admin config
```

Syntax

```
admin config factorydefaults
```

Description

Restores the SLM configuration and device database settings to factory defaults.

```
admin config rebuilddatabase
```

Syntax

```
admin config rebuilddatabase
```

Description

Removes and rebuilds the SLM configuration and database from scratch, in case of database corruption that cannot be fixed by the factory default option.

```
admin config showfiles
```

Syntax

```
admin config showfiles
```

Description

Shows saved configuration files.

```
admin config save file
```

Syntax

```
admin config save file <filename>
```

Description

Saves the SLM configuration to the SLM Configuration Files directory.

```
admin locallog clear
```

Syntax

```
admin locallog clear auditlog
admin locallog clear syslog
admin locallog clear traplog device <Device Name or IP Address>
admin locallog clear traplog group <group name>
group name: SLM, SLC, SLK, SLP, SCS, LTRX, SLB, SPDR, WiBox, or other
```

Description

Clears all of the entries in the auditlog, syslog, or traplog.

```
admin quicksetup
```

Syntax

```
admin quicksetup
```

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

```
admin reboot
```

Syntax

```
admin reboot
```

Description

Terminates all connections and reboots the SLM.

```
admin securechannel regenkey
```

Syntax

```
admin securechannel regenkey
```

Description

Regenerates the secure channel key.

Note: *With this command, you lose access to established secure channels; therefore, the SLM first requests confirmation that you want to regenerate the securechannel key.*

```
admin shutdown
```

Syntax

```
admin shutdown
```

Description

Terminates all connections, shuts down the SLM, and turns off the power.

`admin version`

Syntax

`admin version`

Description

Displays current application version information.

`show progress`

Syntax

`show progress`

Description

Shows the progress of background tasks.

`show sysconfig`

Syntax

`show sysconfig [email <Email Address>]`

Description

Displays a report of configurable parameters. The output can be emailed.

Managed Devices

Administrators, Ethernet Account Users and Menu Only Users

`set manageddevice add`

Syntax

set manageddevice add <managedDeviceName> group <ManagedDeviceGroup> <parameters>

Parameters

```
ethernetdevice <ethernetDevice|IP>
[port <portName|portNumber>]
```

Description

Create a new managed device from the specified Ethernet device or port.

`set manageddevice assign`

Syntax

```
set manageddevice assign <managedDeviceName> group <managedDeviceGroup>
[write|remove]
```

Description

Assigns or removes permissions for a managed device.

`set manageddevice config`

Syntax

```
set manageddevice config <Device Name> <one or more parameters>
```

Parameters

```
name <New Name>
powerport <1|2> state <on|off|cyclepower>]
[dialout <Dial Account Name|enable|disable>
modem <Modem Name>
```

To set modem parameters, you must specify the dial-out option.

```
disconnect modem
delete
phonenumber <phone number>]
application <ssh|telnet|http|none>]
```

Examples

```
set ma config port-1 name waimea-port-1
```

Specifies a managed device name (port-1) and renames it to waimea-port-1.

```
set ma config slp-sunset-port1 state off
```

Specifies a managed device name (slp-sunset-port1) and turns the power off.

Description

Finds a managed device-by-device name and modifies device parameters.

```
set manageddevice defuse
```

Syntax

```
set manageddevice defuse <managedDeviceName>
device|serial|power1|power2|kvm
```

Description

Defuses an Ethernet device or port from an existing managed device.

```
set manageddevice fuse
```

Syntax

```
set manageddevice fuse <managedDeviceName> ethernetdevice
<ethernetDevice|IP> [port <portName|portNumber>]
```

Description

Fuses an Ethernet device or port to an existing managed device.

```
set manageddevice index
```

Note: *Type show manageddevice all to display index.*

Syntax

set manageddevice index <number> <one or more parameters>

Parameters

```
assign group <managedDeviceGroup> [write|remove]
```

Assigns or removes permissions.

```
name <New Name>
powerport <1|2> state <on|off|cyclepower> (SLP only)
delete
dialout <Dial Account Name|enable|disable>
modem <Modem Name>
```

To set modem parameters, you must specify the dial-out option.

```
disconnect modem
phonenumber <phone number>
application <ssh|telnet|http|none>
```

Examples

```
set ma config port-1 name waimea-port-1
set ma config slp-sunset-port1 powerport 1 state off
set ma index 1 delete
set ma index 1 dialout myaccount modem pci-s4 phone 3334444
```

If you set `dialout myaccount first` and then decide to set `modem` and `phonenumber` later, you still must specify `dialout myaccount` or `dialout enable`.

```
set ma index 1 dialout myaccount
set ma index 1 dialout enable modem pci-s4 phone 3334444
set ma index 1 disconnect modem
```

Description

Finds managed device by index and modifies device parameters.

```
set manageddevice index n defuse
```

Syntax

```
set manageddevice index n defuse device|serial|power1|power2|kvm
```

Description

Defuses an Ethernet device or port from an existing managed device.

```
set mgroup add <newManagedGroupName>
```

Syntax

```
set mgroup add <newManagedGroupName>
```

Description

Creates a new managed device group.

```
set mgroup delete <existingManagedGroupName>
```

Syntax

```
set mgroup delete <existingManagedGroupName>
```

Description

Deletes an existing managed device group. The group must be empty.

```
show device
```

Syntax

show device <device name>

Note: *Entries are not case sensitive.*

Description

Searches for and displays Ethernet or managed devices by device name. For example, if you specify `name slc`, the SLM searches for all Ethernet and managed devices whose name starts with `slc`.

```
show device all
```

Syntax

```
show device all
show device
```

Description

Displays all Ethernet and managed devices.

```
show manageddevice account
```

Syntax

```
show manageddevice account <accountName>
```

Description

Displays all managed devices viewable by a user account.

```
show manageddevice accountgroup
```

Syntax

```
show manageddevice accountgroup <accountGroupName>
```

Description

Displays all managed devices viewable by an account group.

```
show manageddevice all
```

Syntax

```
show manageddevice all
show manageddevice
```

Description

Displays information about all managed devices.

```
show manageddevice config
```

Syntax

```
show manageddevice config <Device Name>
```

Description

Displays the configuration of a managed device.

```
show manageddevice index
```

Note: *Type show manageddevice all to display index.*

Syntax

```
show manageddevice index <number>
```

Description

Displays managed devices by index.

`show manageddevice list`

Syntax

`show manageddevice list`

Description

Displays all managed devices in short form.

`show manageddevice search`

Syntax

`show manageddevice search <one or more parameters>`

Parameters

Note: *Search entries are not case sensitive.*

`[name <Port Name>]`

Example

`show manageddevice search name waimea-port`

Description

Displays all ports that match the criteria entered.

Managed Device Users

`set manageddevice config`

Syntax

`set manageddevice config <Device Name> <one or more parameters>`

Parameters

`[name <New Name>]`

`[state <on|off|cyclepower>]` (available for SLP only)

Powers managed device on or off.

Examples

`set ma config port-1 name waimea-port-1`

Specifies a managed device name (port-1) and renames it to waimea-port-1.

`set ma config slp-sunset-port1 state off`

Specifies a managed device name (slp-sunset-port1) and turns the power off.

Description

Finds a managed device-by-device name and modifies device parameters.

`set manageddevice index`

Note: *Type* `show manageddevice` *all to display index.*

Syntax

`set manageddevice index <number> <one or more parameters>`

Parameters

```
name <New Name>
powerport <1|2> state <on|off|cyclepower>] (SLP only)
```

Example

```
set ma port slp-sunset po 2 state on
```

Description

Finds managed device by index and modifies device parameters.

```
set manageddevice config <Device Name> disconnect modem
```

Syntax

```
set manageddevice config <Device Name> disconnect modem
```

Description

Finds managed device by name and disconnects modem.

```
set manageddevice index <number> disconnect modem
```

Note: *Type* `show manageddevice all` *to display index.*

Syntax

```
set manageddevice index <number> disconnect modem
```

Example

```
set ma index 2 disconnect modem
```

Description

Finds a managed device by index number and disconnects modem.

Menu Commands

Users can have custom user menus as their command line interface rather than the standard CLI command set. Each custom user menu can contain up to 50 commands (`logout` is always the last command). Instead of typing each command, the user enters the number associated with the command. Each command can also have an associated nickname that can be displayed in the menu instead of the command. You can use the `showmenu <Menu Name>` and `returnmenu` commands to display another menu from a menu or to return to the prior menu.

```
set menu add
```

Syntax

```
set menu add <Menu Name> [command <command number>]
```

Description

Creates a new custom user menu or adds a command to an existing custom user menu.

```
set menu delete
```

Syntax

```
set menu delete <Menu Name> [command <command number>]
```

Description

Deletes a custom user menu or one command within a custom user menu.

```
set menu edit
```

Syntax

```
set menu edit <Menu Name> command <command number>
```

Changes a command within an existing custom user menu.

```
set menu edit <Menu Name> nickname <command number>
```

Changes a nickname within an existing custom user menu.

```
set menu edit <Menu Name> title <menu title>
```

Sets the optional title for a menu.

```
set menu edit <Menu Name> shownicknames <enable|disable>
```

Enables or disables display of command nicknames instead of commands.

```
set menu edit <Menu Name> redisplaymenu <enable|disable>
```

Enables or disables redisplay of menu before each prompt.

Description

Changes menu properties.

```
show menu
```

Syntax

```
show menu <Menu Name>
show menu name <Menu Name>
show menu all
```

Description

Shows a list of all menu names or all commands for a specific menu.

Note: *To see assignments to account group, type* `help show accountgroup`.

Modem Commands

```
reset modem connection
```

Note: *You may only use this command when the modem is completely stuck. Wait for minimum timeout period (3 minutes) before you use this command when:*

- *You dial out via PPP and encounter no dial tone.*
- *You dial out via PPP and encounter a busy signal.*

Syntax

```
reset modem connection
```

Description

Resets a modem connection.

`set modem scan`

Syntax

`set modem scan`

Description

Scans a modem.

`set modem disconnect`

Note: *Type* `show modem` *to view the current modem connections.*

Syntax

`set modem disconnect <Name>`

Example

`set modem disconnect MyPCIModem`

Description

Terminates modem dial-out connection.

`set modem edit`

Syntax

`set modem edit <Modem Name> <parameters>`

Parameters

```
name <New Name>
baud <300-115200>
flowcontrol <none|xon/xoff|rts/cts>
initscript <Modem Initialization Script>
defaultinitscript <Modem Default Initialization Script>
dialin <Dial Account Name|CLEAR|disable|enable>
```

`CLEAR` removes the dial account assignment.

`disable` disables dial-in.

`enable` enables dial-in

`ipfilter <IPv4 Filter Name|CLEAR>`

`ipfilter CLEAR` removes the ipfilter assignment.

Description

Configures a currently loaded modem.

`show modem`

Syntax

`show modem`

Description

Displays all modems.

```
show modem connection
```

Syntax

```
show modem connection <parameters>
```

Parameters

```
[index <number>]
```

Description

Displays active (established) modem connections.

```
show modem settings
```

Syntax

```
show modem <parameters>
```

Parameters

```
[name <Modem Name>]
[index <number>]
```

Description

Displays modem settings.

```
show modem status
```

Syntax

```
show modem status
```

Description

Displays the status of the modem.

Network Commands

```
admin quicksetup
```

Syntax

```
admin quicksetup
```

Description

Displays the quick setup script on the CLI; only the sysadmin account can use this command.

```
set network bonding
```

Syntax

```
set network bonding <disabled|active-backup|802.3ad-2|802.3ad-
34|adaptive-balancing>
```

Description

Configures Ethernet bonding.

```
set network dns
```

Syntax

```
set network dns <1|2|3> ipaddr <IP Address>
```

Description

Configures up to three DNS servers.

```
set network gateway
```

Syntax

```
set network gateway <parameters>
```

Parameters

```
default <IP Address>
precedence <dhcp|default>
alternate <IP Address>

pingip <IP Address>

ethport <1 or 2>

pingdelay <1-250 seconds>

failedpings <1-250>
```

Description

Sets the default gateway.

```
set network host
```

Syntax

```
set network host <Hostname>
```

Description

Sets the SLM hostname.

```
set network port
```

Syntax

```
set network port <1|2> <parameters>
```

Parameters

```
state <dhcp|bootp|static|disable>
[ipaddr <IP Address> mask <Mask>]
mode <auto|10mbit-half|100mbit-half|10mbit-full|100mbit-full>
[ipfilter <IPv4 Filter Name | CLEAR>]
```

`CLEAR` removes the IP filter assignment.

Description

Configures Network Port 1 or 2.

```
show network all
```

Syntax

```
show network all
```

Description

Displays all network settings.

```
show network bonding
```

Syntax

```
show network bonding
```

Description

Displays network bonding information.

```
show network port
```

Syntax

```
show network port <1|2>
```

Description

Displays Network Port 1 and Network Port 2 connection information.

```
show network settings
```

Syntax

```
show network settings
```

Description

Displays all network settings.

Persistent Connection Commands

```
set persistent add
```

Syntax

```
set persistent add <persistentConnectionName> ethernetdevice
<ethernetDeviceName|IP> <one or more parameters)
```

Parameters

```
[protocol <Secure|SSH|Telnet|TN3270>] (default SSH)
[logging <enable|disable>] (default disable)
[managed <enable|disable>] (default enable)
[active <enable|disable>] (default enable)
[parentlogin <enable|disable>] (default disable)
[login <loginAccount>]
[password <loginPassword>]
[prompt <promptString>]
[application <applicationName>]
[escapesequence <escapeString>] (default is '\x1BC')
[reconnectdelay <1-999>] (default is 1)
[eoltranslation <lf | cr>]
```

Description

Creates a new persistent connection

```
set persistent edit
```

Syntax

```
set persistent edit <persistentConnectionName> <one or more parameters)
```

Parameters

```
[ethernetdevice <ethernetDeviceName|IP>]
[protocol <Secure|SSH|Telnet|TN3270>]
[logging <enable|disable>]
[managed <enable|disable>]
[active <enable|disable>]
[parentlogin <enable|disable>]
[login <loginAccount>]
[password <loginPassword>]
[prompt <promptString>]
[application <applicationName>]
[escapesequence <escapeString>]
[reconnectdelay <1-999>]
[eoltranslation <lf | cr>]
```

Note: *For the edit command, the* `ethernetdevice` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

Description

Modifies an existing persistent connection.

```
set persistent delete
```

Syntax

```
set persistent delete <persistentConnectionName> [ethernetdevice
<ethernetDeviceName|IP>]
```

Note: *For the delete command, the* `ethernetdevice` *parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

Description

Deletes a persistent connection.

```
show persistent
```

Syntax

```
show persistent [[name] <persistentConnectionName>][device
<devname|IP>][all]
```

Note: *The device parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

The <devname> following device may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.

Description

Displays one or more persistent connections

```
connect persistent
```

Syntax

```
connect persistent <persistentConnectionName> [device <devname|IP>]
```

Note: *The device parameter is necessary only to discriminate between two or more persistent connections that are visible to the current user and are using the same name.*

The <devname> following device may be the name of an Ethernet device or the name of a managed device. Persistent connections automatically belong to managed devices that have an Ethernet device component that has persistent connections defined.

Description

```
Connect to an existing persistent connection.
```

Port Commands

```
set ethernetdevice port
```

Syntax

```
set ethernetdevice port <Device Name or IP Address> portnumber <port
number or list> <one or more parameters>
```

Parameters

```
[name <New Port Name>]
```

```
[state <on|off|cyclepower>]
```
(available for SLP only)

Powers Ethernet device port on or off.

Note: *Only SLP outlet action supports a port list.*

Examples

To power up SLP outlet 2:

```
set eth port slp-sunset po 2 state on
```

To power up SLP outlet port list 1-3,6,8-14

```
set eth port slp-sunset po 1-3,6,8-14 state on
```

Description

Finds a port by device name or IP address with the port number and modifies port parameters.

```
show ethernetdevice port
```

Syntax

```
show ethernetdevice port <Device Name or IP Address> all
show ethernetdevice port <Device Name or IP Address> portnumber
<Port Number>
```

Description

Finds an Ethernet device using device name or IP address and displays port information.

```
show ethernetdevice search port
```

Syntax

show ethernetdevice search port <one or more parameters>

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
[portnumber <Port Number>]
```

Examples

```
show ethernetdevice search port name waimea-port
show ethernetdevice search port name waimea portnumber 2
```

Description

Displays all ports that match the criteria entered.

```
show port
```

Note: *Type* `show port all` *to display index.*

Syntax

```
show port <name>
```

Example

`show port slc` displays all Ethernet ports whose name starts with "slc."

Description

Searches Ethernet ports by port name and displays port information.

```
show port all
```

Syntax

```
show port all
show port
```

Displays all Ethernet ports.

```
show port index
```

Syntax

```
show port index <number>
```

Description

Displays Ethernet ports by index.

Search Commands

`show account search email`

Syntax

`show account search email <email address>`

Example

`show account search email sys`

Displays all accounts whose email address starts with "sys."

Description

Displays accounts that match the email address entered.

`show account search name`

Syntax

`show account search name <user name>`

Examples

`show account search name sys`

Displays all accounts whose name starts with "sys."

Description

Displays accounts that match the name entered.

`show ethernetdevice search device`

Syntax

`show ethernetdevice search device <one or more parameters>`

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Device Name>]
[ipaddr <IP Address>]
[location <location>] [firmware <version number>]
```

Example

`show ethernetdevice search device name slc firmware 4`

Description

Displays all devices that match the criteria entered. For example, if you specify `name slc`, the SLM searches for all devices whose name starts with `slc`.

`show ethernetdevice search port`

Syntax

`show ethernetdevice search port <one or more parameters>`

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
[portnumber <Port Number>]
```

Examples

```
show ethernetdevice search port name waimea-port
show ethernetdevice search port name waimea portnumber 2
```

Description

Displays all ports that match the criteria entered.

```
show manageddevice search
```

Syntax

```
show manageddevice search <one or more parameters>
```

Parameters

Note: *Search entries are not case sensitive.*

```
[name <Port Name>]
```

Examples

```
show manageddevice search name waimea-port
```

Description

Displays all ports that match the criteria entered.

Services Commands

```
set service auditlog
```

Syntax

```
set service auditlog <enable|disable>
```

Description

Enables or disables audit logging.

```
set service https
```

Syntax

```
set service https <enable|disable>
```

Description

Enable or disables HTTPS.

```
set service telnet
```

Syntax

```
set service telnet <enable|disable>
```

Description

Enables or disables Telnet logging to the SLM.

`set service sessionlog`

Syntax

`set service sessionlog <enable|disable>`

Description

Enables or disables session logging.

`set service ssh`

Syntax

`set service ssh <enable|disable> version <1|2>`

Description

Enables or disables SSH logging to the SLM.

`set service wap`

Syntax

`set service wap <enable|disable>`

Description

Enables or disables WAP access to SLM.

`show service`

Syntax

`set service`

Description

Displays service settings.

Session Commands

`connect terminate`

Syntax

`connect terminate <connect ID> <one or more parameters>`

Parameters

`outbound <outbound ID>`

You must specify connection ID (inbound ID) to terminate an outbound connection.

Use `show connection` to view the current connections and their ID.

Examples

```
connect terminate 3
connect terminate 3 outbound 1
```

Description

Terminates a user connection to the SLM session. Use `show connection` to view the current connections and IDs.

`show connection`

Syntax

`show connection`

Description

Displays active user connections and connection IDs.

SSH Key Commands

`set sshkey delete`

Syntax

`set sshkey delete keyuser <SSH Key User> keyhost <SSH Key Host>`

Description

Deletes an imported SSH key.

`set sshkey import`

Syntax

`set sshkey import <copypaste>`

Note: *RSA keys must be 1024 bits*

Description

Imports an SSH key.

`show sshkey import`

Syntax

`show sshkey import <one or more parameters>`

Parameters

```
[keyuser <SSH Key User>]
[keyhost <SSH Key IP Address or Name>]
[viewkey <enable|disable>]
```

Description

Displays imported SSH keys.

Task Progress Command

`show progress`

Syntax

`show progress`

Description

Shows the progress of background tasks.

Appendix B: Security Considerations

The SLM provides data path security by means of SSH, Web/SSL, and in the case of SLCs, secure channel. Even with the use of these protocols, however, do not assume you have complete security. Securing the data path is only one measure needed to ensure security. This appendix briefly discusses some important security considerations.

Security Practice

Develop and document a Security Practice. The Security Practice should state:

- The dos and don'ts of maintaining security. For example, the power of SSH and SSL is compromised if users leave sessions open or advertise their password.
- The assumptions that users can make about the facility and network infrastructure, for example, how vulnerable the CAT 5 wiring is to tapping.

Factors Affecting Security

External factors affect the security provided by the SLM, for example:

- A terminal to the SLM may be secure, but the path from the SLM to the end device may not be secure.
- With the right tools, a person having physical access to open the SLM may be able to read the encryption keys.
- There is no true test for a denial-of-service attack-there is always a legitimate scenario for a request storm. A denial-of-service filter locks out some high-performance automated/scripted requests. The SLM attempts to service all requests and does not filter out potential denial-of-service attacks.

Available Services and Port Numbers

The SLM supports the services listed below. When installing and configuring an SLM in an environment where such services are limited, please make sure network equipment configurations allow access to and from the listed port numbers.

Table B-1 Administration

Protocol	Port#	Type
SSH	22	TCP
HTTP	80	TCP
HTTPS (SSL)	443	TCP
Telnet	23	TCP

Table B-2 Management

Protocol	Port#	Type
SMTP	25	TCP
BOOTP/DHCP	67/68	TCP
NTP	123	TCP
NIS	111	TCP/UDP
SNMP	161/162	UDP
LDAP	389	TCP
RADIUS	1645/1812	TCP/UDP

Table B-3 Device Access

Protocol	Port#	Type
FTP	20/21	TCP/UDP
SSH/SCP	22	TCP
TFTP	69	UDP
SNMP	161/162	UDP
LDP	30718	UDP

Appendix C: Safety Information

Safety Precautions

Please follow the safety precautions described below when installing and operating the SLM.

Cover

- Do not remove the cover of the chassis. There are no user-serviceable parts inside. Opening or removing the cover may expose you to dangerous voltage that could cause fire or electric shock.
- Refer all servicing to Lantronix.

Power Plug

- When disconnecting the power cable from the socket, pull on the plug, not the cord.
- Always connect the power cord to a properly wired and grounded power source. Do not use adapter plugs or remove the grounding prong from the cord.
- Only use a power cord with a voltage and current rating greater than the voltage and current rating marked on the unit.
- Install the unit near an AC outlet that is easily accessible.
- Always connect any equipment used with the product to properly wired and grounded power sources.
- To help protect the product from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Do not connect or disconnect this product during an electrical storm.

Input Supply

- Disconnect all power supply sources before servicing to avoid electric shock.
- Check nameplate ratings to assure there is no overloading of supply circuits that could affect overcurrent protection and supply wiring.

Grounding

- Maintain reliable grounding of this product.
- Pay particular attention to supply connections when connecting to power strips rather than directly to the branch circuit.

Rack

If rack mounted units are in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. Consider the following:

- Do not install the unit in a rack in such a way that a hazardous stability condition results because of uneven loading. A drop or fall could cause injury.

- The ambient temperature inside the rack may be greater than the room ambient temperature. Make sure to install the SLM in an environment with an ambient temperature less than the maximum operating temperature of the SLM. (See *Appendix D: Technical Specifications*.)
- Install the equipment in a rack in such a way that the amount of airflow required for safe operation of the equipment is not compromised.
- Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
- Maintain reliable earthing of rack-mounted equipment. Give particular attention to supply connections other than direct connections to the branch circuit (e.g., use of power strips).
- Before operating the SLM, make sure the SLM is secured to the rack.

Port Connections

- Only connect the network ports to an Ethernet network that supports 10Base-T/100Base-T or 10/100/1000Base-T.
- Only connect the console port to equipment with serial ports that support EIA-232 (formerly RS-232C).

Appendix D: Technical Specifications

You can install the SLM either in an EIA-standard 19-inch rack (1U tall) or as desktop unit. Following are specifications for the SLM hardware, which applies to the SLM-01 and SLM-02.

Table D-1 Technical Specifications

	SLM-01	SLM-02
Memory	40 GB Hard Drive 256 MB RAM	160 GB Hard Drive 512 MB RAM
Network interface	One 10/100Base-T (RJ45) One 10/100/1000Base-T (RJ45)	Two 10/100/1000Base-T (RJ45)
Dimensions	1U, 43 x 429 x 584 mm (1.7 H x 16.9 x 23 in)	1U, 44 x 424 x 356 mm (1.7 H x 16.7 x 14 in)
Weight	12.7 kg (28 lb)	10.5 kg (23 lb)
Console	RS-232 (DB9)	RS-232 (DB9)
Power Supply	100-240 VAC 50 -60 Hz	100-240 VAC 50 -60 Hz
Temperature	Operating: 10°C to 35°C (50°F to 95°F) Storage: -40°C to + 70°C (140°F to 158°F)	Operating: 10°C to 35°C (50°F to 95°F) Storage: -40°C to + 70°C (140°F to 158°F)
Relative Humidity	Operating: Non-Operating/Storage: 95%, non-condensing at 30^0C	Operating: Non-Operating/Storage: 95%, non-condensing at 30^0C

Appendix E: Compliance

SLM-01

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:

Lantronix Inc., 167 Technology Drive, Irvine, CA 92618 USA

Declares that the following product:

Product Name(s): Secure Lantronix Management Appliance (SLM-01)

Conform to the following standards or other normative documents:

Safety:

- UL/CSA 60950-1:2003
- EN60950
- CE Mark EU Directive 73/23/EEC, IEC
- IEC 60 950
- EMKO-TSE (74-SEC) 207/94
- GOST-R 50377-92 (GOST-R Mark)

Electromagnetic Immunity:

FCC Class A	AS/NZS 3548 Class A (C-tick Mark)
◆ ICES-003 Class A	◆ RRL Class A Certification to MIC Notices 1997-41 & 1997-42
◆ EN55022 Class A	◆ GOST-R 29216-91
◆ EN55024 (Immunity)	◆ GOST-R 50628-95 (GOST-R Mark)
◆ CE Mark (EU Directive 89/336/EEC)	◆ BSMI CNS13438 Class A (DOC
◆ CISPR-22/VCCI Class A	◆

Supplementary Information:

This Class A digital apparatus complies with ICES-003 (Class A), EN55022 Class A

EN55024 (immunity) and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment. The product complies with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

Additional Agency Approvals and Certifications:

◆ VCCI	◆ C-Tick
◆ TUV	◆ CB Scheme
◆ GS Mark	◆ NIST-certified implementation of AES as specified by FIPS 197
◆ UL/CUL	

This product carries the CE mark since it has been tested and found compliant with the following standards:

Safety: EN 60950

Emissions: EN 55022 Class A

Immunity: EN 55024

Manufacturer's Contact:

Lantronix,Inc.

167 Technology Drive, Irvine, CA 92618USA

Tel: 949-453-3990

Fax: 949-450-7249

SLM-02

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:

Lantronix Inc., 167 Technology Drive, Irvine, CA 92618 USA

Declares that the following product:

Product Name(s): Secure Lantronix Management Appliance (SLM-02)

Conform to the following standards or other normative documents:

Safety:

UL 60950

EN 60950

CE Mark EU Directive 73/23/EEC, IEC

IEC 60950

Electromagnetic Immunity:

FCC Class B

EN61000-3-2/3-3

EN55022 Class B

EN55024 (Immunity)

CE Mark (EU Directive 89/336/EEC)

CISPR-22 Class B

CISPR-24

Supplementary Information:

This Class B digital apparatus complies with EN55022 Class B

EN55024 (immunity) and has been verified as being compliant within the Class B limits of the FCC Radio Frequency Device Rules, measured to CISPR 22.

Additional Agency Approvals and Certifications:

- TUV
- UL/CUL

This product carries the **CE** mark since it has been tested and found compliant with the following standards:

- Safety: EN 60950
- Emissions: EN 55022 Class B
- Immunity: EN 55024

Manufacturer's Contact:

Lantronix,Inc.

167 Technology Drive, Irvine, CA 92618 USA

Tel: 949-453-3990

Fax: 949-450-7249

Appendix F: Protocol Glossary

This glossary provides brief definitions of commonly used protocols.

BOOTP (Bootstrap Protocol)

Similar to DHCP, but for smaller networks. Automatically assigns the IP address for a specific duration of time.

CHAP (Challenge Handshake Authentication Protocol)

A secure protocol for connecting to a system; it is more secure than the PAP.

DHCP (Dynamic Host Configuration Protocol)

Internet protocol for automating the configuration of computers that use TCP/IP.

DNS (Domain Name Servers)

A system that allows a network nameserver to translate text host names into numeric IP addresses.

FTP (File Transfer Protocol)

A standard network protocol used to transfer files from one host or to another host over a TCP-based network, such as the Internet.

HTTPS

A widely used communications protocol for secure communication over a computer network, with especially wide deployment on the Internet.

Kerberos

A network authentication protocol that provides strong authentication for client/server applications by using secret-key cryptography.

LDAP (Lightweight Directory Access Protocol)

A protocol for accessing directory information.

NAT (Network Address Translation)

An Internet standard that enables a LAN to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. This enables a company to shield internal addresses from the public Internet.

NFS (Network File System)

A protocol that allows file sharing across a network. Users can view, store, and update files on a remote computer. You can use NFS to mount all or a portion of a file system. Users can access the portion mounted with the same privileges as the user's access to each file.

NIS (Network Information System)

System developed by Sun Microsystems for distributing system data such as user and host names among computers on a network.

NMS (Network Management Station)

NMS acts as a central server, requesting and receiving SNMP-type information from any computer using SNMP.

NTP (Network Time Protocol)

A protocol used to synchronize time on networked computers and equipment.

PAP (Password Authentication Protocol)

A method of user authentication in which the username and password are transmitted over a network and compared to a table of name-password pairs.

PPP (Point-to-Point Protocol)

A protocol for creating and running IP and other network protocols over a serial link.

RADIUS (Remote Authentication Dial-In User Service)

An authentication and accounting protocol. Enables remote access servers to communicate with a central server to authenticate dial-in users and their access permissions. A company stores user profiles in a central database that all remote servers can share.

Secure Channel

The name that Lantronix gave to encrypted password-less connections on the SLM. These connections use public key encryption for authentication over SSH.

SecurID

SecurID is a two-factor authentication method based on the user's SecurID token and pin number.

SMB/CIFS

(Server Message Block/Common Internet File System): Microsoft's protocol for allowing all applications as well as Web browsers to share files across the Internet. CIFS runs on TCP/IP and uses the SMB protocol in Microsoft Windows for accessing files. With CIFS, users with different platforms and computers can share files without having to install new software.

SFTP (Secure File Transfer Protocol)

SFTP is a network protocol that provides file access, file transfer, and file management functionalities over a secure SSH data stream.

SNMP (Simple Network Management Protocol)

A protocol that administrators use to monitor networks and connected devices and to respond to queries from other network hosts.

SMTP (Simple Mail Transfer Protocol)

TCP/IP protocol for sending email between servers.

SSL (Secure Sockets Layer)

A protocol that provides authentication and encryption services between a web server and a web browser.

SSH (Secure Shell)

A secure transport protocol based on public-key cryptography.

TACACS+ (Terminal Access Controller Access Control System)

A method of authentication used in UNIX networks. It allows a remote access server to communicate with an authentication server to determine whether the user has access to the network.

WAP (Wireless Application Protocol)

WAP is a technical standard for accessing information over a mobile wireless network.