SESPM1040-541-LT-xx

Self-Enclosed Managed Hardened Gigabit Ethernet PoE++ Switch

(4) 10/100/1000Base-T PoE++ Ports + (1) 10/100/1000Base-T or 100/1000Base-X SFP/RJ-45 Combo Ports

Operation Guide

Part Number 33773

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Intellectual Property

Warranty

For details on the Lantronix warranty policy, go to http://www.lantronix.com/support/warranty.

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Revision History

Rev.	Date	Description
B	4/22/20	FW v3.0.0.1: add DHCP Server, update for HW Rev G and later, and PSE FW v3.5.2.
C	8/24/20	Update for FW v3.0.0.2/port 5 switching between copper and fiber.
D	6/7/21	SW Rev 3.0.3: add DHCP Server and 24VDC Passive PoE Module. Add PoE Negotiation via LLDP (note that LLDP neighbors and LLDP statistics are not currently supported). Update BLE firmware to tn-BLE-1_0_5. Add CLI for SNMP community string config. Add CLI show command for DHCP Server pool config and show mac address aging-time. Add 128M tmpfs for upgrades.
E	8/9/21	Add note on Operation Mode on pages 112 and 169.
F	6/15/23	Initial Lantronix rebrand at Software Rev 3.2.5: add “Set port media connector type” command.

Contents

1. Introduction

The Lantronix SESPM1040-541-LT-xx Switch is a Layer 2 managed switch with (4) 10/100/1000Base-T PoE++ (IEEE 802.3bt) ports and (1) combination 10/100/1000Base-T RJ-45 or 100/1000Base-X SFP uplink port (additional optional ports available), that is ideal for use in security and surveillance, PoE lighting, digital signage and many other applications.

The SESPM1040-541-LT-xx switch is self-enclosed in an outdoor NEMA 4X/IP 66 rated enclosure with 6KV surge protection on the AC line to protect against surges in power, built in surge protection on PoE and data ports for lightning protection, and additional fuse protection on PoE and included data port for external circuit cross protection against unintentional intrusion from outside power lines. It can be mounted on a wall or side of a building, or optional brackets are available for mounting on a pole.

The switch is available in multiple configurations: as either an AC- or DC-powered power source (PSE) providing up to 90W on individual ports* (not to exceed 180W total on the AC powered unit or 240W on DC powered unit), **or** as a PoE-powered device (PD) which is also a PSE providing up to 80W of total PoE power. The PD version requires PoE power from an IEEE 802.3 bt Type 4 Class 8 compliant PSE, or it can receive power over copper cable running parallel to a fiber optic cable for data (i.e., composite cable). (*Specific port configuration may apply; see Port Configuration on page 28.) The -PD version includes a 12V Aux port which can be used to provide auxiliary power to a PC, lighting or other accessories.

On all versions, a second 10/10/1000Base-T RJ-45 maintenance or 1000Base-X SFP uplink port can be activated by installing an optional Combo Port Module (sold separately). Alternatively, an optional Passive PoE Combo Port Module can be added to provide 24VDC power to non-standard PoE powered devices such as wireless radios, eliminating the need for an additional external power source for those devices. An optional Digital Input/Output Module with four optical isolators configurable as either inputs or outputs can provide connections for alarms, event notifications, or other customer designated items.

All versions are also equipped with Near Field Communication (NFC) to allow simple, repeatable switch configuration with a user-friendly app on a mobile device prior to connecting or powering up the switch. And on all versions Bluetooth Low Energy (BLE) allows remote access to alarm information or to read or change equipment settings without requiring physical access using inconvenient ladders or scissor lift rental.

The switch also has integrated management software for setup, monitoring, and control of connected devices.

Ordering Information

Model	Description
SESPM1040-541-LT-AC	AC-powered self-enclosed switch with (4) 10/100/1000Base-T PoE++ ports and (1) combo 10/100/1000Base-T RJ-45 or 100/1000Base-X SFP port. Order the –AC version based on the AC power cord for a specific country: SESPM1040-541-LT-AC-AR, -BR, -EU, -JP, -NA, -OZ, SA, or UK.
SESPM1040-541-LT-DC	DC-powered self-enclosed switch with (4) 10/100/1000Base-T PoE++ ports and (1) combo 10/100/1000Base-T RJ-45 or 100/1000Base-X SFP port.
SESPM1040-541-LT-PD	PoE-powered Type 4 Class 8 self-enclosed switch with (4) 10/100/1000Base-T PoE++ ports + (1) combo 10/100/1000Base-T RJ-45 or 100/1000Base-X SFP port.

Port Configuration

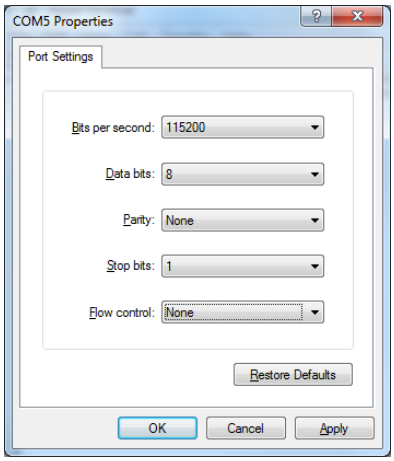
Ports 1-4 are 10/100/1000Base-T PoE++ PSE Ports.

Port 5 is a combo 10/100/1000Base-T or a 100/1000Base-X uplink port. On the AC and DC version, it can either be used as a copper or fiber port. However, on the PD version, it is normally used for PoE power input, in which case the SFP option is not available unless you are using fiber cable running in parallel to a copper cable as the power input, then port 5 can be used as a fiber port (or copper) instead of using it exclusively as the PoE power input port.

Port 6 becomes available when you add an optional Port 6 module (e.g., the optional Additional Combo Port Module or the optional 24V Passive PoE Module providing 24VDC power). The optional Additional Combo Port Module allows you to activate a second combo 10/100/1000Base-T maintenance port or second 1000Base-X uplink port. Alternatively, port 6 can be used for the optional 24V Passive PoE Module. (Because they share the same port, the Additional Combo Port Module providing the 10/100/1000Base-T maintenance port or second 1000Base-X uplink port and the 24V Passive PoE Module providing 24VDC power cannot be used at the same time.)

Note: If using more than one 90W port, alternate ports (i.e., avoid adjacent 90W ports). Use ports 1 and 3 or ports 2 and 4. Exception: using ports 2 and 3 for 90W is allowed. See the related CLI or Web UI section of this manual for PoE priority setting and PoE port power shutdown information.

Console Port



If you have physical access to the switch, a console cable can be plugged into the Console port in order to configure the switch. The default settings are:

- Bits per second (data rate) = 115,200
- Data bits (# of bits) = 8
- Parity = None
- Stop bits (# of stop bits) = 1
- Flow control = None

Related Manuals

SESPM1040-541-LT-xx Quick Start Guide, 33783
SESPM1040-541-LT-xx Install Guide, 33772
SESPM1040-541-LT-xx Operation Guide, 33773 (this manual)

SESPM-4P-PMB Pole Mount Bracket Kit Option Install Guide, 33774
SESPM-4P-FMK Fiber Management Kit Option Install Guide, 33775
SESPM-4P-DIG Digital Input/Output Kit Option Install Guide, 33776
SESPM-2P-1G-CP One Gb Additional Combo Port Module Option Install Guide, 33779
SESPM-2P-24V-CP Quick Start Guide, 33832
SESPM-2P-24V-CP Option Install Guide, 33829
Switch Manager Mobile App for SESPM1040-541-LT-xx User Guide, 33789

Release Notes (version specific)

For More Information

A printed Quick Start Guide is shipped with each switch. See the SESPM1040-541-lt-xx Series product page for more information.

For Lantronix Drivers, Firmware, Manuals, Product Notifications, Warranty Policy & Procedures, etc. go to the Lantronix Technical Resource Center.

Industrial SFP Modules User Guides; see Lantronix Optical Devices webpage for specific information.

Note: Information in this document is subject to change without notice. Note that this manual provides links to third party web sites for which Lantronix is not responsible.

2. Software Configuration

Software Components

The SESPM1040-541-LT-xx interfaces with the following software elements:

- Web UI on a desktop or laptop
- CLI
- Smartphone or tablet via NFC
- Smartphone or tablet via BLE

Last Gasp

In the event of power failure, the switch has a Last Gasp feature that allows the switch to save enough power to send a trap notification of the power failure. The 'Last Gasp' feature provides 10W for 5mS; however, PoE power is not protected on failure.

Automatic Operation

The SESPM1040-541-LT-xx switch performs these operations automatically:

- Shut down the switch if an over temperature condition is detected. If the temperature within the enclosure exceeds 70°C the switch will power off automatically.
- Shut off power to a port in case of a port being over powered. If PD power exceeds power available, ports will shut down according to priority settings (see the poe priority command on page 115 or see Switch > PoE Management > PoE Status on page 168.
- Load NFC configuration at boot up. An option exists to disable this feature. See Switch > Security > Management > NFC on page 187.
- Update PoE firmware at boot up. This can also be done via CLI and Web UI. The switch will only update PSE firmware automatically if it can correctly determine the current running version. Otherwise, the message "*Unable to determine running PSE firmware version, exiting PSE firmware update*" displays.

PoE Services

The SESPM1040-541-LT-xx PoE is controlled by a set of services that are each able to disable PoE on one or all PoE ports. You can configure and enable or disable the following services:

- PoE Auto Power Reset (APR) services
- PoE Schedule services
- Port Power Monitor services

PoE Services that cannot be disabled are:

- PSU Temperature Monitor services
- Total Power Monitor services

Each of the services may set a port to off. If that happens, PoE is shut off for that particular port. Power off events generate a trap (if traps are enabled) and a syslog message with information about what caused power to be shut off.

If a service is disabled, it does not affect PoE on that port. By default, APR and Scheduler are disabled as they require user configuration.

The PoE Service Status page on the Web UI and the service status CLI command **`show poe service`** are intended to be a quick overview of the services and should show which service shutdown a particular port. The syslog message contains the date/time of the event as well as relevant details (PSU Temperature at the time of an over temperature event, for example).

PoE Automatic Power Reset (APR) Services

PoE Automatic Power Reset (APR) monitors a device and can power cycle the PoE port if connectivity is lost. To determine connectivity, ping is used. It is expected, but not required, that the ping frames are directed at the device attached to the PoE port.

To monitor a device, APR has several phases it moves through.

- Discovery Phase 1 is the first phase. The purpose of this phase is to allow the PoE attached device time to boot and possibly acquire an IP address via DHCP. To allow the device time to boot, in this phase ping failures are not counted. Pings are sent every Interval Time seconds. If at any point during Discovery Phase 1 a ping is successful, APR moves to the Monitor phase. Discovery Phase 1 lasts 10 minutes. If the Failure Action is Log and Trap, a syslog message and trap are generated, and APR moves to Discovery Phase 2. If the Failure Action is Reset, Log and Trap, PoE is reset, a syslog message and trap are generated, and APR moves to Discovery Phase 2.
- Discovery Phase 2 is similar to Discovery Phase 1. Phase 2 lasts 10 minutes, does not count ping failures. Pings are sent every Interval Time seconds. On a successful ping, APR moves to the Monitor Phase. Discovery Phase 2 also lasts for 10 minutes. If the end of Discovery Phase 2 is reached without a successful ping frame, APR moves to the Failure phase and user intervention is required. If the Failure Action is Log and Trap, a syslog message and trap are generated. If the Failure Action is Reset, Log and Trap, PoE is disabled on the port, a syslog message and trap are generated.
- Monitor phase indicates that APR has successfully discovered its attached device and is now being monitored. Pings are sent every Interval Time seconds. Each successful ping resets the ping failure counter. If the ping failure counter reaches the Retry Count setting, an APR Failure event occurs. If the Failure Action is *Log and Trap*, a syslog message and trap are generated, and APR moves to Discovery Phase 1. If the Failure Action is *Reset, Log and Trap*, PoE is reset, a syslog message and trap are generated, and APR moves to Discovery Phase 1.

- Failure phase indicates that APR was unable to contact the attached device. APR disables itself and user intervention is required to restart APR. If the Failure Action is Log and Trap, power remains on for this port. If the Failure Action is Reset, Log and Trap, power is shut off to the port.

To configure APR from the Web UI:

- To enable APR from the Web UI, set Ping Check to Enabled.
- To set the IP address APR should monitor, fill in Ping IP address.
- To set the interval between pings in Discovery Phase 1, Discovery Phase 2 and Monitor, modify the Interval Time field.
- To set how many consecutive missed pings initiates an APR failure event, modify Retry Count.
- To set the action of Failure Events, use the Failure Action pulldown - if Log and Trap is selected, APR will not shut off PoE at any time.

To configure APR from the CLI:

- To enable APR on Port 1:

```
configure terminal
interface GigabitEthernet 1/1
poe apr ping-check enable
```

- To disable APR on Port 1:

```
configure terminal
interface GigabitEthernet 1/1
poe apr ping-check disable
```

- To set the Ping IP address on Port 1 to 10.10.10.10:

```
configure terminal
interface GigabitEthernet 1/1
poe apr ip 10.10.10.10
```

- To set the ping interval time on Port 1 to 45 seconds:

```
configure terminal
interface GigabitEthernet 1/1
poe apr interval 45
```

- To set the number of missed pings in the Monitor phase before initiating a failure on Port 1 to 4:

```
configure terminal
interface GigabitEthernet 1/1
poe apr retries 4
```

- To set the APR Failure Action on Port 1 to Log and Trap:

```
configure terminal
interface GigabitEthernet 1/1
poe apr failure LogTrap
```

Current APR status is on the PoE Service Status page in the Web UI or from the CLI:

```
show poe service
```

If APR is disabled by another PoE service, its status would be:

```
Off – Disabled by other PoE service
```

If APR has been disabled by the user, its status would be:

```
Off
```

If APR is in either of the Discovery Phases, its status would be like this (Phase 2 for 222 seconds):

```
Discovery Phase 2 - Duration: 222s
```

If APR is in the Monitor Phase, the status shows how long it has been in this phase, the current consecutive failure count and how many failures have occurred since enabling APR, its status would be:

```
Monitoring - Duration: 5000s Consecutive Failures: 0 Failure Events: 2
```

If APR failed Discovery Phase 2 and Reset, Log and Trap is the Failure action, its status would be:

```
Port Disabled - APR Failure - Discovery failed after 20 minutes, please verify
configuration
```

If a port is resetting, these are the possible statuses:

```
Resetting after Discovery Phase 1 timeout
Resetting after Monitor failure - Failure Events: 3
```

PoE Schedule Services

PoE Schedule allows you to create a schedule that can be applied to a PoE Port. Operations that can be done to a port are power on, power off, and reset (power off followed quickly by a power on).

Currently, schedules are weekly and recurring. When a schedule is applied to a port, the scheduler will determine the current expected PoE state for the port and set it.

For example, the schedule to be applied consists of the following events:

Event	Day	Event Time
Power Off	Monday	21:00
Power On	Tuesday	15:00
Power Off	Tuesday	22:00
Power On	Wednesday	17:00

- If the schedule were applied at 08:00 on Tuesday, the port would be powered off and then at 15:00 on Tuesday (the next event in the schedule), the port would be powered on and then proceed through the schedule.
- If the schedule were applied at 17:00 on Tuesday, the port would be powered on and then at 22:00 on Tuesday the port would be powered off and then proceed through the schedule.
- If the schedule were applied at 12:00 on Saturday, the port would be powered on and then at 21:00 on Monday it would be powered off and then proceed through the schedule.

Schedule Notes:

- By default, there are 16 empty profiles (schedules) - no more profiles can be created.
- In a profile, at a given time, there can be only one event.
- A profile can be applied to multiple ports.
- A port can only have one profile applied at a time.
- Different profiles can have an event at a specific time (Port 1 could be powered on at 12:00 on Monday and Port 2 could be powered off at 12:00 on Monday as well by using two different profiles).

To create a schedule:

- From the Web UI:
    1. Go to the PoE Schedule page.
    2. Press the Add Event button.
    3. Select the Profile ID you wish to add events for.
    4. Set the Day of the Week, the Hour of the Day, the Minute of the Hour (5 minute intervals on Web UI), and the Action.
    5. The PoE Schedule page for the profile you added the event to should be displayed
        a. A Profile can have its name set using the Name textbox at the top.
        b. An event can be deleted using the Delete button for the event to be deleted.
- From the CLI, to add a power on at 21:12 on Monday to Profile 1:

```
configure terminal
poe schedule add 1 monday 21 12 power-on
```

- From the CLI, to delete the event on Monday at 21:12:

```
configure terminal
poe schedule delete 1 monday 21 12
```

- From the CLI, to set Profile 1's name to test:

```
configure terminal
poe schedule name 1 test
```

- From the CLI, to display schedule events:

```
show poe schedule
```

To apply a schedule to a port:

- From the Web UI, go to the PoE Configuration page, use the PoE Schedule pulldown for the port you want to apply the desired Profile, then press the Apply button.
- From the CLI, to apply the schedule Profile 1 to Port 1:

```
configure terminal
interface GigabitEthernet 1/1
poe schedule 1
```

To disable the schedule on a port:

- From the Web UI, go to the PoE Configuration page, use the PoE Schedule pulldown for the port you want to disable the schedule and select Disabled.
- From the CLI:

```
configure terminal
interface GigabitEthernet 1/1
poe schedule disabled
```

To see the current status, use the PoE Service Status page in the Web UI or from the CLI:

```
show poe service
```

For ports that do not have a schedule, the status will look like this:

```
Off
```

If a port has been disabled by another PoE Service, the status will look like this:

```
Off - Disabled by service
```

For ports with a schedule applied, the status will look like this:

```
Running - Current PoE State: On Next event: Reset, Friday at 01:10
```

Port Power Monitor Services

The Port Power Monitor will disable a port if its average power draw over the last minute exceeds the configured amount. The average power is displayed in the Total Power Monitor's status per port on the PoE Service Status page in the Web UI or with the service status CLI command:

```
show poe service
```

Port Power Monitor and Total Power Monitor services use the same values; Total Power Monitor cannot be disabled so the values are displayed there.

To configure the Port Power Monitor, use the Port Power Maximum field on the PoE Configuration page in the Web UI or the CLI command sequence:

```
configure terminal
interface GigabitEthernet 1/<port>
poe maxpower <power in W>
```

To disable the Port Power Monitor, set the Port Power Maximum to 0 on the PoE Configuration page in the Web UI or the CLI command sequence (for port 3):

```
configure terminal
interface GigabitEthernet 1/3
poe maxpower 0
```

To re-enable a port that has been disabled by the Port Power Monitor, after evaluating the attached PD:

- Use the PoE Configuration page and set the Port Power Maximum to a new value
- Use the PoE Configuration page and set the PoE Mode to Disabled, then back to Enabled.
- Use the CLI commands to set the power limit to something other than the current value:

  ```
  configure terminal
  interface GigabitEthernet 1/<port>
  poe maxpower <power in W>
  ```

- Use the CLI to disable/enable the port:

  ```
  configure terminal
  interface GigabitEthernet 1/<port>
  poe mode disable
  poe mode enable
  ```

If a PD exceeds the Port Power Maximum threshold:

- Syslog message will be generated:

  ```
  port(3) power monitor over-power failure, observed port power: 15.5W
  ```

- Trap will be generated if traps are enabled:

  ```
  (get Port Power trap information)
  ```

To see the current status, use the PoE Service Status page in the Web UI or from the CLI:

```
show poe service
```

The status message will look like this under normal conditions:

```
Monitoring -  3.1W
```

If the Port Power Monitor disabled a port, its status will look like this:

```
Port Disabled - Over power limit detected: 15.5W
```

If the Port Power Monitor has been disabled by another service (scheduler turning the port off, for example), its status will look like this:

```
Off - Disabled by service
```

If the Port Power Monitor has been disabled by the user, its status will look like this:

```
Off
```

To see the current configured Port Power Maximum, look at the setting on the PoE Configuration page in the Web UI or use the CLI command:

```
show poe config port 1/<port>
```

PSU Temperature Monitor Services

The PSU Temperature Monitor is always running and cannot be disabled. To protect the PSU from overheating and destroying itself, if the PSU Temperature exceeds 76C, PoE on all ports will be disabled until the PSU temperature drops below 60°C.

If the PSU Temperature exceeds the temperature threshold:

- Syslog message will be generated that looks like this:
  ```
  port(1) PSU over-heating, disabling poe - observed PSU temperature: 77.2C
  ```
- Trap is generated if traps are enabled:
  ```
  (get PSU over temp trap information)
  ```

When the temperature returns to a safe level and power is restored:

- Syslog message is generated:
  ```
  port(1) PSU temperature OK, enabling poe - observed PSU temperature: 59.5C
  ```
- Trap is generated if traps are enabled:
  ```
  (get PSE temp ok trap information)
  ```

To see the current status, use the PoE Service Status page in the Web UI or from the CLI:

```
show poe service
```

The status message will look like this under normal conditions:

```
Monitoring - PSU temperature:  41.0C
```

If the PSU Temperature Monitor shutdown a port, its status will look like this:

```
Port Disabled - PSU cooling down, PSU temperature: 77.2C
```

The PSU Temperature Monitor parameter is displayed in the Web UI at PoE Management > PoE Service Status and in the CLI with the `show poe service` command.

Total Power Monitor Services

The Total Power Monitor is always running and cannot be disabled. The purpose of this monitor is to keep the overall power draw on the PSU at or below 180W on the -AC or 240W on the -DC but to allow individual ports to allocate up to 90W.

A rolling average for the past minute is kept for each port. These averages are summed and when 180/240W is exceeded, the lowest priority port is shut off. Port shutdown order is as follows:

Configured Priority	PoE Port			
	Port 1	Port 2	Port 3	Port 4
Low	4	2	3	1
High	8	6	7	5
Critical	12	10	11	9

If a port is disabled, a syslog message is generated:

```
port(1) shutdown: PSU Total Power budget of 240W exceeded - observed Total Power draw: 245.2W
```

If traps are enabled, a trap is generated:

```
(get total power monitor trap information)
```

To re-enable a port, set the port to Disabled on the PoE Configuration page and then set it back to Enabled.

To see the current status, use the PoE Service Status page in the Web UI or from the CLI:

```
show poe service
```

The status message will look like this under normal conditions:

```
Monitoring -  3.0W
```

If the Total Power Monitor had to shut down a port, its status will look like this:

```
Disabled - PSU over power limit
```

The Total Power Monitor parameter is displayed in the Web UI at PoE Management > PoE Service Status and in the CLI with the `show poe service` command.

Software Configuration

Initial Switch Configuration

This manual assumes that the switch was successfully installed as described in the Install Guide. Initial switch configuration can be via:

- Console Port (Serial) (RS-232 RJ-45) (out-of-band)
- Command Line Interface (CLI) (Telnet or SSH; in-band)
- GUI via Ethernet (in-band)
- NFC (Switch Manager Mobile App)

The factory defaults are IP Address: **192.168.1.10**, User Name: **admin**, and Password: **admin**.

NFC configuration: all versions are equipped with Near Field Communication (NFC) to allow simple, repeatable switch configuration with a user-friendly app on a mobile device prior to connecting or powering up the switch. Using NFC you can configure the switch without it being powered up. When the NFC-enabled device (smartphone or tablet) and the NFC "tag" or antenna on the switch are in close proximity, a magnetic field is formed and the power from that magnetic field uses modulation to transfer data. The NFC antenna/tag contains a nonvolatile EEPROM which retains the data transferred from the smartphone or tablet even after it moves out of proximity, and the configuration is transferred into the switch's memory once the switch is fully powered up.

BLE configuration: Bluetooth Low Energy (BLE) allows remote access to alarm information or to read or change equipment settings without requiring physical access using inconvenient ladders or scissor lift rental.

CLI Configuration

The Command Line Interface (CLI) is a text-based interface that you can access via either a Telnet session or a direct serial connection to the switch (e.g., a PC running a terminal emulation package such as Tera Term or HyperTerminal).

Log In to the CLI

At the login prompt **`SESPM1040-541-LT login:`** use the factory defaults of IP Address: **192.168.1.10**, User Name: **admin**, and Password: **admin**. Note that Login times out after 60 seconds of inactivity. Hit the Enter key, wait 60 seconds, and then log in again. Example:

```
login as: admin
admin@172.27.100.100's password:
Linux SESPM1040-541-LT 4.19.102-gd08eba0 #23 Thu Dec 8 11:29:17 CST 2022 armv7l

SESPM1040-541-LT

#
```

Idle timeout

The messages: "*Warning: Idle timeout. The session will be closed.*" and "*Login timed out after 60 seconds*." display after 60 seconds of CLI inactivity. Hit the Enter key, wait for the login prompt to display, then log back in to the SESPM1040-541-LT.

```
#
Warning: Idle timeout. The session will be closed.
Debian GNU/Linux 9

SESPM1040-541-LT login:
```

Note: If the CLI login time is extensive (20 seconds) try disabling the TACACS+ and Radius servers.

CLI Command Controls

The switch provides these commands for CLI control:

?	Display the set of commands supported in the current CLI command mode.
<cr>	Executes the command; same as <Enter>.
<tab>	Displays the available commands in a mode in tabular format.
<Backtab>	Erases cli command one character at a time.
↑	Go to the previous command entry.
↓	Go to the next command entry.

CLI Command Modes

The switch supports these CLI command modes: Exec Mode, Config Mode, and Interface Config Mode.

Mode	Description	Prompt
Exec Mode	The initial (startup) CLI mode.	`SESPM1040#`
Config Mode	Enter from Exec mode with the **`configure terminal`** command.	`SESPM1040(config)#`
Interface Config Mode	Enter from Config mode with the **`interface GigabitEthernet`** or **`interface vlan`** command.	**`SESPM1040(config-if-1/2)#`** or **`SESPM1040(config-if-vlan-1)#`**

The following sections describe the CLI commands in each mode.

Exec Mode Commands

When you first access the CLI, the system is in Exec mode and the command prompt displays as `SESPM1040#`. At the prompt enter a **?** and hit the Enter key to display the commands supported in the current mode.

```
SESPM1040# ?
  !          Comments
  clear      Reset functions
  configure  Enter configuration mode
  copy       Restore system configuration
  debug      Enter debug mode
  end        end
  exit       Exit from the CLI
  firmware   firmware
  history    Display the current session's command line history
  logout     Logout of the current CLI session
  ping       Send ICMP frame to network host to verify network connectivity and
             host availability
  reload     Reload system
  show       Show running system information
  top        Return to the default mode
SESPM1040#
```

At the command prompt enter a <tab> to display the available commands in a mode in the format below:

```
SESPM1040# <tab>
!         clear     configure copy      debug     end       exit      firmware
history   logout    ping      reload    show
top
SESPM1040#
```

Command: **?** (help)

Description: Enter a question mark (**?**) in the command line to display the commands / parameters available in the current mode. You can also enter a <tab> to display the available commands in table format.

Syntax : **?**

Parameters: <cr>

Mode: All command modes.

Example 1: Enter a single question mark (**?**) in the command line to display the commands available in a list.

```
SESPM1040# show ?
  ble              BLE commands
  clock            Set clock options
  community-names  show community names
  default-config   Contents of default configuration
  dhcp             DHCP Server
  dio              Digital IO configuration
  dmi              Show DMI Information
  dns              show dns
  firmware         firmware
  https            Show HTTPS information
```

```
  interface        Interface status and configuration
  ip               IP interface status and configuration
  mac              Show MAC table
  nfc              Display NFC state
  ntp              Show NTP information
  pd-aux           PD Auxiliary Port Status
  poe              show poe
  pvlans           show pvlans
  radius           Radius Servers
  running-config   Current operating configuration
  ssh              SSH
  startup-config   Contents of startup configuration
  switchport       Show the VLAN operating mode.
  syslog           system log commands
  system           Show system information
  tacplus          TacPlus Servers
  tamper           Tamper Detection
  telnet           Telnet
  trapservers      show trapservers
  usernames        show usernames
  vct              Virtual cable test results
  version          show software version
  vlan             Display list of VLANs
SESPM1040#
```

Example 2: Enter a Tab in the command line to display the available commands in a table.

```
SESPM1040-AC-PLM1# show <tab>
ble              clock           community-names default-config  dio
dmi              dns             firmware        https           interface
ip               mac             nfc             ntp             pd-aux
poe              pvlans          radius          running-config  ssh
startup-config   switchport      syslog          system          tacplus
tamper           telnet          trapservers     usernames       vct
version          vlan
SESPM1040-AC-PLM1#
```

Command: **!**

Description: Comment

Syntax : **!** <cr>

Parameters: ! Comments

Arguments ignored comment text

<cr>

Mode: All command modes.

Example:

```
SESPM1040# ! ?
  !          Comments
  Arguments  ignored comment text
  <cr>
SESPM1040# !
SESPM1040#
```

Command: **configure** terminal

Description: Enter Configuration mode. See Config Mode Commands on page 58.

Syntax : **configure terminal** <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# configure ?
  terminal  Configure from the terminal

SESPM1040# configure terminal ?
  <cr>

SESPM1040# configure terminal
SESPM1040(config)#
```

Command: **clear** statistics

Description: Clear statistics for one or more given interfaces.

Syntax : **clear** statistics <* | G Gigabit Ethernet Port>

Parameters:

*	All ports
GigabitEthernet	1 Gigabit Ethernet Port

Mode: Exec mode (also in Config Interface mode).

Example:

```
SESPM1040# clear statistics GigabitEthernet 1/3
Clearing stats for port 3
SESPM1040#
```

Command: **copy**

Description: Restore system configuration (copy current system configuration). Use this command to back up current system configuration and restore backed up system configuration.

Syntax : **copy** { startup-config | running-config | <source_path> } { startup-config | running-config | <destination_path> } [syntax-check] [{ merge | replace }]
copy running-config startup-config
copy startup-config running-config
copy default-config

Parameters:

default-config	Backup default-config
running-config	Backup running-config
startup-config	Backup startup-config
String	source file or url (tftp://address/filename)
String	source file or url (tftp://address/filename)
String	destination url (tftp://address/filename)
running-config	Copy startup to running

Mode: Exec mode.

Example:

```
SESPM1040# copy running-config tftp://192.168.5.13/tn-poe-running-config.xml.gz
Copy successful
SESPM1040# copy running-config tftp://192.168.1.30/running-config.txt
Copy successful
SESPM1040# copy running-config startup-config
Copy successful
SESPM1040# copy startup-config running-config
Copy successful
SESPM1040#
```

A restart is required after a copy startup-config.

Note: It is important to wait for the operation to complete before restarting or running another command that affects the configuration. The message *Success* or *Fail* displays when the operation is complete.

Note: After completing an Apply startup-config, and before you restart the device, it is advised to Save startup-config. Otherwise the system will apply a stale startup-config during initialization.

Backup files are simple text files. A filename extension is optional. For Backup, the generated file uses exactly whatever name that you provide. It is up to you to ensure that the file name is unique on the server. One way to do that is by including the device IP address in the file name.

Examples:

```
sespm_running-config_192.168.1.10
running-config_192.168.1.10_20191018.txt
poe_startup-config_291.168.1.2.dat
```

Messages:
startup-config is not supported
Save startup-config failed

Backup failed
Copy successful
Copy timed out
Copy failed
Save running to startup failed
Save startup to running failed

Backup and Restore Summary

The table below lists and briefly explains each command in the Backup and Restore functions.

Web Command	CLI Command	What It Does
Backup running-config	`copy running-config tftp://<server_ip>/<path>`	Generate a backup file of the running config and download it to a server.
Restore running-config	`copy tftp://<server_ip>/<path> running-config`	Upload the specified file from a server and apply it to the running config.
Save startup-config	`copy running-config startup-config`	Generate a backup file of the current running config and save it locally as startup config (no download). (Minor variation of Backup Procedure)
Backup startup-config	`copy startup-config tftp://<server_ip>/<path>`	Download the local startup config file to a server (transfer existing file, regardless of when it was generated).
Restore startup-config	`copy tftp://<server_ip>/<path> startup-config`	Upload the specified file from a server and replace existing local startup config file (does not affect the running config).
Activate startup-config	`copy startup-config running-config`	Apply the local startup config file to the running config (no upload). (Minor variation of Restore Procedure.)
Backup default-config	`copy default-config tftp://<server_ip>/<path>`	Download existing local factory defaults config file to a server.
Restore default-config	`reload defaults [keep-ip]`	Apply the local factory defaults config file to the running config (no upload). (Minor variation of Restore Procedure.)

Command: **debug**

Description: Enter debug mode

Syntax : **debug** <cr>

Parameters:

!	Comments
dmi	dmi polling
end	Exit from debug mode
exit	Exit from debug mode
history	Display the current session's command line history
logout	Logout of the current CLI session
top	Return to the default mode
off	stop dmi polling.
on	start dmi polling.
Unsigned integer	Set the size of history list (zero means no limit)

Mode: Exec mode.

Example:

```
SESPM1040-AC PLM 1# debug ?
  <cr>

SESPM1040-AC PLM 1# debug
SESPM1040-AC PLM 1(debug)# ?
  !        Comments
  dmi      dmi polling
  end      Exit from debug mode
  exit     Exit from debug mode
  history  Display the current session's command line history
  logout   Logout of the current CLI session
  top      Return to the default mode

SESPM1040-AC PLM 1(debug)# dmi ?
  off  stop dmi polling.
  on   start dmi polling.

SESPM1040-AC PLM 1(debug)# dmi off
touch: cannot touch '/agent3/conf/dmidisable': Permission denied
SESPM1040-AC PLM 1(debug)# dmi on
SESPM1040-AC PLM 1(debug)# history
  Unsigned integer  Set the size of history list (zero means no limit)

SESPM1040-AC PLM 1(debug)# history 100
    1  show version
    2  debug
    3  dmi off
    4  dmi on
    5  history 100
SESPM1040-AC PLM 1(debug)# end
SESPM1040-AC PLM 1#
```

Command: **end**

Description: Exit from Config mode or Config Interface mode to Exec mode.

Syntax : **end** <cr>

Parameters: None.

Mode: Config mode or Interface Config mode.

Example:

```
SESPM1040(config)# end
SESPM1040# configure terminal
SESPM1040(config)# interface ?
  GigabitEthernet  Port List S/X-Y,Z (1/1-4)
  vlan             List of VLAN interface numbers (1-4095)
SESPM1040(config)# interface GigabitEthernet 1/3
SESPM1040(config-if-1/3)# end
SESPM1040#
```

Command: **exit**

Description: From Exec mode, exit from the CLI and display the login prompt. You must log back in again.
From Config mode, go back to Exec mode.
From Interface Config mode, go back to Config mode.

Syntax : **exit** <cr>

Parameters: None.

Mode: All command modes.

Example:

```
SESPM1040(config-if-1/5)# exit
SESPM1040(config)# exit
SESPM1040# exit
Debian GNU/Linux 9
<cr>
SESPM1040-541-LT login:
```

Command: **firmware**

Description: Upgrade firmware version or swap firmware images (in Exec mode). The blue heartbeat LED and green LED next to it on the PCB flash together during most of the upgrade, then the green LED turns off at or just before the reboot. Then as reboot progresses, both LEDs flash together again. The switch has three firmwares that can be upgraded: Switch, PoE, and BLE firmware. If just the switch firmware needs upgrading the switch will reboot once after the switch firmware upgrade; the switch will reboot twice if both the switch firmware and the BLE firmware are upgraded. Send Lantronix a firmware download request based on your current firmware version.

Syntax : **firmware** update tftp://server/

firmware swap

Parameters:		
	swap	Switch between Active and Alternate firmware image.
	update	Upgrade the firmware version
	String	tftp://server/path-and-filename

Mode: Exec mode.

Example:

```
SESPM1040# firmware swap
Switching to area0
Complete
active area=0
Reboot switch? Enter Y or N:
SESPM1040# firmware update tftp://192.168.5.13/ sespm1040-541-lt-3.0.0.bin
Firmware Update Started
.
.
SESPM1040# firmware update tftp://192.168.5.13/ sespm1040-541-lt-3.0.0.bin
Firmware Update Complete
SESPM1040# firmware update tftp://server/
SESPM1040# firmware update tftp://192.168.1.10 configxx.bin
Syntax error: Illegal command line
SESPM1040# firmware swap
Broadcast message from root@SESPM1040-541-LT (Wed Mar 27 09:43:50 2019):
The system is going down for reboot NOW!
Complete
SESPM1040#
```

Messages

Message: *Backup Rev: INVALID Firmware swap failed*
Couldn't figure out inactive_area. Giving up on creating alternative firmware version.

Meaning: The swap firmware image operation failed.

Recovery: **1.** Verify the active and alternate firmware versions. **2.** Use the “show firmware active-area” command. **3.** Try the firmware swap operation again.

Command: **history**

Description: Display the current session's command line history.

Syntax : **history** <size of history list>

Parameters: Unsigned integer Set the size of history list (zero means no limit)

Mode: Exec mode.

Example:

```
# history 10
    1  debug
    2  exit
    3  history 10
#
```

Command: **ping**

Description: Send ICMP frame to network host to verify network connectivity and host availability.

Syntax : **ping** ip host1 source 192.168.70.21 repeat 2 size 5 interval 2

Parameters:

	ip	Send ICMP IPv4 messages to network hosts (default)
	String	Hostname or IP Address to ping
	<cr>	

Mode: Exec mode.

Example:

```
SESPM1040# ping ip 192.168.90.27
PING 192.168.90.27 (192.168.90.27) 56(84) bytes of data.
64 bytes from 192.168.90.27: icmp_seq=1 ttl=64 time=0.238 ms
64 bytes from 192.168.90.27: icmp_seq=2 ttl=64 time=0.199 ms
64 bytes from 192.168.90.27: icmp_seq=3 ttl=64 time=0.209 ms
64 bytes from 192.168.90.27: icmp_seq=4 ttl=64 time=0.194 ms
64 bytes from 192.168.90.27: icmp_seq=5 ttl=64 time=0.213 ms

--- 192.168.90.27 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 0.194/0.210/0.238/0.022 ms
SESPM1040#
```

Messages:

ping: host1: Temporary failure in name resolution

ping: ip: Temporary failure in name resolution

Command: **reload**

Description: Reload factory defaults.

Syntax : **reload** cold <cr>
reload defaults (keep-ip/do not-keep-ip)>

Parameters:

cold	Reload cold (cycle power)
defaults	Reload defaults
keep-ip	Enter "keep-ip" to maintain all management interface settings, including the method, address (if method is static), netmask, gateway, and management VLAN.

Mode: Exec mode.

Example:

```
# reload cold
The system is going down for reboot NOW!1-LT (ttyp0) (Sun Jan  1 01:40:21 201
#
SESPM1040-541-LT# reload defaults keep-ip
Reload defaults may take 1 to 2 minutes.  Please wait...
^CReload successful
SESPM1040-541-LT#
SESPM1040# configure terminal
SESPM1040(config)# interface vlan 1
SESPM1040(config-if-vlan-1)# ip address dhcp
SESPM1040(config-if-vlan-1)# do show interface vlan 1
DHCP Address Subnet Mask Gateway
192.251.144.109 255.255.255.0 192.251.144.2
SESPM1040(config-if-vlan-1)#
```

Note: A restart is required after a reload factory defaults.

Note: It is important to wait for the operation to complete before restarting or running another command that affects the configuration. The message *Success* or *Fail* displays when the operation is complete.

Note: After completing a reload factory defaults, and before you restart the device, it is advised to Save startup-config. Otherwise the system will apply a stale startup-config during initialization.

The restore command will remove all configured users except "admin" before applying the target config.
The running config contains only those user accounts that were restored from the target config. This applies to Restore running-config, Apply startup-config, and Factory Defaults.

Messages:

Restore successful

Restore timed out

Restore failed

Displays "*Another reload or copy operation is running. Retry later.*" if a copy or reload defaults operation is already running in another client. See the "Backup and Restore Summary" on page 204.

Show Commands

The **show** commands display running system information from Exec mode.

ble	BLE commands
clock	Set clock options
community-names	show community names
default-config	Contents of default configuration
dhcp	DHCP Server pool
dio	Digital IO configuration
dmi	Show DMI Information
dns	show dns
firmware	firmware
https	Show HTTPS information
interface	Interface status and configuration
ip	IP interface status and configuration
mac	Show MAC table
nfc	Display NFC state
ntp	Show NTP information
pd-aux	PD Auxiliary Port Status
poe	show poe
pvlans	show pvlans
radius	Radius Servers
running-config	Current operating configuration
ssh	SSH
startup-config	Contents of startup configuration
switchport	Show the VLAN operating mode.
syslog	system log commands
system	Show system information
tacplus	TacPlus Servers
tamper	Tamper Detection
telnet	Telnet
trapservers	show trapservers
usernames	show usernames
vct	Virtual cable test results
version	show software version
vlan	Display list of VLANs

Command: **show ble**

Description: See the BLE Commands section on page 104.

Command: **show clock**

Description: Display clock options.

Syntax : **show** clock detail <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show clock detail
System Date: 2019-05-17 12:52:06-05:00
Timezone   : America/North_Dakota/Center
SESPM1040#
SESPM1040# show clock detail
System Date: 2019-09-16 14:03:07-05:00
Timezone   : None
SESPM1040#
PLM SESPM-PD 1# show clock detail
System Date: 2019-11-07 17:30:07-06:00
Timezone   : America/Chicago
PLM SESPM-PD 1#
```

Command: **show community names**

Description: Display SNMP Community names.

Syntax : **show** community name <cr>

Mode: Exec mode.

Example:

```
SESPM1040# show community-names
Community String      Access Mode
---------------------------------
public                public
private               private
SESPM1040#
```

Command: **show default-config**

Description: Display the contents of startup configuration.

Syntax : **show** default config <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040-AC PLM 1# show default-config
<<BEGIN-CONFIG>>

[nfc]
portno = 1
enable = 1

[ntp]
servers[1] address = 0.0.0.0
servers[2] address = 0.0.0.0
servers[3] address = 0.0.0.0
servers[4] address = 0.0.0.0
servers[5] address = 0.0.0.0

[dhcp-client]
option rfc3442-classless-static-routes code = 121
option rfc3442-classless-static-routes value = array of unsigned integer 8
send host-name #eval = gethostname()
request 1 = subnet-mask
request 2 = broadcast-address
request 3 = time-offset
request 4 = routers
request 5 = domain-name
request 6 = domain-name-servers
request 7 = domain-search
request 8 = host-name
request 9 = dhcp6.name-servers
request 10 = dhcp6.domain-search
request 11 = dhcp6.fqdn
request 12 = dhcp6.sntp-servers
request 13 = netbios-name-servers
request 14 = netbios-scope
request 15 = interface-mtu
request 16 = rfc3442-classless-static-routes
request 17 = ntp-servers

[ble]
portno = 1
broadcast = 2
connection = 0

[poe-port]
port 1 portno = 1
port 1 mode = enabled
port 1 priority = low
port 1 maxpower = 90
port 1 profileid = 0
port 1 opermode = 2
port 2 portno = 2
port 2 mode = enabled
port 2 priority = low
port 2 maxpower = 90
port 2 profileid = 0
port 2 opermode = 2
port 3 portno = 3
port 3 mode = enabled
port 3 priority = low
```

```
port 3 maxpower = 90
port 3 profileid = 0
port 3 opermode = 2
port 4 portno = 4
port 4 mode = enabled
port 4 priority = low
port 4 maxpower = 90
port 4 profileid = 0
port 4 opermode = 2

[pvlan]
pvlan 1 memberports = 1,2,3,4,5,6

[port-config]
port 1 portno = 1
port 1 adminstatus = enabled
port 1 autoneg = enabled
port 1 speed = 3
port 1 duplex = 2
port 1 pauserx = disabled
port 1 pausetx = disabled
port 1 porttype = 1
port 1 descr = -
port 2 portno = 2
port 2 adminstatus = enabled
port 2 autoneg = enabled
port 2 speed = 3
port 2 duplex = 2
port 2 pauserx = disabled
port 2 pausetx = disabled
port 2 porttype = 1
port 2 descr = -
port 3 portno = 3
port 3 adminstatus = enabled
port 3 autoneg = enabled
port 3 speed = 3
port 3 duplex = 2
port 3 pauserx = disabled
port 3 pausetx = disabled
port 3 porttype = 1
port 3 descr = -
port 4 portno = 4
port 4 adminstatus = enabled
port 4 autoneg = enabled
port 4 speed = 3
port 4 duplex = 2
port 4 pauserx = disabled
port 4 pausetx = disabled
port 4 porttype = 1
port 4 descr = -
port 5 portno = 5
port 5 adminstatus = enabled
port 5 autoneg = enabled
port 5 speed = 3
port 5 duplex = 2
port 5 pauserx = disabled
port 5 pausetx = disabled
port 5 porttype = 2
port 5 descr = -
port 6 portno = 6
port 6 adminstatus = enabled
port 6 autoneg = enabled
port 6 speed = 3
port 6 duplex = 2
port 6 pauserx = disabled
port 6 pausetx = disabled
port 6 porttype = 2
port 6 descr = -
```

```
[management]
br0 auto 1 = br0
br0 iface = br0
br0 iface family = inet
br0 iface method = static
br0 iface address = 192.168.1.10
br0 iface netmask = 255.255.255.0
br0 iface gateway = 192.168.1.1
br0 iface bridge-vlan-aware = yes

[port-vlan]
iface[1] = port1
iface[1] bridge-pvid = 1
iface[1] bridge-access = 1
iface[1] bridge-allow-untagged = yes
iface[2] = port2
iface[2] bridge-pvid = 1
iface[2] bridge-access = 1
iface[2] bridge-allow-untagged = yes
iface[3] = port3
iface[3] bridge-pvid = 1
iface[3] bridge-allow-untagged = yes
iface[3] bridge-access = 1
iface[4] = port4
iface[4] bridge-pvid = 300
iface[4] bridge-allow-untagged = yes
iface[4] bridge-trunk = 1
iface[5] = port5
iface[5] bridge-pvid = 1
iface[5] bridge-access = 1
iface[5] bridge-allow-untagged = yes
iface[6] = port6
iface[6] bridge-pvid = 1
iface[6] bridge-access = 1
iface[6] bridge-access = 1

[vlan-global]
allowed-access-vlans = 1

[hostname]
hostname = SESPM1040-541-LT

[snmp-agent]
pcom2sec[1] = "public default public"
pcom2sec[2] = "private default private"
vacmGroup[1] = "1 3 1 0x7075626c696300 0x7075626c696300"
vacmGroup[2] = "1 3 1 0x7072697661746500 0x7072697661746500"
vacmGroup[3] = "1 3 1 0x707269766174653200 0x7072697661746500"
vacmGroup[4] = "1 3 2 0x7075626c696300 0x7075626c696300"
engineIDOctStr = "0x800003640300c0f2583f68"

[ble]
portno = "1"
broadcast = "1"
connection = "0"

<<END-CONFIG>>

SESPM1040-AC PLM 1#
```

Command: **show dhcp pool**

Description: Display current DHCP server pool information.

Syntax : **show dhcp** pool

Parameters: pool DHCP Server

Mode: Exec mode.

Example:

```
# show dhcp pool
No record found.
#
```

Command: **show dio**

Description: Display current Digital IO configuration.

Syntax : **show dio** <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show dio
Digital IO Board Installed: Yes
-----------------------------------------
Port    Type    State         Description
-----------------------------------------
dio1    input   high to low   dio_port1
dio2    input   low to high   dio_port2
dio3    input   low to high   dio_port3
dio4    output  low           dio_port4
SESPM1040#

PLM SESPM-PD 1# show dio
Digital IO Board Not Installed
PLM SESPM-PD 1#
```

Messages:
Failed to read DIO_ID_ADDR\n
Error reading from address 0x%02x\n
Digital IO Board Not Installed

Command: **show dmi**

See the DMI (Diagnostic Monitoring Interface) Commands section on page 122.

Command: **show dns**

Description: Display DNS server settings.

Syntax : **show** dns servers <cr>

Parameters:

servers	Display IPv4 DNS Server(s) configuration. Show "n/a" for server entries that are not configured.
<cr>	

Mode: Exec mode.

Example:

```
SESPM1040(config)# do show dns servers
DNS Server 1  2.2.2.2             Address type: IPv4
DNS Server 2  0.0.0.0             Address type: n/a
DNS Server 3  0.0.0.0             Address type: n/a
DNS Server 4  0.0.0.0             Address type: n/a
SESPM1040(config)#
```

Command: **show firmware active-area**

Description: Displays the firmware active area to verify a swap between Active and Alternate firmware versions. Displays the active and backup (alternate) firmware revisions.

Syntax : **show firmware active-area** <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
# show firmware active-area
Active Rev:           3.2.5 20230503
Backup Rev:           3.2.4 20230424
#
```

Command: **show https**

Description: Display HTTPS information.

Syntax : **show** https config <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show https config
HTTPS configuration:
------------------------------------------------------------------------
HTTPS State:                            enable
HTTPS port:                             443
Method:                                 0
Cert Type:                              0
Cert Name:
Private key file:
Privatekey password:                    Unused
SESPM1040#
```

Command: **show interface**

Description: Display Interface status and configuration.

Syntax : **show** interface < GigabitEthernet | 1/1-x>
show interface status <* | 1/1-4>
show interface statistics <* | 1/1-4>
show interface get-description <* | 1/1-4>
show interface vlan < Vlan 1>

Parameters:

GigabitEthernet	Port List S/X-Y,Z (1/1-4)
GigabitEthernet	Port List S/X-Y,Z (1/1-6)
vlan	Show information for management vlan ${vlanid}
vlan expression list	1,100,200-205 vlanid
1/1-6	portid
status	status of interface
statistics	statistics for this interface
get-description	get-description <cr>

Mode: Exec mode.

Example 1:

```
SESPM1040# show interface GigabitEthernet ?
  1/1-6  portid
SESPM1040# show interface GigabitEthernet 1/3 ?
  !               Comments
  exit            Exit from configure mode
  get-description  get port description
  statistics      get port statistics
  status          get port status
SESPM1040# show interface GigabitEthernet 1/1 get-description
Port 1 Description:
-------------------------------------------
Description:
SESPM1040# show interface GigabitEthernet 1/1 statistics
Port 1 statistics:
-------------------------------------------
Rx Packets:          8656
Tx Packets:          1340
Rx Octets:           719703
Tx Octets:           1353750
Rx Errors:           0
Tx Errors:           0
Rx Drops:            0
Tx Drops:            0
SESPM1040# show interface GigabitEthernet 1/1 status
Port 1 configuration:
```

```
-------------------------------------------
Link State:          up
Speed:               100Mbps
Duplex:              full
AutoCross Mode:      autoCross
Connector Type:      RJ-45
Auto Negotiation:    enable
Force Speed:         100Mbps
Force Duplex:        full
Description:
SESPM1040#
```

Example 2:

```
SESPM1040# show interface <cr>
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen
1000
    link/ether 00:c0:f2:58:3f:08 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::2c0:f2ff:fe58:3f08/64 scope link
       valid_lft forever preferred_lft forever
15: br5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN
group default qlen 1000
    link/ether 52:f6:61:ed:c5:0a brd ff:ff:ff:ff:ff:ff
    inet6 fe80::50f6:61ff:feed:c50a/64 scope link
       valid_lft forever preferred_lft forever
SESPM1040# show interface vlan 1
Static Address    Subnet Mask       Gateway
-------------------------------------------------
192.168.90.27     255.255.255.0     192.168.1.1


#
```

Example 3:

```
# show interface vlan ?
  vlan expression list 1,100,200-205  vlanid
# show interface vlan 1
11: br0.1@br0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP
 group default qlen 1000
    link/ether 00:c0:f2:58:3f:08 brd ff:ff:ff:ff:ff:ff
    inet 192.168.90.27/24 scope global br0.1
```

```
       valid_lft forever preferred_lft forever
    inet6 fe80::2c0:f2ff:fe58:3f08/64 scope link
       valid_lft forever preferred_lft forever
#
```

Messages:

Command line is not complete. Try option "help"

Device "br0.1,100" does not exist.

Syntax error: Illegal command line

Command: **show ip**

Description: Display contents of current configuration (IP interface status and configuration).

Syntax : **show** ip interface <brief> <details>

Parameters:

dhcp	DHCP Server
interface	IP interface status and configuration
brief	IP interface status and configuration (terse)
details	IP interface status and configuration (verbose)

Mode: Exec mode.

Example:

```
SESPM1040# show ip interface brief
Static Address    Subnet Mask      Gateway
--------------------------------------------------
192.168.90.27     255.255.255.0     192.168.90.1
SESPM1040# show ip interface details
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:c0:f2:af:8f:07 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::2c0:f2ff:feaf:8f07/64 scope link
       valid_lft forever preferred_lft forever
‘’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’’
15: br5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN group default qlen
1000
    link/ether 66:50:d6:82:ee:9b brd ff:ff:ff:ff:ff:ff
    inet6 fe80::6450:d6ff:fe82:ee9b/64 scope link
       valid_lft forever preferred_lft forever
SESPM1040#
# show ip dhcp ?
  <cr>

# show ip dhcp <cr>
#
```

Command: **show mac**

Description: See “MAC Address Table Commands” on page 5.

Command: **show ntp**

Description: Display NTP (Network Timing Protocol) information.

Syntax : **show ntp** status

Parameters: status Show NTP information

Mode: Exec mode.

Example:

```
SESPM1040# show ntp status
NTP configuration:
------------------------------------------------------------------------
NTP State:                              enable
NTP daylight saving time state:         enable
NTP timezone:                           America/North_Dakota/Center
Current time:                           2019 0327 16:37:43
SNTP Server 1:                          0.0.0.0
SNTP Server 2:                          0.0.0.0
SNTP Server 3:                          0.0.0.0
SNTP Server 4:                          0.0.0.0
SNTP Server 5:                          0.0.0.0
SESPM1040#

SESPM1040# show ntp status
NTP configuration:
------------------------------------------------------------------------
NTP State:                              disable
NTP daylight saving time state:         enable
NTP timezone:                           None
Current time:                           2023 0502 13:20:31
SNTP Server 1:                          172.27.100.49
SNTP Server 2:                          0.0.0.0
SNTP Server 3:                          0.0.0.0
SNTP Server 4:                          0.0.0.0
SNTP Server 5:                          0.0.0.0
SESPM1040#
```

Command: **show pd-aux**

Description: Display PD Auxiliary Port Status (SESPM1040-541-LT-PD only).

Syntax : **show pd-aux** <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show pd-aux
Auxiliary Port Status:         disabled
SESPM1040# show pd-aux
Auxiliary Port Status:         enabled
SESPM1040#
```

Command: **show poe**

Description: See the PoE Commands section on page 105.

Command: **show pvlans**

Description: Display Private VLAN parameters.

Syntax : **show pvlans** <cr>

Parameters: None.

Mode: Exec mode.

Example: With default PVLAN ID 1 only:

```
SESPM1040# show pvlans
PVLAN ID  Ports
--------  ------------------------------------------------------
1         GigabitEthernet 1/1  GigabitEthernet 1/2  GigabitEthernet 1/3
          GigabitEthernet 1/4  GigabitEthernet 1/5  GigabitEthernet 1/6
2
3
4
5
6
SESPM1040#
```

Example: With PVLAN IDs 1-5 configured:

```
SESPM1040# show pvlans
PVLAN ID  Ports
--------  ------------------------------------------------------
1         GigabitEthernet 1/1  GigabitEthernet 1/2
2
3         GigabitEthernet 1/3
4         GigabitEthernet 1/4
5         GigabitEthernet 1/5
SESPM1040#
```

Command: **show radius**

Description: Display RADIUS server parameters.

Syntax : **show radius** <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040(config)# radius add 1 radhost11 setStandard4 4
Radius is Disabled, please do a "radius enable" first.
SESPM1040(config)# radius enable
SESPM1040(config)# radius add 1 radhost11 setStandard4 4
SESPM1040(config)# do show radius
Radius is Enabled
-----------------------------------------
RADIUS SERVERS
-----------------------------------------
Host index 1
Host:        radhost11
Key:         ******************************
Timeout:     1

Host index 2
Host:        other-server
Key:         ******************************
Timeout:     3

SESPM1040(config)#

SESPM1040# show radius
Radius is Disabled
SESPM1040# configure terminal
SESPM1040(config)# radius ?
  add      Add Radius Server
  disable  Disable the use of Radius Authentication Server(s)
  enable   Enable the definition and use of Radius Server(s)

SESPM1040(config)# radius enable
SESPM1040(config)# do show radius
Radius is Disabled
SESPM1040(config)#
```

Command: **show running-config**

Description: Display current operating configuration. Press the **space bar** to continue displaying running-config data. Press the **q** key to quit the running-config display. Note that this command only shows changes; if the IP Address, Subnet mask, and/or Gateway have not been changed then they will not be displayed by this command.

Syntax : **show** running-config <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040-AC PLM 1# show running-config
# show running-config
Getting running-config
<<BEGIN-CONFIG>>

[account]
<<begin>>
U2FsdGVkX186v1blr9rYBLnMUzgefbAudAw1Wm2efz+QSiQDDUCSppgV9cddnG73
Opyw8W8gONT/UuxuIX47ecxDrhtDrTR69fORjCrHhjtK6QRxaZ0zFVG2q/eTP1Br
<<end>>

[ntp]
servers[1] address = 192.168.93.28

[dhcp-server]
default-lease-time = 600
max-lease-time = 7200
ddns-update-style = none

[ble]
portno = 1
broadcast = 1
connection = 0

[digitalio]
dio-port 1 portno = 1
dio-port 1 type = 1
dio-port 1 level = 0
dio-port 1 trap = 1
dio-port 1 description = dio_port1
dio-port 2 portno = 2
dio-port 2 type = 1
dio-port 2 level = 0
dio-port 2 trap = 1
dio-port 2 description = dio_port2
dio-port 3 portno = 3
dio-port 3 type = 1
dio-port 3 level = 0
dio-port 3 trap = 1
dio-port 3 description = dio_port3
dio-port 4 portno = 4
dio-port 4 type = 1
dio-port 4 level = 0
dio-port 4 trap = 1
dio-port 4 description = dio_port4

[vlan-global]
allowed-access-vlans = 1

[static-mac]

[port-vlan]
```

```
iface[1] = port1
iface[1] bridge-pvid = 1
iface[1] bridge-access = 1
iface[1] bridge-allow-untagged = yes
iface[2] = port2
iface[2] bridge-pvid = 1
iface[2] bridge-access = 1
iface[2] bridge-allow-untagged = yes
iface[3] = port3
iface[3] bridge-pvid = 1
iface[3] bridge-allow-untagged = yes
iface[3] bridge-access = 1
iface[4] = port4
iface[4] bridge-pvid = 1
iface[4] bridge-access = 1
iface[4] bridge-allow-untagged = yes
iface[5] = port5
iface[5] bridge-pvid = 1
iface[5] bridge-access = 1
iface[5] bridge-allow-untagged = yes
iface[6] = port6
iface[6] bridge-pvid = 1
iface[6] bridge-access = 1
iface[6] bridge-allow-untagged = yes

[management]
br0 iface[2] method = dhcp
auto

[snmp-agent]
engineBoots = 8
oldEngineID = 0x800003640300c0f26a90fe
engineIDOctStr = 0x800003640300c0f26a90fe

[sysinfo]
clocksource = ntp
sespmPassivePoE = enabled

[telnet]
enabled = yes

<<END-CONFIG>>

#
```

Messages:

Set backup failed
Copy successful
Copy timed out
Copy failed

Command: **show ssh**

Description: Display current Secure SHell configuration.

Syntax : **show** ssh <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
# show ssh
SSH Server Status:      enabled
Major Version:          2
Minor Version:          0
SSH Auth Timeout:       120
SSH Auth Retries:       6
Public Key of Host RSA:
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCbeBj5cFvmJc/l3rdhwRL7mDZ1HxUPE56s7tWt41XU
6b9X6w0BaXIuAnXYcaJs7hKjaDkLdmtWzA2CLps9YnY78wG22EeLbhyaxnxnMed3hofCirL0ACgF0Eu2
deu+N9rDnFozGFBFHEUACHn2Bi4EueKAyZ7zyru/Mbnx5h7F70URL1Ed+A/pKei40dx+jZ5+LoNU9nHh
y089Tfdim1RkIdhK
Public Key of Host DSA:
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBOgdsv8N
mgqrTemPdZpzMAeKqnJBkrAnKEH7P7iczBBSmxYqACQEkJUZHFzPIoRkgPy1r6AOBWAXfxkyCJHNKRQ=
 root@sespm

#
```

Command: **show startup-config**

Description: Display contents of startup configuration. Press the **space bar** to continue displaying startup-config data. Press the **q** key to quit the startup-config display.

Syntax : **show** startup-config <cr>

Parameters: None.

Mode: Exec mode.

Example 1: -AC Model

```
SESPM1040-AC PLM 1# show startup-config

[static-mac]

[port-vlan]
iface[1] = port1
iface[1] bridge-pvid = 1
iface[1] bridge-access = 1
iface[1] bridge-allow-untagged = yes
iface[2] = port2
iface[2] bridge-pvid = 1
iface[2] bridge-access = 1
iface[2] bridge-allow-untagged = yes
iface[3] = port3
iface[3] bridge-pvid = 1
iface[3] bridge-allow-untagged = yes
iface[3] bridge-access = 1
iface[4] = port4
iface[4] bridge-pvid = 1
iface[4] bridge-access = 1
iface[4] bridge-allow-untagged = yes
iface[5] = port5
iface[5] bridge-pvid = 1
iface[5] bridge-access = 1
iface[5] bridge-allow-untagged = yes
iface[6] = port6
iface[6] bridge-pvid = 1
iface[6] bridge-access = 1
iface[6] bridge-allow-untagged = yes

[management]
br0 iface[2] method = dhcp
auto

[snmp-agent]
engineBoots = 6
oldEngineID = 0x800003640300c0f26a90fe
engineIDOctStr = 0x800003640300c0f26a90fe

[sysinfo]
clocksource = ntp

[telnet]
enabled = yes

<<END-CONFIG>>

#
```

Example 2: -PD Model

```
# show startup-config


<<BEGIN-CONFIG>>

[account]
<<begin>>
U2FsdGVkX1+nYkAI+EDUhsQVYgWcC5SDmxgjMmapW5FwS6lPusqFDiGvsltY+XV9
MkOv+dq1MZxJ9tZySBIJOg==
<<end>>

[ntp]
servers[1] address = 192.168.93.28

[dhcp-server]
default-lease-time = 600
max-lease-time = 7200
ddns-update-style = none

[ble]
portno = 1
broadcast = 1
connection = 0

[digitalio]
dio-port 1 portno = 1
dio-port 1 type = 1
dio-port 1 level = 0
dio-port 1 trap = 1
dio-port 1 description = dio_port1
dio-port 2 portno = 2
dio-port 2 type = 1
dio-port 2 level = 0
dio-port 2 trap = 1
dio-port 2 description = dio_port2
dio-port 3 portno = 3
dio-port 3 type = 1
dio-port 3 level = 0
dio-port 3 trap = 1
dio-port 3 description = dio_port3
dio-port 4 portno = 4
dio-port 4 type = 1
dio-port 4 level = 0
dio-port 4 trap = 1
dio-port 4 description = dio_port4

[vlan-global]
allowed-access-vlans = 1

[static-mac]

[port-vlan]
iface[1] = port1
iface[1] bridge-pvid = 1
iface[1] bridge-access = 1
iface[1] bridge-allow-untagged = yes
iface[2] = port2
iface[2] bridge-pvid = 1
iface[2] bridge-access = 1
iface[2] bridge-allow-untagged = yes
iface[3] = port3
iface[3] bridge-pvid = 1
iface[3] bridge-allow-untagged = yes
iface[3] bridge-access = 1
iface[4] = port4
iface[4] bridge-pvid = 1
iface[4] bridge-access = 1
```

```
iface[4] bridge-allow-untagged = yes
iface[5] = port5
iface[5] bridge-pvid = 1
iface[5] bridge-pvid = 1
iface[5] bridge-allow-untagged = yes
iface[6] = port6
iface[6] bridge-pvid = 1
iface[6] bridge-access = 1
iface[6] bridge-allow-untagged = yes

[management]
br0 iface[2] method = dhcp
auto

[snmp-agent]
engineBoots = 6
oldEngineID = 0x800003640300c0f26a90fe
engineIDOctStr = 0x800003640300c0f26a90fe

[sysinfo]
clocksource = ntp

[telnet]
enabled = yes

<<END-CONFIG>>

#
```

Messages: *cat: /etc/startup-config: No such file or directory*

Command: **show switchport**

Description: Display the VLAN operating mode of all ports.

Syntax : **show** switchport <mode | portid>

Parameters:

mode	Show the VLAN operating mode of all ports (access or trunk mode).
GigabitEthernet	Show the VLAN operating mode of this port.
1/1-6	portid
<cr>	

Mode: Exec mode.

Example:

```
PLM SESPM-PD 1# show switchport mode GigabitEthernet 1/1
GigabitEthernet 1/1 VLAN Mode: access
PLM SESPM-PD 1# show switchport mode GigabitEthernet 1/2
GigabitEthernet 1/2 VLAN Mode: access
PLM SESPM-PD 1# show switchport mode GigabitEthernet 1/4
GigabitEthernet 1/4 VLAN Mode: trunk
PLM SESPM-PD 1#
```

Command: **show syslog**

Description: Show contents of system log. Press the **space bar** to continue displaying syslog log data. Enter the letter **q** to quit.

Syntax : **show** syslog <host | log | port>

Parameters:

host	system log remote host
log	Contents of system log
port	system log port

Mode: Exec mode.

Example:

```
# show syslog host
host: 0.0.0.0
# show syslog port
Syslog remote port: 514
# show syslog log
Jan 18 02:41:18 SESPM1040-541-LT liblogging-stdlog:  [origin software="rsyslogd" swVersion="8.24.0"
x-pid="1479" x-info="http://www.rsyslog.com"] start
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]: Wrote 0 leases to leases file.
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]: No subnet declaration for br0.1 (192.168.80.8).
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]: ** Ignoring requests on br0.1.  If this is not what
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:    you want, please write a subnet declaration
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:    in your dhcpd.conf file for the network segment
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:    to which interface br0.1 is attached. **
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]: No subnet declaration for br0 (no IPv4 addresses).
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]: ** Ignoring requests on br0.  If this is not what
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:    you want, please write a subnet declaration
Jan 18 02:41:19 SESPM1040-541-LT dhcpd[1514]:    in your dhcpd.conf file for the

--More--(8%)
```

Press the **space bar** to continue displaying syslog log data.

Press the **q** key to quit the syslog display.

Command: **show system**

Description: Display system information.

Syntax : **show** system <cr>

Parameters: None.

Mode: Exec mode.

Example 1: The –AC model:

```
# show system
Model Name:           SESPM1040-541-LT-AC
System Description:   Self-Enclosed Managed Hardened Gigabit Ethernet PoE++ Switch
Location:
Contact:
System Name:
System Date:          2023-05-02 13:33:55-05:00
System Uptime:        7 days, 12h:44m:35s
Bootloader Revision:  1.2.0
Firmware Version:     3.2.5 20230503
Hardware Revision:    H
Serial number:        5541344
MAC Address:          00:C0:F2:6A:91:26
Memory:               Total=251608 KBytes, Free=193472 KBytes
BLE MAC Address:      D0:CF:5E:96:F9:86
BLE State:            Enabled
BLE Connection:       Disconnected
NFC State:            Enabled
Digital IO Board:     Installed. Version = REVC
Option Module:        Not installed
PSU Temperature:      24.75C
CPU Temperature:      29.75C#
```

Example 2: The –PD model:

```
# show system
Model Name:           SESPM1040-541-LT-PD
System Description:   Self-Enclosed Managed Hardened Gigabit Ethernet PoE++ Switch
Location:
Contact:
System Name:
System Date:          2023-05-02 13:33:55-05:00
System Uptime:        02h:27m:18s
Bootloader Revision:  1.2.0
Firmware Version:     2023-05-11 15:21:36-05:00
Hardware Revision:    H
Serial number:        5536531
MAC Address:          00:C0:F2:6A:90:FE
```

```
Memory:               Total=251608 KBytes, Free=193232 KBytes
BLE MAC Address:      D0:CF:5E:96:FC:D7
BLE State:            Enabled
BLE Connection:       Disconnected
NFC State:            Enabled
Digital IO Board:     Not installed
Phy Module:           Installed. Version = REVA
PSU Temperature:      26.75C
CPU Temperature:      30.50C
#
```

Command: **show tacplus**

Description: Display TACACS+ Server parameters and status. TACACS+ authentication requires Password Authentication Protocol (PAP) login setup on the TACACS+ server.

Syntax : **show** tacplus <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show tacplus
-------------------------------------------
TACPLUS SERVERS
-------------------------------------------
Host index 1
Host:
Key:

Host index 2
Host:
Key:

Host index 3
Host:
Key:

Host index 4
Host:
Key:

Host index 5
Host:
Key:

SESPM1040# show tacplus
TACACS+ is Disabled
SESPM1040#
```

Command: **show tamper**

Description: Tamper Detection. See Tamper Detection Commands on page 120.

Command: **show telnet**

Description: Display telnet state.

Syntax : **show** tacplus <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show telnet
Telnet Service Status:  enabled
SESPM1040#
```

Command: **show trapservers**

Description: Display SNMP trap server configuration.

Syntax : **show** trapservers <cr>

Parameters: None.

Mode: Exec mode.

Example:

```
SESPM1040# show trapservers
Index  Host                Version   Community
-------------------------------------------------
1      192.168.1.30        v2c       NewOne
2      SNMPTRPv1           V1        public
3      SNMPTRPv2c          v2c       private
SESPM1040#
```

Command: **show usernames**

Description: Display usernames.

Syntax : **show** usernames <cr>

Mode: Exec mode.

Example:

```
SESPM1040# show usernames
1       admin      admin
SESPM1040# show usernames
1       admin      admin
2       jeffs      read-only
3       BobB       admin
4       s_holt     read-only
SESPM1040#
```

Command: **show vct**

Description: Virtual cable test results. See Virtual Cable Test (VCT) Commands on page 117.

Command: **show version**

Description: Display software revisions and related information.

Syntax : **show** version <cr>

Parameters: None.

Mode: Exec mode.

Example 1: The –AC version:

```
# show version
Active Rev:           3.2.5 20230503
Backup Rev:           3.2.4 20230424
Device name:          SESPM1040-541-LT
Hardware Revision:    H
Bootloader Revision:  1.2.0
Serial number:        5541344
MAC Address:          00:C0:F2:6A:91:26
System Up Time:       7 days, 12h:47m:13s#
```

Example 2: The –PD version:

```
# show version
Active Rev:           3.2.5 20230503
Backup Rev:           3.2.4 20230424
Device name:          SESPM1040-541-LT
Hardware Revision:    H
Bootloader Revision:  1.2.0
Serial number:        5536531
MAC Address:          00:C0:F2:6A:90:FE
System Up Time:       3 days, 10h:37m:50s
#
```

Command: **show vlan**

Description: Display VLAN parameters.

Syntax : **show** vlan

Parameters:

all	Show vlan information
brief	Show status of all VLANs
id	VLAN number (1-4094)
membership	Show which ports are members of the specified vlan
status	Show status of all (access and trunk) VLANs
vlan expression	list 1,100,200-205 vlanid
<cr>	

Mode: Exec mode.

Example:

```
SESPM1040-AC PLM 1# show vlan <cr>
  VLAN          Name              Status         Ports
------- ---------------------- ---------  -------------------------
    1                           Active     1/1 1/2 1/3 1/4 1/5 1/6
SESPM1040-AC PLM 1# show vlan all
  VLAN          Name              Status         Ports
------- ---------------------- ---------  -------------------------
    1                           Active     1/1 1/2 1/3 1/4 1/5 1/6
SESPM1040-AC PLM 1# show vlan brief
  VLAN          Name              Status         Ports
------- ---------------------- ---------  -------------------------
    1                           Active     1/1 1/2 1/3 1/4 1/5 1/6
SESPM1040-AC PLM 1# show vlan membership 1
    1   1/1  1/2  1/3  1/4  1/5  1/6
SESPM1040-AC PLM 1#
# show vlan all
  VLAN          Name              Status         Ports
------- ---------------------- -------- -------------------------
    1                           Active  Gi 1/1 1/2 1/3 1/5 1/6
  300                           Active  Gi 1/4
#
# show vlan status
  VLAN          Name              Status         Ports
------- ---------------------- -------- -------------------------
    1                           Active  Gi 1/1 1/2 1/3 1/5
  100                           Active  Gi 1/6
  300                           Active  Gi 1/4
#
```

Config Mode Commands

These commands can be entered from Config mode. Enter Config mode with the **`configure terminal`** command.

!	Comments
ble	BLE Commands
clock	Set NTP options
community	community commands
dio	Digital IO configuration
dns	Set DNS options
do	To run exec commands in config mode
end	Exit from configure mode
exit	Exit from configure mode
history	Display the current session's command line history
https	Set https options
interface	Enter interface mode
ip	ip commands
logout	Logout of the current CLI session
mac	MAC Table
nfc	NFC Commands
no	Negate a command or set its defaults
ntp	Set NTP options
pd-aux	PD Auxiliary commands
poe	Set poe options
radius	Radius
snmptrap	SNMP Trap Server
ssh	SSH Config
syslog	syslog information
system	system information
tacplus	Tacplus
tamper	Tamper Detection
telnet	Configure Telnet service
top	Return to the default mode
username	Usernames
vct	Virtual Cable Test
vlan	create/edit VLAN number (1-4094)

The Config mode commands are described below.

Command: **!**

Description: Comments

Syntax : **!** <cr>

Parameters: None.

Mode: Config mode.

Example:

```
SESPM1040(config)# ! ?
  Arguments  ignored comment text
  <cr>
SESPM1040(config)# !
SESPM1040(config)#
```

Command: **ble**

Description: See the BLE Commands section on page 103.

Command: **clock**

Description: Set NTP options. The NTP server will restart after a time zone change. At FW v 3.0.0 fix CLI "clock set" command format and prompts; remove day of week.

Syntax : **clock** set < Sun Mon Tue Wed Thr Fri Sat>
clock timezone < Africa America Antarctica Arctic Asia Atlantic Australia Europe Indian Pacific>

Parameters:

set	Set the time and date
timezone	Set timezone
Day of the week	Day of the week (Sun/Mon/Tue/Wed/Thr/Fri/Sat)
Month of the year	Month of the year (1..12)
Calendar day of month	Day of the month (0..31)
HH:MM:SS using 24 hour clock	Current time
Year	Year (1993..2035)
Africa	Set Africa
America	Set America
Antarctica	Set Antarctica
Arctic	Set Arctic
Asia	Set Asia
Atlantic	Set Atlantic
Australia	Set Australia
Europe	Set Europe
Indian	Set Indian
Pacific	Set Pacific
Africa	Display Africa List
America	Display America List
Antarctica	Display Antarctica List

Arctic	Display Arctic List
Asia	Display Asia List
Atlantic	Display Atlantic List
Australia	Display Australia List
Europe	Display Europe List
Indian	Display Indian List
Pacific	Display Pacific List

Mode: Config mode.

Example 1: Before FW v 3.0.0:

```
SESPM1040(config)# clock timezone Europe Paris
SESPM1040(config)# do show clock detail
System Date: 2019-02-19 14:13:44+01:00
Timezone   : Europe/Paris
SESPM1040(config)# clock set Tue 2 19 01:17:15 2019
SESPM1040(config)# do show clock detail
System Date: 2020-09-09 02:17:42+02:00
Timezone   : Europe/Paris
SESPM1040(config)# clock timezone America North_Dakota Center
SESPM1040(config)# do show clock detail
System Date: 2023-05-02 13:43:03-05:00
Timezone   : America/North_Dakota/Center
SESPM1040(config)# clock timezone America ?
  Argentina      Display Argentina List
  Indiana        Display Indiana List
  Kentucky       Display Kentucky List
  North_Dakota   Display North_Dakota List
  pick location  locations (Anchorage/Anguilla/Antigua/Araguaina/Aruba/Asuncion/
Atikokan/Atka/Bahia/Bahia_Banderas/Barbados/Belem/Belize/Blanc-Sablon/Boa_Vista/
Bogota/Boise/Buenos_Aires/Cambridge_Bay/Campo_Grande/Cancun/Caracas/Catamarca/Ca
yenne/Cayman/Chicago/Chihuahua/Coral_Harbour/Cordoba/Costa_Rica/Creston/Cuiaba/C
uracao/Danmarkshavn/Dawson/Dawson_Creek/Denver/Detroit/Dominica/Edmonton/Eirunep
e/El_Salvador/Ensenada/Fortaleza/Fort_Nelson/Fort_Wayne/Glace_Bay/Godthab/Goose_
Bay/Grand_Turk/Grenada/Guadeloupe/Guatemala/Guayaquil/Guyana/Halifax/Havana/Herm
osillo/Inuvik/Iqaluit/Jamaica/Jujuy/Juneau/Knox_IN/Kralendijk/La_Paz/Lima/Los_An
geles/Louisville/Lower_Princes/Maceio/Managua/Manaus/Marigot/Martinique/Matamoro
s/Mazatlan/Mendoza/Menominee/Merida/Metlakatla/Mexico_City/Miquelon/Moncton/Mont
errey/Montevideo/Montreal/Montserrat/Nassau/New_York/Nipigon/Nome/Noronha/Ojinag
a/Panama/Pangnirtung/Paramaribo/Phoenix/Port-au-Prince/Porto_Acre/Port_of_Spain/
Porto_Velho/Puerto_Rico/Punta_Arenas/Rainy_River/Rankin_Inlet/Recife/Regina/Reso
lute/Rio_Branco/Rosario/Santa_Isabel/Santarem/Santiago/Santo_Domingo/Sao_Paulo/S
coresbysund/Shiprock/Sitka/St_Barthelemy/St_Johns/St_Kitts/St_Lucia/St_Thomas/St
_Vincent/Swift_Current/Tegucigalpa/Thule/Thunder_Bay/Tijuana/Toronto/Tortola/Van
couver/Virgin/Whitehorse/Winnipeg/Yakutat/Yellowknife)

SESPM1040(config)#
SESPM1040(config)# clock set Sat 4 13 04:30:00 2019
SESPM1040(config)# do show clock detail
System Date: 2022-05-03 05:31:08-05:00
Timezone   : None
SESPM1040(config)#
```

Example 2: FW v 3.0.0 and above:

```
Test-2(config)# clock set ?
Year (1993..2035)
Test-2(config)# clock set 2020 ?
Month of the year (01..12)
Test-2(config)# clock set 2020 04 ?
Calendar day of month (01..31)
Test-2(config)# clock set 2020 04 07 ?
HH:MM:SS using 24 hour clock Current time
Test-2(config)# clock set 2020 04 07 11:27:00
```

Command: **community add**

Description: Add SNMP Community name and access level (Read Only or Read/Write).

Syntax : **community** add name | access level

Parameters: String The SNMP community name

access level Access level (RO/RW)

Mode: Config mode.

Example:

```
SESPM1040(config)# community add SnmpComm-1 RW
SESPM1040(config)# community add SnmpComm-2 RO
SESPM1040(config)# do show community-names
Community String      Access Mode
---------------------------------
public                public
private               private
SnmpComm-1            private
SnmpComm-2            public
SESPM1040(config)#
```

Messages: *SetSnmp Error 1*
SNMP SetTimeout
SNMP SetTimeout: No Response from %

Note that after SNMP Community Strings are changed, you must save startup-config and then restart for the changes to take effect. Otherwise the system continues to show and respond to the community strings that were in effect at the last startup.

Command: **community delete**

Description: Delete SNMP Community name.

Syntax : **community** delete name <cr>

Parameters: String The SNMP community name

Mode: Config mode.

Example:

```
SESPM1040(config)# do show community-names
Community String      Access Mode
---------------------------------
public                public
private               private
SnmpComm-1            private
SnmpComm-2            public
SESPM1040(config)# community delete SnmpComm-1
SESPM1040(config)# do show community-names
Community String      Access Mode
---------------------------------
public                public
private               private
SnmpComm-2            public
SESPM1040(config)#
```

Command: **dio**

Description: Set Digital IO config. The SESPM-4P-DIG is an optional Digital Input/Output Module with four optical isolators and a 12V integral power source. It provides connection for alarms, event notifications, or other customer designated items. See the *SESPM-4P-DIG Option Install Guide*.

Syntax : **dio** < description | interrupt | output | porttype >

Parameters:

description	interrupt type (description string)
interrupt	interrupt type
output	interrupt type (output state)
porttype	port type
1-4	port (1..4)
String	description
port type	type (lowToHigh/highToLow)
output state	type (low/high)
port type	type (output/input)

Example:

```
SESPM1040(config)# dio description 1 1st-intrpt
SESPM1040(config)# dio interrupt 1 lowtohigh
SESPM1040(config)# dio interrupt 2 highToLow
SESPM1040(config)# dio output 2 low
SESPM1040(config)# dio output 2 high
SESPM1040(config)# dio porttype 1 output
SESPM1040(config)#
SESPM1040-AC PLM 1(config)# do show dio
Digital IO Board Installed: Yes
-----------------------------------------
Port    Type    State         Description
-----------------------------------------
dio1    output  low           dio_port1
dio2    input   low to high   dio_port2
dio3    input   high to low   dio_port3
dio4    output  high          dio_port4
SESPM1040-AC PLM 1(config)#
```

Messages:
alarm sent %d
Write data=%02X\n
syslog(LOG_NOTICE, "Digital IO - Motion alarm\n
syslog(LOG_NOTICE, "Digital IO - Access alarm\n
Digital IO input event on port x
Digital IO Board Not Installed

Command: **dns**

Description: Add and delete up to 4 IPv4 DNS servers and set DNS options.

Syntax : **dns** add <DNS server index> < DNS IPv4 address>
dns delete <<DNS server index>

Parameters:

add	Add DNS Server
delete	Delete DNS Server
1-4	DNS server index (1..4)
A.B.C.D	DNS IPv4 address

Mode: Config mode.

Example:

```
SESPM1040# show dns servers
DNS Server 1  0.0.0.0             Address type: n/a
DNS Server 2  0.0.0.0             Address type: n/a
DNS Server 3  0.0.0.0             Address type: n/a
DNS Server 4  0.0.0.0             Address type: n/a
SESPM1040# configure terminal
SESPM1040(config)# dns add 1 2.2.2.2
SESPM1040(config)# do show dns servers
DNS Server 1  2.2.2.2             Address type: IPv4
DNS Server 2  0.0.0.0             Address type: n/a
DNS Server 3  0.0.0.0             Address type: n/a
DNS Server 4  0.0.0.0             Address type: n/a
SESPM1040(config)# dns delete 1
  <cr>

SESPM1040(config)# dns delete 1
SESPM1040(config)# do show dns servers
DNS Server 1  0.0.0.0             Address type: n/a
DNS Server 2  0.0.0.0             Address type: n/a
DNS Server 3  0.0.0.0             Address type: n/a
DNS Server 4  0.0.0.0             Address type: n/a
SESPM1040(config)#
```

Command: **do**

Description: To run Exec mode commands in Config mode or Interface Config mode.

Syntax : **do** <cli command>

Parameters:

clear	Reset functions
configure	Enter configuration mode
copy	Restore system configuration
debug	Enter debug mode
end	end
firmware	firmware
history	Display the current session's command line history
ping	Send ICMP frame to network host to verify network connectivity and host availability
reload	Reload system
show	Show running system information

Mode: Config mode.

Example:

```
SESPM1040(config)# do <tab>
clear     configure copy      debug     end       firmware  history   ping
reload    show
SESPM1040(config)# do show usernames
1      admin     admin
SESPM1040(config)# do clear
  statistics  Clear statistics for one or more given interfaces

SESPM1040(config)# do clear statistics ?
  *               All ports
  GigabitEthernet  1 Gigabit Ethernet Port

SESPM1040(config)# do clear statistics GigabitEthernet 1/6
Clearing stats for port 6
SESPM1040(config)#

SESPM1040(config-if-1/3)# do show usernames
1      admin     admin
SESPM1040(config-if-1/3)#
```

Command: **end**

Description: Exit from Config mode to Exec mode or exit from Interface Config mode to Config mode.

Syntax : **end** <cr>

Parameters: None.

Mode: Interface Config mode or Config mode.

Example:

```
SESPM1040(config)# end
SESPM1040#

SESPM1040(config-if-1/4)# end
SESPM1040#
```

Command: **exit**

Description: Exit from Config mode to Exec mode or exit from Interface Config mode back to Config mode. From Exec mode, close the current CLI command session.

Syntax : **exit** <cr>

Parameters: None.

Mode: Leave Exec mode, Config mode, or Interface Config mode.

Example:

```
SESPM1040(config)# exit
SESPM1040#

SESPM1040(config-if-1/3)# exit
SESPM1040(config)#
```

Command: **history**

Description: Set/display the current session's command line history.

Syntax : **history** <size>

Parameters: Unsigned integer Set the size of history list (zero means no limit)
<cr>

Mode: Config mode.

Example:

```
SESPM1040-AC PLM 1(config)# history 50
    1  show dmi
    2  show switchport mode GigabitEthernet 1/1
    4  exit
    5  show vlan all
    6  show vlan brief
    7  show vlan id 1
    8  show vlan status
    9  show vlan
   10  configure terminal
   11  history 50
SESPM1040-AC PLM 1(config)# history 5
    8  show vlan status
    9  show vlan
   10  configure terminal
   11  history 50
   12  history 5
SESPM1040-AC PLM 1(config)#
```

Command: **https**

Description: Set HTTPS options. **Note** that if you disable HTTPS here or via the Web UI, the Web server is disabled and Web browser access goes away.

Syntax : **https** <certificate-file | certificate-type | method | port >

Parameters:

certificate-file	Set certificate file
certificate-type	Set cert type
method	Set cert method
port	Set https port
private-key-file	Set private key file
private-password	Set private key file
String	filename
Cert type	cert method (self-certificated/authorized)
Cert Method	cert method (tftp/ftp/xmodem)
HTTPS port	HTTPS port (1..65535)
String	password
enable	enable subcommand
disable	disable subcommand

Mode: Config mode.

Example:

```
SESPM1040(config)# https certificate-file sssssss.pem
SESPM1040(config)# https certificate-type self-certificated
SESPM1040(config)# https private-key-file xxxxxxx
SESPM1040(config)# https private-password admin
SESPM1040(config)# https method tftp
SESPM1040(config)# https port 244
theoid: 1.3.6.1.4.1.868.2.5.3.1.1.12.1.0.1.1048576
val: 244
SESPM1040(config)#
```

Message: *Invalid secret key configuration parameter*

Note: HTTPS uses port 443

Command: **interface**

Description: Enter configure interface mode. See Interface Config Mode Commands on page 83 for sub-commands in this mode.

Syntax : **interface** <GigabitEthernet>

Parameters: GigabitEthernet Port List S/X-Y,Z (1/1-6)

vlan	vlan id (1-4094) in allowed vlans list
1/1-6	portid
vlan 1-4094	vlanid (1..4094)
!	Comments
autoneg	Set port auto-negotiation
description	Set port description
do	To run exec commands in config mode
end	Exit from interface mode
exit	Exit from configure mode
get-description	get port description
history	Display the current session's command line history
logout	Logout of the current CLI session
no	Negate a command or set its defaults
poe	Set poe options
pvlan	list of PVLANs
shutdown	Shutdown of the interface
speed	Set port speed
statistics	get port statistics
status	get port status
switchport	Enter switchport VLAN mode
top	Return to the default mode
trunk	trunk mode commands
speed description	Ethernet port speed (auto/10Mbps_HDX/10Mbps_FDX/100Mbps_HDX/ 100Mbps_FDX/1Gbps_FDX)
address	Set the IP address of a management VLAN interface
arp	Address Resolution Protocol
dhcp	Dynamic Host Configuration Protocol
igmp	ip mode
verify	verify command

Mode: Config mode and Interface Config mode.

Example: In Config mode:

```
SESPM1040(config)# interface ?
  GigabitEthernet  Port List S/X-Y,Z (1/1-6)
  vlan             vlan id (1-4094) in allowed vlans list?

(config)#
SESPM1040(config)# interface GigabitEthernet ?
  1/1-6  portid
SESPM1040(config)# interface GigabitEthernet 1/6
SESPM1040(config-if-1/6)# autoneg enable
```

```
SESPM1040(config-if-1/6)# exit

SESPM1040(config-if-1/3)# statistics
Port 3 statistics:
---------------------------------------------
Rx Packets:          655
Tx Packets:          78791
Rx Octets:           49639
Tx Octets:           7950161
Rx Errors:           0
Tx Errors:           0
Rx Drops:            0
Tx Drops:            0
SESPM1040(config-if-1/3)# status
Port 3 configuration:
---------------------------------------------
Link State:          up
Speed:               100Mbps
Duplex:              full
AutoCross Mode:      autoCross
Connector Type:      RJ-45
Auto Negotiation:    enable
Force Speed:         100Mbps
Force Duplex:        full
Description:

SESPM1040(config-if-1/3)#
```

Example: In Interface Config mode:

```
SESPM1040(config)# interface vlan ?
  Number in the range 1-4095  vlanid
SESPM1040(config)# interface vlan 1 ?
  <cr>
SESPM1040(config)# interface vlan 1
Configure interface for the management VLAN with 1.
SESPM1040(config-if-vlan-1)#
  !        Comments
  do       To run exec commands in config mode
  end      Exit from interface mode
  exit     Exit from configure mode
  history  Display the current session's command line history
  ip       Interface Internet Protocol config commands
  logout   Logout of the current CLI session
  no       Negate a command or set its defaults
  top      Return to the default mode
SESPM1040(config-if-vlan-1)#
```

Messages:

If attempting to configure Port 6 or a PVLAN on Port 6 when no option Port 6 module (e.g., SESPM-2P-1G-CP) is installed, a message will display indicating "*No Port 6 is Present*". (Added at release v3.0.0.1.)

Command: **ip**

Description: IP commands; configure DHCP server pool.

Syntax : ip

Parameters:

dhcp	Configure DHCP server pool
vlanid	vlan expression list 1,100,200-205
A.B.C.D	Starting IP address
A.B.C.D	End IP address
1-86400	Max Lease Time (1..86400)
A.B.C.D[/mask]	IPv4 network mask
A.B.C.D	IPv4 default gateway IP address
A.B.C.D	DNS IP address
pool	Configure DHCP pool
1-4094	VLAN ID (1..4094)

Mode: Config mode.

Example:

```
(config)# ip dhcp pool 20-40 192.168.80.30 192.168.80.60 3600 255.255.255.0 192.168.80.1
192.168.90.9
====No record.
No record.
error setting dhcp pool VLAN Id.
(config)# ip dhcp pool 1 192.168.80.30 192.168.80.60 3600 255.255.255.0 192.168.80.1
192.168.90.9
(config)#
```

1. To create a DHCP pool with VLAN ID 1:

```
# configure terminal
(config)# ip dhcp pool 1 192.168.56.90 192.168.56.98 12333 255.255.255.0 192.168.56.5 10.10.10.10
(config)#
```

2. To delete an existing DHCP pool

```
# configure terminal
(config)# no ip dhcp pool 1
(config)#
```

3. Currently only one DHCP pool can be configured. If you try to create another pool, you get the error:

```
# configure terminal
(config)# ip dhcp pool 2 192.168.56.90 192.168.56.98 12333 255.255.255.0 192.168.56.5 10.10.10.10
A pool already exists. Only one pool supported currently, please delete and re-create.
(config)#
```

Note: The DHCP client falls back to 192.168.1.10 if no DHCP server is found.

Messages: *error setting dhcp pool VLAN Id.*

Command: **logout**

Description: Logout of the current CLI session. You can then hit Enter and log back in to the switch.

Syntax : **logout** <cr>

Parameters: None.

Mode: Config mode.

Example:

```
SESPM1040-AC PLM 1(config)# logout
```

Command: **mac**

See the MAC Address Table Commands section on page 125.

Command: **nfc**

Description: NFC Commands

See NFC Commands on page 116.

Command: **no**

Description: Negate a command or set its defaults. Most Config mode commands have a 'no' form, generally used to disable a function. Use the command without the 'no' keyword to re-enable a disabled function or to enable a function that is disabled by default.

Config mode commands also can have a default form, which returns the command settings to the default values. Most commands are disabled by default, so in these cases using the default form has the same result as using the 'no' form of the command. Some commands however are enabled by default and have parameters set to certain default values. In such cases, the default form of the command enables the command and sets the parameters to their default values.

Syntax : **no** <command> <cr>

Parameters:

interface	Reset interface options
ip	Global IP configuration subcommands (Config mode)
mac	MAC table entries/configuration
address-table	MAC table entries/configuration
poe	Restore defaults on PoE commands
passive	Restore defaults on Passive PoE commands
enable	Enable Passive PoE
username	Delete user (Config mode)
vlan	delete/destroy VLAN number (1-4094 in allowable vlans)
String	Delete user
autoneg	Clear port auto-negotiation (Interface config mode)
shutdown	Shutdown of the interface (Interface config mode)
switchport	Remove switchport VLAN mode
no switchport access vlan	Remove vlan access mode for a port
ip	Interface Internet Protocol config commands (Interface config mode)
GigabitEthernet	Port List S/X-Y,Z (1/1-6)
vlan	vlan id (1-4094) in allowed vlans list?
vlan expression list	1,100,200-205 vlanid
dhcp	no ip dhcp commands
pool	Delete a DHCP pool
vlan expression list	1,100,200-205 VLAN of the subnet.

Mode: Config mode and Interface Config mode.

Example 1: In Config Mode:

```
(config)# no interface vlan 200
/usr/bin/vlan-cli setmgmtvlan 1
/usr/bin/vlan-cli commitmgmtvlan
(config-if-vlan)#
```

Example 2: In Interface Config Mode:

```
SESPM1040(config)#
SESPM1040-AC PLM 1(config-if-1/5)# no autoneg
theoid=1.3.6.1.2.1.26.5.1.1.1.1049856.1
SESPM1040-AC PLM 1(config-if-1/5)# no shutdown
Port 5 up
```

```
SESPM1040-AC PLM 1(config-if-1/5)# no switchport access vlan
should remove VLAN 5 and default back to VLAN 1
```

Message: *Additional Combo Port currently not installed*

Command: **ntp**

Description: Set NTP (Network Timing Protocol) options.

Syntax : **ntp**

Parameters:		
	server	Set ntp server
	state	Set NTP state
	NTP Server index	Server index (1..4)
	IP Type	Address type (ipv4/ipv6/dns)
	A.B.C.D	NTP IP Address
	enable	enable subcommand
	disable	disable subcommand

Mode: Config mode.

Example:

```
ESPM1040(config)# ntp state enable
SESPM1040(config)# ntp server 1 ipv4 192.168.1.10
SESPM1040(config)# do show ntp status
NTP configuration:
------------------------------------------------------------------------
NTP State:                                enable
NTP daylight saving time state:           enable
NTP timezone:                             None
Current time:                             2019 0424 14:50:25
SNTP Server 1:                            192.168.1.10
SNTP Server 2:                            0.0.0.0
SNTP Server 3:                            0.0.0.0
SNTP Server 4:                            0.0.0.0
SNTP Server 5:                            0.0.0.0
SESPM1040(config)#
```

Command: **pd-aux**

Description: Set PD Auxiliary parameters (SESPM1040-541-LT-PD only). This command lets you enable or disable the Auxiliary Port state and view the present PoE Input Status on the SESPM1040-541-LT-PD.

Syntax : **pd-aux** <enable | disable>

Parameters: disable Turn PD Auxiliary Power off

enable Turn PD Auxiliary Power on

Mode: Config mode.

Example:

```
SESPM1040(config)# do show pd-aux
Auxiliary Port Status:         enabled
SESPM1040(config)# pd-aux disable
SESPM1040(config)# do show pd-aux
Auxiliary Port Status:         disabled
SESPM1040(config)# pd-aux enable
SESPM1040(config)# do show pd-aux
Auxiliary Port Status:         enabled
SESPM1040(config)#
```

Message: *Operation not supported*

Command: **poe**

Description: See the PoE Commands on page 106.

Command: **radius**

Description: Configure RADIUS Server parameters. **Note** that you must enable Radius before you can add a Radius server instance.

Syntax : **radius** <add |disable | enable> < server index (1..2)> < radius host> <key> < retries (1..5)> < timeout (1..60)>

Parameters:

add	Add Radius Server; you must enable Radius first
disable	Disable the use of Radius Authentication Server(s)
enable	Enable the definition and use of Radius Server(s)
Radius Server index	server index (1..2)
String	radius host
String	radius host
String	key
Radius server retries	retries (1..5)
Radius server timeout	timeout (1..60)
<cr>	

Mode: Config mode.

Example:

```
SESPM1040(config)# radius add 1 radHst11 KKeeYy11 3
Radius is Disabled, please do a "radius enable" first.
SESPM1040(config)# radius enable
SESPM1040(config)# radius add 1 radHst11 KKeeYy11 3
SESPM1040(config)#
```

Message: *Radius is Disabled, please do a "radius enable" first.*

Command: **snmptrap**

Description: Configure SNMP Trap Server parameters.

Syntax : **snmptrap** <add | delete> <host ip> <snmp version> <Community string> <port> <Delete trap>

Parameters:

add	trap server host
delete	Delete trap
A.B.C.D	host ip
snmp version	snmp version (v1/v2c)
String	Community string
1-999	port (1..999)
1-20	Delete trap (1..20)
<cr>	

Mode: Config mode.

Example:

```
SESPM1040(config)# snmptrap add 192.168.1.40 v2c aaaaaaaaa 161
SESPM1040(config)# do show trapservers
Index  Host                Version   Community
-------------------------------------------------
1      192.168.1.40        v2c       aaaaa
SESPM1040(config)# snmptrap delete ?
  1-20  Delete trap (1..20)

SESPM1040(config)# snmptrap delete 1
SESPM1040(config)# do show trapservers
Index  Host                Version   Community
-------------------------------------------------
SESPM1040(config)#
```

Messages:

SNMP SetTimeout: No Response from (peername)

SetSnmp Error x

Command: **ssh**

Description: Set SSH configuration.

Syntax : ssh <Auth Retries (1..5) > <Auth Timeout (1..120) > < server state (enable/disabled) >

Parameters:

auth-retries	Authentication Retries
auth-timeout	Authentication Timeout
server-status	Server status
1-5	Authentication Retries (1..5)
1-120	Authentication Timeout (1..120)
select	Set server state (enable/disable)

Mode: Config mode.

Example:

```
SESPM1040(config)# ssh auth-retries 2
SESPM1040(config)# ssh auth-timeout 15
SESPM1040(config)# ssh server-status enable
SESPM1040(config)# do show ssh
SSH Server Status:      enabled
Major Version:          2
Minor Version:          0
SSH Auth Timeout:       120
SSH Auth Retries:       6
Public Key of Host RSA:
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDG7i5e64L243Z203bzQnKu5AjDcO5LXcqxMlWYXlRZ
7deG96xHUsXz384K7IZIjPcfkQGvJG9vxPMlk3mQx/uHC/4A6PkFSFnO3eouEHnssYpgaawdu4gJE6Lg
ZWoJaTAWXp2BdlvnzJJCgTLm8bgErGHHplOsVmf6g5ZjrA8jN30GrOiEr733qWtEdHdVJQzQh6dRJj6h
7yYFnwXHj3gizZkK
Public Key of Host DSA:
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBLwhpUrx
QGD7nKWcQjNCRggFTXWg3sB6OH0qKt6fPZyBArwtRFPP4WVwxm5JAm5pZ7Jzmq8gz6rOqRQ1l6qlspo=
 root@sespm

SESPM1040(config)#
```

Command: **syslog**

Description: Configure Syslog parameters.

Syntax : **syslog** <host> <port>

Parameters:

host	Set syslog host IP address
port	Set syslog port number
A.B.C.D	The syslog host
SYSLOG port	The syslog port (1..65535)
<cr>	

Mode: Config mode.

Example:

```
SESPM1040(config)# syslog host 192.168.1.50
SESPM1040(config)# syslog port 447
SESPM1040(config)# do show syslog host
host: 192.168.1.50
SESPM1040(config)# do show syslog port
Syslog remote port: 447
SESPM1040(config)#
```

Command: **system**

Description: Set system commands. Do not enter spaces or the pound sign (#) in these commands.
Note: starting at Software Version 2.1.0.3, when configuring " System Name" in the Web UI, it does not update in the CLI until you switch CLI modes (e.g., from Config mode to either Exec mode or Interface Config mode and back).

Syntax : **system** <contact | location | name>

Parameters:

contact	Set sysContact
location	Set sysLocation
name	Set sysName
String	The sysContact
String	The sysLocation
String	The sysName

Mode: Config mode.

Example:

```
PLM SESPM-PD 1(config)# system contact Bob
PLM SESPM-PD 1(config)# system location Test
PLM SESPM-PD 1(config)# system name PLM Lab
Syntax error: Illegal command line
PLM SESPM-PD 1(config)# system name PLM_Lab
PLM_Lab(config)# do show system
Model Name:           SESPM1040-541-LT-PD
System Description:   Self-Enclosed Managed Hardened Gigabit Ethernet PoE++ Switch
Location:             Test
Contact:              Bob
System Name:          PLM_Lab
System Date:          2012-01-30 16:55:26-06:00
System Uptime:        477 days, 08h:19m:39s
Bootloader Revision:  1.2.0
Firmware Version:     3.2.3 20230215
Hardware Revision:    A1
Serial number:        00019
MAC Address:          00:C0:F2:58:3F:60
Memory:               Total=251724 KBytes, Free=198948 KBytes
BLE MAC Address:      90:FD:9F:60:63:98
BLE State:            Enabled
BLE Connection:       Disconnected
NFC State:            Enabled
Digital IO Board:     Not installed
Phy Module:           Not installed
PSU Temperature:      35.75C
CPU Temperature:      37.50C
PLM_Lab(config)#
```

Command: **tacplus**

Description: Configure TACACS + parameters. **Note** that you must enable TACACS + before you can add a TACACS + instance. TACACS+ authentication requires Password Authentication Protocol (PAP) login setup on the TACACS+ server.

Syntax : **tacplus** <add | delete> < server index> < tacplus host> <key> <retries> <timeout>

Parameters:

add	Add Tacplus Server
disable	Disable the use of TACACS+ Authentication Server(s)
enable	Enable the definition and use of TACACS+ Server(s)
Tacplus Server index	server index (1..6)
String	tacplus host
String	key
Tacplus server retries	retries (1..5)
Tacplus server retries	timeout (1..60)

Mode: Config mode.

Example:

```
SESPM1040(config)# tacplus add 1 tacHost1 KeYsTrIng1 9
SESPM1040(config)# tacplus ?
  add      Add Tacplus Server
  disable  Disable the use of TACACS+ Authentication Server(s)
  enable   Enable the definition and use of TACACS+ Server(s)
SESPM1040(config)# tacplus disable
SESPM1040(config)# tacplus add 1 tchst1 kkkeeeyyy 2
TACACS+ is Disabled, please do a "tacplus enable" first.
SESPM1040(config)# tacplus enable
SESPM1040(config)# tacplus delete 1
SESPM1040(config)#
```

Message: *TACACS+ is Disabled, please do a "tacplus enable" first.*

Command: **telnet**

Description: Configure Telnet service (enable or disable telnet).

Syntax : **telnet** < enable | disable >

Parameters: enable Enable Telnet service.
disable Disable Telnet service.

Mode: Config mode.

Example:

```
SESPM1040(config)# telnet ?
  disable  Disable telnet service
  enable   Enable telnet service

SESPM1040(config)# telnet disable
SESPM1040(config)# do show telnet
Telnet Service Status:  disabled
SESPM1040(config)# telnet enable
SESPM1040(config)# do show telnet
Telnet Service Status:  enabled
SESPM1040(config)#
```

Command: **top**

Description: Return to the default mode.

Syntax : **top** <cr>

Parameters: None.

Mode: Config mode and Interface Config mode

Example:

```
# top
# configure terminal
(config)# top
# configure terminal
(config)# interface GigabitEthernet 1/4
 (config-if-1/4)# top
#
```

Command: **username**

Description: Add a new user, set user name parameters, and delete a user. Each user requires a username, password, and privilege level. Initially, one user (admin) exists. You can add up to 50 users via the CLI.

Syntax : **username** <add> <delete> <name>

Parameters:

add	Change user level
delete	Delete user
name	Username
String	user name
String	Delete user
change	Change user level
password	Service port
String	password
privilege level	privilege (admin)
String	user password

Mode: Config mode.

Example:

```
SESPM1040(config)# username add jeffs admin admin
SESPM1040(config)# do show usernames
1      admin     admin
2      jeffs     admin
SESPM1040(config)# username name change jeffs admin
SESPM1040(config)# username delete jeffs
SESPM1040(config)# do show usernames
1      admin     admin
SESPM1040(config)# username name change wily admin
SESPM1040(config)# username add emilee admin admin
username add failed - user name already exists.
SESPM1040(config)#
```

Messages

user: bob not found

username add failed - user name already exists.

cannot add user - user table is full.
username add failed - user name already exists.
username add failed.
username add failed to activate user
Syntax error: Illegal parameter

Command: **vct**

Description: See “Virtual Cable Test (VCT) Commands” on page 117.

Command: **vlan**

Description: Enter VLAN Config mode; create/edit VLAN number (1-4094) in allowable VLANs.

Syntax : **vlan** <vlan id | sub-command>

Parameters:

vlanid	vlan expression list 1,100,200-205
!	Comments
do	To run Exec mode commands in Config mode
end	Exit from Interface Config mode
exit	Exit from Config mode
history	Display the current session's command line history
logout	Log out of the current CLI session
no	Negate a command or set its defaults
show	show vlan status
shutdown	Disable the VLAN
top	Return to the default mode
reload	Reload system
show	Show running system information
statistics	Clear statistics for one or more given interfaces
terminal	Configure from the terminal
default-config	Backup default-config
running-config	Backup running-config
startup-config	Backup startup-config
String	source file or url (tftp://address/filename)
swap	Swap between Active and Alternate firmware image.
update	update
Unsigned integer	Set the size of history list (zero means no limit)
String	Hostname or IP-address to ping
cold	Reload cold
defaults	Reload defaults
keep-ip	keep ip
<show>	<Exec mode show commands>
<cr>	

Mode: Config mode.

Example 1:

```
(config)# vlan 100,300
(config-vlan)# show status
  VLAN          Name             Status         Ports
------- ---------------------- ---------  -------------------------
  100
  300                                        1/4
(config-vlan)# shutdown 200-299
(config-vlan)# do show vlan status
```

```
  VLAN          Name             Status         Ports
------- ---------------------- -------- --------------------------
    1                          Active  Gi 1/1 1/2 1/3 1/5 1/6
  100                          Active
  300                          Active  Gi 1/4
(config-vlan)#
```

Example 2:

```
(config-vlan)# do show version
Active Rev:           3.2.5 20230424
Active Rev:           3.0.3 20210605
Device name:          SESPM1040-541-LT
Hardware Revision:    H
Bootloader Revision:  1.2.0
Serial number:        5536531
MAC Address:          00:C0:F2:6A:90:FE
System Up Time:       02h:57m:00s
(config-vlan)# do <tab>
clear     configure copy      debug     end       firmware  history   ping
reload    show
(config-vlan)#
```

Managing the Switch from a VLAN other than VLAN 1

You can create different VLANs and add ports to them, but you can't currently remove VLAN 1. **Note**: If you do the steps below in reverse order, you will lock yourself out. The VLAN must be on the Port first before being defined as a Management VLAN.

Example 3: Create VLAN 5, assign an IP address to VLAN 5, and then add port 2 to VLAN 5:

```
# configure terminal
(config)# vlan 5
(config-vlan)# exit
(config)# interface vlan 5
Configure interface for the management VLAN with 5.
(config-if-vlan)# ip address 192.168.5.205 255.255.255.0
(config-if-vlan)# exit
(config)# interface GigabitEthernet 1/2 Configure interface 1/2.
(config-if-1/2)# switchport access vlan 5 Couldn't set VLAN id=5 for port "1/2"
(config-if-1/2)#
```

Interface Config Mode Commands

These commands can be entered from Interface Config mode. Enter Interface Config mode with the **`configure interface`** command.

GigabitEthernet	Port List S/X-Y,Z (1/1-6)
vlan	vlan id (1-4094) in allowed vlans list?
vlan expression list	1,100,200-205 vlanid
!	Comments
autoneg	Set port auto-negotiation
connector-type	Set port media connector type
Combo port type	Choose media connector type for combo port (RJ-45/SFP)
description	Set port description
do	To run exec commands in Interface config mode
end	Exit from interface mode
exit	Exit from interface configuration mode
get-description	get port description
history	Display the current session's command line history
logout	Logout of the current CLI session
no	Negate a command or set its defaults
poe	Set poe options
pvlan	list of PVLANs
shutdown	Shutdown of the interface
speed	Set port speed
statistics	get port statistics
status	get port status
switchport	Enter switchport VLAN mode
top	Return to the default mode
trunk	trunk mode commands
trunk	Set trunk mode for port 1/x to VLAN number
select	description (enable/disable)
1/1-6	portid
address	Set the IP address of an interface
dhcp	Set dhcp mode
A.B.C.D	IP address
A.B.C.D[/mask]	gateway
apr	Set poe options
maxpower	poe maxpower
mode	poe mode
priority	poe priority
schedule	poe schedule
failure	poe apr retries
interval	poe apr interval
ip	poe apr IP
ping-check	poe ping check
retries	poe apr retries
1-6	pvlan (1..6)
speed description	(auto/10Mbps_HDX/10Mbps_FDX/100Mbps_HDX/100Mbps_FDX/1Gbps_FDX)

access	Set access mode for a port
trunk	Set trunk mode for a port.
vlan	Set access mode for a port
vlan expression list	1,100,200-205 vlanid

Command: **configure interface**

Description: Enter interface Config mode from Exec mode.

Syntax: **interface** GigabitEthernet 1/1-x

interface vlan 100

Mode: Interface Config mode.

Parameters:

GigabitEthernet	Port List S/X-Y,Z (1/1-4)
vlan	List of VLAN interface numbers (1-4095)
1/1-5	portid
autoneg	Set port auto-negotiation
description	Set port description
end	Exit from interface mode
exit	Exit from interface configuration mode
get-description	get port description
no	Negate a command or set its defaults
poe	Set poe options
pvlan	list of PVLANs
shutdown	Shutdown of the interface
speed	Set port speed
statistics	get port statistics
status	get port status
Arguments	ignored comment text
enable	description (enable/disabled)
String	description
maxpower	poe maxpower
mode	poe mode
priority	poe priority
schedule	poe schedule
1-360	privilege (1..360)
Disabled, Enabled, Force	privilege (enabled/disabled/force)
priority name	privilege (low/high/critical)
Disabled, 1-16	privilege (disabled/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16)
address	Set the IP address of an interface
dhcp	Set dhcp mode
A.B.C.D	IP address
A.B.C.D	[/mask] mask

Example:

```
SESPM1040(config)# interface GigabitEthernet 1/1
SESPM1040(config-if-1/1)# autoneg enable
SESPM1040(config-if-1/1)# description r2d2
SESPM1040(config-if-1/1)# poe maxpower 1
```

```
SESPM1040(config-if-1/1)# poe mode enabled
SESPM1040(config-if-1/1)# poe priority critical
SESPM1040(config-if-1/1)# poe schedule 15
SESPM1040(config-if-1/1)#
```

Messages: *Combo port 6 is not installed* displays if you try to configure Port 6 when no optional port 6 module (e.g., SESPM-2P-1G-CP Additional Combo Port Module) is installed (added at FW v3.0.0.1.).

Command: **autoneg**

Description: Enable/disable port auto-negotiation.

Syntax: **autoneg** <enable> <disable>

Parameters: enable description (enable/disabled)

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# autoneg enable
SESPM1040(config-if-1/2)# autoneg disable
Syntax error: Illegal parameter
SESPM1040(config-if-1/2)# autoneg disabled
SESPM1040(config-if-1/2)#
```

Command: **connector-type**

Description: Set port media connector type

Syntax: connector-type <RJ-45> <SFP>

Parameters: Combo port type Choose media connector type for combo port (RJ-45/SFP)

Mode: Interface Config mode.

Example:

```
(config-if-1/5)# connector-type RJ-45
(config-if-1/5)# connector-type SFP
(config-if-1/5)#
```

Command: **description**

Description: Set port description.

Parameters: String description

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# description Hollywood
SESPM1040(config-if-1/2)#
```

Command: **do**

Description: To run exec commands in Interface Config mode.

Syntax: do <command>

Parameters:

clear	Reset functions
configure	Enter configuration mode
copy	Copy from one file to another
end	end
firmware	firmware
ping	Send ICMP frame to network host to verify network connectivity and host availability
reload	Reload system
show	Show running system information

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# do configure terminal
SESPM1040(config)# interface GigabitEthernet 1/2
SESPM1040(config-if-1/2)# do copy ?
  running-config  Copy current system configuration

SESPM1040(config-if-1/2)# do firmware ?
  swap    Swap between Active and Alternate firmware image.
  update  update

SESPM1040(config-if-1/2)# do ip ?
  A.B.C.D  IP Address

SESPM1040(config-if-1/2)# do ping ?
  ip      Send ICMP IPv4 messages to network hosts (default)
  ipv6    Send ICMP IPv6 messages to network hosts
  String  Hostname or IP Aaddress to ping

SESPM1040(config-if-1/2)# do poe ?
  power  poe power commands

SESPM1040(config-if-1/2)# do poe power ?
  1-5  poe port (1..5)

SESPM1040(config-if-1/2)# do poe power 1
  power  poe power (up/down)

SESPM1040(config-if-1/2)# do poe power 1 up
```

```
SESPM1040(config-if-1/2)#
SESPM1040(config-if-1/2)# do reboot ?
  <cr>

SESPM1040(config-if-1/2)# do show ?
  ble             BLE commands
  clock           Set clock options
  community-names  show community names
  default-config  Contents of default configuration
  dio             Digital IO configuration
  dns             show dns
  firmware        firmware
  https           Show HTTPS information
  interface       Interface status and configuration
  ip              IP interface status and configuration
  nfc             Display NFC data
  ntp             Show NTP information
  pd-aux          PD Auxiliary Port Status
  poe             show poe
  pvlans          show pvlans
  radius          Raduis Servers
  running-config  Current operating configuration
  ssh             SSH
  startup-config  Contents of startup configuration
  syslog          system log commands
  system          Show system information
  tacplus         TacPlus Servers
  telnet          Telnet
  trapservers     show trapservers
  usernames       show usernames
  version         show software version

SESPM1040(config-if-1/2)#
```

Command: **end**

Description: Exit from interface mode

Syntax:

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# end
SESPM1040#
```

Command: **exit**

Description: Exit from interface configuration mode

Syntax:

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# exit
SESPM1040(config)#
```

Command: **get-description**

Description: Get port description.

Syntax: **get-description** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
PLM SESPM-PD 1(config-if-1/5)# get-description
Port 5 Description:
-------------------------------------------
Description:         PoE++ / LAN uplink from 192.168.90.27

PLM SESPM-PD 1(config-if-1/5)#
```

Command: **history**

Description: Display the current session's command line history.

Syntax: **history** <size>

Parameters: Unsigned integer Set the size of history list (zero means no limit)

Mode: Interface Config mode.

Example:

```
SESPM1040-AC PLM 1(config-if-1/3)# history 5
    9  vlan 10
   10  show status
   11  exit
   12  interface GigabitEthernet 1/3
   13  history 5
SESPM1040-AC PLM 1(config-if-1/3)#
PLM SESPM-PD 1(config-if-1/5)# history 10
    2  configure terminal
    5  interface vlan 100
    9  interface GigabitEthernet 1/2
   11  interface vlan 300
   13  interface vlan 200
   15  interface GigabitEthernet 1/4
   17  exit
   18  interface GigabitEthernet 1/5
   19  get-description
   20  history 10
PLM SESPM-PD 1(config-if-1/5)#
```

Command: **ip**

Description: Interface Internet Protocol config commands.

Syntax: **ip** < address | arp | dhcp | igmp | verify>

Parameters:

address	Set the IP address of a management VLAN interface
arp	Address Resolution Protocol
dhcp	Dynamic Host Configuration Protocol
igmp	ip mode
verify	verify command
dhcp	Set the IP address mode of a management VLAN interface to DHCP
A.B.C.D	IPv4 address for the management VLAN interface
A.B.C.D[/mask]	IPv4 network mask for the management VLAN interface
A.B.C.D	IPv4 default gateway IP address; specify default gateway (if not routing IP).

(config-if-vlan)# ?

!	Comments
do	To run exec commands in config mode
end	Exit from interface mode
exit	Exit from interface configuration mode
history	Display the current session's command line history
ip	Interface Internet Protocol config commands
logout	Logout of the current CLI session
no	Negate a command or set its defaults
top	Return to the default mode

(config-if-vlan)# no ?

ip Interface Internet Protocol config commands

(config-if-vlan)# no ip ?

(config-if-vlan)# do ?

clear	Reset functions
configure	Enter configuration mode
copy	Restore system configuration
debug	Enter debug mode
end	end
firmware	firmware
history	Display the current session's command line history
ping	Send ICMP frame to network host to verify network connectivity and host availability
reload	Reload system
show	Show running system information

Mode: Interface Config mode.

Example:

```
(config-if-vlan)# ip address 192.168.90.27 255.255.255.0 192.168.90.1
(config-if-vlan)# do show vlan
  VLAN          Name             Status         Ports
------- ---------------------- -------- -------------------------
    1                          Active  Gi 1/1 1/2 1/3 1/5
   10                          Active
  300                          Active  Gi 1/4
(config-if-vlan)#
PLM SESPM-PD 1(config-if-vlan)# ip <tab>
address arp     dhcp    igmp    verify
PLM SESPM-PD 1(config-if-vlan)# ip dhcp
PLM SESPM-PD 1(config-if-vlan)# ip igmp
PLM SESPM-PD 1(config-if-vlan)# ip verify
PLM SESPM-PD 1(config-if-vlan)# ip ?
  address  Set the IP address of a management VLAN interface
  arp      Address Resolution Protocol
  dhcp     Dynamic Host Configuration Protocol
  igmp     ip mode
  verify   verify command
(config-if-vlan)# ip arp
(config-if-vlan)# ip dhcp
(config-if-vlan)# ip igmp
(config-if-vlan)# ip verify
PLM SESPM-PD 1(config-if-vlan)#
```

Command: **logout**

Description: Logout of the current CLI session. You can hit Enter and log back in again.

Syntax: **logout** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040-AC PLM 1(config-if-1/3)# logout
Debian GNU/Linux 9
<cr>
SESPM1040-541-LT login:
```

Command: **no**

Description: Negate a command or set its defaults. Most Config mode commands have a no form, generally used to disable a function. Use the command without the no keyword to re-enable a disabled function or to enable a function that is disabled by default.

Config mode commands also can have a default form, which returns the command settings to the default values. Most commands are disabled by default, so in these cases using the default form has the same result as using the no form of the command. Some commands however are enabled by default and have parameters set to certain default values. In such cases, the default form of the command enables the command and sets the parameters to their default values.

Syntax: **no** < autoneg | shutdown>

Parameters:

autoneg	Clear port auto-negotiation
shutdown	Shutdown of the interface

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/2)# no autoneg
SESPM1040(config-if-1/2)# no shutdown
Port 2 up
SESPM1040(config-if-1/2)#
```

Command: **poe**

Description: See the PoE Commands section on page 105.

Command: **pvlan**

Description: list of PVLANs. Configure Private VLAN for an interface.

Syntax: **pvlan** <pvlan instance number>

Parameters: 1-6 pvlan (1..6)
<cr>

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/3)# pvlan ?
  1-6  pvlan (1..6)

SESPM1040(config-if-1/3)# pvlan 1 ?
  <cr>

SESPM1040(config-if-1/3)# pvlan 1
SESPM1040(config-if-1/3)# pvlan 2
SESPM1040(config-if-1/3)# pvlan 3
SESPM1040(config-if-1/3)# pvlan 4
SESPM1040(config-if-1/3)# pvlan 5
SESPM1040(config-if-1/3)# pvlan 6
SESPM1040(config-if-1/3)# pvlan 1
SESPM1040(config-if-1/3)# pvlan 7
Syntax error: Illegal parameter
SESPM1040(config-if-1/3)# pvlan 7
```

Command: **shutdown**

Description: Shutdown the interface.

Syntax: **shutdown** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/5)# shutdown
  <cr>

SESPM1040(config-if-1/5)#
```

Command: **speed**

Description: Set the speed and duplex for an interface.

Syntax: **speed** < auto | 10Mbps_HDX | 10Mbps_FDX | 100Mbps_HDX | 100Mbps_FDX | 1Gbps_FDX >

Parameters:

auto	Auto-negotiate speed and duplex for interface
10Mbps_HDX	Set interface speed to 10 Mbps and Half Duplex
10Mbps_FDX	Set interface speed to 10 Mbps and Full Duplex
100Mbps_HDX	Set interface speed to 100 Mbps and Half Duplex
100Mbps_FDX	Set interface speed to 100 Mbps and Full Duplex
1Gbps_FDX	Set interface speed to 1 Gbps and Full Duplex

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/5)# speed auto
SESPM1040(config-if-1/2)# speed 100Mbps_HDX
SESPM1040(config-if-1/2)# speed 10Gbps_HDX
SESPM1040(config-if-1/2)# speed 10Gbps_fdx
SESPM1040(config-if-1/2)#
```

Command: **statistics**

Description: Get port statistics for an interface.

Syntax: **statistics** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/5)# statistics
Port 5 statistics:
---------------------------------------------
Rx Packets:          797047
Tx Packets:          6887
Rx Octets:           68020037
Tx Octets:           1924058
Rx Errors:           0
Tx Errors:           0
Rx Drops:            0
Tx Drops:            0
SESPM1040(config-if-1/5)#
```

Command: **status**

Description: Get port status.

Syntax: **status** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040(config-if-1/3)# status
Port 3 configuration:
-------------------------------------------
Link State:          up
Speed:               100Mbps
Duplex:              full
AutoCross Mode:      autoCross
Connector Type:      RJ-45
Auto Negotiation:    enable
Force Speed:         100Mbps
Force Duplex:        full
Description:
SESPM1040(config-if-1/3)#
SESPM1040(config-if-1/5)# status
Port 5 configuration:
-------------------------------------------
Link State:          up
Speed:               1Gbps
Duplex:              full
AutoCross Mode:      autoCross
Connector Type:      RJ-45
Auto Negotiation:    enable
Force Speed:         auto
Force Duplex:        full
Description:         PoE uplink from 192.168.90.27
SESPM1040(config-if-1/5)#
SESPM1040(config-if-1/6)# status
Port 6 configuration:
-------------------------------------------
Link State:          down
Speed:               1Gbps
Duplex:              full
AutoCross Mode:      autoCross
Connector Type:      RJ-45
Auto Negotiation:    enable
Force Speed:         auto
Force Duplex:        half
Description:

SESPM1040(config-if-1/6)#
```

Command: **switchport**

Description: Enter and set switchport VLAN mode. Allow vlan expression list 1,100,200-205.Note: Range checking of the VLAN IDs is not yet present. A number larger than 4095 will be map/truncated to the 0-4095 range and will be used in the back end. If you wind up with a VLAN ID > 4095, it can be removed by using a negation command (no ....) with the same too-large number.

Syntax: **switchport** <access | trunk | Vlan>

Parameters:

access	Set access mode for a port
trunk	Set trunk mode for a port.
vlan	Set trunk mode for a port.
vlan expression list	1,100,200-205 vlanid
<cr>	

Mode: Interface Config mode.

Example 1:

```
SESPM1040-AC PLM 1(config-if-1/4)# switchport
Entering switchport VLAN mode for 1/4
SESPM1040-AC PLM 1(switchport-1/4)# access vlan 10
Set access mode for port 1/4 to VLAN number 10
SESPM1040-AC PLM 1(switchport-1/4)# mode trunk
Set port 1/4 to VLAN mode trunk
SESPM1040-AC PLM 1(switchport-1/4)# access
Set access mode for port 1/4 to VLAN number
SESPM1040-AC PLM 1(switchport-1/4)#

SESPM1040-AC PLM 1(switchport-1/6)# mode access
Set port 1/6 to VLAN mode access
SESPM1040-AC PLM 1(switchport-1/6)#

SESPM1040-AC PLM 1(switchport-1/2)# exit
Debian GNU/Linux 9

SESPM1040-541-LT login:
```

Example 2:

```
SESPM1040-AC PLM 1(config)# vlan ?
  vlan 1-4094  vlanid (1..4094)
  <cr>

SESPM1040-AC PLM 1(config)# vlan 10 ?
  <cr>

SESPM1040-AC PLM 1(config)# vlan 10
Entered VLAN configure mode for 10
SESPM1040-AC PLM 1(config-vlan)# ?
  !         Comments
  do        To run exec commands in config mode
  end       Exit from interface mode
  exit      Exit from configure mode
  history   Display the current session's command line history
  logout    Logout of the current CLI session
```

```
  no        Negate a command or set its defaults
  show      show vlan status
  shutdown  Disable the VLAN
  top       Return to the default mode

SESPM1040-AC PLM 1(config-vlan)#
```

Example 3:

```
SESPM1040-AC PLM 1(config)# vlan ?
  vlan 1-4094  vlanid (1..4094)
  <cr>

SESPM1040-AC PLM 1(config)# vlan 10 ?
  <cr>

SESPM1040-AC PLM 1(config)# vlan 10
Entered VLAN configure mode for 10

SESPM1040-AC PLM 1(config-vlan)# show status
Show VLAN status for 10
SESPM1040-AC PLM 1(config-vlan)#

SESPM1040-AC PLM 1(config-vlan)# show
  VLAN          Name             Status         Ports
------- ---------------------- ---------  --------------------------
    1                                      1/1 1/2 1/3 1/4 1/5 1/6
  100
SESPM1040-AC PLM 1(config-vlan)# show status
  VLAN          Name             Status         Ports
------- ---------------------- ---------  --------------------------
  100
SESPM1040-AC PLM 1(config-vlan)#
```

Example 4:

```
SESPM-PD(config-if-1/6)# switchport trunk vlan 200,300
Syntax error: Illegal parameter
(config-if-1/3)# switchport trunk vlan 10-20
Syntax error: Illegal parameter

(config-if-1/2)# switchport trunk vlan 10
.................
(config-if-1/2)#
```

Example 5:

```
PLM SESPM-PD 1(config-if-1/1)# switchport trunk ?
  vlan  Set up trunk mode for a port.
  <cr>

PLM SESPM-PD 1(config-if-1/1)# switchport trunk vlan ?
  vlan expression list 1,100,200-205  vlanid

PLM SESPM-PD 1(config-if-1/1)# switchport trunk vlan 100 ?
  <cr>

PLM SESPM-PD 1(config-if-1/1)# switchport trunk vlan 100
.....
PLM SESPM-PD 1(config-if-1/1)# switchport trunk vlan 100-200
Couldn't set allowed VLANs "100-200" for port "1/1"
PLM SESPM-PD 1(config-if-1/1)# do show switchport mode GigabitEthernet 1/1
GigabitEthernet 1/1 VLAN Mode: trunk
PLM SESPM-PD 1(config-if-1/1)#
```

Messages:

error setting ip

error setting dhcp mode

Syntax error: The command is not completed

Couldn't set VLAN id=10 for port "1/4"

Set switchport access mode for port 1/5

Couldn't set allowed VLANs "100-200" for port "1/1"

Couldn't set VLAN mode=2 for port "1/5"

Command: **top**

Description: Return to the default mode.

Syntax: **top** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
SESPM1040-AC PLM 1(switchport-1/4)# top
SESPM1040-AC PLM 1#

SESPM1040-AC PLM 1(config)# top
SESPM1040-AC PLM 1#
```

Command: **trunk**

Description: trunk mode commands

Syntax: **trunk** <cr>

Parameters: None.

Mode: Interface Config mode.

Example:

```
(config-if-1/5)# trunk ?
  <cr>

(config-if-1/5)# trunk?
  trunk  trunk mode commands
  <cr>

(config-if-1/5)# trunk
Set trunk mode for port 1/5 to VLAN number
(config-if-1/5)# trunk 3
Syntax error: Illegal command line
(config-if-1/5)# trunk ?
  <cr>

(config-if-1/5)# trunk?
Set trunk mode for port 1/5 to VLAN number
(config-if-1/5)#
```

BLE Commands

Bluetooth Low Energy (BLE) allows remote access to alarm information or to read or change equipment settings without requiring physical access using ladders or scissor lifts.

BLE session timeout: within a minute of inactivity the CLI session will be logged out and BLE connection dropped.

Note that there are BLE commands in Exec mode and Config mode.

Command: **show ble**

Description: Display the current BLE MAC address or BLE software version.

Syntax : **show** ble < broadcast | connection | mac | version>

Parameters:

broadcast	BLE broadcast state (Enabled or Disabled)
connection	BLE software connection
mac	BLE mac address
version	BLE software version

Mode: Exec mode.

Example:

```
SESPM1040-AC PLM 1# show ble broadcast
BLE Broadcast State: Enabled
SESPM1040-AC PLM 1# show ble connection
BLE Connection: Disconnected
SESPM1040-AC PLM 1# show ble version
BLE Version: 1.0.4
SESPM1040-AC PLM 1#

# show ble broadcast
BLE Broadcast State: Enabled
# show ble connection
BLE Connection: Disconnected
# show ble mac
90:FD:9F:60:CC:46
# show ble version
BLE Version: 1.0.4

#
```

Command: **configure ble**

Description: Configure BLE parameters.

Syntax : **ble** <broadcast | disconnect | end>

Parameters:

broadcast	ble broadcast
disconnect	ble disconnect
end	ble end
select	broadcast (enable/disable)

Mode: Config mode.

Example:

```
# show ble broadcast
BLE Broadcast State: Enabled
# show ble connection
BLE Connection: Disconnected
# show ble mac
90:FD:9F:60:CC:46
# show ble version
BLE Version: 1.0.4

(config)# ble broadcast enable
(config)# ble disconnect
disconnect BLE 1.0
error- opening /dev/ttyS1
(config)# ble end
/tmp/klish.fifo.30519.9XU9qk: 1: /tmp/klish.fifo.30519.9XU9qk: ble-end: not found
(config)# do show ble broadcast
BLE Broadcast State: Enabled
(config)# do show ble connection
BLE Connection: Disconnected
(config)# do show ble mac
90:FD:9F:60:CC:46
(config)# do show ble version
BLE Version: 1.0.4

(config)#
```

BLE Messages:

syslog (LOG_NOTICE) *BLE Disconnect trap*

syslog (LOG_NOTICE) *BLE Connect trap*

BLE Trap sent...\n

ble-end: not found

PoE Commands

Commands for configuring Power over Ethernet and Passive PoE. **Note** that there are commands for configuring PoE in Exec mode, Config mode and Interface Config mode. Also, be aware that not all PoE commands are available for Passive PoE operation (e.g., APR and PoE Scheduling are not available with Passive PoE).

Exec mode:

show poe apr	Display PoE APR settings (auto power reset)
show poe config	Display PoE (Power Over Ethernet) config for the switch
show poe input	Display PoE Input
show poe passive status	Display Passive PoE Information
show poe profile	Display poe scheduling profile name
show poe schedule	Display schedule list
show poe service	Display PoE service status for the switch
show poe status	Display PoE status for the switch

Config mode:

passive	Passive PoE commands
schedule	PoE schedule management

Interface Config mode:

apr	Set poe options
maxpower	poe maxpower
mode	poe mode
opermode	poe opermode
priority	poe priority
schedule	poe schedule

Command: **show poe**

Description: Display PoE (Power over Ethernet) parameters.

Mode: Exec mode.

Syntax : **show** poe <apr | config | opermode | profile | input | passive status schedule | status>

Parameters:

apr	Display PoE APR settings (auto power reset)
config	Display PoE (Power Over Ethernet) config for the switch
input	PoE Input
passive	Passive PoE passive Information
status	Display the current PoE Passive operating status
profile	Display poe scheduling profile name
schedule	schedule list
service	Display PoE service status for the switch
status	Display PoE status for the switch (see "All PoE Port Status" below)
1/1-4	PoE ports (1/1-4)
id	Profile id
1-16	Profile id (1..16) (1..16)
port	Display PoE status for one switch port
ports	Display PoE status for all switch ports

Example:

```
SESPM1040# show poe apr
------------------------------------------------------------------------
Port  Ping Check  Ping IP Address  Interval  Retry   Failure Action
------------------------------------------------------------------------
1     enable      192.168.1.30     30        3       Reset and Log & Trap
2     enable      192.168.1.40     30        3       Log & Trap
3     enable      192.168.1.30     30        3       Reset and Log & Trap
4     enable      192.168.1.50     30        3       Log & Trap
SESPM1040# show poe profile id 1
Profile 1 Name: profile1
SESPM1040# show poe schedule
Profile:  1 saturday     09:00   reset
SESPM1040# show poe config port 1/4
--------------------------------
Port configuration
--------------------------------
SESPM1040# configure terminal
SESPM1040(config)# interface GigabitEthernet 1/4
SESPM1040(config-if-1/4)# poe opermode ?
  Operation Mode  opermode
(bt_90w/bt_60w/bt_30w/bt_15w/bt_90w_legacy/bt_60w_legacy/bt_30w_legacy/bt_15w_legacy/bt_90w
_poh_legacy/at_type2_60w_legacy/at_type3_cdp_60w_legacy/bt_90w_legacy_2p_45w)
SESPM1040(config-if-1/4)# poe opermode bt_30w_legacy
Operation Mode
opermode ?(bt_90w/bt_60w/bt_30w/bt_15w/bt_90w_legacy/bt_60w_legacy/bt_30w_legacy/bt_15w_leg
acy/bt_90w_poh_legacy/at_type2_60w_legacy/at_type3_cdp_60w_legacy/bt_90w_legacy_2p_45w)
SESPM1040(config-if-1/4)# do show poe config ports
-------------------------------------------
Port configuration
-------------------------------------------
port        mode        priority    opermode                max power
1           Enabled     Critical    bt_90w                  90
2           Enabled     High        bt_90w                  90
3           Enabled     Low         bt_90w                  90
4           Enabled     Low         bt_90w                  90
# show poe status
-------------------------------------------------------------------------------
       PD      Power       Power       Power   Current Port        Port
Port   Class   Requested   Allocated   Used    Used    Priority    Status
-------------------------------------------------------------------------------
1      -         0.000       0.000     0.000     0.000   Low       Port Off (User configured)
2      1         4.000       4.000     1.000     0.019   Critical  PD Detected (2-Pair, IEEE
802.3af/at)
3      1         4.000       4.000     1.000     0.018   High      PD Detected (2-Pair, IEEE
802.3af/at)
4      8        90.000      90.000     2.600     0.048   Low       PD Detected (4-Pair, IEEE 802.3bt
Single Signature)
# show poe service
                  Service    Config  Status
-----------------------------------------------------------------------
Port: 1
                      APR  Disabled  Off
                Scheduler  Disabled  Off
       Port Power Monitor   Enabled  Monitoring
  PSU Temperature Monitor   Enabled  Monitoring - PSU temperature:  42.5C
```

```
      Total Power Monitor   Enabled  Monitoring -  0.0W
                PoE State         -  On
------------------------------------------------------------------------
Port: 2
                     APR  Disabled  Off
               Scheduler  Disabled  Off
       Port Power Monitor   Enabled  Monitoring
  PSU Temperature Monitor   Enabled  Monitoring - PSU temperature:  42.5C
      Total Power Monitor   Enabled  Monitoring -  1.0W
                PoE State         -  On
------------------------------------------------------------------------
Port: 3
                     APR  Disabled  Off
               Scheduler  Disabled  Off
       Port Power Monitor   Enabled  Monitoring
  PSU Temperature Monitor   Enabled  Monitoring - PSU temperature:  42.5C
      Total Power Monitor   Enabled  Monitoring -  1.0W
                PoE State         -  On
------------------------------------------------------------------------
Port: 4
                     APR  Disabled  Off
               Scheduler  Disabled  Off
       Port Power Monitor   Enabled  Monitoring
  PSU Temperature Monitor   Enabled  Monitoring - PSU temperature:  42.5C
      Total Power Monitor   Enabled  Monitoring -  3.1W
                PoE State         -  On
SESPM1040#
SESPM1040# show poe input
Auxiliary Power:                4.839W
PoE Input Power Requested:     72.000W
PoE Input Power Allocated:     72.000W
PSE Power Available:           62.161W
SESPM1040#
# show poe passive status
Passive PoE Config:            Disabled
Passive PoE Overload State:    Disabled
Passive PoE Status:            Passive PoE overload unknown status -1
Passive PoE Underload Config:  Disabled
Passive PoE Underload State:   Disabled
Passive PoE Underload Status:  Underload Protection is Disabled
Passive PoE Power:              0.000W
Passive PoE Device Power:       0.000W
Passive PoE Input Voltage:      0.000V
Total PSE Power Available:      0.000W
#
```

Messages:

No scheduled tasks displays if no PoE Schedule tasks are configured.

ARP Status: *APR Failure - PoE Off, Discovery failed after 20 minutes, please verify configuration*

All PoE Port Status

Port Status	Description
Port Off (Mains Voltage above Max Voltage Limit)	Mains voltage is higher than Max Voltage limit.
Port Off (Insufficient Mains Voltage)	Mains voltage is lower than Min Voltage limit.
Port Off (Disable all ports HW pin set, please power cycle)	Hardware pin disabled all ports. If power cycling does not clear this condition, contact Technical Support.
Port Off (non-existent port, please power cycle)	This condition should not occur. If power cycling does not clear this condition, contact Technical Support.
Undefined port (please power cycle)	Internal port mapping error. If power cycling does not clear this condition, contact Technical Support.
Port Off (Internal HW fault)	Internal port not responding. If power cycling does not clear this condition, contact Technical Support.
Port Off (User configured)	Check PoE Service Status to see why port is off. You may have turned off PoE power via CLI, Web UI, or the Switch Manager Mobile App.
Port Off Momentarily (Detection in process)	Classification is in progress.
Port Off (non-802.3AF/AT PD detected)	Non-standard PD is connected to this port.
Port Off (Underload)	Underload state according to 802.3AF/AT (current is below Imin).
Port Off (Overload)	Overload state according to 802.3AF/AT (current is above Icut).
Port Off (Power budget exceeded)	Internal Power Management disabled port due to insufficient power.
Port Off Momentarily (Configuration change in progress)	Port configuration or Operation Mode were changed and port is classifying.
Port Off (Port receiving voltage, check remote device)	Port is off due to external source applying power.
Port Off (Improper capacitor, short or non-PD detected)	Improper capacitor value or short on attached PD.
Port Off (Discharged load)	Other port is receiving voltage and causing this port to power off.
Port Off (Short detected)	Short detected in PD
Port Off (Over temperature at Port)	Port temperature protection mechanism was activated.
Port Off (Over temperature at PSE)	PSE internal die temperature above safe operating limit.
Unknown Device	Currently not used.
Power Denied (Power management: calculated power > power limit)	Calculated power exceeds power limit.
Power Denied (Port requested more power than user-configuration allows)	PD requested more power than user predefined power value.
Power Denied (Port requested more power than available)	PD requested more power than port is capable of providing (ex: PoH PD over M device port).
Port Off (Illegal Class detected)	PD class is illegal.
Port Off Post-Crash (Overload/Underload/Short detected)	Port off due to SESPM crash. If power cycling does not clear this condition, contact support.
Port Off Post-Crash	Port off due to SESPM crash, internal configuration set to forced off after crash. Ports are not configured in this manner, please contact support if this error occurs.
Port Off Post-Crash (Previously not providing power)	Port off due to SESPM crash. If power cycling does not clear this condition, contact support.
Force Power Crash Error	SESPM crashed while port was in Forced power mode.
Port Off (During recovery, Underload detected)	During crash recovery, port was disabled due to UDL. If power cycling does not clear this condition, contact support.

Port Off (During recovery, PG Event)	During crash recovery, port was disabled due to PG event. If power cycling does not clear this condition, contact support.
PD Detected (2-Pair non-IEEE on 2-Pair port)	Non-IEEE PD detected in BT 2P mode.
PD Detected (2-Pair IEEE 802.3bt on 2-Pair port)	Detected compliant PD in BT 2P mode.
PD Detected (2-Pair only, non-IEEE)	Signature failure on 2P (out of 4P), only powering on 2P.
PD Detected (2-Pair, non-IEEE)	Non-IEEE PD detected in BT 4P mode, only powering on 2P.
PD Detected (4-Pair, non-IEEE)	Non-IEEE PD detected in BT 4P mode, powering on 4P.
PD Detected (2-Pair, IEEE 802.3af/at)	SSPD detected in 4P mode, operating in 2P because Class <= 4.
PD Detected (4-Pair, IEEE 802.3bt Single Signature)	SSPD detected in 4P mode, operating in 4P because Class > 4.
PD Detected (2-Pair, IEEE 802.3bt Dual Signature in 1st phase)	DSPD detected in 4P mode, operating in 2P due to 4P candidate validation in two cycles.
PD Detected (2-Pair, IEEE 802.3bt Dual Signature)	DSPD detected in 4P mode, operating in 2P.
PD Detected (4-Pair, IEEE 802.3bt Dual Signature)	DSPD detected in 4P mode, operating in 4P.
Power Forced On (2-Pair, BT)	Delivering forced power in 2P mode.
Power Forced On (4-Pair, BT)	Delivering forced power in 4P mode.
Power Forced (Error, BT)	In Forced power mode, at least 2P stopped delivering power due to error.
No PD Detected, Connection check error	Invalid connection check signature detected in 4P mode.
No PD Detected, Open	Port is not connected.

SSPD = Series Surge Protection Device

DSPD = Data Series Surge Protection Device

Command: **poe apr**

Description: Set PoE Auto Power Reset (APR) parameters. This command lets you enable and configure a ping check of connected powered devices. The Auto Power Reset feature provides savings by allowing connected powered devices to be remotely monitored and reset (rebooted) in the event they become unresponsive, eliminating the need to dispatch technicians for simple power issues.

Mode: Interface Config mode.

Syntax : **poe** apr <failure | interval | ip | ping-check | retries>

Parameters:

failure	poe apr retries
interval	poe apr interval
ip	poe apr IP
ping-check	poe ping check
retries	poe apr retries
10-99	apr interval (1..100)
A.B.C.D	apr ip
enable	enable ping check subcommand
disable	disable ping check subcommand
1-5	apr retries (1..5)
failure action	failure action (LogTrap/ResetLogTrap)

Example:

```
SESPM1040(config-if-1/3)# poe apr interval 20
SESPM1040(config-if-1/3)# poe apr retries 4
SESPM1040(config-if-1/3)# poe apr failure LogTrap
SESPM1040(config-if-1/3)# poe apr ping-check enable
SESPM1040(config-if-1/3)# poe apr ip 192.168.1.100
# show poe status
--------------------------------------------------------------------------------
        PD      Power       Power       Power   Current Port        Port
Port    Class   Requested   Allocated   Used    Used    Priority    Status
--------------------------------------------------------------------------------
1       -         0.000       0.000     0.000     0.000   Low       Port Off (User configured)
2       1         4.000       4.000     1.000     0.019   Critical  PD Detected (2-Pair, IEEE
802.3af/at)
3       1         4.000       4.000     1.000     0.018   High      PD Detected (2-Pair, IEEE
802.3af/at)
4       8        90.000      90.000     2.600     0.048   Low       PD Detected (4-Pair, IEEE 802.3bt
Single Signature)
# show poe config port 1/1
--------------------------------
Port configuration
--------------------------------
port         1
mode         Disabled
priority     Low
opermode     bt_60w
max power    90
# show poe config port 1/2
--------------------------------
Port configuration
--------------------------------
```

```
port         2
mode         Enabled
priority     Critical
opermode     bt_90w
max power    90
# show poe config port 1/3
--------------------------------
Port configuration
--------------------------------
port         3
mode         Enabled
priority     High
opermode     bt_90w
max power    90
#
```

Command: **poe maxpower**

Description: Set maximum PoE power for a specific interface.

Mode: Interface Config mode.

Syntax: **poe** maxpower <maximum power in Watts)

Parameters: 0-90 maxpower (0..90 W)

Example:

```
SESPM1040(config-if-1/1)# poe maxpower
  0-90  maxpower (0..90)

SESPM1040(config-if-1/1)# poe maxpower 90
SESPM1040(config-if-1/1)#
```

Command: **poe mode**

Description: Set the PoE mode of operation for a specified interface.

Mode: Interface Config mode.

Syntax: **poe** mode < enable/disable/force>

Parameters: Disable, Enable, Force privilege (enabled/disabled/force). In Force mode, the switch port will power up the linked PD without any detect/negotiate mechanism (PD limited to 30W).

When the port changes to Force mode, the port's PoE LED will light immediately. Select Force mode for devices that do not do PoE negotiation (e.g., for a PoE DSRC RSU).

Note: Only connect PDs which support a power input of 48~56V to prevent damage to PDs.

Example:

```
SESPM1040(config-if-1/3)# poe mode enable
SESPM1040(config-if-1/3)# poe mode disable
SESPM1040(config-if-1/3)# poe mode force
SESPM1040(config-if-1/3)#
```

Command: **poe opermode**

Description: Configure PoE port Operation Mode for ports 1-4. See "Operation Mode Details" below for more information. **Note**: the default Operation Mode is IEEE 802.3bt 90W but the switch should recognize other IEEE 802.3 devices. If the device to be powered is not recognized, it may be a non-standard device and you may need to manually change the Operation Mode to the correct mode.

Mode: Interface Config mode.

Syntax: **opermode** <mode>

(bt_90w/bt_60w/bt_30w/bt_15w/bt_90w_legacy/bt_60w_legacy/bt_30w_legacy/bt_15w_legacy/bt_90w_poh_legacy/at_type2_60w_legacy/at_type3_cdp_60w_legacy/bt_90w_legacy_2p_45w)

Parameters:

bt_90w	IEEE 802.3bt -- 90 Watts (default FW v3.0.0 and after)
bt_60w	IEEE 802.3bt -- 60 Watts (default before FW v3.0.0)
bt_30w	IEEE 802.3bt -- 30 Watts
bt_15w	IEEE 802.3bt -- 15 Watts
bt_90w_legacy	IEEE 802.3bt -- 90 Watts – Legacy device support
bt_60w_legacy	IEEE 802.3bt -- 60 Watts – Legacy device support
bt_30w_legacy	IEEE 802.3bt -- 30 Watts - Legacy device support
bt_15w_legacy	IEEE 802.3bt -- 15 Watts – Legacy device support
bt_90w_poh_legacy	IEEE 802.3bt -- 90 Watts Power over HDBaseT - Legacy device support
at_type2_60w_legacy	IEEE 802.3at Type 2 -- 60 Watts – Legacy device support
at_type3_cdp_60w_legacy	IEEE 802.3at Type 3 -- 60 Watts – Cisco CDP – Legacy device support
bt_90w_legacy_2p_45w	IEEE 802.3bt at 90 Watts – 2-Pair -- 45 Watts– Legacy device support

Example:

```
SESPM1040(config-if-1/1)# do show poe config port 1/1
--------------------------------
Port configuration
--------------------------------
port         1
mode         Enabled
priority     low
max power    90
SESPM1040(config-if-1/1)# poe opermode bt_60w
SESPM1040(config-if-1/1)# do show poe config port 1/1
--------------------------------
Port configuration
--------------------------------
port         1
mode         Enabled
priority     low
max power    90
SESPM1040(config-if-1/1)#
```

PoE Operation Mode Details

PoE Operation Mode, set with the `poe opermode`' CLI command or on the PoE Configuration web page, controls what the port presents to an attached PD. The available modes are:

Mode	4Pair Compliance	4Pair PSE Power Available	2Pair Compliance	2Pair PSE Power Available	Legacy Capacitor Detection	Notes
bt_90w	Type 4/Class 8	90w	Type 3	30w	no	
bt_60w	Type 3/Class 6	60w	Type 3	30w	no	
bt_30w	Type 3/Class 4	30w	Type 3	30w	no	
bt_15w	Type 3/Class 3	15w	Type 3	15w	no	
bt_90w_legacy	Type 4/Class 8	90w	Type 3	30w	yes	
bt_60w_legacy	Type 3/Class 6	60w	Type 3	30w	yes	
bt_30w_legacy	Type 3/Class 4	30w	Type 3	30w	yes	
bt_15w_legacy	Type 3/Class 3	15w	Type 3	15w	yes	
bt_90w_poh_legacy	All Classes + IEEE Detection	90w	All Classes + IEEE Detection	45w	no	90w/45w PoH like on all classes - does not handle legacy detection - to be renamed
at_type2_60w_legacy	Type 2/Class 6	60w	Type 2	30w	yes	Type 2 non-standard BT with special AT behavior
at_type3_cdp_60w_legacy	Type 3/Class 3	60w	Type 3	30w	yes	CDP required to activate 4Pair 60w, coming in future release
bt_90w_legacy_2p_45w	Type 4/Class 8	90w	Type 3/Class 5	45w	yes	2Pair special class 5 behavior

CLI Example:

```
(config-if-1/5)# poe opermode ?
  Operation Mode  opermode (bt_90w/bt_60w/bt_30w/bt_15w/bt_90w_legacy/bt_60w_leg
acy/bt_30w_legacy/bt_15w_legacy/bt_90w_poh_legacy/at_type2_60w_legacy/at_type3_c
dp_60w_legacy/bt_90w_legacy_2p_45w)
 (config-if-1/5)# poe opermode bt_60w
(config-if-1/5)#
```

Command: **passive**

Description: 24V Passive PoE Module Commands; see the "*SESPM-2P-24V-CP Passive PoE Port Module Option Install Guide*".

Command: **poe priority**

Description: Configure PoE priority for a specified interface.

Mode: Interface Config mode.

Syntax: **poe** priority < low/high/critical >

Parameters: priority name privilege (low/high/critical). Priority represents the priority of the PD device, or the power priority associated with the PSE type device's port that is sourcing the power. There are three levels of power priority: Critical, High, and Low. If the power priority is not known it is indicated as "Unknown". The default is Low priority.

Example:

```
SESPM1040(config-if-1/2)# poe priority high
SESPM1040(config-if-1/2)# poe priority critical
SESPM1040(config-if-1/2)#
```

PoE Port Power Shutdown Order

The -AC powered version of the switch is capable of supplying 180W total PoE across all ports, and the -DC powered version of the switch is capable of supplying 240W total PoE across all ports with up to 90W per individual port. The switch should be able to supply 90W to two ports (180W) under all normal circumstances.

It is recommended that Port 1 and Port 3 be used for the most critical devices and set to Critical PoE Port Priority to ensure power remains up on those ports in the event the connected devices attempt to draw too much power.

If the switch exceeds the 180/240W PoE limit, then it will begin to shut power down on ports according to PoE Port Priority settings (Low Priority ports first, then High Priority ports, then Critical Priority ports last). If ports are set to the same priority, then the order of shutdown will be Port 4 → Port 2 → Port 3 → Port 1.

Order of Port Power Shutdown in Case of Overpowering of Connected Devices

Configured Priority	**PoE Port**			
	Port 1	Port 2	Port 3	Port 4
Low	4	2	3	1
High	8	6	7	5
Critical	12*	10	11*	9

For the PoE powered version (-PD), the same priority rules apply, although the maximum total power is 80W.

There are temperature sensors within the switch to monitor the temperature inside the switch. If the power supply within the switch gets too hot, all ports will be shut down regardless of priority. This is to prevent the switch from overheating and causing permanent damage.

Command: **poe schedule**

Description: Configure PoE schedule for a specified interface.

Mode: Interface Config mode.

Syntax: **poe** schedule < disabled | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16>

Parameters: Disabled 1-16 privilege (disabled/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16)

Example:

```
SESPM1040(config-if-1/2)# poe schedule disabled
SESPM1040(config-if-1/2)# poe schedule 15
SESPM1040(config-if-1/2)# poe schedule disabled
SESPM1040(config-if-1/2)#
```

NFC Commands

Commands for configuring Near Field Communications. You can display and set NFC state.

Command: **nfc state**

Description: Set NFC state. Enable/disable NFC for a specified interface. The default is enabled.

Mode: Interface Config mode.

Syntax: **nfc** state <enable | disable>

Parameters: enable NFC enabled
disable NFC disabled

Example:

```
SESPM1040(config)# nfc ?
  state  Set NFC state

SESPM1040(config)# nfc state ?
  select  NFC state (enable/disable)

SESPM1040(config)# nfc state enable
SESPM1040(config)# do show nfc
NFC Enabled
SESPM1040(config)#
```

Command: **show nfc**

Description: Display NFC state.

Mode: Exec mode.

Syntax: **show** nfc <cr>

Parameters: None.

Example:

```
SESPM1040# show nfc
NFC Enabled
SESPM1040#
```

Virtual Cable Test (VCT) Commands

The SESPM1040-541-LT-xx Virtual Cable Tester uses TDR (Time Domain Reflectometry) for remote identification of potential cable malfunctions. VCT detects and reports potential cabling issues such as pair swaps, pair polarity, and excessive skew. It can also detect cable opens, shorts, or impedance mismatch in the cable and report accurately within one meter the distance to the fault.

The CLI displays and tests a single selected port. Note that Link can be lost during the test.

Command: **show vct**

Description: Display Virtual Cable Test results.

Mode: Exec mode.

Syntax: **show** vct port (1..6)

Parameters: port or range of ports (1,4-6) port

Example:

```
SESPM1040-AC PLM 1# show vct 1
-----------------------------------------------
Pair        Status         Length (meters)
-----------------------------------------------
A           Not Started       0
B           Not Started       0
C           Not Started       0
D           Not Started       0
SESPM1040-AC PLM 1# show vct 5
-----------------------------------------------
Pair        Status         Length (meters)
-----------------------------------------------
A           Pair Open         8
B           Pair Open         8
C           Pair Open         8
D           Pair Open         10
SESPM1040-AC PLM 1#

PLM SESPM-PD 1# show vct 1
-----------------------------------------------
Pair        Status         Length (meters)
-----------------------------------------------
A           Not Started       0
B           Cross Pair Short  0
C           Cross Pair Short  0
Segmentation fault
PLM SESPM-PD 1#
```

Command: **vct**

Description: Run Virtual Cable Test (VCT). Use the VCT test to determine if cabling is at fault when you cannot establish a link for a switch copper port.

Mode: Config mode.

Syntax: **vct** < start | port >

Parameters:

start	start vct
1-6	port (1..6)
[,-][1-6]|[1-6]+	port or range of ports (1,4-6)

Example:

```
(config)# vct start 1-6
------------------------------------------------
Port 1
Pair        Status         Length (meters)
------------------------------------------------
A           Pair Ok           0
B           Pair Ok           0
C           Pair Ok           0
D           Pair Ok           0
------------------------------------------------
Port 2
Pair        Status         Length (meters)
------------------------------------------------
A           Pair Ok           0
B           Pair Ok           0
C           Pair Ok           0
D           Pair Ok           0
------------------------------------------------
Port 3
Pair        Status         Length (meters)
------------------------------------------------
A           Pair Ok           0
B           Pair Ok           0
C           Pair Ok           0
D           Pair Ok           0
------------------------------------------------
Port 4
Pair        Status         Length (meters)
------------------------------------------------
A           Pair Open         10
B           Pair Open         8
C           Pair Open         9
D           Pair Open         8
------------------------------------------------
Port 5
Pair        Status         Length (meters)
------------------------------------------------
A           Pair Open         8
B           Pair Open         10
C           Pair Open         9
D           Pair Open         10
Port 6 Not present
(config)#
```

Cable Test Results

```
/*
-----------------------------------------------
Pair        Status         Length (meters)
-----------------------------------------------
A           Not Started       0
B           Not Started       0
C           Not Started       0
D           Not Started       0
POE++#

Port    Pair A  Length A     Pair B  Length B    Pair C  Length C    Pair D  Length D
15      OK      30           OK      30          OK      30          OK      30
*/
```

Virtual Cable Test Status

Not Started: The Virtual Cable Test has not begun yet.

Same Pair Short: A short circuit was detected within the same pair tested.

Cross Pair Short: A short circuit was detected between the tested pair and an untested pair.

Pair Busy: The Virtual Cable Test was not done because the pair was detected as busy.

Port: The Port number tested.

Pair: The status of the cable pair tested.

Pair OK: Correctly terminated pair.

Pair Open: Open pair detected.

Pair Short: Shorted pair detected.

Abnormal: incorrect termination detected.

Short x: Cross-pair short to pair x detected (where x is pair A, B, C, or D).

Cross x: Abnormal cross-pair coupling with pair x detected (where x is pair A, B, C, or D).

Length: The length (in meters) of the cable pair. The resolution is 3 meters.

Virtual Cable Test Messages

Port x Not present

subAgent is not ready.

Syntax error: Illegal parameter

Tamper Detection Commands

The switch includes tamper detection. A 3-axis linear accelerometer detects if the switch has exceeded user-selected vibration limits, indicating someone may be tampering with the switch or if the switch mount has somehow been compromised.

Tamper detection is turned off by default. The tamper parameters are state (enable/disable) and threshold 1-100 with 1 being the least sensitive (i.e., takes the most impact to cause an event). Tamper detection will generate SNMP traps and syslog entries. Tamper Event Detected is a binary state: True indicates an event was detected; False indicates no event was detected.

Command: **tamper**

Description: Enable, disable, and configure tamper detection state and threshold parameters.

Mode: Config mode.

Syntax: **tamper** < state |threshold>

Parameters:

state	Tamper Detection State
threshold	Tamper Detection Threshold
select	state (enable/disable)
1-100	threshold (1..100)

Example:

```
(config)# do show tamper
Tamper Detection
----------------
Tamper Detection is Enabled
Tamper Event: True
Threshold = 100
(config)# tamper threshold 88
(config)# do show tamper
Tamper Detection
----------------
Tamper Detection is Enabled
Tamper Event: False
Threshold = 88
(config)# tamper state enable
(config)# do show tamper
Tamper Detection
----------------
Tamper Detection is Enabled
Tamper Event: False
Threshold = 1
(config)# tamper state disable
(config)# do show tamper
Tamper Detection
```

```
----------------
Tamper Detection is Disabled
Tamper Event: False
Threshold = 1
(config)#
```

Command: **show tamper**

Description: Display tamper detection settings.

Mode: Exec mode.

Syntax: **show tamper** <cr>

Parameters: None.

Example:

```
SESPM1040-AC-PLM1# show tamper
Tamper Detection
----------------
Tamper Detection is Disabled
Tamper Event: False
Threshold = 70
SESPM1040-AC-PLM1#
```

Tamper Detection Messages

Tamper Interrupt Detected.....\n
OUT_Z_H = %-2d (0x%02X)\n
send Tamper trap ...\n");
syslog(LOG_NOTICE, "Digital IO - Tamper Detected Trap\n
Tamper detection interrupt\n
Tamper detection interrupt"); // add status reg

Error - pthread_create() return code: %d\n",iret1);
519 exit(EXIT_FAILURE);
printf("pthread_create() for thread 1 returns: %d\n
Tamper monitor disabled
Tamper monitor restarting...\n
DEBUGMSGTL(("tamper-demon", "%s:%d more than 1 matching rows.....\n
Failed to read configuration value: reg0\n

DMI (Diagnostic Monitoring Interface) Commands

The switch can display electrical and vendor information specific to an SFP module present in an SFP port. DMI values are shown for ports 5 and 6. The switch polls the SFPs every 30 seconds to test for threshold and alarm events. Events detected will cause SNMP traps and syslog entries.

Command: **show dmi**

Description: Display Diagnostic Monitoring Interface settings.

Mode: Exec mode.

Syntax: **show dmi** <cr>

Parameters: None.

Example:

```
# show dmi
-----------------------------------------
DMI Information  -  Port 5
-----------------------------------------
Vendor name          : Transition
Vendor PN            : TN-SFP-SXD
Vendor Serial Number : 8672322
Vendor revision      : 0000
Data Code            : 110908
Vendor revision      : 0000
Data Code            : 110908
-------------------------------------------------------------------------
                        High Alarm  Low Alarm   High Warn    Low Warn
Type          Current   Threshold   Threshold   Threshold    Threshold
-------------------------------------------------------------------------
Temperature(C) +45.8       +95.0     -118.6      +85.0        -123.6
Voltage(V)     3.2704      3.6000    3.0000      3.5000       3.1000
Tx Bias(mA)    8.2         39.0      1.2         29.0         3.2
Tx Power(mW)   0.2232      0.5012    0.1000      0.3981       0.1259
Rx Power(mW)   0.0008      0.6310    0.0126      0.5012       0.0200
Tx Power(dBm)   -6.56       -3.00     -10.00      -4.00        -9.00
Rx Power(dBm)   -30.46      -2.00     -19.00      -3.00        -16.99
-----------------------------------------
DMI Information  -  Port 6
-----------------------------------------
Vendor name          : Transition
Vendor PN            : TN-SFP-SXD
Vendor Serial Number : 8672426
Vendor revision      : 0000
Data Code            : 111110
Vendor revision      : 0000
Data Code            : 111110
-------------------------------------------------------------------------
                        High Alarm  Low Alarm   High Warn    Low Warn
Type          Current   Threshold   Threshold   Threshold    Threshold
-------------------------------------------------------------------------
Temperature(C) +40.4       +95.0     -118.6      +85.0        -123.6
Voltage(V)     3.2752      3.5840    3.0000      3.5000       3.0976
```

```
Tx Bias(mA)    8.1         39.0      1.2         29.0         3.2
Tx Power(mW)   0.2024      0.5012    0.1000      0.3981       0.1259
Rx Power(mW)   0.0008      0.6310    0.0126      0.5012       0.0200
Tx Power(dBm)   -6.90       -3.00     -10.00      -4.00        -9.00
Rx Power(dBm)   -30.46      -2.00     -19.00      -3.00        -16.99
#
```

Messages: *SFP is not present in port 5, SFP is not present in port 6*

Parameter descriptions:

Vendor Name: Displays the name of the SFP module vendor (e.g., *Transition*).

Vendor PN: Displays the vendor part number or product name of the SFP module (e.g., *TN-SFP-SXD*).

Vendor Serial Number: Displays the serial number of the SFP (e.g., *8672426* or *TWDW34Z001*).

Vendor revision: Displays the revision of the SFP (e.g., *2.0*).

Data Code: Displays the date the SFP module was made (e.g., *111110* or *160730*).

The table displays Current, High Alarm Threshold, Low Alarm Threshold, High Warn Threshold, Low Warn Threshold for each of the following parameters:

Temperature(C): Displays the current internally measured temperature of SFP module in degrees Celsius (e.g., *37.968*). Temperature accuracy is vendor specific but must be better than 3 degrees Celsius over specified operating temperature and voltage.

Voltage(V): Displays the working DC voltage of SFP module (e.g., *3.2776*). This is the internally measured SFP transceiver supply voltage. Accuracy is vendor specific but must be better than 3 percent of the manufacturer's nominal value over specified operating temperature and voltage. Note that in some transceivers, transmitter supply voltage and receiver supply voltage are isolated. In that case, only one supply is monitored. Refer to the SFP specification for more detail.

TX Bias(mA): Displays the Bias current of SFP module (e.g., *4.304*). This is the measured TX bias current in mA. Accuracy is vendor specific but must be better than 10 percent of the manufacturer's nominal value over specified operating temperature and voltage.

TX Power(mW): Displays the transmit power of SFP module (e.g., *0.2024* mW). This is the measured coupled TX output power in mW. Accuracy is vendor specific but must be better than 3dB over specified operating temperature and voltage. Data is assumed to be based on measurement of a laser monitor photodiode current. Data is not valid when the transmitter is disabled.

RX Power(mW): Displays the receive power of SFP module (e.g., *0.0001*). This is the measured received optical power in mW. Absolute accuracy is dependent upon the exact optical wavelength. For the vendor specified wavelength, accuracy should be better than 3dB over specified temperature and voltage. This accuracy should be maintained for input power levels up to the lesser of maximum transmitted or maximum received optical power per the appropriate standard. It should be maintained down to the minimum transmitted power minus cable plant loss (insertion loss or passive loss) per the appropriate standard. Absolute accuracy beyond this minimum required received input optical power range is vendor specific.

Tx Power(dBm): Shows the transmit power of the SFP module (e.g., -2.30 dBm). Displays the measured coupled TX output power in mW. Accuracy is vendor specific but must be better than 3dB over specified operating temperature and voltage. Data is assumed to be based on measurement of a laser monitor photodiode current. Data is not valid when the transmitter is disabled.

Rx Power(dBm): Shows the receiver power of the SFP module (e.g., none). Displays the measured received optical power in mW. Absolute accuracy is dependent upon the exact optical wavelength. For the vendor specified wavelength, accuracy should be better than 3dB over specified temperature and voltage. This accuracy should be maintained for input power levels up to the lesser of maximum transmitted or maximum received optical power per the appropriate standard. It should be maintained down to the minimum transmitted power minus cable plant loss (insertion loss or passive loss) per the appropriate standard. Absolute accuracy beyond this minimum required received input optical power range is vendor specific.

MAC Address Table Commands

The switch lets you configure and view MAC Address Table parameters.

Switching of frames is based on the DMAC address contained in the frame. The switch builds a table that maps MAC addresses to switch ports for knowing which ports the frames should go to (based on the DMAC address in the frame). This table contains both static and dynamic entries. Static entries are configured by the network administrator if they want to do a fixed mapping between the DMAC address and switch ports.

The frames also contain a MAC address (SMAC address), which shows the MAC address of the equipment sending the frame. The SMAC address is used by the switch to automatically update the MAC table with these dynamic MAC addresses. Dynamic entries are removed from the MAC table if no frame with the corresponding SMAC address has been seen after a configurable age time.

Learning Mode: The switch maintains a MAC address table for switching frames efficiently between VLAN ports. When the switch receives a frame, it associates the MAC address of the transmitting interface with the recipient VLAN and port. When MAC address learning is enabled for the recipient port, the entry is added to the MAC address table. When MAC address learning is not enabled, the entry is not added to the table.

Aging Time: Defines the time period an entry is in the table, measured from the most recent reception of a frame on the entry's VLAN from the specified MAC address. The switch removes entries when their presence in the MAC address table exceeds this aging time setting. The Aging time range is 10 - 1,000,000 seconds; the default is 300 seconds (five minutes). **Note** that the CLI has 15-3000 seconds as the valid range.

Command: **show mac address-table**

Description: Display MAC Address Table settings.

Mode: Exec mode.

Syntax: **show mac** address-table <cr>
show mac address-table aging-time
show mac address-table static

Parameters:

aging-time	Show Aging Time
static	All static mac addresses
<cr>	

Example 1:

```
# show mac address-table static
-----------------------------------------------
Type      VID   Mac Address         Port
-----------------------------------------------
Static     1    00:00:00:00:00:00   4
Static     1    00:C0:F2:58:3F:08   6
#
```

Example 2:

```
# show mac address-table
-----------------------------------------
Aging Time:        300
-----------------------------------------
Mac Address         Port    Type      Age
-----------------------------------------
```

```
00:C0:F2:46:87:38   2       Dynamic   18
00:C0:F2:58:3F:08   0       Static    0
00:C0:F2:5A:4E:54   2       Dynamic   908
00:C0:F2:4C:43:A2   2       Dynamic   18
00:C0:F2:45:13:41   2       Dynamic   58
00:08:E3:FF:FC:28   2       Dynamic   22
00:C0:F2:57:59:25   2       Dynamic   2701
00:C0:F2:56:16:40   2       Dynamic   5891
00:C0:F2:49:45:81   2       Dynamic   25
00:C0:F2:47:A6:F8   2       Dynamic   104
00:C0:F2:44:AC:EE   2       Dynamic   1618
58:97:BD:F6:0E:E4   2       Dynamic   154
00:C0:F2:54:B9:40   2       Dynamic   5851
00:C0:F2:5A:49:81   2       Dynamic   911
00:C0:F2:00:99:DC   2       Dynamic   2980
00:C0:F2:58:3F:60   1       Dynamic   24029
00:40:8C:7D:81:9A   2       Dynamic   5191
00:C0:F2:56:15:20   2       Dynamic   7999
00:C0:F2:56:16:58   2       Dynamic   5891
#
# show mac address-table aging-time
-----------------------------------------
Aging Time:         15
#
```

Command: **mac**

Description: Configure MAC Address table parameters.

Mode: Config mode.

Syntax: **mac** <address-table> <aging-time >

mac address-table static <mac> <port>

mac address-table static <mac> <vlan> <port>

Parameters:

address-table	MAC table entries/configuration
aging-time	MAC address aging time in seconds
flush	Flush MAC learning table
delete-static	MAC table entries
static	MAC table entries
15-3000	Aging Time (15..3000 seconds)
0a:0b:0c:0d:0e:0f	48 bit MAC address: xx:xx:xx:xx:xx:xx
1-6	Port 1-6 (1..6)
1-4095	VLAN IDs 1-4095 (1..4095)
PORT_LIST	Port list in 1/1-26
PORT_LIST	Port list in 1/1-26

Example 1:

```
(config)# mac agingtime 200
Aging Time Set To: 200
```

```
(config)# exit
# show mac address-table
------------------------------------------
Aging Time:        200
------------------------------------------
Mac Address         Port    Type      Age
------------------------------------------
00:1B:11:B2:6D:4B   1       Dynamic   9
00:C0:F2:6A:90:50   0       Static    0
#
```

Example 2:

```
# show mac address-table static
-------------------------------------------------
Type      VID   Mac Address         Port
-------------------------------------------------
Static     1    00:00:00:00:00:00   4
Static     1    00:C0:F2:58:3F:08   6
# show mac address-table ?
  static  All static mac addresses
  <cr>

# configure terminal
(config)# mac ?
  address-table  MAC table entries/configuration
  agingtime      Aging Time

(config)# mac address-table ?
  aging-time     Mac address aging time
  delete-static  MAC table entries
  static         MAC table entries

 (config)# mac address-table static
  0a:0b:0c:0d:0e:0f  48 bit MAC address: xx:xx:xx:xx:xx:xx

(config)# mac address-table static 11:22:33:44:55:66 2
(config)# mac address-table ?
  aging-time     Mac address aging time
  delete-static  MAC table entries
  static         MAC table entries

(config)# mac address-table delete-static ?
  0a:0b:0c:0d:0e:0f  48 bit MAC address: xx:xx:xx:xx:xx:xx

(config)# do show mac address-table static
-------------------------------------------------
Type      VID   Mac Address         Port
-------------------------------------------------
Static     1    00:00:00:00:00:00   4
Static     1    00:C0:F2:58:3F:08   6
Static     1    11:22:33:44:55:66   2
(config)# mac address-table delete-static
  0a:0b:0c:0d:0e:0f  48 bit MAC address: xx:xx:xx:xx:xx:xx

(config)# mac address-table static 11-22-33-44-55-66 5
SetStaticMac: 11-22-33-44-55-66 5
(config)#
```

Example 3:

```
(config)# do show mac address-table static
-------------------------------------------------
Type      VID   Mac Address         Port
-------------------------------------------------
Static     1    00:C0:F2:58:3F:08   3
Static     1    11:22:33:44:55:66   5
Static     1    00:00:00:00:00:00   5
(config)# mac address-table delete-static
  0a:0b:0c:0d:0e:0f  48 bit MAC address: xx:xx:xx:xx:xx:xx

(config)# mac address-table delete-static 00-00-00-00-00-00 ?
  <cr>

(config)# mac address-table delete-static 00-00-00-00-00-00
mac=00-00-00-00-00-00
(config)# do show mac address-table static
-------------------------------------------------
Type      VID   Mac Address         Port
-------------------------------------------------
Static     1    00:C0:F2:58:3F:08   3
Static     1    11:22:33:44:55:66   5
(config)#
```

Example 4:

```
(config)# mac flush
MAC learning table flushed.
 (config)# do show mac address-table
-----------------------------------------
Aging Time:        300
-----------------------------------------
Mac Address         Port    Type      Age
-----------------------------------------
70:85:C2:26:CE:68   5       Dynamic   656
4C:BD:8F:C3:D7:00   5       Dynamic   725
20:47:47:04:24:84   5       Dynamic   3308
00:C0:F2:44:A6:79   5       Dynamic   305
00:C0:F2:6A:8D:20   5       Dynamic   166
AC:CC:8E:BA:F7:C1   5       Dynamic   425
5C:83:8F:55:14:DF   5       Dynamic   67
00:08:E3:FF:FC:28   5       Dynamic   6
00:C0:F2:6A:90:FE   0       Static    0
(config)#
```

Messages:

Syntax error: Illegal parameter

SetSnmp Error 2

CLI Change at Switch FW v 2.1.0

Command format before switch firmware v 2.1.0.3:

mac address-table static <mac> <port>

Example: `mac address-table static aa:bb:cc:dd:ee:ff 4`

Command at v 2.1.0.3 and after (added "vlan" parameter to static mac create command):

mac address-table static <mac> <vlan> <port>

Example: `mac address-table static aa:bb:cc:dd:ee:ff 100 4`

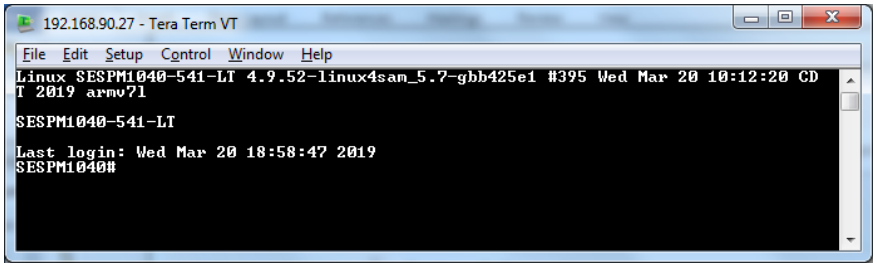
CLI Messages

At CLI startup: (login prompt; not an error message).

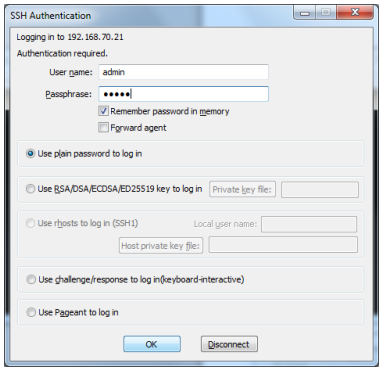
```
Debian GNU/Linux 9
SESPM1040-541-LT login: admin
Password:
Last login: Thu Apr 11 18:54:18 UTC 2019 on ttyS1
Linux SESPM1040-541-LT 4.9.52-linux4sam_5.7-gbb425e1 #81 Wed Apr 10 10:13:38 CDT
 2019 armv7l

SESPM1040-541-LT

SESPM1040#
```



Message: *Authentication required.*



CLI Error messages:

Message: *Syntax error: The command is not completed*

Meaning: You entered only part of a CLI command.

Recovery: Type the entire CLI command; see the related command description above.

Message: *The system is going down for reboot NOW!n (ttyp1) (Wed Nov 7 09:20:15 2018):*

Meaning: CLI operation timed out.

Recovery: Hit Enter, wait for the login prompt to display, and then log in.

Example:

```
Broadcast message from root@SESPM1040-541-LT (Wed May 15 16:11:38 2019):

The system is going down for reboot NOW!
Debian GNU/Linux 9

agent3-tn-ion login: admin
Password:
Last login: Wed Dec 12 15:46:53 UTC 2018 on ttyS1
Linux agent3-tn-ion 4.9.52-linux4sam_5.7-gc7774e9 #3 Wed Dec 12 09:29:04 CST 201
8 armv7l

SESPM1040-541-LT

SESPM1040#
SESPM1040(config-if-vlan-100)# ip 192.168.90.27
The system is going down for reboot NOW!1-LT (ttyp2) (Mon Mar 11 17:50:10 201
```

Message: *Login timed out after 60 seconds.*

Meaning: No CLI entries have been made in the last 60 seconds.

Recovery: Re-open a session, hit Enter, wait 20 seconds, log in, and continue operation.

Example:

```
agent3-tn-ion login:
Login timed out after 60 seconds.
Debian GNU/Linux 9
```

Message: *subAgent is not ready*

Meaning: A function is broken in the CLI.

Recovery: **1**. Try using the Web UI for the desired functionality that's broken in the CLI. **2**. Try enabling HTTPS at Security > Management > HTTPS.

Message: *Command Failed (1)*

Meaning: The attempted command entry failed.

Recovery: **1**. Verify the command syntax and re-enter the command.

Message: *Syntax error: Illegal command line*

Meaning: You entered an unsupported command / parameter.

Recovery: Use the **?** (help) command to determine the command / parameter required.

Example:

```
SESPM1040# show version brief
Syntax error: Illegal command line
SESPM1040#
```

Reset (System) button (FW v 2.1.0.3 and above)

If the Reset (System) button on the switch PCB is pressed and released in less than .5 seconds (500 milliseconds), the system considers this to be unintentional and nothing changes on the system. The following messages will be printed to the user console (RJ-45 console):

```
Reset Button pressed...
Reset Button released...
Reset Button held for 0.000000 seconds (95.000000ms)
Reset Button - accidental press - ignoring.
```

If the Reset (System) button is held for greater than .5 seconds and less than 10 seconds, the system considers this a reset command. The system will reboot. The following messages will appear on the user console:

```
System Button pressed...
System Button released...
System Button held for 4.000000 seconds (4329.000000ms)
System Button - pressed - Resetting...
```

If the Reset (System) button is held for >10 seconds, the system considers this a factory reset command. The system will execute a 'reload defaults'. The system will not reboot, and the system will not store the default-config as the startup-config. With access to the system restored, the user can execute those tasks when desired. The following messages will appear on the user console (note that there will be a delay before the last line appears while the factory settings are applied to the system):

```
System Button pressed...
System Button released...
System Button held for 14.000000 seconds (14283.000000ms)
System Button - long press - Restoring Factory Defaults...
System Button - Factory Settings restored
```

CLI Command Summary

Exec Mode Commands

!	Comments
clear	Reset functions
configure	Enter configuration mode
copy	Copy from one file to another
debug	Enter debug mode
end	end
exit	Exit from the CLI
firmware	firmware
history	Display current session CLI history
logout	Logout of the current CLI session
ping	Send ICMP to verify network connectivity
reload	Reload system
show	Show running system information
top	Return to the default mode

Config Mode Commands

!	Comments
ble	BLE Commands
clock	Set NTP options
community	community commands
dio	Digital IO configuration
dns	Set DNS options
do	To run exec commands in config mode
end	Exit from configure mode
exit	Exit from configure mode
history	Display current session's CLI history
https	Set https options
interface	Enter interface mode
ip	Set ip options
logout	log out of the current CLI session
mac	MAC Address Table
nfc	NFC Commands
no	Negate a command or set its defaults
ntp	Set NTP options
pd-aux	PD Auxiliary commands
poe	Set poe options
radius	Radius
snmptrap	SNMP Trap Server
ssh	SSH Config
syslog	syslog information
system	system information
tacplus	Tacplus
tamper	Tamper Detection
telnet	Configure Telnet service
top	Return to the default mode
username	Usernames
vct	Virtual Cable Test
vlan	Create/edit VLAN number (1-4094)

Interface Config Mode Commands (Ports)

!	Comments
autoneg	Set port auto-negotiation
connector-type	Set port media connector type
description	Set port description
do	To run exec commands in config mode
end	Exit from interface mode
exit	Exit from interface configuration mode
get-description	get port description
history	Display current session's CLI history
logout	Log out of the current CLI session
no	Negate a command or set its defaults
poe	Set poe options
pvlan	list of PVLANs
shutdown	Shutdown of the interface
speed	Set port speed
statistics	get port statistics
status	get port status
switchport	Enter switchport VLAN mode
top	Return to default mode
trunk	trunk mode commands

Interface Config Mode Commands (Vlan1)

!	Comments
do	To run exec commands in config mode
end	Exit from interface mode
exit	Exit from configure mode
history	Display the current session's CLI history
ip	Interface Internet Protocol config commands
logout	Logout of the current CLI session
no	Negate a command or set its defaults
top	Return to the default mode

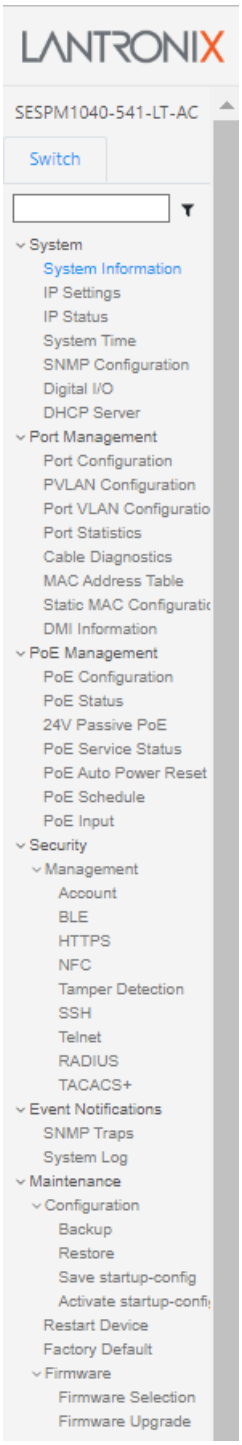
Show Commands

ble	BLE commands
clock	Set clock options
community-names	show community names
default-config	Contents of default configuration
dhcp	DHCP Server
dio	Digital IO configuration
dmi	Diagnostic Monitoring Interface
dns	show dns
firmware	firmware
https	Show HTTPS information
interface	Interface status and config
ip	IP interface status and configuration
mac	MAC Address Table
nfc	Display NFC state
ntp	Show NTP information
pd-aux	PD Auxiliary Port Status
poe	show poe

Show Commands (cont'd)

pvlans	show pvlans
radius	Raduis Servers
running-config	Current operating config
ssh	SSH
startup-config	Contents of startup config
switchport	show VLAN operating mode
syslog	system log commands
system	Show system information
tacplus	TacPlus Servers
tamper	Tamper Detection
telnet	Telnet
trapservers	show trapservers
usernames	show usernames
vct	Virtual cable test results
version	show software version
vlan	Display list of VLANs

Web UI Menu System



The left-hand menu contains one main tab (Switch) and several sub-tabs for configuring and monitoring the switch's major functions. The major Switch tab functions include System, Port Management, PoE Management, Security, Event Notifications, and Maintenance. Each of the major Switch tabs has sub-tabs. The Web UI has a 15-minute auto-logout timer.

Web UI Navigation Tools

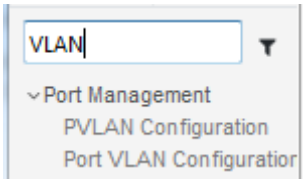

: **Hide/Display** the left pane menus.

: **Switch icon**: Click on a port to display the Port Configuration page with the status of the selected port.


Log out: click to log out of the Web UI. The Login page displays again.


Help: click to display the related Help webpage.


: Search box to enter search text; e.g., enter VLAN to display:



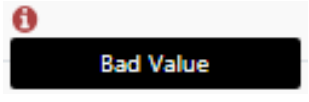
: Click the  icon to go back to the menu.


: View Password text as you type it in.


: Hide Password text as you type it in.

Web UI Messaging

These color-coded Web UI messages can be displayed.



: The switch detected an incorrect entry.

Nothing was changed No parameters were changed when you clicked the Apply button.

Error in setting the values You set an invalid value for one or more parameters.

Form data has been reset The parameter entry (change) was accepted.

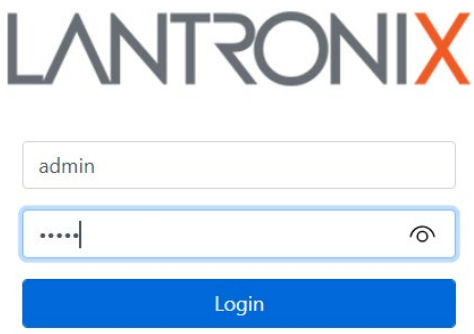
Valid Characters

Most text entry fields have a set of 65 valid characters:
"ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789+/”

The ‘#’ is the only printable character that is not allowed in text fields. Spaces are allowed within strings in most text fields, but the Web UI trims leading and trailing spaces. User names cannot contain a space and are limited to alpha-numeric characters plus ‘.’, ‘-‘ and ‘_’.

Log In to the Web UI

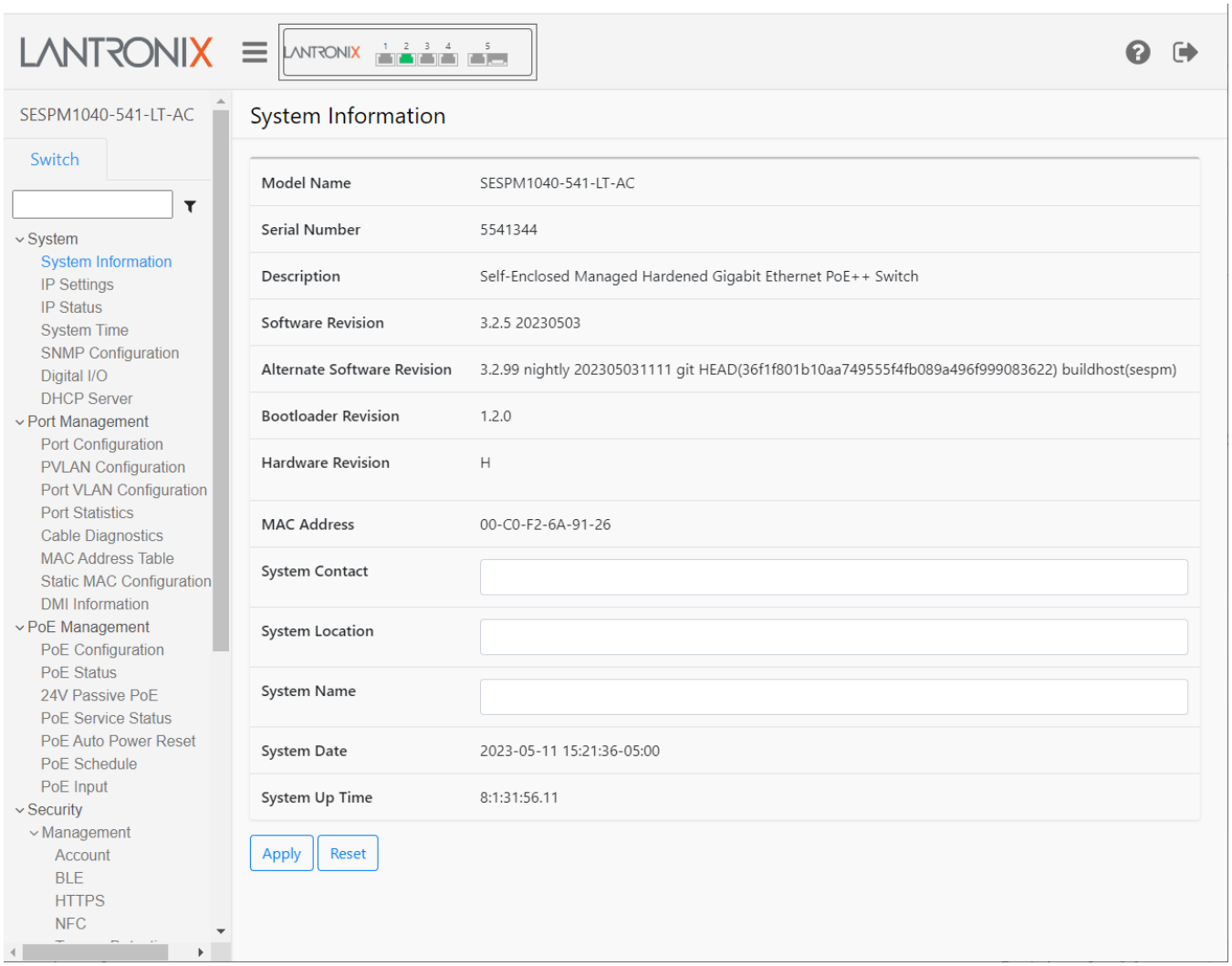
1. Set the static IP address for the device to be used for configuration to the same network IP address as the SESPM1040-541-LT-xx. The SESPM1040-541-LT-xx default address is 192.168.1.10.
2. Connect one end of the network cable to the network jack on the SESPM1040-541-LT-xx and the other to the network connection of the device to be used for configuration.
3. Open a browser on the configuration device and enter **192.168.1.10** into the address bar. The Login page displays requesting a Username and a Password.



4. Enter the default values (Username: **admin**, and Password: **admin**).
5. Click on the **Login** button. The System Information page displays as shown and described below.

Switch > System > System Information

This page lets you view and configure device level parameters. The System Information page for the SESPM1040-541-LT-**AC** is shown below.



Parameter descriptions:

Model Name: displays the device model name (e.g., *SESPM1040-541-LT-AC* or *SESPM1040-541-LT-PD*).

Serial Number: displays the device S/N (e.g., *5536531*).

Description: describes the device (*Self-Enclosed Managed Hardened Gigabit Ethernet PoE++ Switch*).

Software Revision: shows the current (running) SW rev. and date (e.g., 3.2.5 20230503).

Alternate Software Revision: describes the alternate SW rev. and date (e.g., *3.2.4 20230424)*.

Bootloader Revision: displays the bootloader rev. (e.g., *1.2.0*).

Hardware Revision: displays the HW rev. (e.g., *H*).

MAC Address: displays the MAC address of this switch in the format 11-22-33-44-55-66.

System Contact: lets you enter a person to contact for this system. Do not enter the pound sign (#).

System Location: lets you enter a place for this system. Do not enter the pound sign (#).

System Name: lets you enter a name for this system. Do not enter the pound sign (#). **Note**: starting at Software Version 2.0.3, when configuring "System Name" in the Web UI, it does not update in the CLI until you switch CLI modes (e.g., from Config mode to either Exec mode or Interface Config mode and back).

System Date: shows the currently-configured system date and time in the format *2023-05-11 15:21:36-05:00*.

System Up Time: displays the amount of time this system has been up and running in the format *dd:hh:mm:ss* (e.g., *8:1:31:56.11*).

Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset*."

Message: *Alternate Software Revision = INVALID*

Meaning: You upgraded FW to the existing version.

Recovery: In the Web UI, hit the browser Back button. In the CLI, hit CTRL-C. The alternate image is marked invalid in U-Boot, but the alternate version will not change to "INVALID" on Web pages and CLI show commands until a restart.

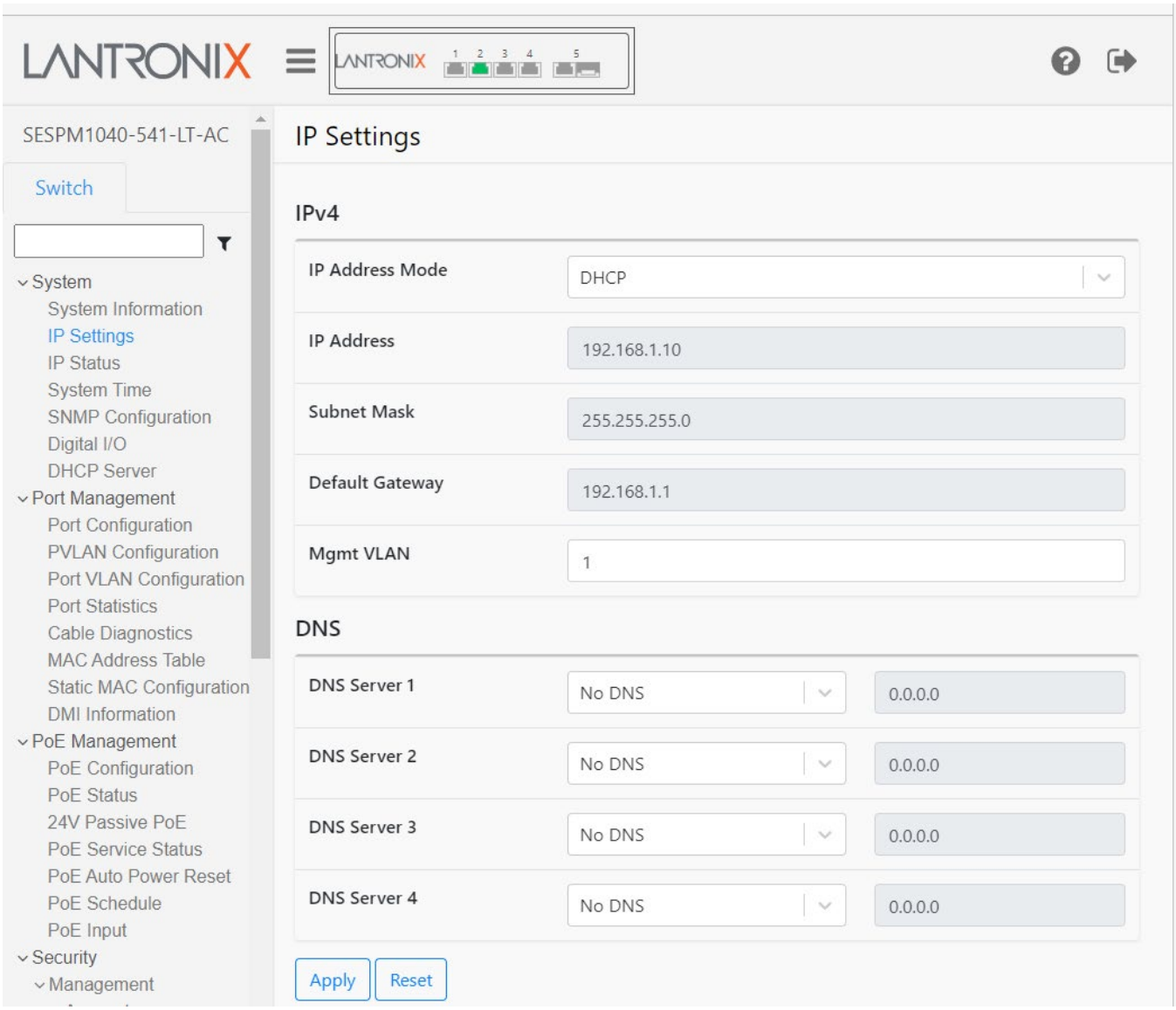
Problem: After a switch reboot, the System Up Time starts at 0:00:00:00.00 plus whatever time has elapsed between boot and when the page displays. Other page parameters may be affected similarly.

Description: The browser cache may be causing a stale value to be displayed.

Solution: Clear browser cache and check if the parameter is updated.

Switch > System > IP Settings

Here you can view and configure IP address parameters and DNS Server parameters for up to four DNS Servers.



Parameter descriptions:

IPv4 section

IP Address Mode: At the dropdown select DHCP or Static, where:

DHCP: A configured and running DHCP server assigns the IP address for this device.

Static: You assign the IP address for this device (default setting).

IP Address: The IP address of this switch (e.g., 192.168.1.10 by default).

Subnet Mask: The subnet mask for this switch (e.g., 255.255.255.0).

Default Gateway: The default gateway (e.g., 192.168.1.30). A default gateway is the node in a computer network using the Internet Protocol Suite that serves as the forwarding host (router) to other networks when no other route specification matches the destination IP address of a packet.

Mgmt VLAN: Enter a Management VLAN ID. The valid range is 1-4094. The default is VLAN ID 1. A Mgmt VLAN entry is required.

DNS section

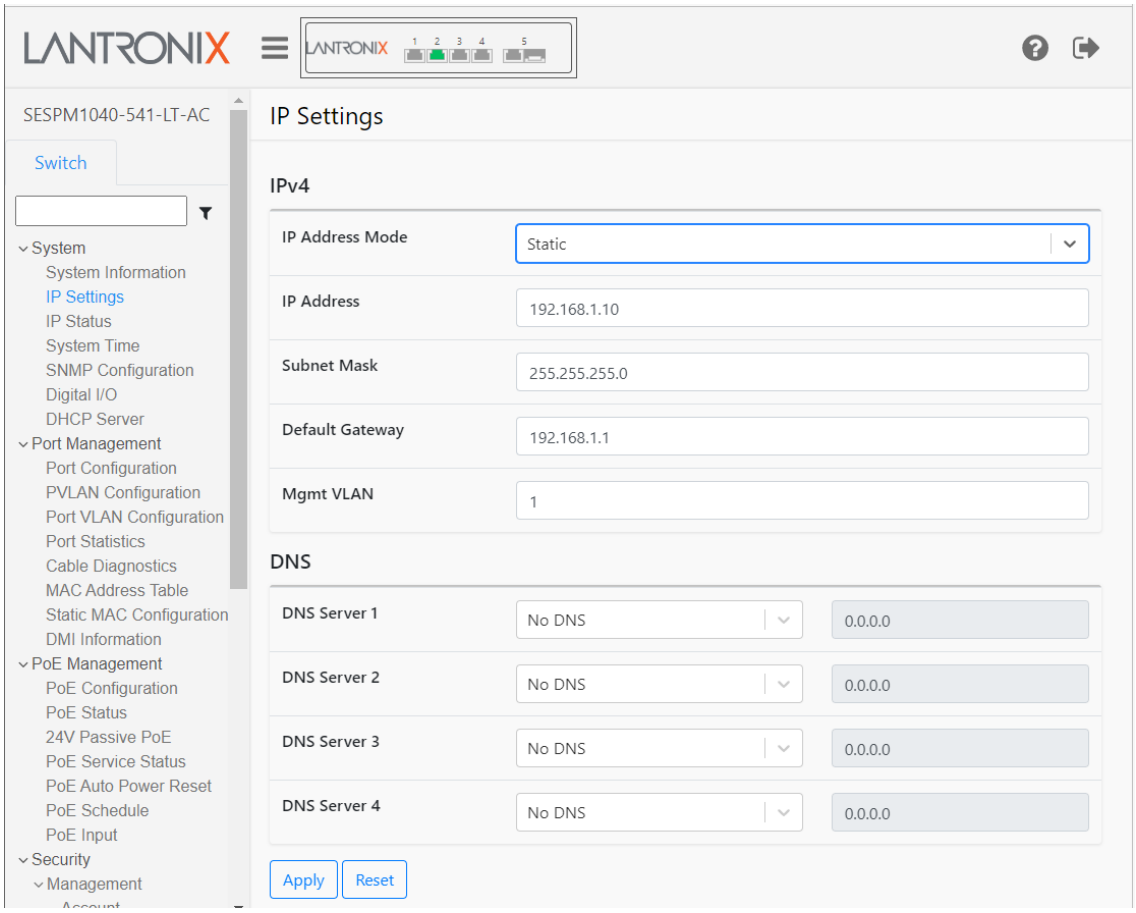
DNS Server x: At the Select dropdown select DNS mode as *No DNS* or *Configured* and enter an IP address for each of 1-4 configured DNS Servers.

Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset.*"

Example: Static IP Address Mode configured:



Messages:

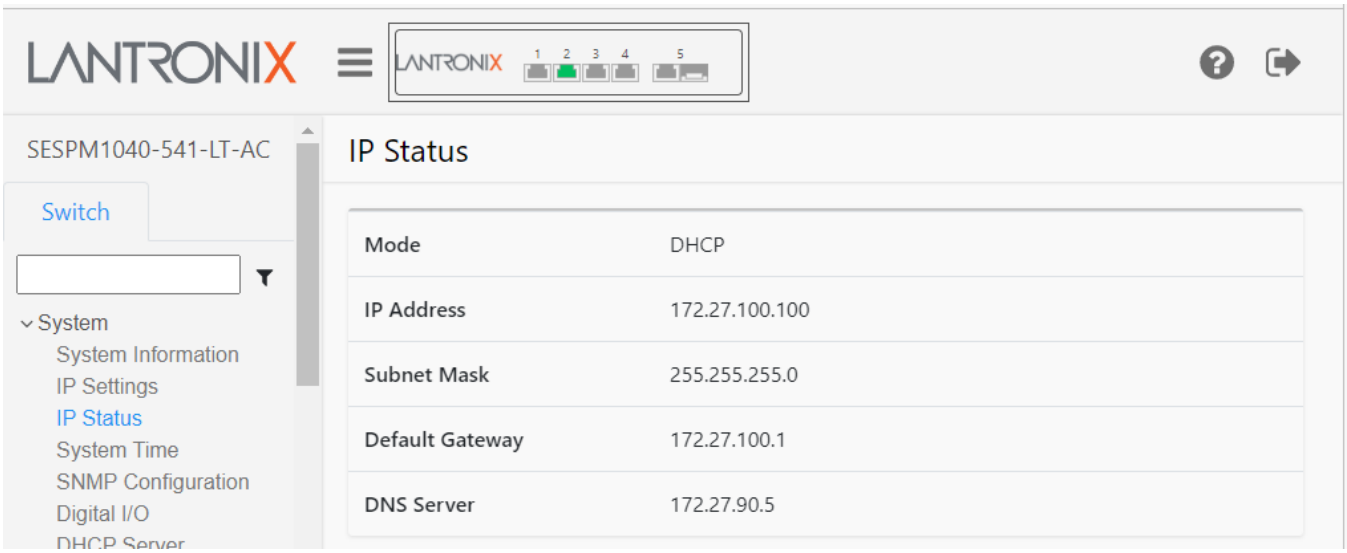
Error in setting the values

Form data has been reset

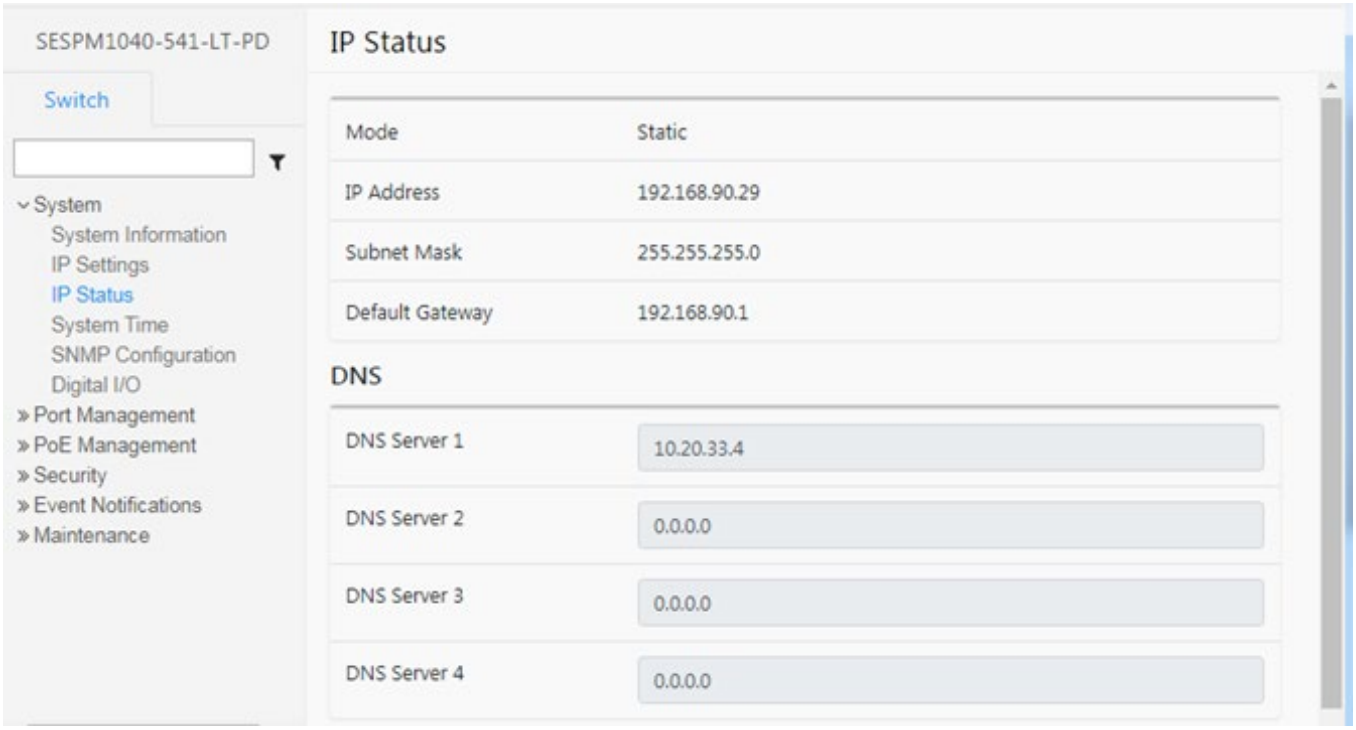
Mgmt VLAN is required

Switch > System > IP Status

This page lets you view IP status parameters assigned to the switch (read only fields).



If one or more DNS Servers are configured at the Switch > System > IP Settings page, then you can view the DNS Server parameters.



Parameter descriptions:

IP Status

Mode : The current IP mode (e.g., *Static* or *DHCP*).

IP Address : The current IP address assigned to the switch (192.168.90.10 by default).

Subnet Mask : The current Subnet Mask assigned to the switch (255.255.255.0 by default).

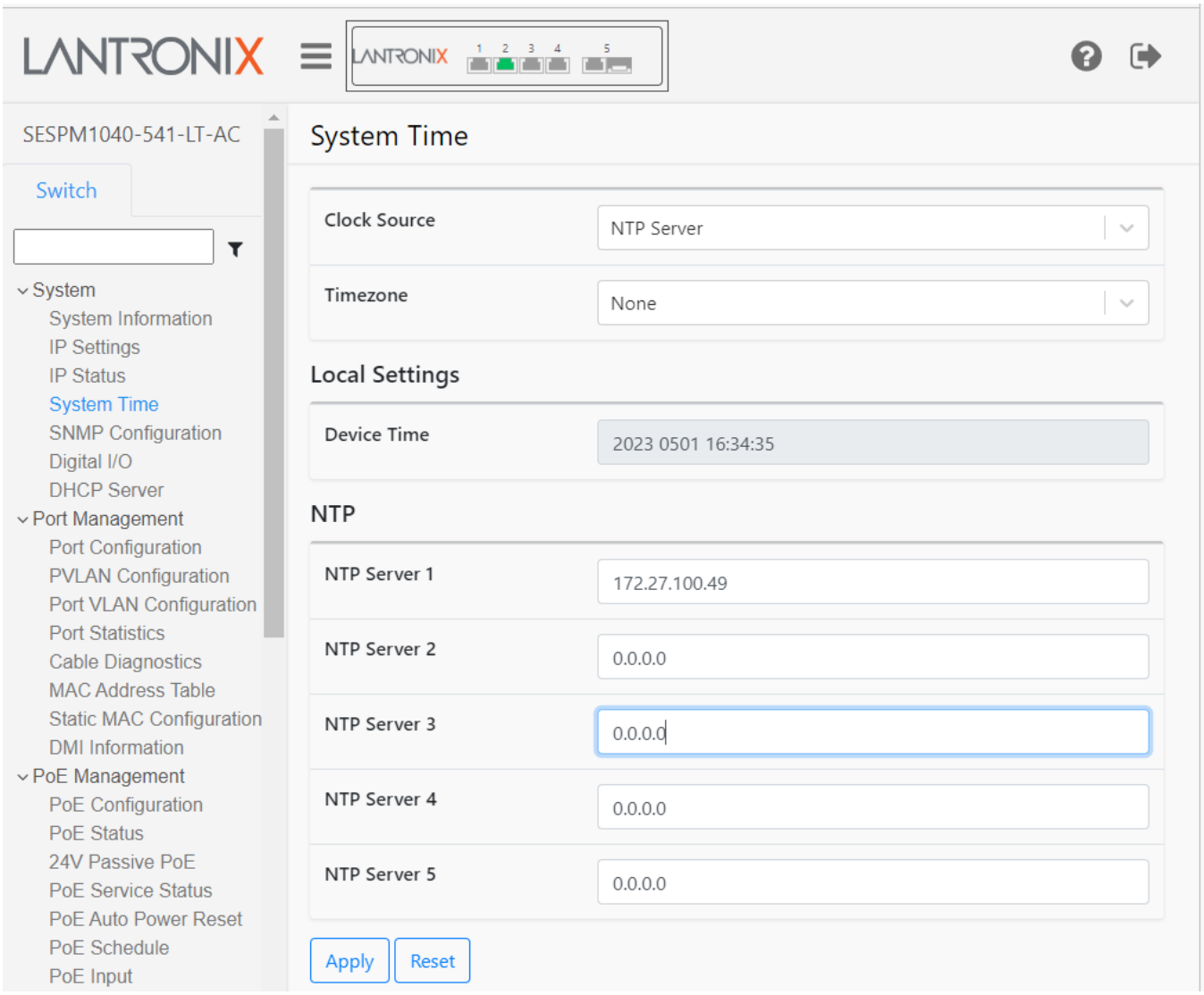
Default Gateway : The current Default Gateway assigned to the switch (192.168.90.1 by default).

DNS

DNS Server 1 -4: Displays the DNS Server(s) IP address(es) if one or more DNS Server(s) are configured at the Switch > System > IP Settings page.

Switch > System > System Time

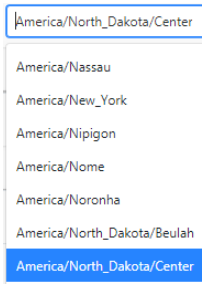
This page lets you configure clock, time, time zone, and/or NTP parameters.



Parameter descriptions:

Clock Source : At the dropdown select Local Settings or NTP Server. This selection determines the remaining page selections available.

Device Time : Enter the desired time in the format *yyyy mmdd hh:mm:ss* (e.g., *2023 0501 16:34:35*). The default is *2011 1231 20:15:19*.



Timezone : At the dropdown select a UTC time zone (e.g., *America/Chicago* or *Asia/Dubai* or *Europe/Brussels*). See Current UTC, Time Zone (Coordinated Universal Time) for more information.

NTP Server 1: Enter an IP address for the first NTP Server (e.g., https://www.ntppool.org/en/).

NTP Server 2-5: Enter an IP address for a second, third, fourth and fifth NTP Server.
If local time is set the Device Time field is grayed out. The NTP fields are grayed out when NTP is not set.

Buttons:

Apply: Saves the entries on this page to the running-config file.

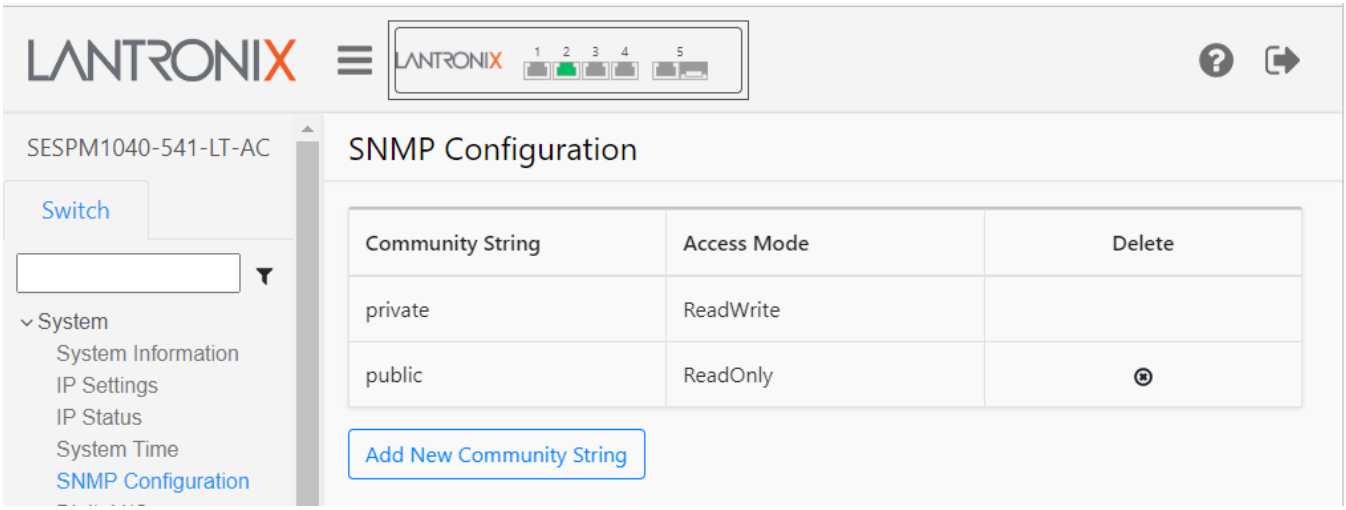
Reset: Resets the page to default parameter settings.

Messages:

Error in setting the values
Form data has been reset
Nothing was changed

Switch > System > SNMP Configuration

This page lets you view and configure SNMP parameters. The SNMP Configuration page configures the SNMPv2 community strings to which the switch will respond. You can add additional read-only or read-write community strings, and you can optionally delete the default "public" read-only community string. You cannot delete or modify the default "private" read-write community string.



Parameter descriptions:

Community String: The SNMP Write Community string. SNMPv1 and SNMPv2 use communities to establish trust between managers and agents. Most agents support three community names, one each for read-only, read-write, and trap. These three community strings control different types of activities. The read-only community applies to get requests. The read-write community string applies to set requests. The trap community string applies to receipt of traps.

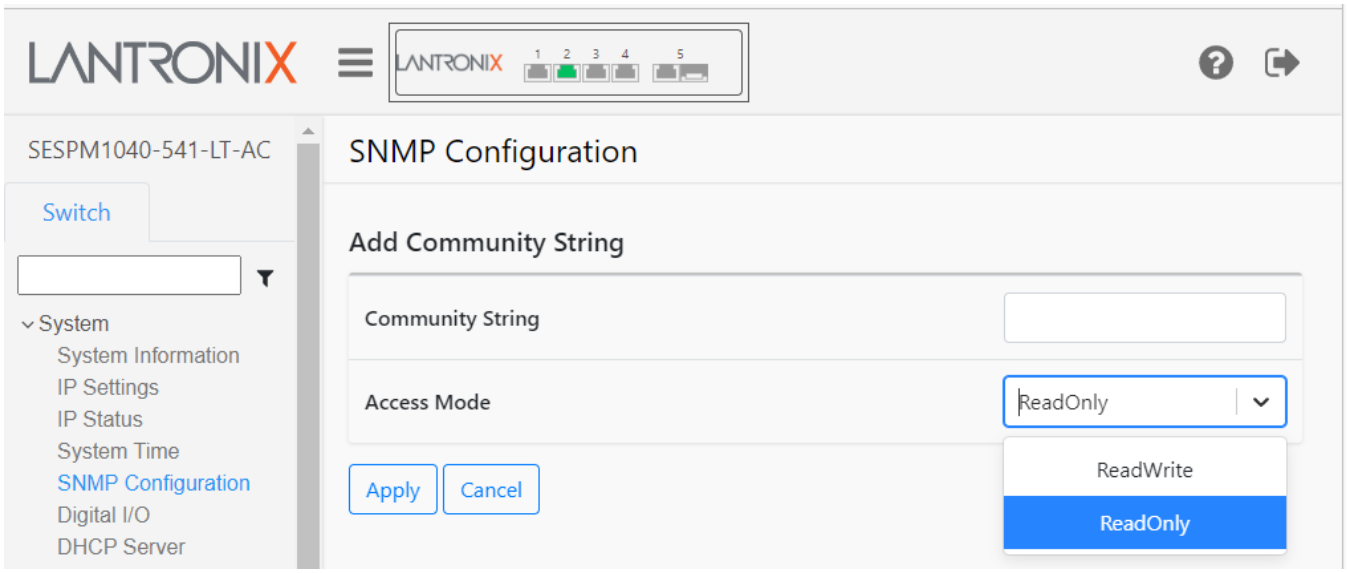
Access Mode: At the dropdown select ReadOnly or ReadWrite. The SNMP Read Community string. The SNMP Read-Only Community String is like a user ID or password that is sent along with each SNMP Get-Request and allows (or denies) access to a device's statistics.

Delete: Click the icon to delete the row in the table. The message"*SESPM1040541LTAC is deleted*" displays.

Buttons

Add New Community String: Click to display the SNMP Configuration page as shown below.

SNMP Configuration – Add Community String page:

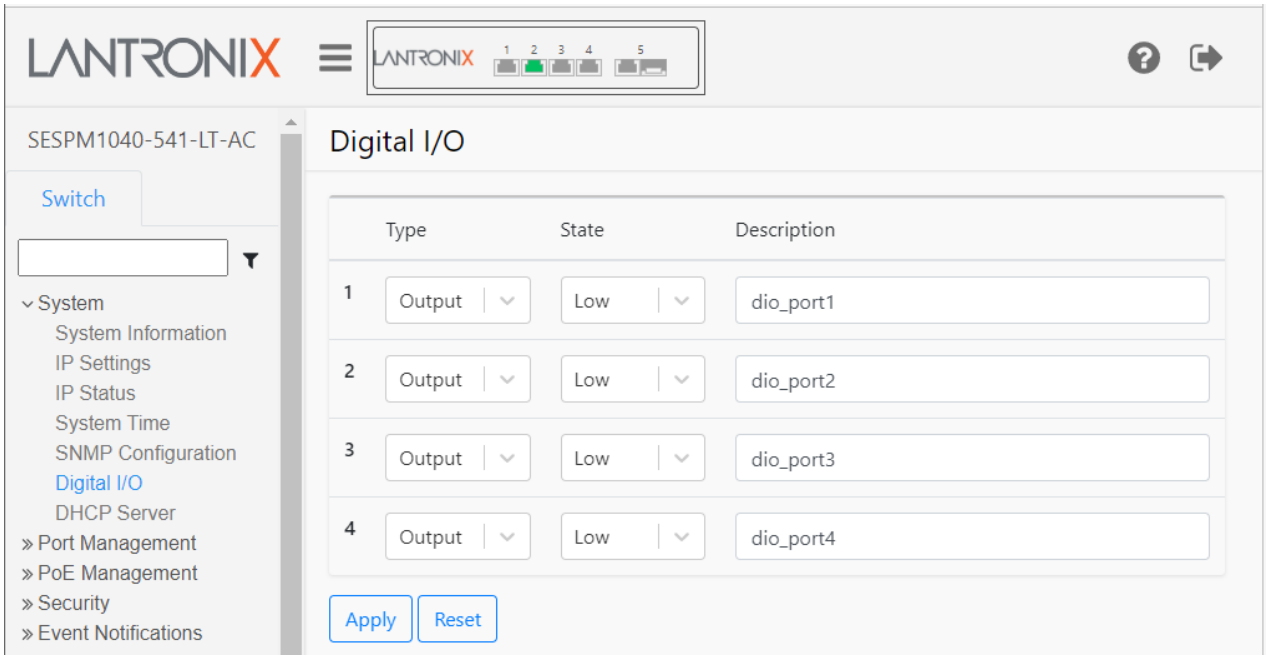


Apply: Saves the entries on this page to the running-config file.
Cancel: Click to re-display the SNMP Configuration page.

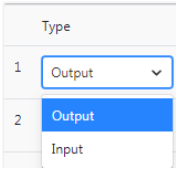
Messages:
Failed. Server error: 12
Successfully saved!
Form data has been reset

Switch > System > Digital I/O

This page displays the install status of the optional SESPM-4P-DIG (Digital Input/Output Module). The SESPM-4P-DIG is a Digital Input/Output Module with four optical isolators. It provides connection for alarms, event notifications, or other customer designated items. The kit consists of four optical isolators independently configurable as either inputs or outputs, and a 12 VDC power source. See the *SESPM-4P-DIG Option Install Guid*e.



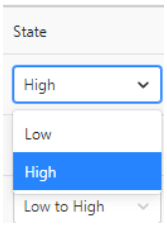
Parameter descriptions:



Type: At the dropdown select the DIO port type for each DIO port.

Output: Sets this port as an output port.

Input: Sets this port as an output port.



State: At the dropdown select the DIO state for each DIO port:

Low to High: for Input Type, sets this port for low-to-high DIO state.

High to Low: for Input Type, for Input Type, sets this port for high-to-low DIO state.

Low: for Output Type, sets this port to low DIO state.

High: for Output Type, sets this port to high DIO state.

Description: Enter descriptive text for this DIO instance in the entry field.

Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page to default parameter settings.

Messages:

Digital IO board is not present: displays if the Digital IO board is not installed in the switch.

! Successfully saved! displays when a change to the page is successfully applied.

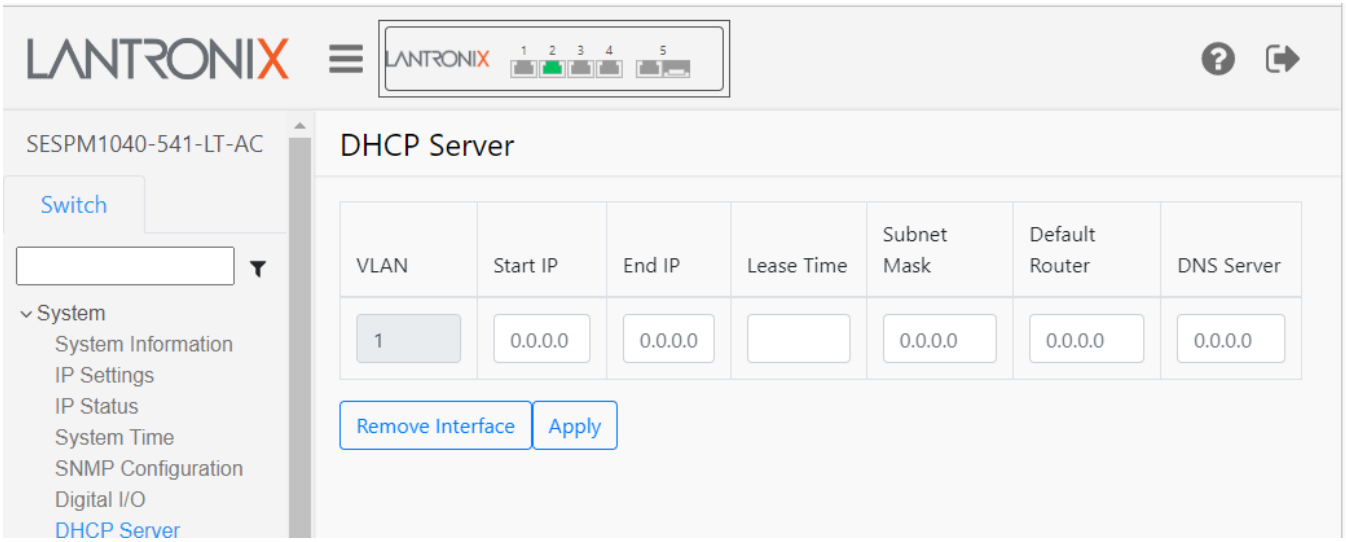
Switch > System > DHCP Server

This page lets you view and configure up to five DHCP server instances.

A DHCP Server is a network server that automatically provides and assigns IP addresses, default gateways and other network parameters to client devices. It relies on the standard protocol known as Dynamic Host Configuration Protocol to respond to broadcast queries by clients.

This page lets you add, modify and delete DHCP Server entries. The page displays a table with configurable columns for Start IP, End IP, Lease Time, Subnet Mask, Default Router, and DNS Server. The page also lets you add a new interface where the VLAN field is configurable.

At the default DHCP Server page click the Add Interface button to display the DHCP Server table.



Parameter descriptions:

VLAN: The VLAN ID (VID) defined by this row of the DHCP Server table. Displays the associated VLAN ID (read only).

Start IP: The starting IP address for this row of the DHCP Server table. Enter the DHCP server beginning IP address. The default is 192.168.1.11.

End IP: The ending IP address for this row of the DHCP Server table. Enter the DHCP server ending IP address. The default is 192.168.1.15.

Lease Time: The DHCP server's Lease Time in seconds. Enter the DHCP server lease time. The valid range is 1 - 86400 seconds. The default is 3000 seconds.

Subnet Mask: The DHCP server's Subnet mask. Enter the subnet mask to be used. The default is 255.255.255.0.

Default Router: The DHCP server's default router IP address. Enter the IP address of the default router. The default is 192.168.1.1.

DNS Server: The DNS server's IP address. Enter the IP address of the Domain Name Server. The default is 192.168.1.1.

Buttons:

Add Interface: Click to add a line to the table. Add a DHCP Server instance to the table. Up to five DHCP servers can be configured.

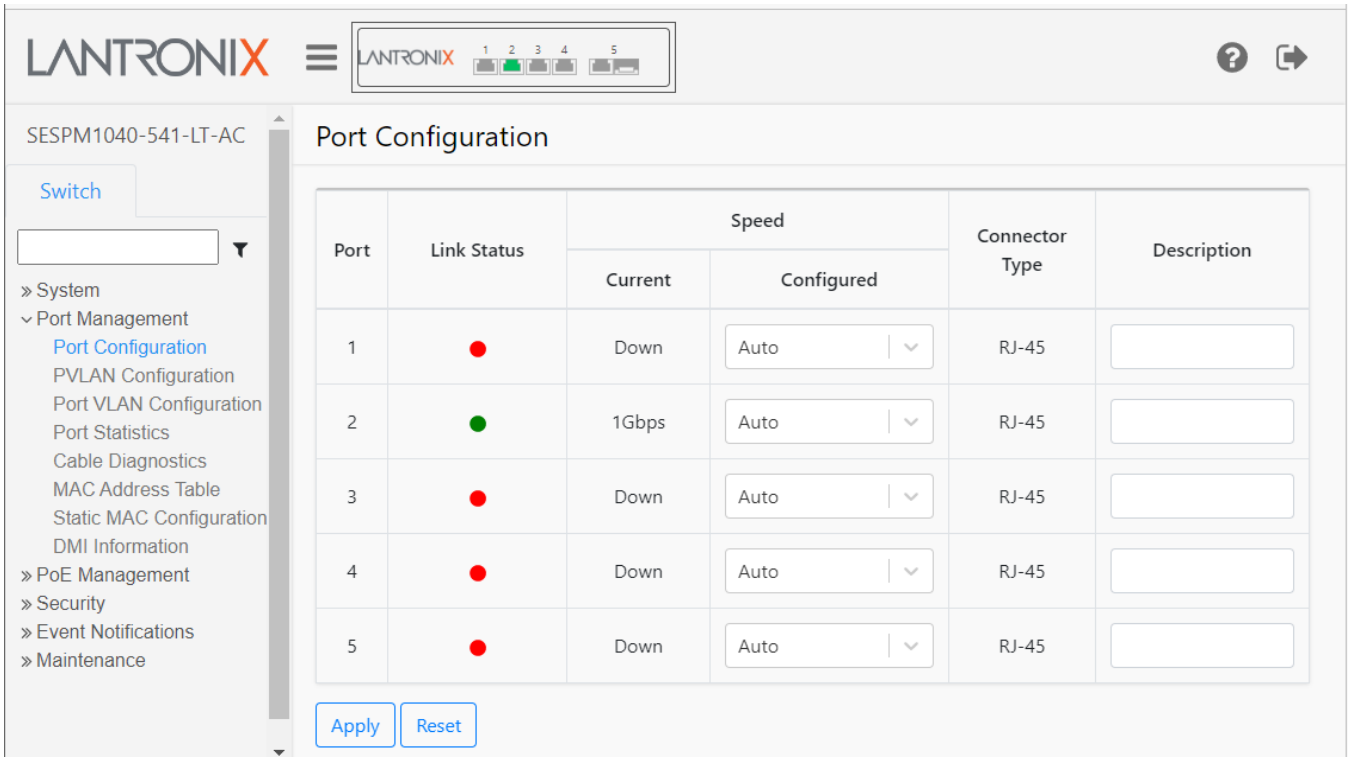
Remove Interface: Click to delete a line from the table. Click to delete a DHCP Server instance from the table.
Reset: Resets the page to default parameter settings.
Apply: Click to save the entries on this page to the running-config file.

Messages:
Start IP is invalid. Update subnet mask or change value.
End IP is invalid. Update subnet mask or change value.

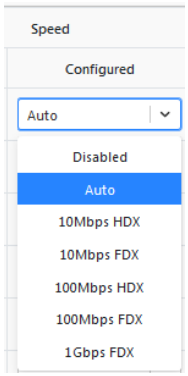
Note: The DHCP client falls back to 192.168.1.10 if no DHCP server is found.

Switch > Port Management > Port Configuration

This page lets you view and configure port parameters such as Link Status, Speed, etc. The Port Configuration page for the –AC and the –DC is shown below:



Parameter descriptions:



Port: The port number described by this line in the table.

Link Status: The current status of the link (port). Green (●) = link up and red (●) = link down.

Speed Current: The currently configured port speed (i.e., Disabled, Auto, 10Mbps HDX, 10Mbps FDX, 100Mbps HDX, 100Mbps FDX, 1Gbps HDX, 1Gbps FDX) (read only field).

Speed Configured: At the dropdown you can select a different speed than the Current Speed. The default is Auto. You can select 10Mbps HDX, 10Mbps FDX, 100Mbps HDX, 100Mbps FDX, 1Gbps FDX, or Disabled. FDX indicates Full Duplex and HDX indicates Half Duplex.

Connector Type: the configured connector type such as, RJ-45, combo, SFP, or RP-SMA (for wireless module). This is a read only field.

Description: lets you enter a description for your site.

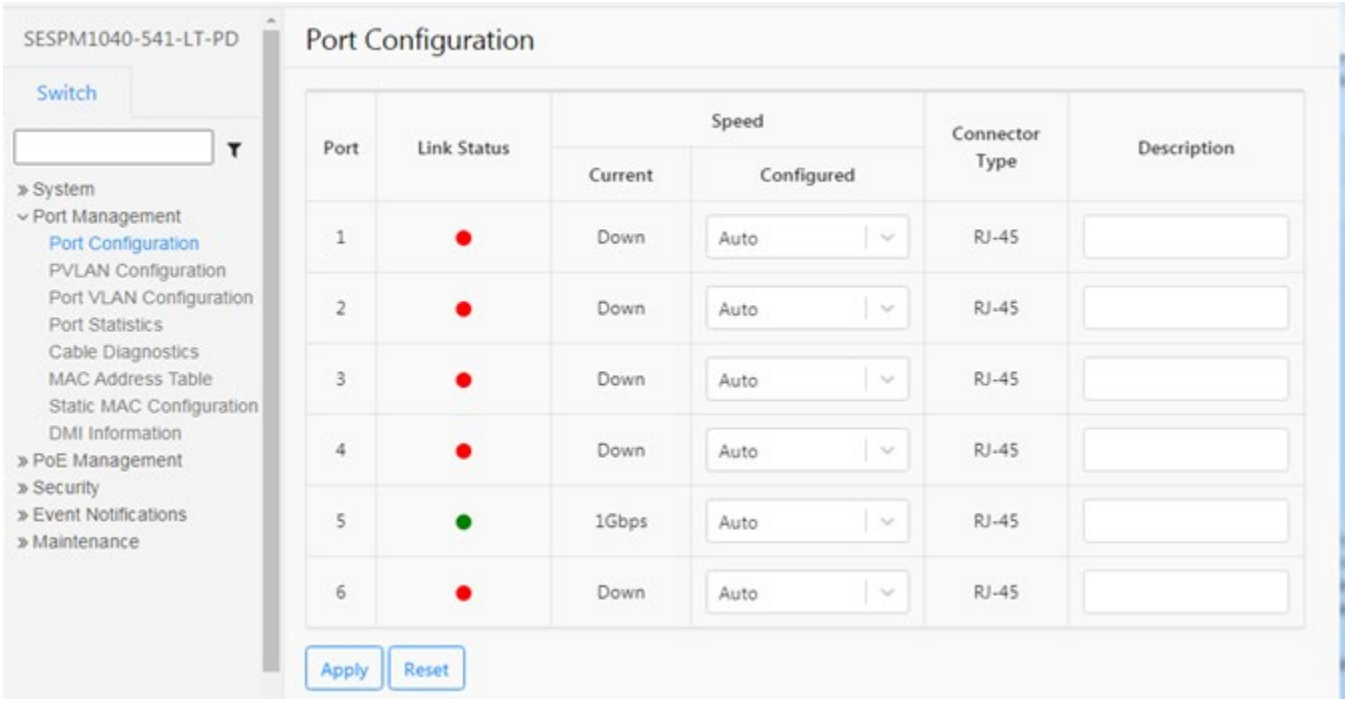
Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset*".

The SESPM1040-541-LT-PD version is a PoE-powered self-enclosed switch. The -PD version includes a 12V Aux port which can be used to provide auxiliary power to a PC, lighting or other accessories.

The Port Configuration page for the –PD is shown below:

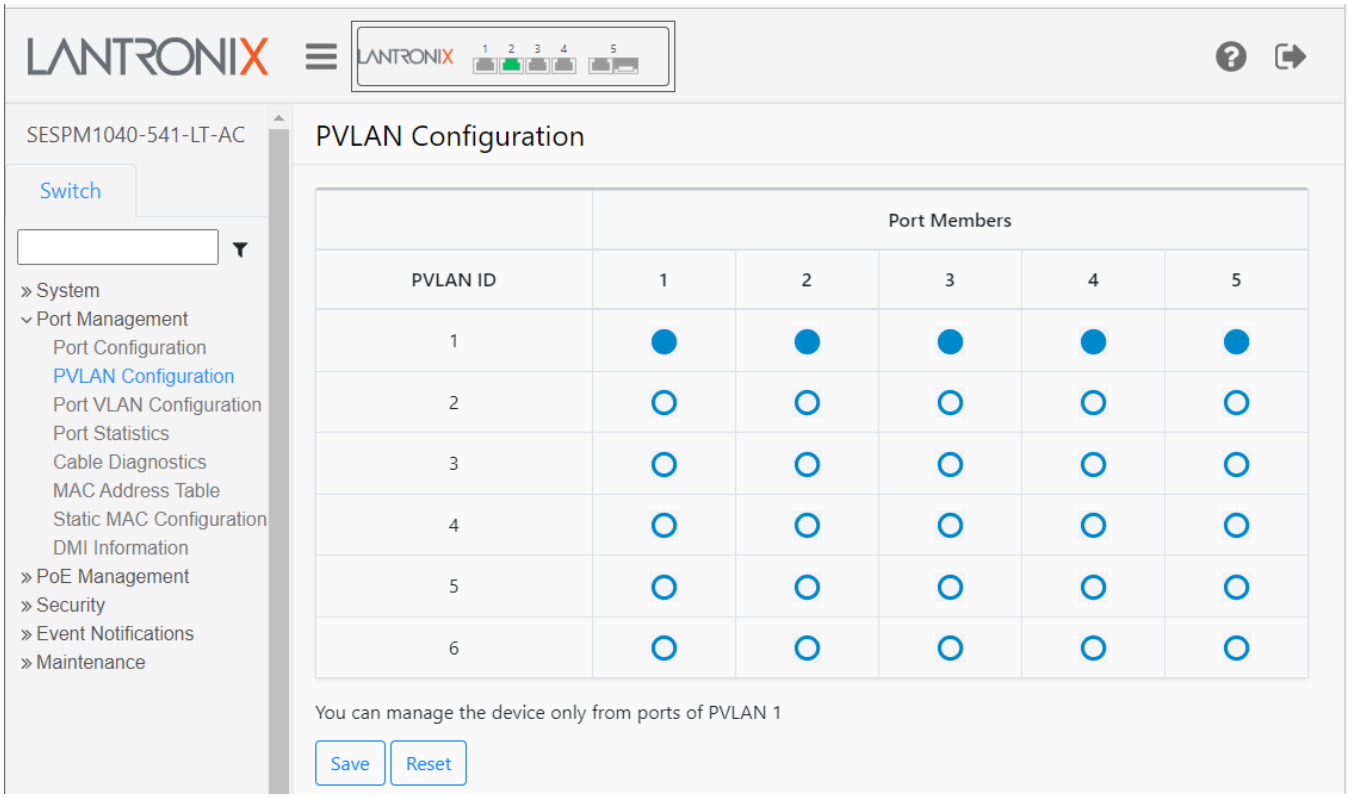


Note: Port 5 is a combo 10/100/1000Base-T or a 100/1000Base-X uplink port. On the -AC and -DC version, it can either be used as a copper or fiber port. However, on the -PD version, it is normally used for PoE power input, in which case the SFP option is not available unless you are using fiber cable running in parallel to a copper cable as the power input, then port 5 can be used as a fiber port (or copper) instead of using it exclusively as the PoE power input port.

Note: Changing the cable copper to fiber or fiber to copper requires resetting on Port 5.

Switch > Port Management > PVLAN Configuration

This page lets you assign port membership for up to six Private VLAN instances. By default, all ports are members of PVLAN ID 1. **Note**: You can manage the device only from ports of PVLAN 1.



Parameter descriptions:

PVLAN ID: This column displays a PVLAN ID (1-6) for each configurable PVLAN instance.

Port Members: Provides five columns of radio buttons to assign port membership for up to six switch ports.

Buttons:

Save: Saves the entries on this page to the running-config file. Displays the message "*Successfully Updated pvLans*!" when successfully completed.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset.*"

PVLANs vs. Port VLANs

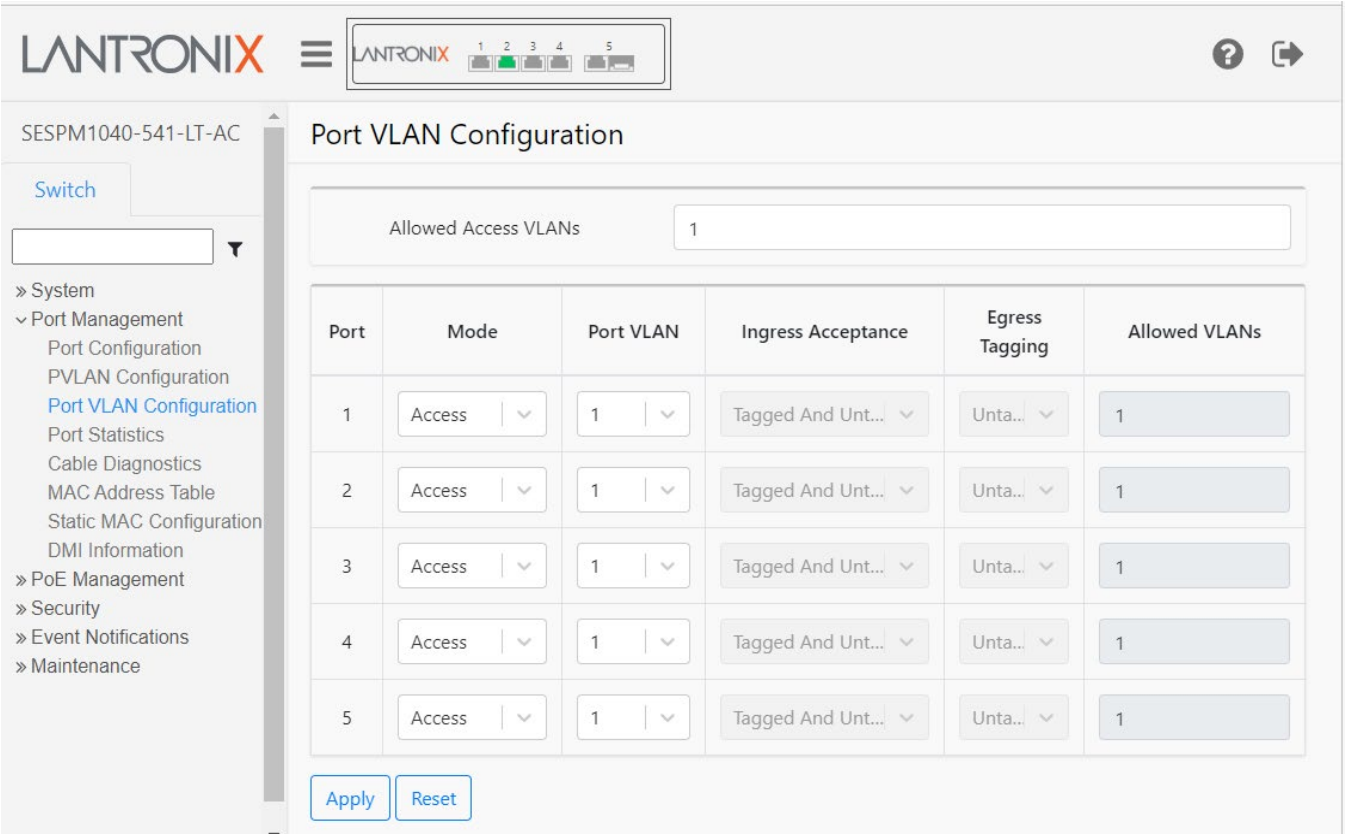
PVLANs (Private VLANs) as discussed in the section above are internal to the switch only and are intended to segregate traffic between ports. Management must be on PVLAN 1.

Port VLANs as discussed in the section below are external and internal to the switch. Management can be on any single VLAN currently. Management on multiple VLANs is a planned future enhancement.

Switch > Port Management > Port VLAN Configuration

The switch supports up to 50 VLANs per port. This page lets you perform port VLAN related tasks:

1. Create A VLAN: Create a VLAN and associate a VLAN ID (number from 1 - 4094) with it.
2. Assign a Switch Port to a VLAN: Create an association between a port on the SESPM switch and a previously created VLAN.
3. Define the Switch Port usage type: The common port types for VLAN usage are Trunk and Access:
    a. Trunk type ports: All ingressing or egressing frames have 802.1q tags.
    b. Access type ports: All ingressing or egressing frames have no 802.1q tags.

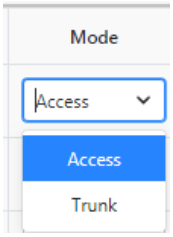


Parameter descriptions:

Allowed Access VLANs : Enter the VLAN IDs that you would be associating to a port in Access mode (e.g., 1, 20, 30). This field shows the VLANs that are created on the switch. By default, only VLAN 1 exists. More VLANs may be created by using a list syntax where the individual elements are separated by commas. Ranges are specified with a dash separating the lower and upper bound.

Port : This is the logical port number of this row.

Mode : The port mode determines the fundamental behavior of the port in question. A port can be in one of the modes described below. Whenever a particular mode is selected, the remaining fields in that row will be either grayed out or made changeable depending on the mode in question. Grayed out fields show the value that the port will get when the mode is applied.

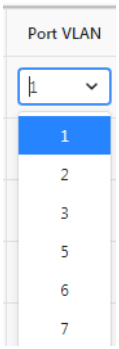


***Access*:** Access ports are normally used to connect to end stations. Dynamic features like Voice VLAN may add the port to more VLANs behind the scenes. Access ports (the default) have these characteristics:

- Member of exactly one VLAN, the Port VLAN (a.k.a. Access VLAN), which by default is 1,
- accepts untagged frames and C-tagged frames with VLAN configured as Port VLAN,
- discards all frames that are not classified to the Access VLAN, and
- on egress all frames are transmitted untagged.

***Trunk*:** Trunk ports can carry traffic on multiple VLANs simultaneously and are normally used to connect to other switches. Trunk ports have the following characteristics:

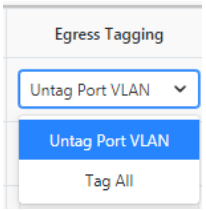
- By default, a trunk port is a member of VLAN 1 (may be limited by the use of Allowed VLANs).
- Frames classified to a VLAN that the port is not a member of will be discarded.
- By default, all frames but frames classified to the Port VLAN (a.k.a., Native VLAN) get tagged on egress. Frames classified to the Port VLAN do not get C-tagged on egress.
- Egress tagging can be changed to tag all frames, in which case only tagged frames are accepted on ingress.



Port VLAN : Determines the port's VLAN ID (a.k.a. PVID). Allowed port VLANs are any VLAN ID from 1 to 4094 is allowed (provided they are listed in "Allowed Access VLANs"; the default is 1.
On ingress, frames get classified to the Port VLAN if the frame is untagged and the port is in Access mode.
On egress, frames classified to the Port VLAN do not get tagged if Egress Tagging configuration is set to untag Port VLAN.
The Port VLAN is called an "Access VLAN" for ports in Access mode and “Native VLAN” for ports in Trunk mode.

Ingress Acceptance : Hybrid ports allow for changing the type of frames that are accepted on ingress.
The dropdown displays ***Tagged and untagged*** : both tagged and untagged frames are accepted in both Access and Trunk modes (read-only).

Egress Tagging : Ports in Trunk mode may control the tagging of frames on egress. At the dropdown select:



Untag Port VLAN : Frames classified to the Port VLAN are transmitted untagged. Other frames are transmitted with the relevant tag.

Tag All : All frames, whether classified to the Port VLAN or not, are transmitted with a tag.

Allowed VLANs : Ports in Trunk and Hybrid mode may control which VLANs they can become members of. An Access ports can only be a member of one VLAN, the Access VLAN. The field's syntax is identical to the syntax used in the Allowed Access VLANs field described above. By default, a port is member of VLAN 1. But you can configure VLANs from 1 - 4094. You can configure up to 50 VLANs per port. This field may not be left empty.

Buttons:

Apply: Saves the entries on this page to the running-config file. Displays “*Successfully saved!*” when successfully completed.

Reset: Resets the page data to previous settings and momentarily displays the message “*Form data has been reset*.”

Messages:

Error in setting the values

Nothing was changed

Form data has been reset.

Count VLANs should be equal to 50 or less

Additional Combo Port currently not installed

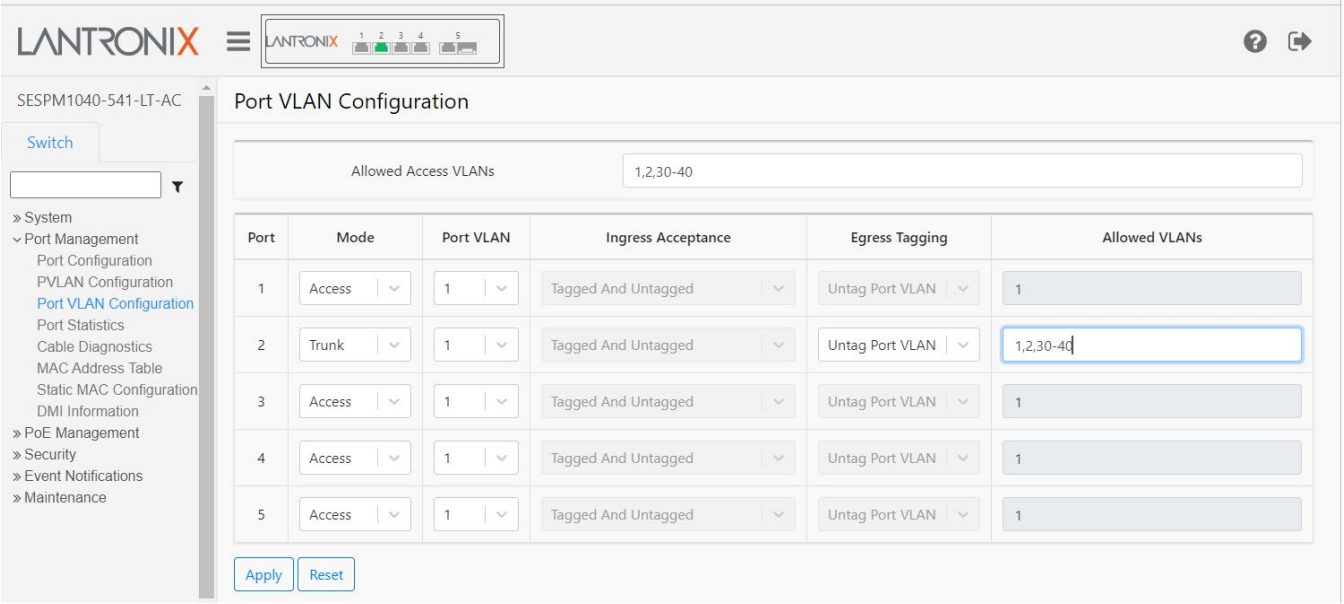
Successfully saved!

These messages may display momentarily:

The port #3 still in progress please wait and apply again.

The port #4 still in progress please wait and apply again.

Example:



Managing the Switch from a VLAN other than VLAN 1

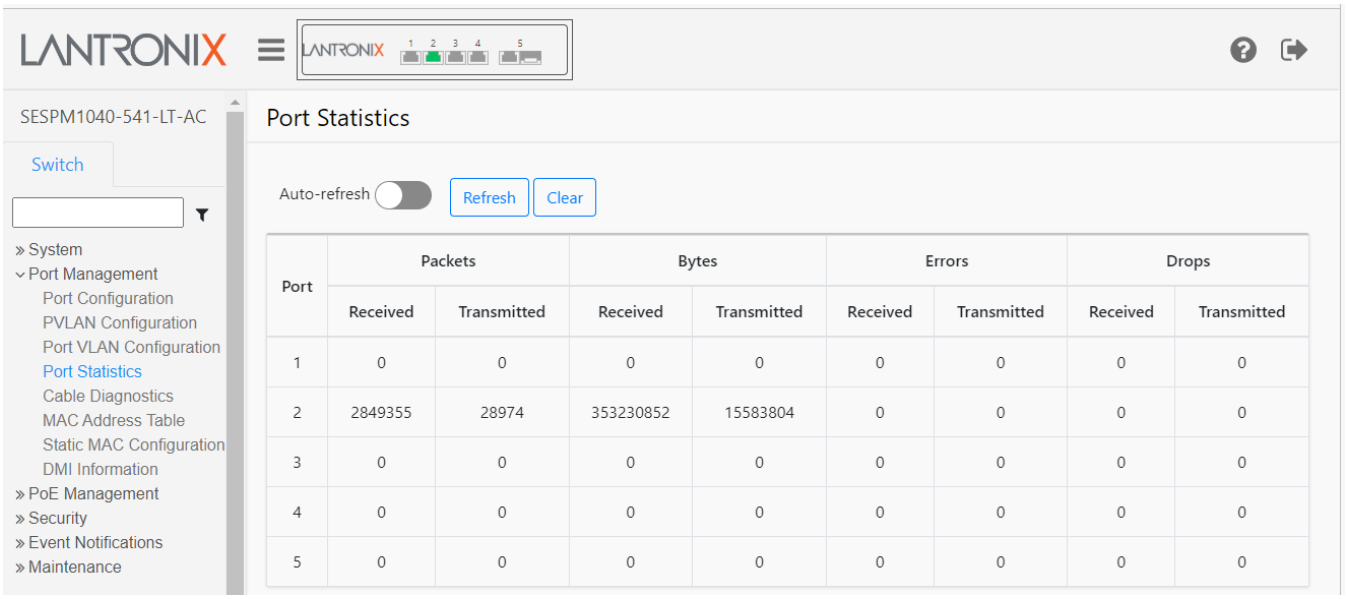
You can create different VLANs and add ports to them, but you can't currently remove VLAN 1. **Note**: If you do this in reverse order, you will lock yourself out. The VLAN must be on the Port first before being defined as a Management VLAN.

1. At Port Management > Port VLAN Configuration build the VLAN config. Build the desired port as a Trunk VLAN Port since trunks can have multiple VLANs and they are tagged on the egress of that interface. (Access VLANs are for attached devices as they only support one VLAN and are untagged on the egress of the port; i.e. a camera doesn't know what a VLAN is). This is typically then networked to a port on the core network switch which has a Trunk Port including that VLAN.

2. Build the IP interface with that management VLAN associated with it. Then you can access and manage the switch with the management VLAN.

Switch > Port Management > Port Statistics

This page displays the current port statistics for the switch ports.



Parameter descriptions:

Port : This column shows the set of switch ports.

Packets: Shows the number of packets received and transmitted for each port.

Bytes : Shows the number of bytes received and transmitted for each port.

Errors : Shows the number of errors received and transmitted for each port.

Drops : Shows the number of drops received and transmitted for each port.

Buttons:

Auto-refresh : Click to update the page automatically every 6 seconds.

Refresh : Click to manually refresh (update) the entries on this page immediately.

Clear : Clears (resets to 0) the page statistics.

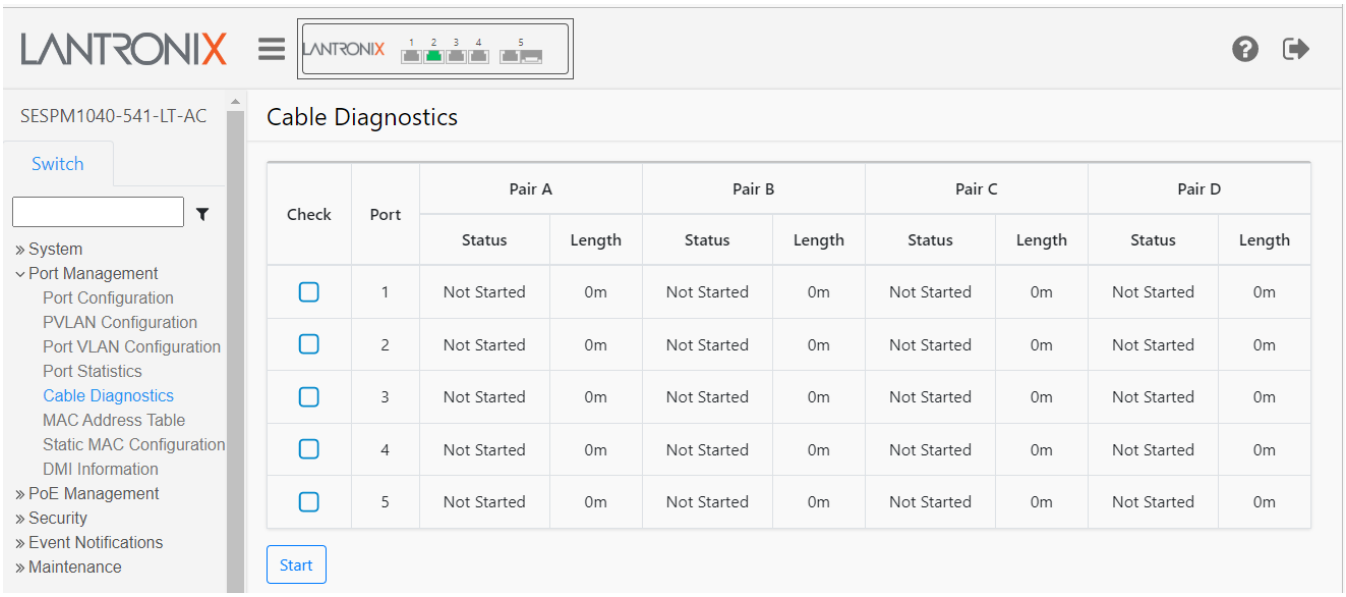
Messages: *Successfully cleared* displays when the Clear operation successfully completes. If this message displays and the counters are not cleared, click the Refresh button to complete the Clear.

Switch > Port Management > Cable Diagnostics

This page lets you run cable diagnostic tests per port.

The SESPM1040-541-LT-xx Cable Diagnostics uses TDR (Time Domain Reflectometry) for remote identification of potential cable malfunctions. Cable Diagnostics detects and reports potential cabling issues such as pair swaps, pair polarity, and excessive skew. It can also detect cable opens, shorts, or impedance mismatch in the cable and report accurately within one meter the distance to the fault.

The webpage allows running the cable diagnostic tests all ports that are selected. Note that Link can be lost during the test.



Parameter descriptions:

Check: Check or uncheck the box to enable or disable diagnostics per port. The default is no ports checked (all ports disabled for cable diagnostics).

Port: The number of the switch port that this line of the table defines.

Status: The diagnostic status for Pairs A, B, C and D per port. Can display Not Started, Pair OK, Pair Open, Same Pair Short, etc.

Length: The determined cable length in meters for Pairs A, B, C and D per port (e.g., 0M, 8m, 13m).

Buttons:

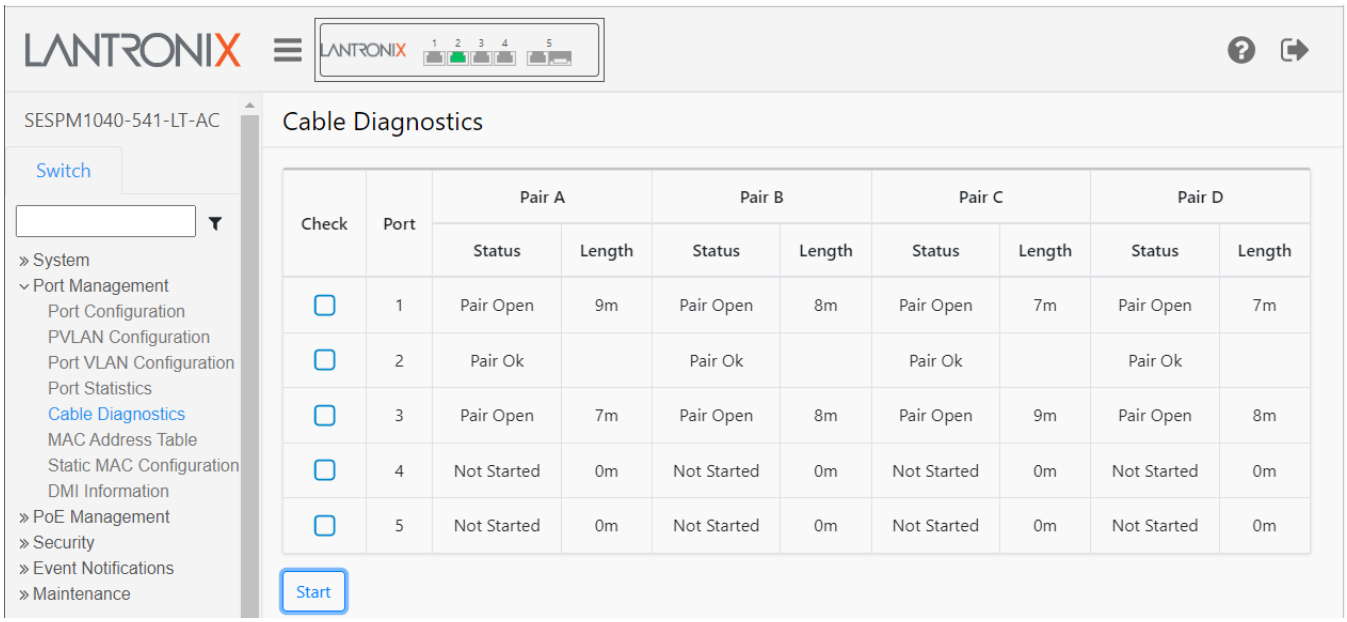
Start : Click to begin the diagnostic test.

Messages:

Cable Diagnostics is Running...

The status indicator values are 0 = unknown, 1 = begin (unused), 2 = started, 3 = running, 4 = finished, and 5 = fiber port (diagnostic unavailable).

Example: Ports 1 and 3 show Pair Open, Port 2 shows Pair OK, Ports and 5 have Not Started.



Switch > Port Management > MAC Address Table

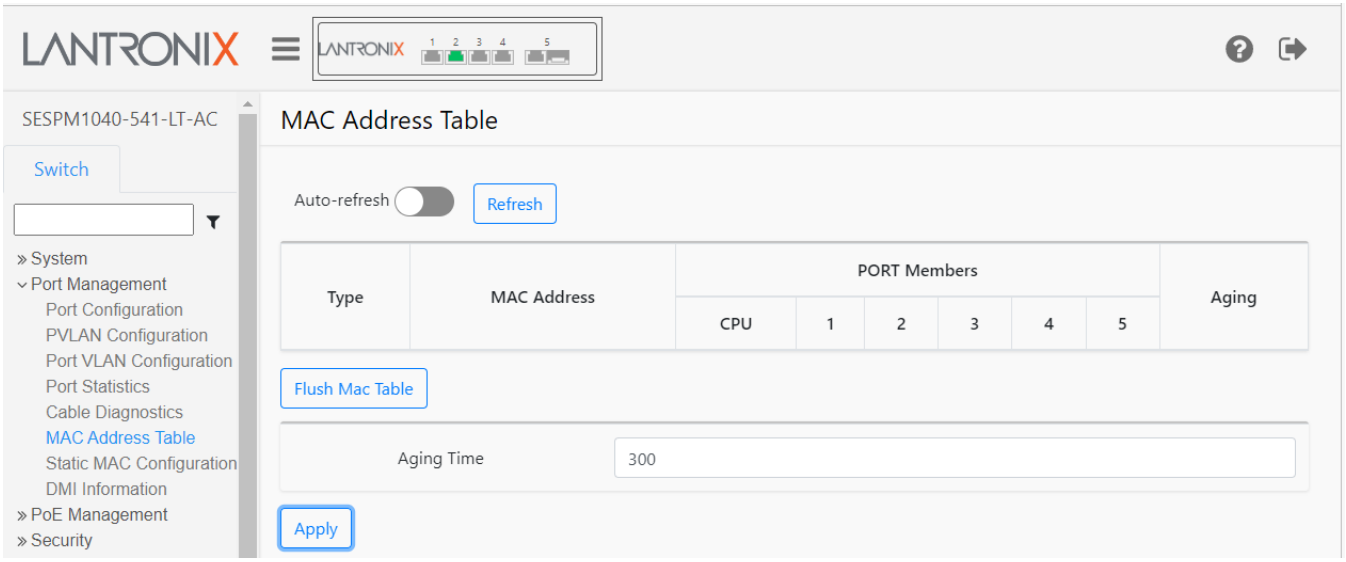
This page lets you view and set MAC Address Table parameters.

The switch maintains a MAC address table for switching frames efficiently between ports. The MAC address table contains Static and Dynamic MAC addresses.

- ***Static*** MAC addresses are added to the table with a CLI command or via the Web UI.
- ***Dynamic*** MAC addresses are added to the table when the switch receives a frame whose source MAC address is not listed in the MAC address table. The switch builds the table dynamically by referencing the source MAC address of frames it receives.

Switching of frames is based on the Destination MAC address (DMAC address) contained in the frame.
The switch builds a table that maps MAC addresses to switch ports for knowing which ports the frames should go to (based on the DMAC address in the frame). This table contains both static and dynamic entries. The static entries are configured by the network administrator if the administrator wants to do a fixed mapping between the DMAC address and switch ports.

The frames also contain a Source MAC address (SMAC address), which shows the MAC address of the device sending the frame. The SMAC address is used by the switch to automatically update the MAC table with these dynamic MAC addresses. Dynamic entries are removed from the MAC table if no frame with the corresponding SMAC address has been seen after a configurable age time.



Parameter descriptions:

Type: Displays the type of MAC address table (***Static*** or ***Dynamic***):

Static: entries are configured by the network administrator if the administrator wants to do a fixed mapping between the DMAC address and switch ports.

Dynamic: entries are removed from the MAC table if no frame with the corresponding SMAC address was seen after a configurable Aging Time (see below).

MAC Address: Displays the related 48-bit MAC address in the format xx-xx-xx-xx-xx-xx.

PORT Members: Displays the Member ports (CPU or ports 1-5 or 1-6). A Member port is indicated by a green dot in its respective column.

Aging: Displays the time period that an entry can remain in the table, measured from the most recent reception of a frame on the entry's VLAN from the specified MAC address. The switch removes entries when their presence in the MAC address table exceeds this aging time setting. The valid Aging Time range is 10 - 1,000,000 seconds; the default is 300 seconds (five minutes).

Aging Time: Enter or scroll to the time period that an entry can remain in the table before being removed (timed out). The valid Aging Time range is 10 - 1,000,000 seconds; the default is 300 seconds (five minutes).

Buttons:

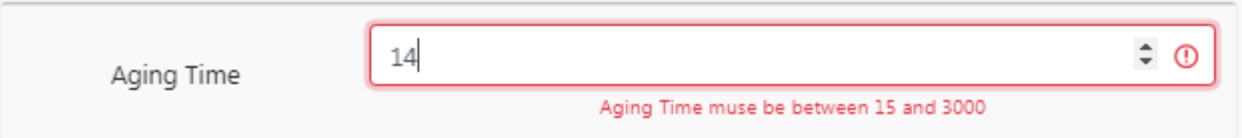
Auto-refresh : Click to update the page automatically every 6 seconds.

Refresh : Click to manually refresh (update) the entries on this page immediately.

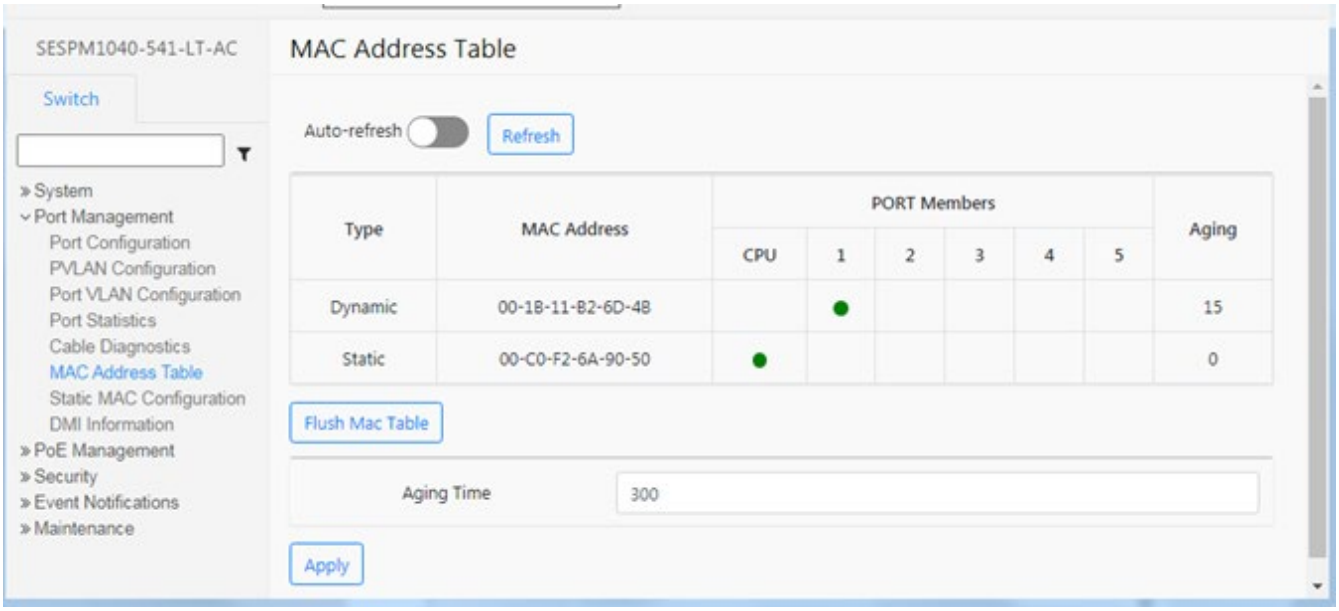
Flush MAC Table: Click to immediately remove all dynamic entries from the table.

Apply : Click to save the new parameter settings to the running-config file.

Messages: *Aging Time must be between 15 and 3000*

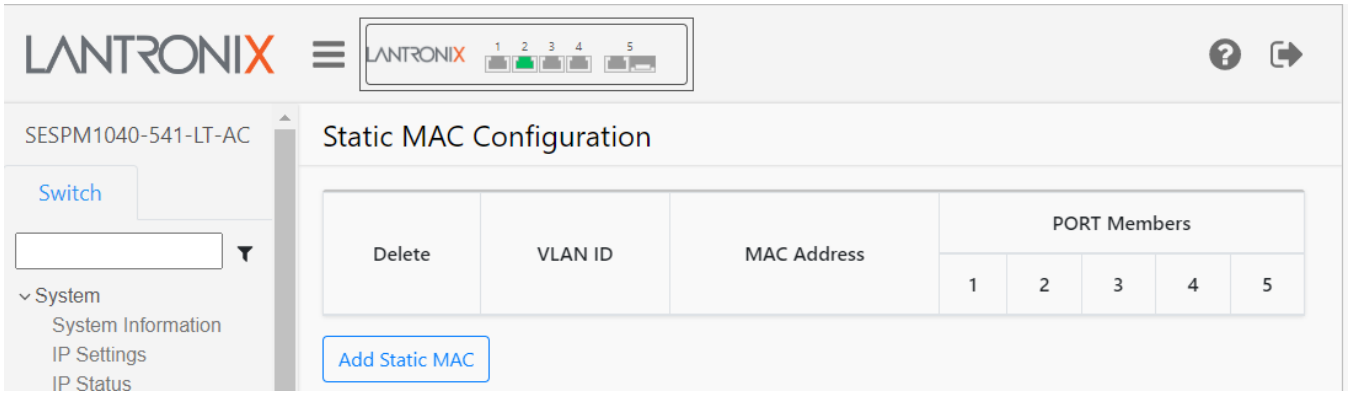


Example:



Switch > Port Management > Static MAC Configuration

This page lets you create, view, configure, and delete Static MAC addresses. The default (startup) page is shown below.



Parameter descriptions:

Delete: Click to delete an existing Static MAC address from the table. The valid range is 1-2049.

VLAN ID: Displays the existing set of related VLAN IDs.

MAC Address: Displays the related 48 bit MAC address in the format xx-xx-xx-xx-xx-xx.

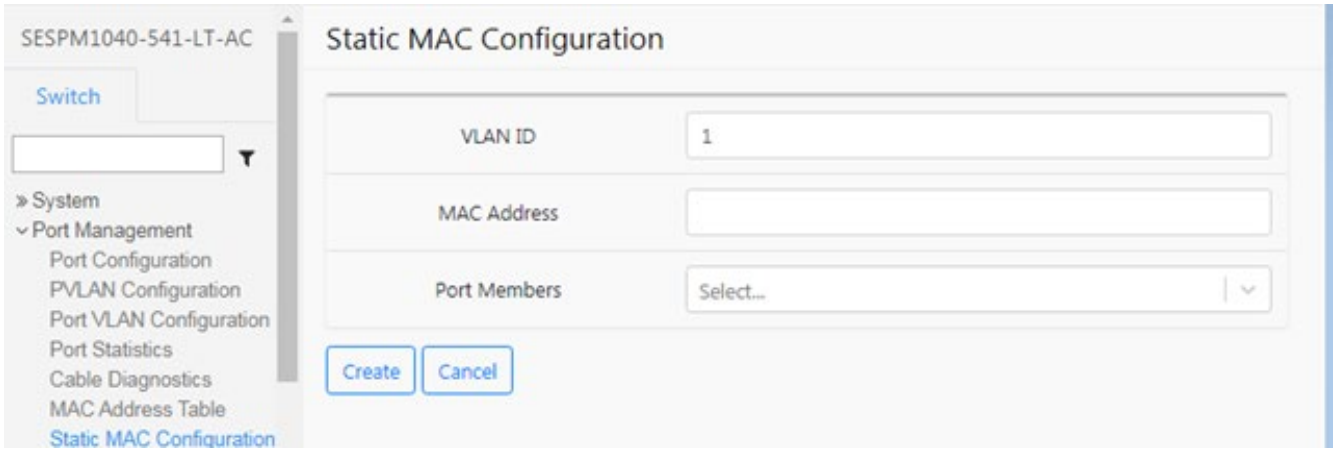
PORT Members: Displays Port members of each Static MAC (Port 1 – Port 6). A green dot indicates a port member.

Buttons:

Add Static MAC: Click to add a Static MAC address and configure its parameters on the Static MAC Configuration page (shown below).

Create Static MAC Configuration

Click the Add Static MAC button to display the configurable parameters:



Parameter descriptions:

VLAN ID: Enter an existing VLAN ID. The default is VID 1 (the default Management VLAN).

MAC Address: Enter a valid MAC address in the format *11-22-33-44-55-66*.

PORT Members: At the dropdown select Port 1 – 5 or 1- 6 as the Port member for this Static MAC.

Buttons:

Create: Click to add the Static MAC address, as configured on this page, to the MAC Address Table page. You may need to refresh the browser to display the table on the webpage.

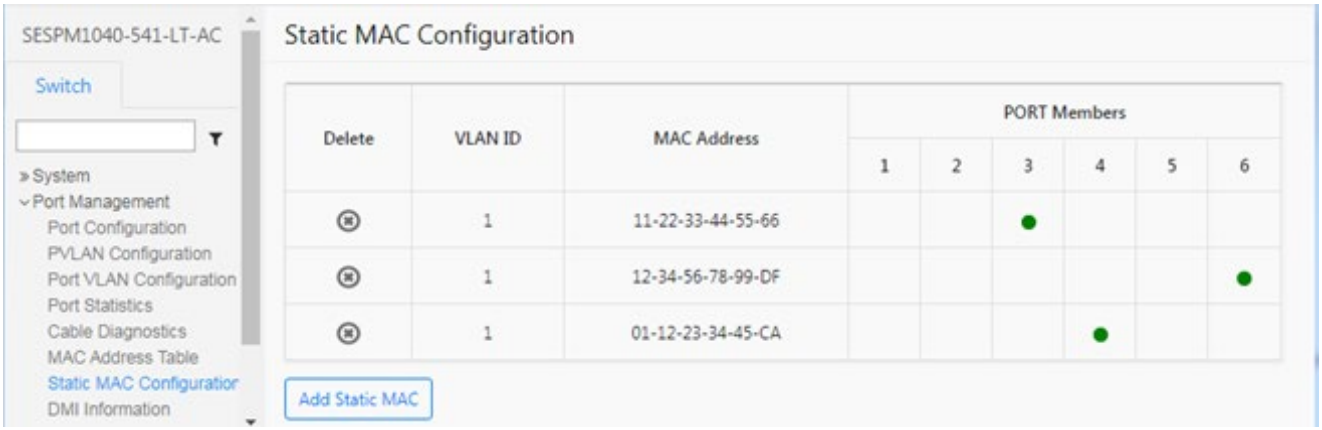
Cancel: Click to quit (cancel) this webpage operation and return to the Static MAC Configuration table.

Messages:

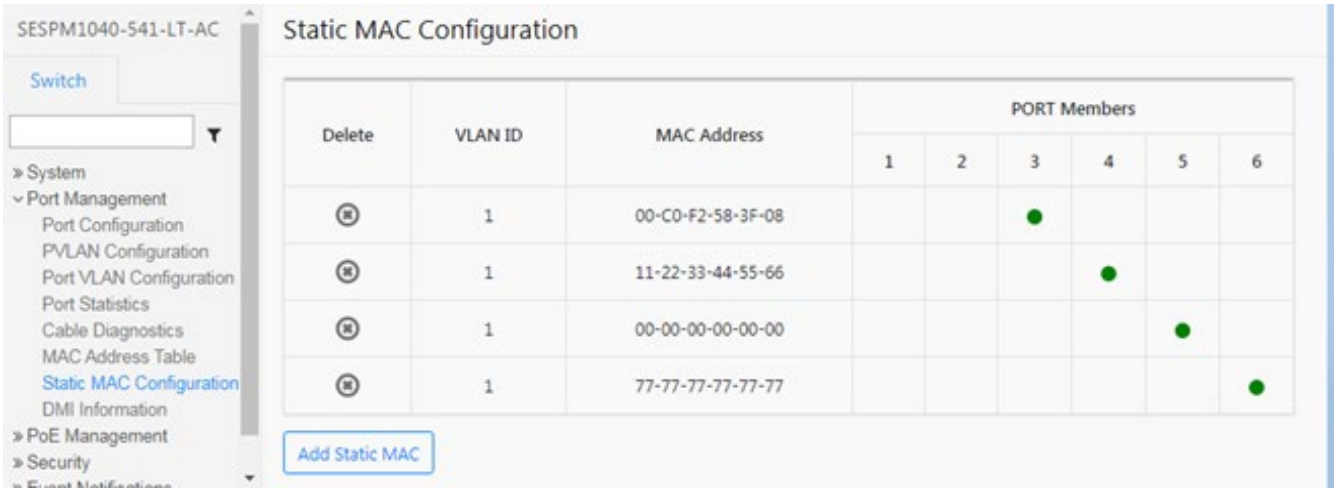
Successfully added!

The MAC Address is not valid

Example 1:

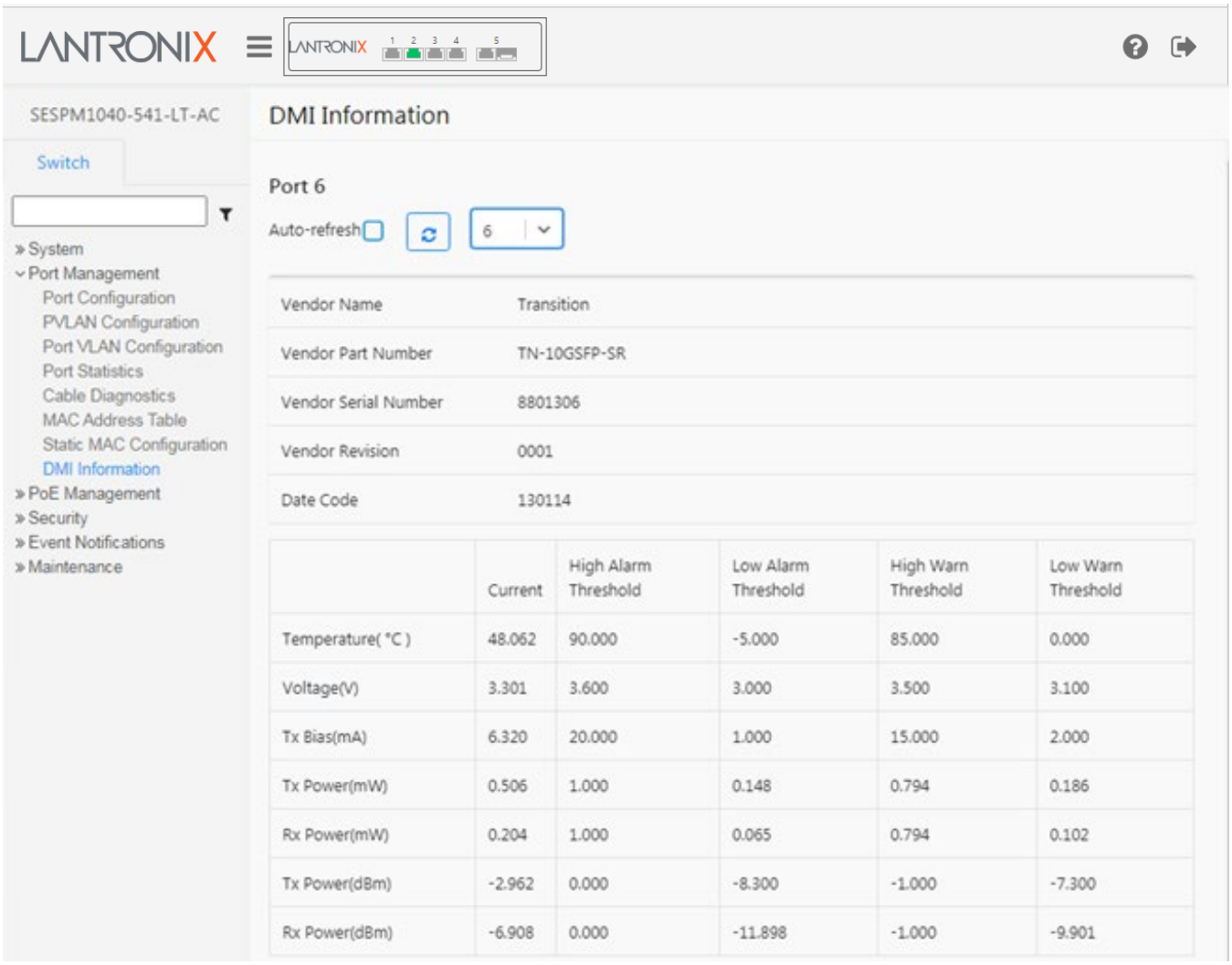


Example 2:



Switch > Port Management > DMI Information

This page lets you view DMI (Diagnostic Monitoring Information) for SFP ports. DMI values are shown for ports 5 and 6. The switch polls the SFPs every 30 seconds to test for threshold and alarm events. A detected Event will cause SNMP traps and syslog entries.



Parameter descriptions (top section): Displays basic SFP information for a port:

Vendor Name: Displays the name of the SFP module vendor (e.g., *Transition*).

Vendor Part Number: Displays the vendor part number or product name of the SFP module (e.g., *TN-SFP-SXD*).

Vendor Serial Number: Displays the serial number of the SFP (e.g., *8672426* or *TWDW34Z001*).

Vendor revision: Displays the revision of the SFP (e.g., *2.0*).

Date Code: Displays the date the SFP module was made (e.g., *111110* or *160730*).

Parameter descriptions (bottom section): The table displays the DMI parameters below in five columns (Current, High Alarm Threshold, Low Alarm Threshold, High Warn Threshold, and Low Warn Threshold):

Temperature(C): Displays the current internally measured temperature of SFP module in degrees Celsius (e.g., *37.968*). Temperature accuracy is vendor specific but must be better than 3 degrees Celsius over specified operating temperature and voltage.

Voltage(V): Displays the working DC voltage of SFP module (e.g., *3.2776*). This is the internally measured SFP transceiver supply voltage. Accuracy is vendor specific but must be better than 3 percent of the manufacturer's nominal value over specified operating temperature and voltage. Note that in some transceivers, transmitter supply voltage and receiver supply voltage are isolated. In that case, only one supply is monitored. Refer to the SFP specification for more detail.

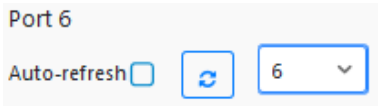
TX Bias(mA): Displays the Bias current of SFP module (e.g., *4.304*). This is the measured TX bias current in mA. Accuracy is vendor specific but must be better than 10 percent of the manufacturer's nominal value over specified operating temperature and voltage.

TX Power(mW): Displays the transmit power of SFP module (e.g., *0.2024* mW). This is the measured coupled TX output power in mW. Accuracy is vendor specific but must be better than 3dB over specified operating temperature and voltage. Data is assumed to be based on measurement of a laser monitor photodiode current. Data is not valid when the transmitter is disabled.

RX Power(mW): Displays the receive power of SFP module (e.g., *0.0001*). This is the measured received optical power in mW. Absolute accuracy is dependent upon the exact optical wavelength. For the vendor specified wavelength, accuracy should be better than 3dB over specified temperature and voltage. This accuracy should be maintained for input power levels up to the lesser of maximum transmitted or maximum received optical power per the appropriate standard. It should be maintained down to the minimum transmitted power minus cable plant loss (insertion loss or passive loss) per the appropriate standard. Absolute accuracy beyond this minimum required received input optical power range is vendor specific.

Tx Power(dBm): Shows the transmit power of the SFP module (e.g., -2.30 dBm). Displays the measured coupled TX output power in mW. Accuracy is vendor specific but must be better than 3dB over specified operating temperature and voltage. Data is assumed to be based on measurement of a laser monitor photodiode current. Data is not valid when the transmitter is disabled.

Rx Power(dBm): Shows the receiver power of the SFP module (e.g., none). Displays the measured received optical power in mW. Absolute accuracy is dependent upon the exact optical wavelength. For the vendor specified wavelength, accuracy should be better than 3dB over specified temperature and voltage. This accuracy should be maintained for input power levels up to the lesser of maximum transmitted or maximum received optical power per the appropriate standard. It should be maintained down to the minimum transmitted power minus cable plant loss (insertion loss or passive loss) per the appropriate standard. Absolute accuracy beyond this minimum required received input optical power range is vendor specific.



Buttons:

Auto-refresh: Check the box to automatically update page information every 6 seconds.

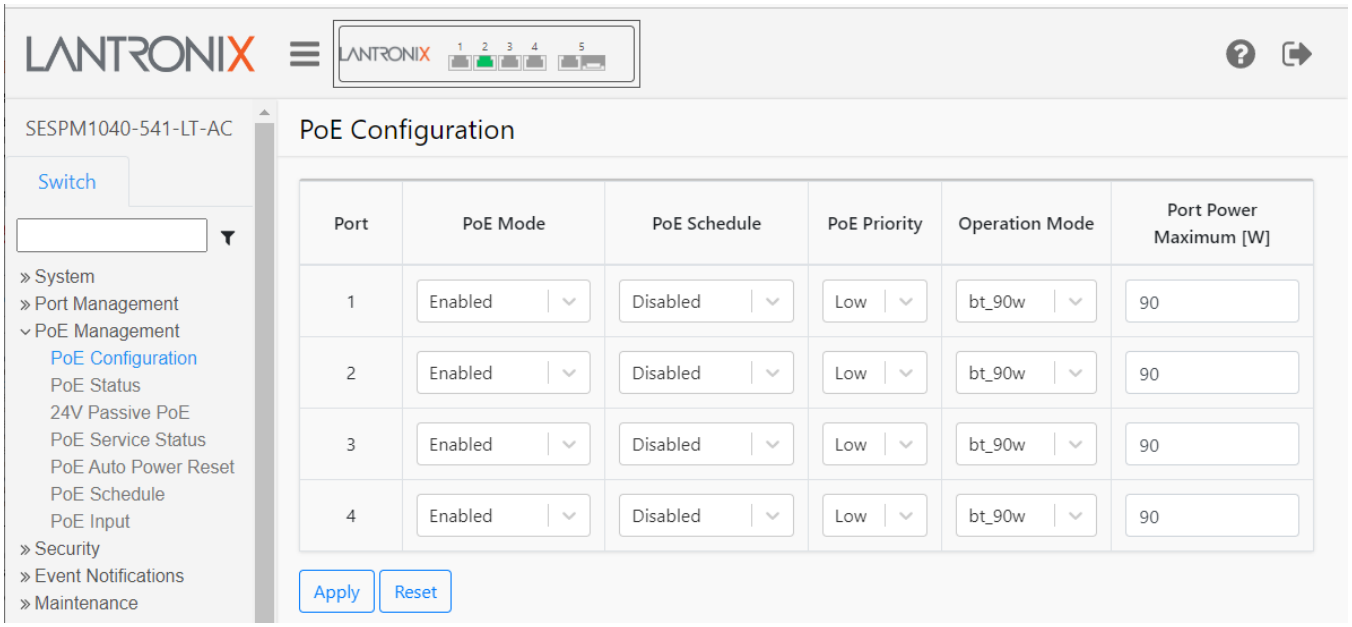
Refresh: Refreshes (updates) the entries on this page immediately.

Port select: At the dropdown select the port on which to display information. **Note**: Port 6 SFP needs to have a Combo Port Module installed to function.

Switch > PoE Management > PoE Configuration

This page lets you view and configure PoE (Power over Ethernet) parameters for the ports.

The switch is available as either **1)** an AC- or DC-powered power source (PSE) providing up to 90W on individual ports***** (not to exceed 180W total on the AC powered version or 240W total on the DC powered version), or **2)** a PoE-powered device (PD) which is also a PSE, providing up to 80W of power. The -PD version requires PoE power from an IEEE 802.3bt Type 4 Class 8 compliant PSE, or it can receive power over copper cable running parallel to a fiber optic cable for data (i.e., composite cable). ***** Note that specific port configuration may apply.



Parameter descriptions:

Port: The port number described by this line in the table. It is recommended that Port 1 and Port 3 be used for the most critical devices and set to Critical PoE Port Priority. See "PoE Port Power Shutdown Order" below.

PoE Mode: At the dropdown select Enabled, Disabled, or Force, where:

Enabled: PoE Mode is enabled for this port. This is the default setting.

Disabled: PoE Mode is disabled for this port.

Force: Provide power even if the device doesn't classify to standards.

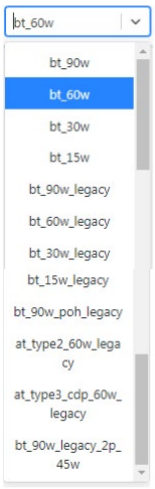
PoE Schedule: At the dropdown select Disabled or Profile 1-16. The default is Disabled.

PoE Priority: At the dropdown select Low, High, or Critical, where:

Low: When power is limited, Critical ports receive power first, then High priority ports, and Low priority ports last (default).

High: When power is limited, Critical ports receive power first and then High priority ports receive remaining power.

Critical: When power is limited, Critical ports receive power first. It is recommended that Port 1 and Port 3 be used for the most critical devices and set to Critical PoE Port Priority. See "PoE Port Power Shutdown Order" below.



Operation Mode: At the dropdown select which PoE standard to use. This defines how much power to allocate to each PoE port. **Note**: the default Operation Mode is IEEE 802.3bt 90W but the switch should recognize other IEEE 802.3 devices. If the device to be powered is not recognized, it may be a non-standard device and you may need to manually change the Operation Mode to the correct mode. The Operation Modes are:

bt_90w	IEEE 802.3bt -- 90 Watts (default FW v3.0.0 and after)
bt_60w	IEEE 802.3bt -- 60 Watts (default before FW v3.0.0)
bt_30w	IEEE 802.3bt -- 30 Watts
bt_15w	IEEE 802.3bt -- 15 Watts
bt_90w_legacy	IEEE 802.3bt -- 90 Watts – Legacy device support
bt_60w_legacy	IEEE 802.3bt -- 60 Watts – Legacy device support
bt_30w_legacy	IEEE 802.3bt -- 30 Watts - Legacy device support
bt_15w_legacy	IEEE 802.3bt -- 15 Watts – Legacy device support
bt_90w_poh_legacy	IEEE 802.3bt -- 90 Watts Power over HDBaseT - Legacy device support
at_type2_60w_legacy	IEEE 802.3at Type 2 -- 60 Watts – Legacy device support
at_type3_cdp_60w_legacy	IEEE 802.3at Type 3 -- 60 Watts – Cisco CDP – Legacy device support
bt_90w_legacy_2p_45w	IEEE 802.3bt at 90 Watts – 2-Pair -- 45 Watts– Legacy device support

See "PoE Operation Mode Details" below for more information.

Port Power Maximum [W]: The maximum amount of power for this port. Max Power is the used power threshold above which the PSE controller will shut off the port to protect the switch – i.e., an overload limit. The valid range is 0 - 95 Watts. The default is 90 Watts. The total for all ports is limited to 180 Watts for the -AC version, 240W for the -DC version, or 80 Watts for the –PD version.

Buttons:

Apply: Saves the entries on this page to the running-config file. Displays "*Successfully saved!*" when done.

Reset: Resets the page data to previous settings and momentarily displays "*Form data has been reset.*".

PoE Operation Mode Details

PoE Operation Mode, set on the PoE Configuration page or with the "poe opermode" CLI command, controls what the port presents to an attached PD. The available modes are:

Mode	4Pair Compliance	4Pair PSE Power Available	2Pair Compliance	2Pair PSE Power Available	Legacy Capacitor Detection	Notes
bt_90w	Type 4/Class 8	90w	Type 3	30w	no	
bt_60w	Type 3/Class 6	60w	Type 3	30w	no	
bt_30w	Type 3/Class 4	30w	Type 3	30w	no	
bt_15w	Type 3/Class 3	15w	Type 3	15w	no	
bt_90w_legacy	Type 4/Class 8	90w	Type 3	30w	yes	
bt_60w_legacy	Type 3/Class 6	60w	Type 3	30w	yes	
bt_30w_legacy	Type 3/Class 4	30w	Type 3	30w	yes	
bt_15w_legacy	Type 3/Class 3	15w	Type 3	15w	yes	
bt_90w_poh_legacy	All Classes + IEEE Detection	90w	All Classes + IEEE Detection	45w	no	90w/45w PoH like on all classes - does not handle legacy detection - to be renamed
at_type2_60w_legacy	Type 2/Class 6	60w	Type 2	30w	yes	Type 2 non-standard BT with special AT behavior
at_type3_cdp_60w_legacy	Type 3/Class 3	60w	Type 3	30w	yes	CDP required to activate 4Pair 60w, coming in future release
bt_90w_legacy_2p_45w	Type 4/Class 8	90w	Type 3/Class 5	45w	yes	2Pair special class 5 behavior

PoE Port Power Shutdown Order

The -AC powered version of the switch is capable of supplying 180W total PoE across all ports simultaneously; the -DC powered version of the switch is capable of supplying 240W total PoE across all ports simultaneously, or up to 90W per individual port.

The switch should be able to supply 90W to two ports (180W) under all normal circumstances. It is recommended that Port 1 and Port 3 be used for the most critical devices and set to Critical PoE Port Priority to ensure power remains up on those ports in the event the connected devices attempt to draw too much power.

If the switch exceeds the 180W/240W PoE limit, then it will begin to shut power down on ports according to PoE Port Priority settings (Low Priority ports first, then High Priority ports, then Critical Priority ports last). If ports are set to the same priority, then the order of shutdown will be Port 4 → Port 2 → Port 3 → Port 1.

Order of Port Power Shutdown in Case of Over-powering of Connected Devices

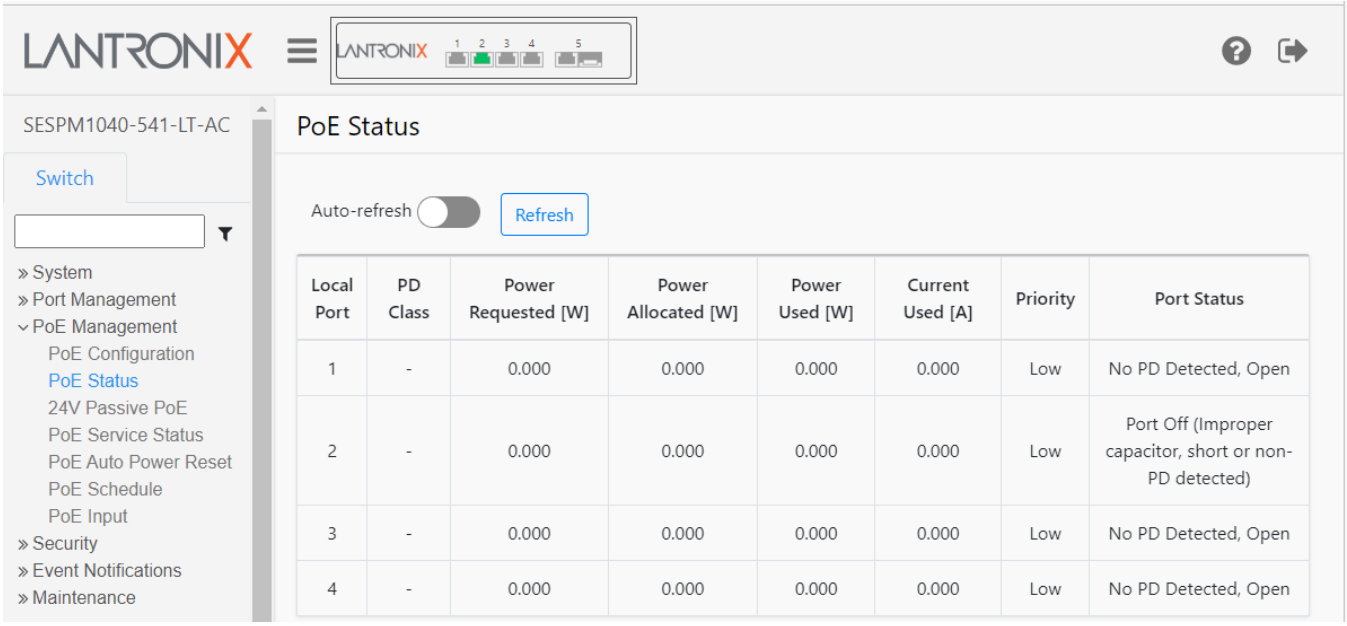
Configured Priority	PoE Port			
	Port 1	Port 2	Port 3	Port 4
Low	4	2	3	1
High	8	6	7	5
Critical	12	10	11	9

For the PoE powered version (-PD), the same priority rules apply, although the maximum total power is 80W.

There are temperature sensors within the switch to monitor the temperature inside the switch. If the power supply within the switch gets too hot, all ports will be shut down regardless of priority. This is to prevent the switch from overheating and causing permanent damage.

Switch > PoE Management > PoE Status

This page lets you view PoE status on a per-port basis.



Parameter descriptions:

Local Port: Displays the port number described by this line in the table.

PD Class: The PoE PD class (1-8) of the powered device attached to this port.

Power Requested [W]: The amount of PoE power requested by the PD attached to this port, in Watts.

Power Allocated [W]: The amount of PoE power currently allocated to the PD attached to this port, in Watts.

Power Used [W]: The amount of PoE power now in use by the PD attached to this port, in Watts.

Current Used [A]: The amount of current now in use by the PD attached to this port, in Amps.

Priority: Displays the priority currently assigned to the port:

- ***Low***: Receives power after critical and high priority ports (default).
- ***High***: Receives available power after critical ports.
- ***Critical***: Receives available power first.

Port Status: Typical port status reported:

- ***Port Off (User configured)***: You have turned off PoE power via CLI, Web UI, or the Switch Manager Mobile App.
- ***No PD Detected***: The switch cannot detect an attached Powered Device.
- ***Port Off Momentarily (Detection in process)***: The switch has detected an attached Powered Device but has not yet started changing the PoE configuration for this port.
- ***Port Off Momentarily (Configuration change in progress)***: The switch is in the process of changing the PoE configuration for this port. You can wait for the status to change or click the Refresh button.
- ***PD Detected (2-Pair, IEEE 802.3bt Single Signature)***: The switch detected an attached Powered Device and is reporting its status (e.g., *PD Detected (2-Pair, IEEE 802.3bt Single Signature)*

PD Detected (4-Pair, IEEE 802.3bt Single Signature): The switch detected an attached Powered Device and is reporting its status as *4-Pair, IEEE 802.3bt Single Signature*.

PD Detected (2-Pair, IEEE 802.3af/at) : The switch detected an attached Powered Device and is reporting its status as 2-Pair, IEEE 802.3af/at.

Port Off (Improper capacitor detected or short): If a non-PoE device is connected to PoE port 1 of the switch, PoE Status should detect as "*No PD Detected*" instead of detecting as "*Port Off (Improper capacitor detected or short)*.

unknown: This port's status cannot be detected. The attached device may be unsupported or mis-configured.

Port Off (Illegal Class detected) : PD class is illegal.

All PoE Port Status

Port Status	Description
Port Off (Mains Voltage above Max Voltage Limit)	Mains voltage is higher than Max Voltage limit.
Port Off (Insufficient Mains Voltage)	Mains voltage is lower than Min Voltage limit.
Port Off (Disable all ports HW pin set, please power cycle)	Hardware pin disabled all ports. If power cycling does not clear this condition, contact Technical Support.
Port Off (non-existent port, please power cycle)	This condition should not occur. If power cycling does not clear this condition, contact Technical Support.
Undefined port (please power cycle)	Internal port mapping error. If power cycling does not clear this condition, contact Technical Support.
Port Off (Internal HW fault)	Internal port not responding. If power cycling does not clear this condition, contact Technical Support.
Port Off (User configured)	Check PoE Service Status to see why port is off. You may have turned off PoE power via CLI, Web UI, or the Switch Manager Mobile App.
Port Off Momentarily (Detection in process)	Classification is in progress.
Port Off (non-802.3AF/AT PD detected)	Non-standard PD is connected to this port.
Port Off (Underload)	Underload state according to 802.3AF/AT (current is below Imin).
Port Off (Overload)	Overload state according to 802.3AF/AT (current is above Icut).
Port Off (Power budget exceeded)	Internal Power Management disabled port due to insufficient power.
Port Off Momentarily (Configuration change in progress)	Port configuration or Operation Mode were changed, and port is classifying.
Port Off (Port receiving voltage, check remote device)	Port is off due to external source applying power.
Port Off (Improper capacitor, short or non-PD detected)	Improper capacitor value or short on attached PD.
Port Off (Discharged load)	Other port is receiving voltage and causing this port to power off.
Port Off (Short detected)	Short detected in PD
Port Off (Over temperature at Port)	Port temperature protection mechanism was activated.
Port Off (Over temperature at PSE)	PSE internal die temperature above safe operating limit.
Unknown Device	Currently not used.
Power Denied (Power management: calculated power > power limit)	Calculated power exceeds power limit.
Power Denied (Port requested more power than user-configuration allows)	PD requested more power than user predefined power value.
Power Denied (Port requested more power than available)	PD requested more power than port is capable of providing (ex: PoH PD over M device port).

Port Off (Illegal Class detected)	PD class is illegal.
Port Off Post-Crash (Overload/Underload/Short detected)	Port off due to switch crash. If power cycling does not clear this condition, contact support.
Port Off Post-Crash	Port off due to switch crash, internal configuration set to forced off after crash. Ports are not configured in this manner, please contact support if this error occurs.
Port Off Post-Crash (Previously not providing power)	Port off due to switch crash. If power cycling does not clear this condition, contact support.
Force Power Crash Error	Switch crashed while port was in Forced power mode.
Port Off (During recovery, Underload detected)	During crash recovery, port was disabled due to UDL. If power cycling does not clear this condition, contact support.
Port Off (During recovery, PG Event)	During crash recovery, port was disabled due to PG event. If power cycling does not clear this condition, contact support.
PD Detected (2-Pair non-IEEE on 2-Pair port)	Non-IEEE PD detected in BT 2P mode.
PD Detected (2-Pair IEEE 802.3bt on 2-Pair port)	Detected compliant PD in BT 2P mode.
PD Detected (2-Pair only, non-IEEE)	Signature failure on 2P (out of 4P), only powering on 2P.
PD Detected (2-Pair, non-IEEE)	Non-IEEE PD detected in BT 4P mode, only powering on 2P.
PD Detected (4-Pair, non-IEEE)	Non-IEEE PD detected in BT 4P mode, powering on 4P.
PD Detected (2-Pair, IEEE 802.3af/at)	SSPD detected in 4P mode, operating in 2P because Class ≤ 4.
PD Detected (4-Pair, IEEE 802.3bt Single Signature)	SSPD detected in 4P mode, operating in 4P because Class > 4.
PD Detected (2-Pair, IEEE 802.3bt Dual Signature in 1st phase)	DSPD detected in 4P mode, operating in 2P due to 4P candidate validation in two cycles.
PD Detected (2-Pair, IEEE 802.3bt Dual Signature)	DSPD detected in 4P mode, operating in 2P.
PD Detected (4-Pair, IEEE 802.3bt Dual Signature)	DSPD detected in 4P mode, operating in 4P.
Power Forced On (2-Pair, BT)	Delivering forced power in 2P mode.
Power Forced On (4-Pair, BT)	Delivering forced power in 4P mode.
Power Forced (Error, BT)	In Forced power mode, at least 2P stopped delivering power due to error.
No PD Detected, Connection check error	Invalid connection check signature detected in 4P mode.
No PD Detected, Open	Port is not connected.

SSPD = Series Surge Protection Device

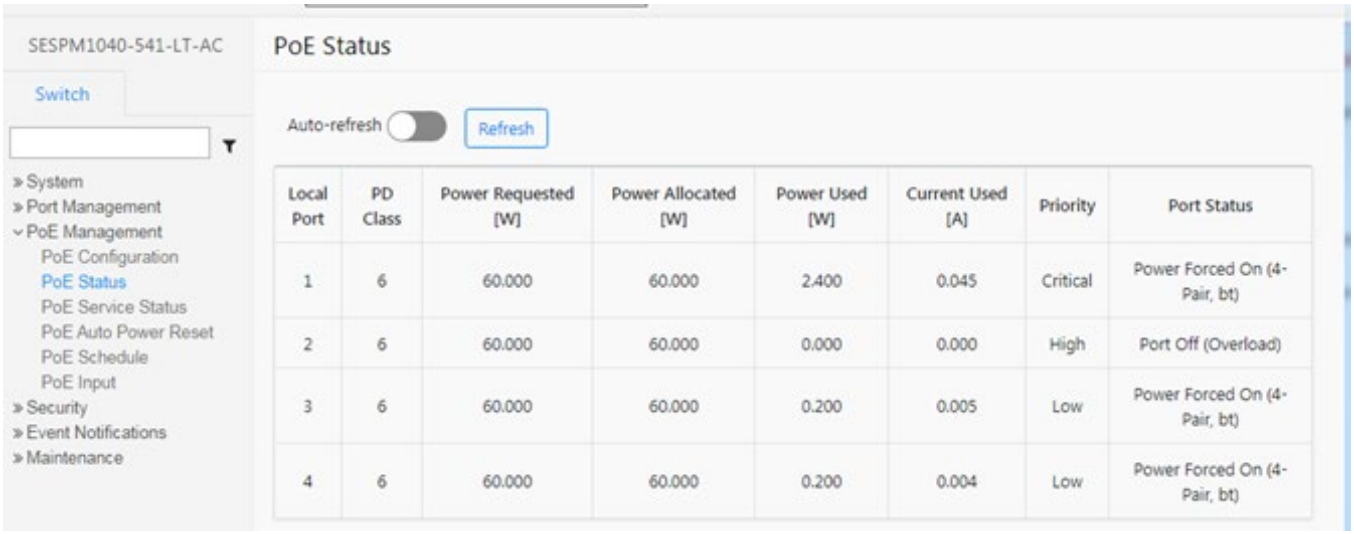
DSPD = Data Series Surge Protection Device

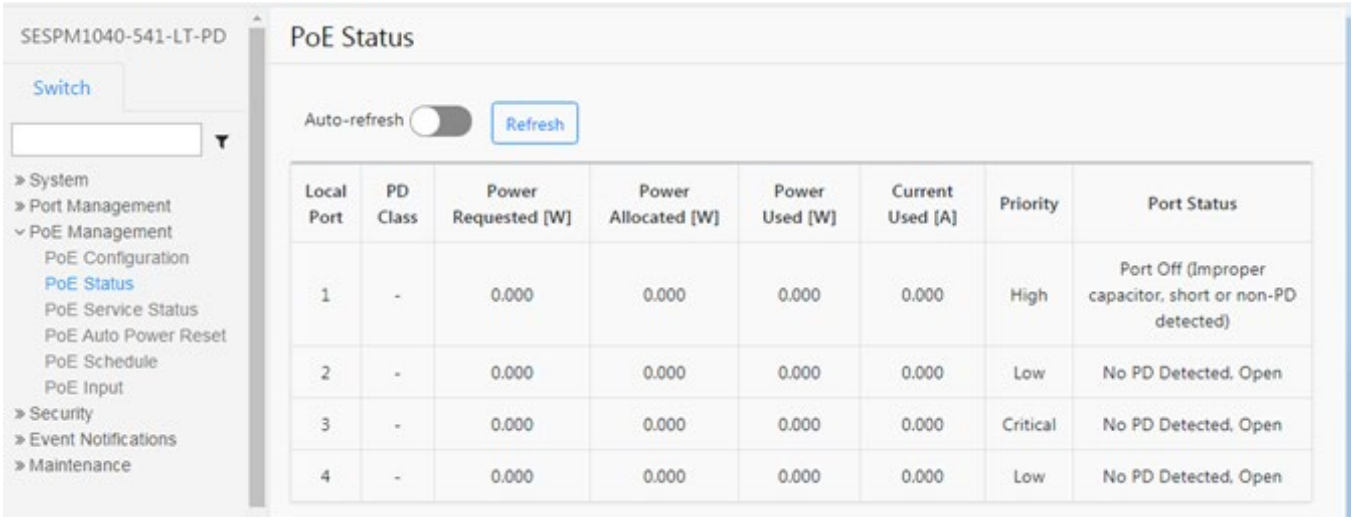
Buttons:

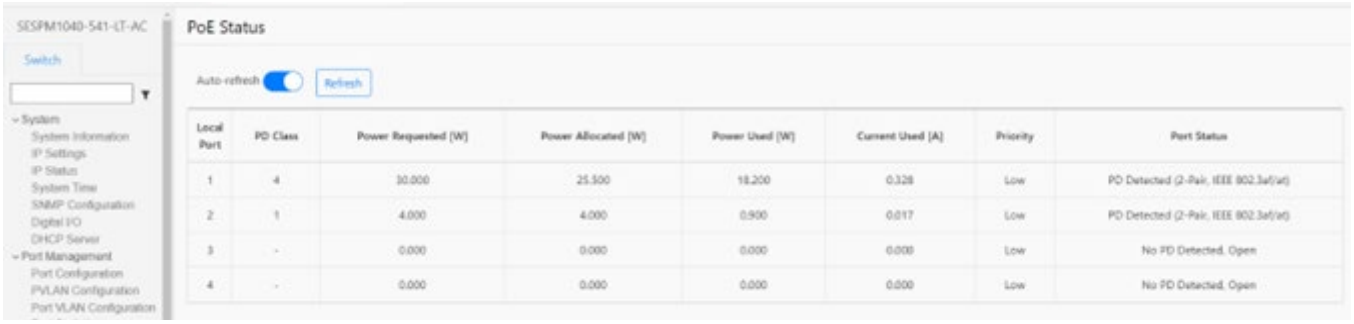
Auto-refresh: Check the slide bar to automatically update page information every 6 seconds. It displays in blue when enabled and in gray when disabled.

Refresh: Refreshes (updates) the entries on this page.

Examples:

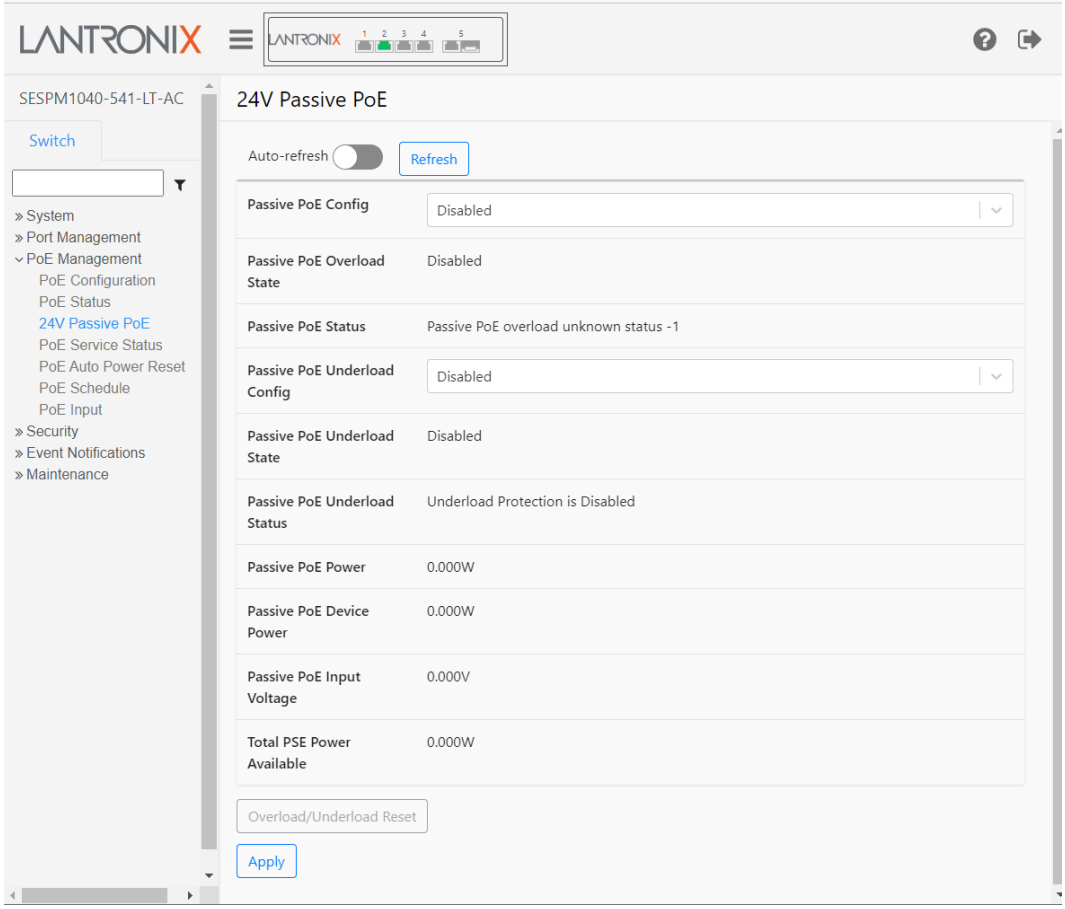

SESPM1040-541-LT-AC
Switch
System
Port Management
PoE Management
PoE Configuration
PoE Status
PoE Service Status
PoE Auto Power Reset
PoE Schedule
PoE Input
Security
Event Notifications
Maintenance
PoE Status
Auto-refresh
Refresh
Local Port | PD Class | Power Requested [W] | Power Allocated [W] | Power Used [W] | Current Used [A] | Priority | Port Status
1 | 6 | 60.000 | 60.000 | 2.400 | 0.045 | Critical | Power Forced On (4-Pair, bt)
2 | 6 | 60.000 | 60.000 | 0.000 | 0.000 | High | Port Off (Overload)
3 | 6 | 60.000 | 60.000 | 0.200 | 0.005 | Low | Power Forced On (4-Pair, bt)
4 | 6 | 60.000 | 60.000 | 0.200 | 0.004 | Low | Power Forced On (4-Pair, bt)

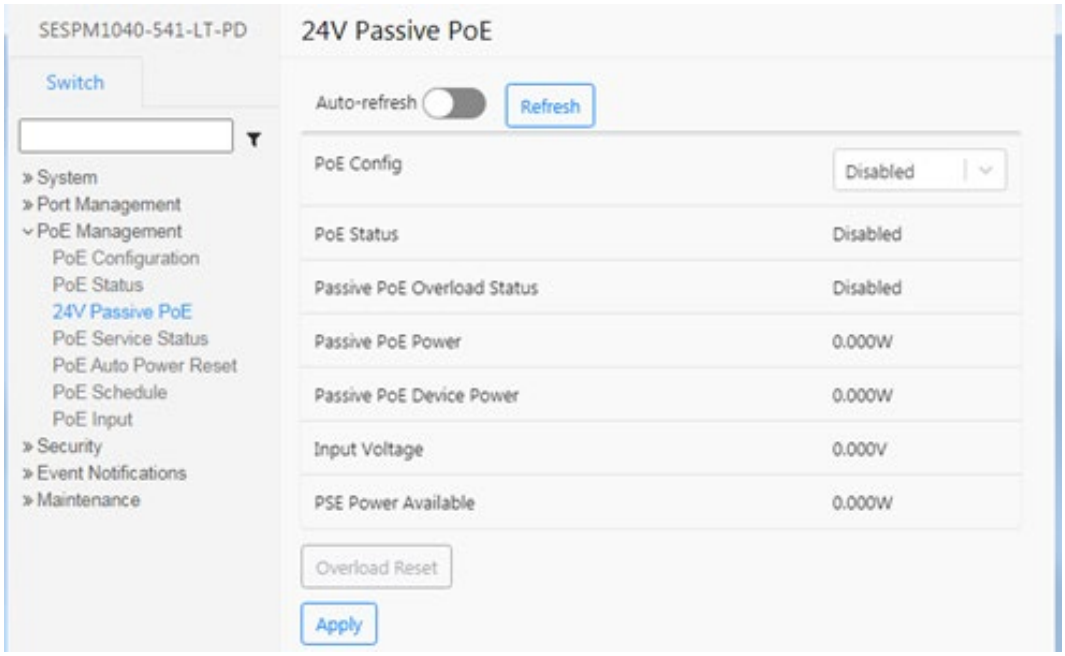

SESPM1040-541-LT-PD
Switch
System
Port Management
PoE Management
PoE Configuration
PoE Status
PoE Service Status
PoE Auto Power Reset
PoE Schedule
PoE Input
Security
Event Notifications
Maintenance
PoE Status
Auto-refresh
Refresh
Local Port | PD Class | Power Requested [W] | Power Allocated [W] | Power Used [W] | Current Used [A] | Priority | Port Status
1 | - | 0.000 | 0.000 | 0.000 | 0.000 | High | Port Off (Improper capacitor, short or non-PD detected)
2 | - | 0.000 | 0.000 | 0.000 | 0.000 | Low | No PD Detected, Open
3 | - | 0.000 | 0.000 | 0.000 | 0.000 | Critical | No PD Detected, Open
4 | - | 0.000 | 0.000 | 0.000 | 0.000 | Low | No PD Detected, Open


SESPM1040-541-LT-AC
PoE Status

Switch > PoE Management > 24V Passive PoE

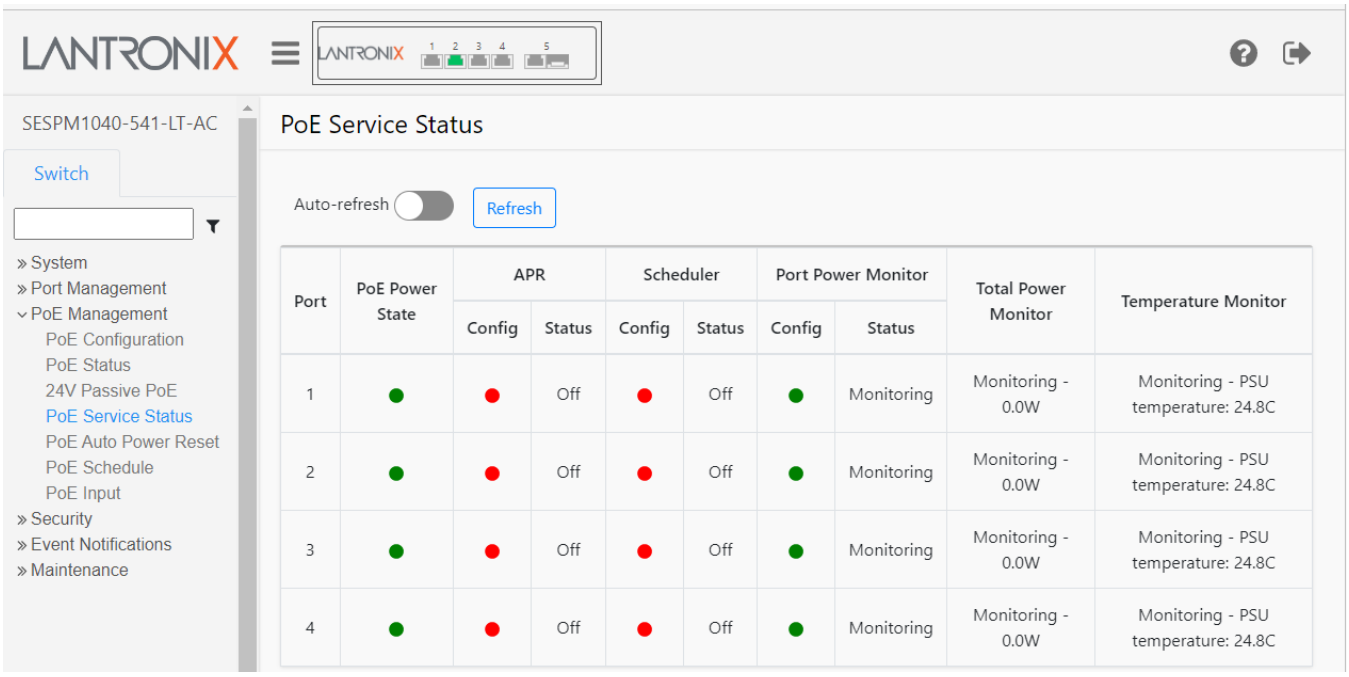
The switch lets you configure and view SESPM-2P-24V-CP Option Module parameters. See the “SESPM-2P-24V-CP Option Install Guide” for option installation, CLI commands, web UI, and troubleshooting information.





Switch > PoE Management > PoE Service Status

This page lets you view PoE service status on a per-port basis. See “PoE Automatic Power Reset (APR) Services” on page 10 for more information.



Parameter descriptions:

Port: Displays the port number described by this line in the table.

PoE Power State: The current state of PoE power; a green dot means PoE power is up or a red dot means PoE power is down.

APR Config: The current APR (Auto Power Reset) state; a green dot means APR is up or a red dot means APR down.

APR Status: The current APR (Auto Power Reset) status. For example:

Off: APR is turned off for this port.

Monitoring: PoE power for this port is being monitored.

Monitoring - Duration*: 0s Consecutive Failures: 0 Failure Events: 0*: See “PoE Automatic Power Reset (APR) Services” on page 10 for more information.

Discovery Phase 2 - Duration: 210s, APR Failure - PoE Off: A discovery failure was detected for this port.

Discovery failed after 20 minutes*, please verify configuration, Monitoring - Duration: 30s Consecutive Failures: 0 Failure Events: 0*: A discovery failure was detected for this port.

***Discovery Phase 1 - Duration: 90s*:** Discovery was detected for this port.

APR Failure - Discovery failed after 20 minutes, please verify configuration:

See “PoE Automatic Power Reset (APR) Services” on page 10 for more information.

Scheduler Config: The current PoE scheduler, either a green dot meaning the PoE scheduler is up or a red dot meaning the PoE scheduler is down for this port.

Scheduler Status: The current PoE scheduler status. For example:

Off: PoE scheduling is disabled for this port.

On: PoE scheduling is enabled for this port.

Off - Disabled by service: PoE scheduling is disabled for this port. See "PoE Schedule Services" on page 12 for more information.

Running - Current PoE State*: On Next event: Reset, Wednesday at 03:30*): See PoE Schedule below.

PoE Power Monitor Config: The current PoE power monitor config, either a green dot = up or a red dot = down.

PoE Power Monitor Status: The current PoE power monitor status (e.g., *Monitoring*).

Total Power Monitor: Displays the status and measured power provided to each port (e.g.*, Monitoring - 11.9W*).

Temperature Monitor: The current status and temperature (e.g., *Monitoring - PSU temperature: 29.2C*). The Temperature Monitor watches the temperature of the PSU and if it goes over 76° C, PoE is shut off on all ports until the PSU temperature drops below 60° C.

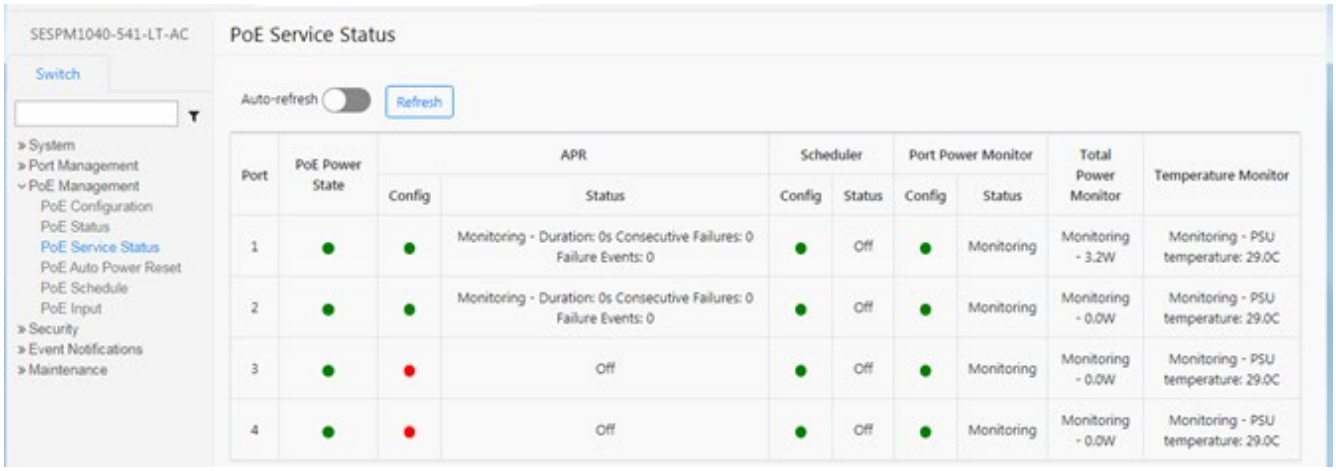
See "PoE Services" on page 10 for more PoE services information.

Buttons:

Auto-refresh: Check the slide bar to automatically update page information every 6 seconds. It displays in blue when enabled and in gray when disabled.

Refresh: Refreshes (updates) the entries on this page.

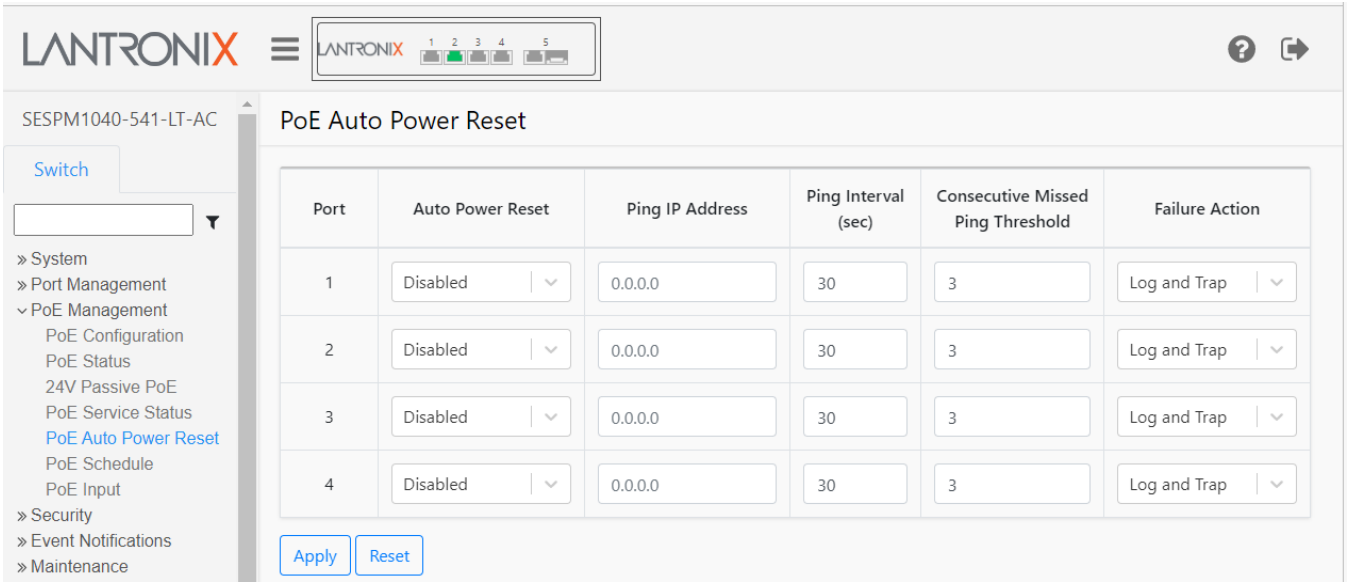
Example:



Switch > PoE Management > PoE Auto Power Reset

This page lets you enable and configure a ping check of connected devices.

The Auto Power Reset feature provides savings by allowing connected devices to be remotely monitored and reset (rebooted) in the event they become unresponsive, eliminating the need to dispatch technicians for simple power issues.



Parameter descriptions:

Port: The port number described by this line in the table.

Auto Power Reset: At the dropdown select Enabled or Disabled for each port. The default is Disabled.

Ping IP Address: Enter the IP address to ping.

Ping Interval (sec): Set the time between pings in seconds. The valid range is 10 - 120 seconds. The default is 30 seconds.

Consecutive Missed Ping Threshold: The number of consecutive failed pings to trigger an APR Failure. The default is 3.

Failure Action: At the dropdown select what action is to be taken if a ping fails. The selections are *Reset, Log and Trap* or *Log and Trap*. The default is *Log and Trap*.

Buttons:

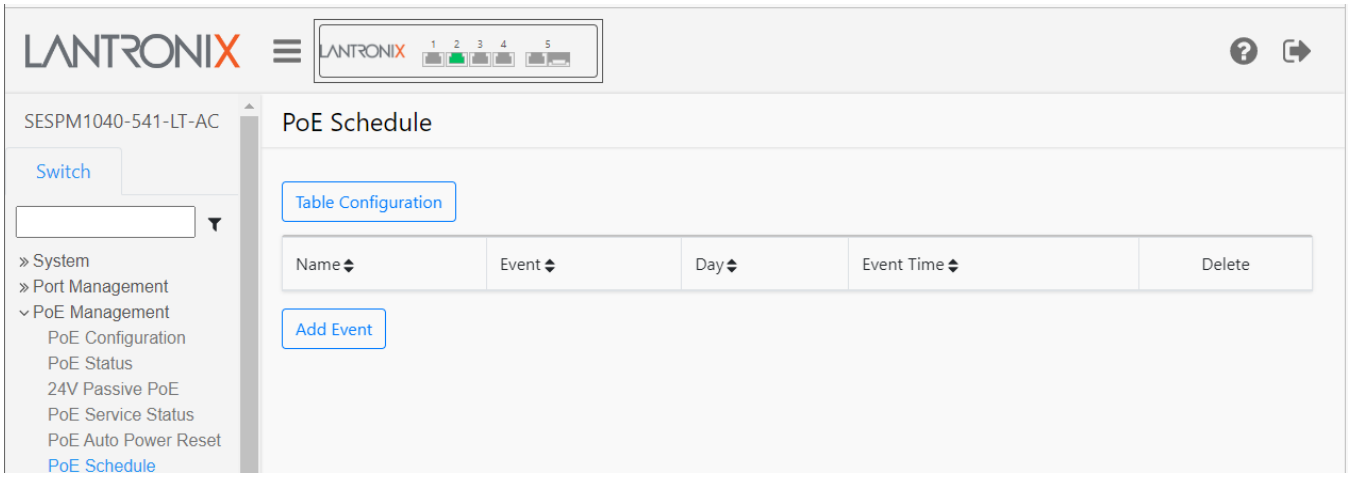
Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset.*"

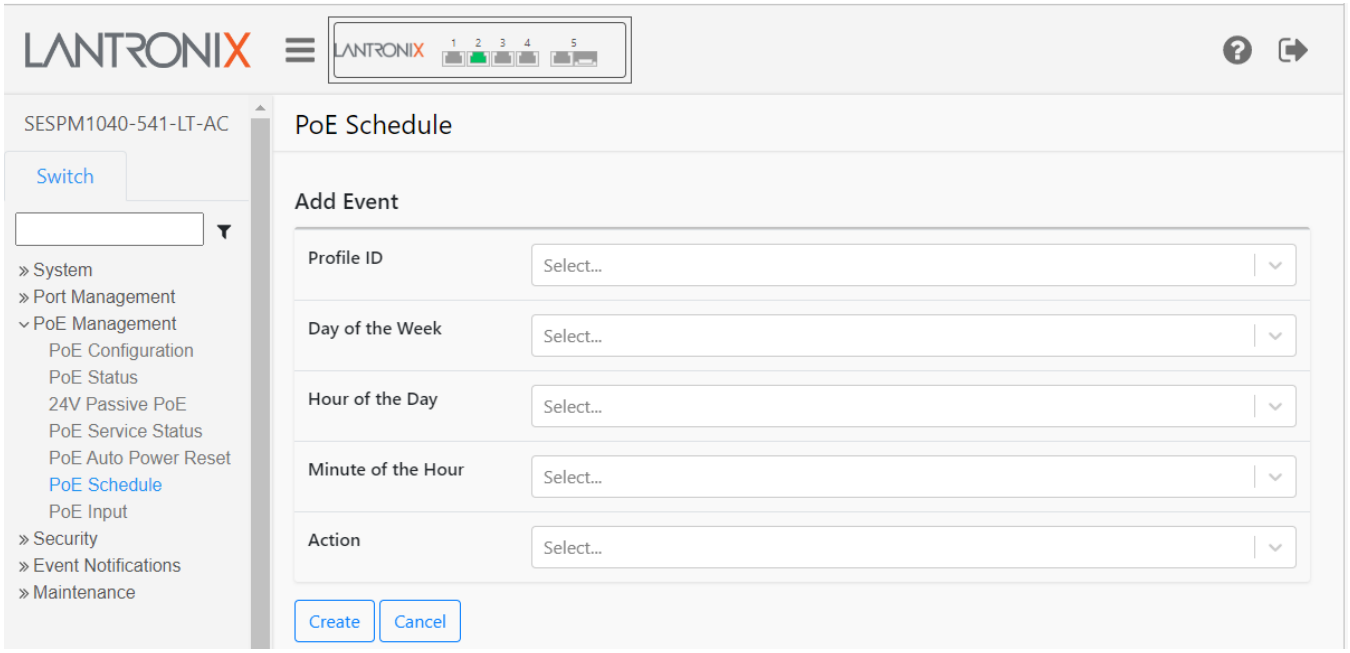
Switch > PoE Management > PoE Schedule

This page lets you configure 1-16 PoE schedule profiles of scheduled events (actions) to be applied. Note that you must also select a profile at System > PoE Management > PoE Configuration in the PoE Schedule column (see above).

Navigate to Switch > PoE Management > PoE Schedule to display the initial PoE Schedule page:



At the initial PoE Schedule page click the **Add Event** button to display the table to enter the PoE Schedule - Add Event parameters. SW v 3.0.2 updated the dropdown when adding events to select profile correctly and moved naming profiles to the table configuration button.



Parameter descriptions:

Profile ID: At the dropdown select the PoE schedule profiles (e.g., Profile 1-16).

Day of the Week: Displays the day of the week the event will occur at, Monday - Sunday or Every Day.

Day of the Week: Select Monday – Sunday or Every Day.

Hour of the Day: Select 00-23 as the hour for the selected Event (Action) to occur.

Minute of the Hour: Select 00-55 in 5 minute increments as the minute of the hour for the selected Action to occur.

Action: Select Power On, Power Off, or Reset as the Scheduled Event (Action) to occur.

Buttons:

Apply: Click the button to save the page entries to the running-config file.

Table Configuration: Click the button to display the PoE Schedule - Add Event page (see below).

Add Event: Click the button to display the table to enter the PoE Schedule - Add Event parameters.

Configure Table: Click to display the Add Event table again.

Add Event: Click to display the Add Event table again.

Add: Click to add a new PoE schedule instance to the table.

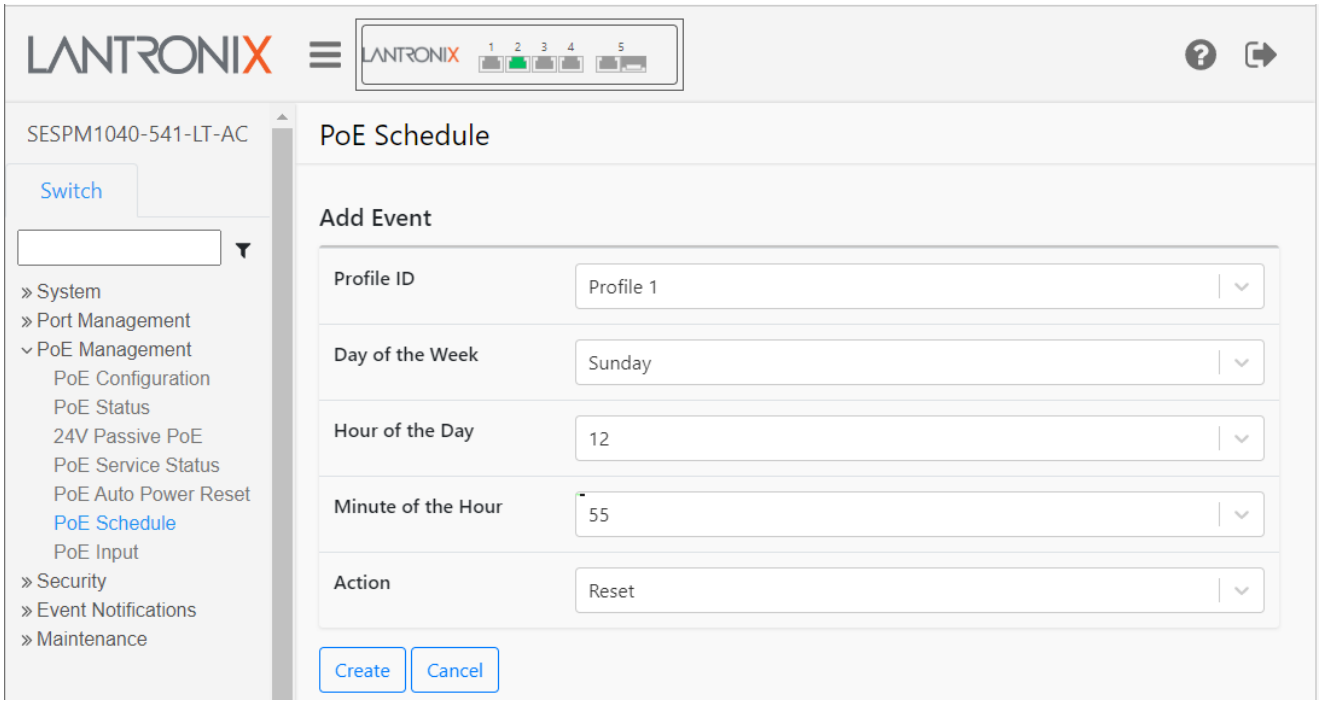
Create: Saves the entries on this page to the running-config file.

Cancel: Resets the page data to previous settings and momentarily displays the message *Form data has been reset.*

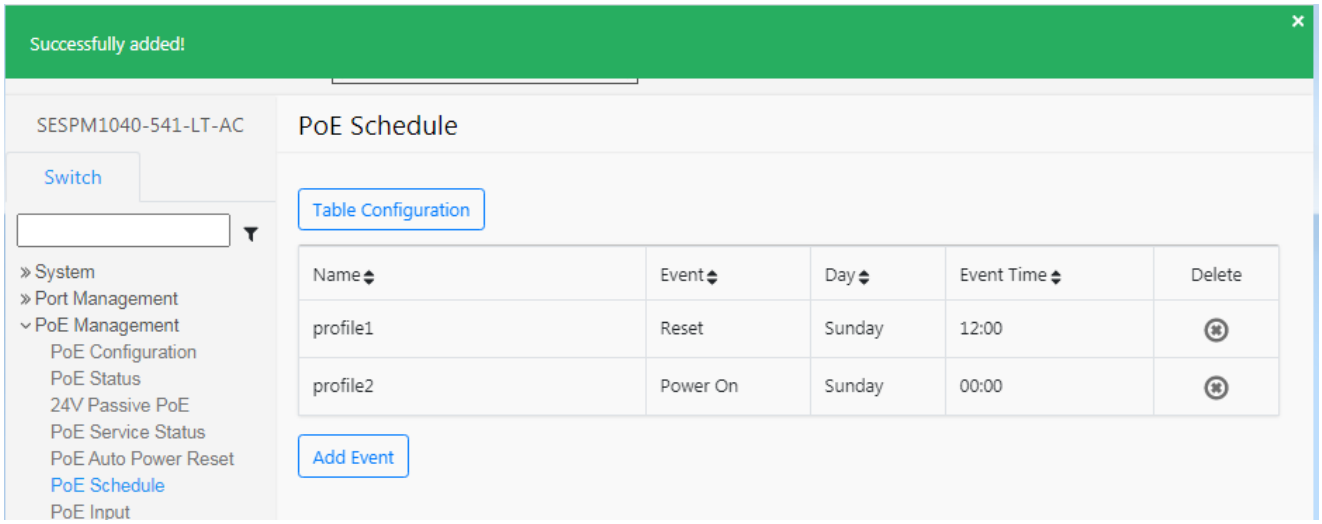
 **Delete**: Click to go to back the PoE Schedule - Add Event page.

Message: *Error while adding* displays if a parameter was entered incorrectly.

Example 1: PoE Schedule selections:



Example 2: Two PoE Schedule profiles successfully added:



Parameter descriptions:

Profile: At the dropdown select a PoE schedule profile (profile 1-16).

Name: Displays the selected PoE schedule profile (e.g., profile 1-16).

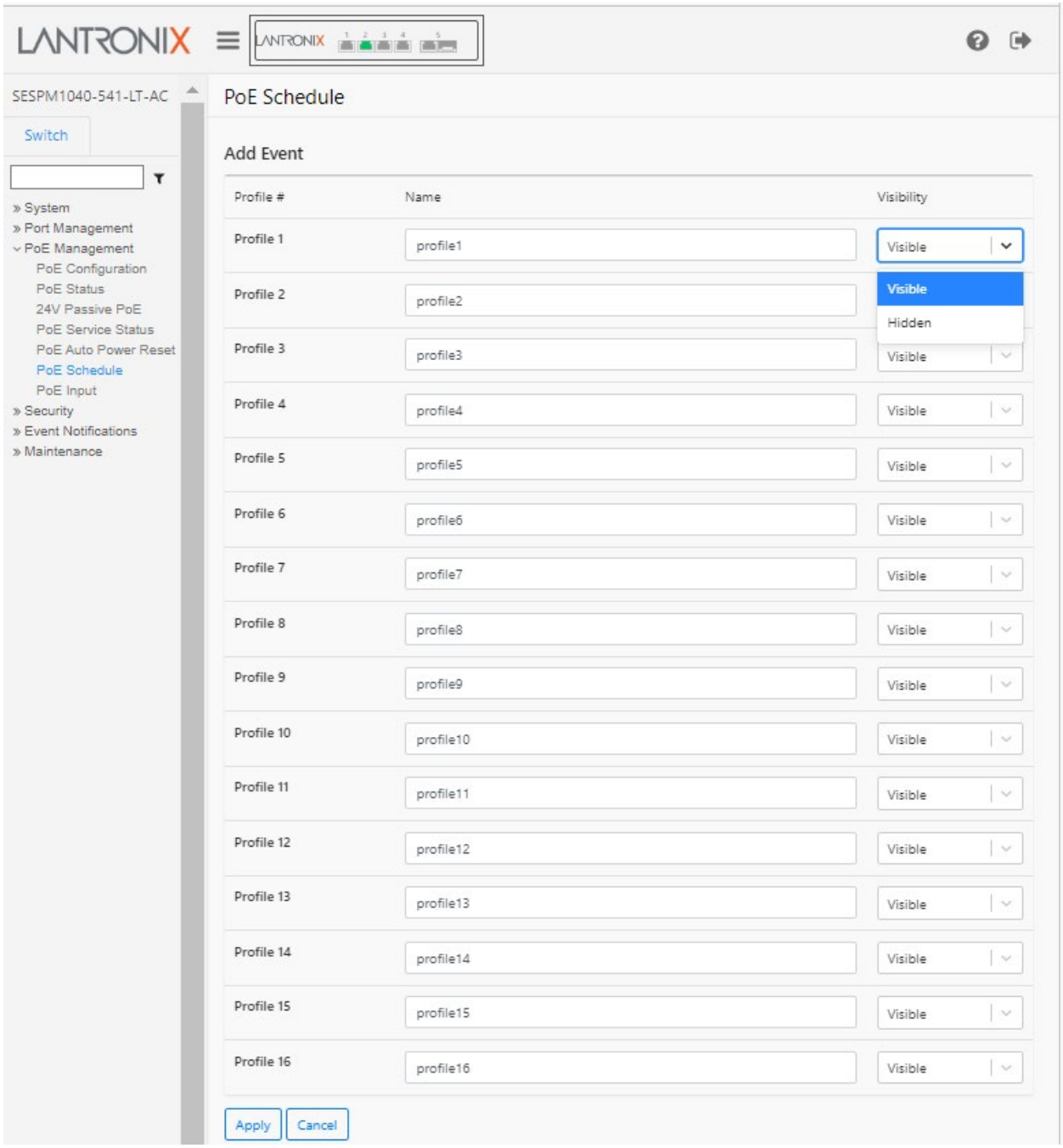
Event: Displays the Action to be performed (Power On, Power Off, or Reset) at the scheduled date and time.

Day: Displays the day of the week the event will occur at, Monday - Sunday or Every Day.

Event Time: Displays the time that the event will take place (e.g., 02:10).

Delete: Click to delete the profile instance.

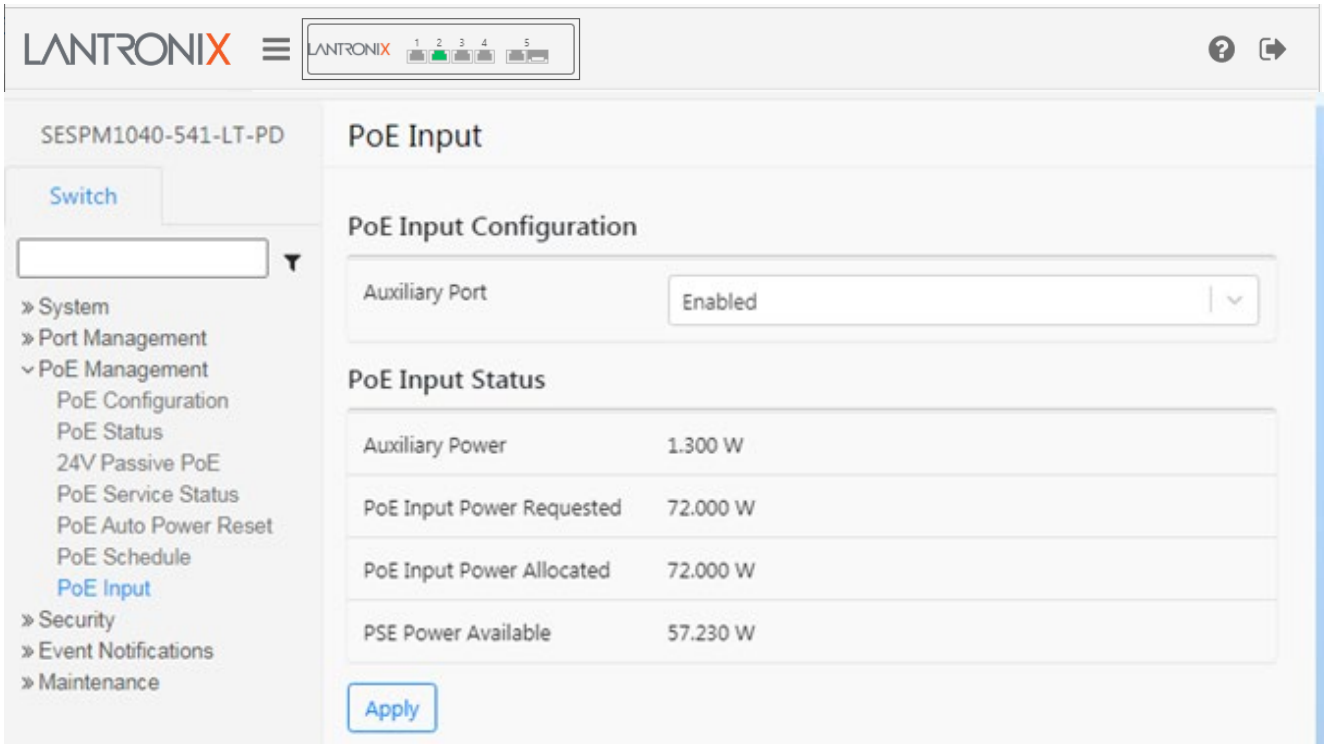
Example 3: Click the **Table Configure** button to display the PoE Schedule - Add Event page:



Profile Visible / Hidden : At the dropdown select Visible on the PoE Schedule Table or Hidden (enabled but not displayed on the PoE Schedule Table) and click the Apply button. The default is Visible.

Switch > PoE Management > PoE Input (-PD Only)

This page lets you enable / disable the Auxiliary Port state and view the present PoE Input Status on the SESPM1040-541-LT-PD.



Parameter descriptions:

PoE Input Configuration section:

Auxiliary Port: At the dropdown select Enabled or Disabled as the Aux Port state.

PoE Input Status section:

Auxiliary Power: Displays the amount of remaining power in Watts available to the Aux Port (e.g., 4.839 W).

PoE Input Power Requested: Displays the amount of PoE input power in Watts from the PSE (e.g., 72.000 W).

PoE Input Power Allocated: Displays the amount of PoE input power in Watts presently allocated to the Aux Port (e.g., 72.000 W).

PSE Power Available: Displays the amount of power sourcing equipment available to the –PD (e.g., 62.161 W).

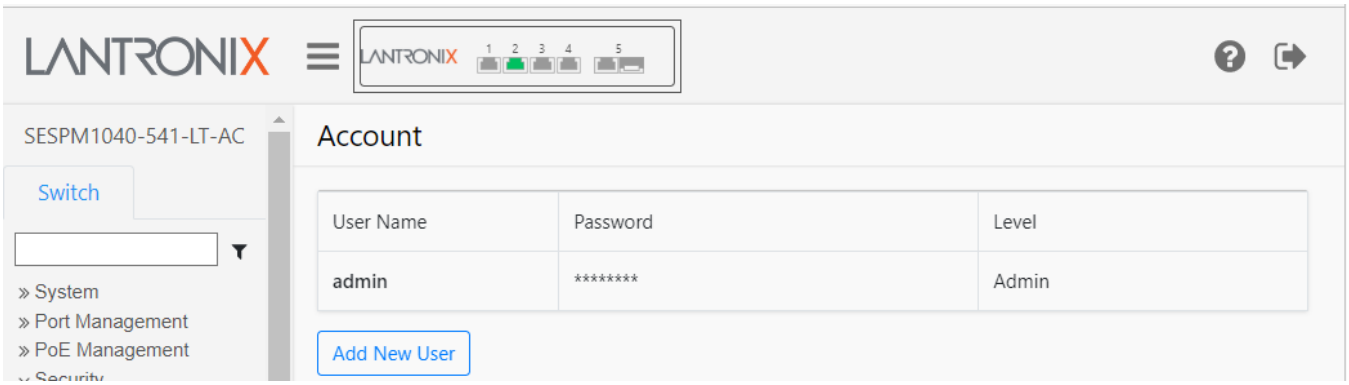
Buttons:

Apply: Click to save the entries on this page to the running-config file.

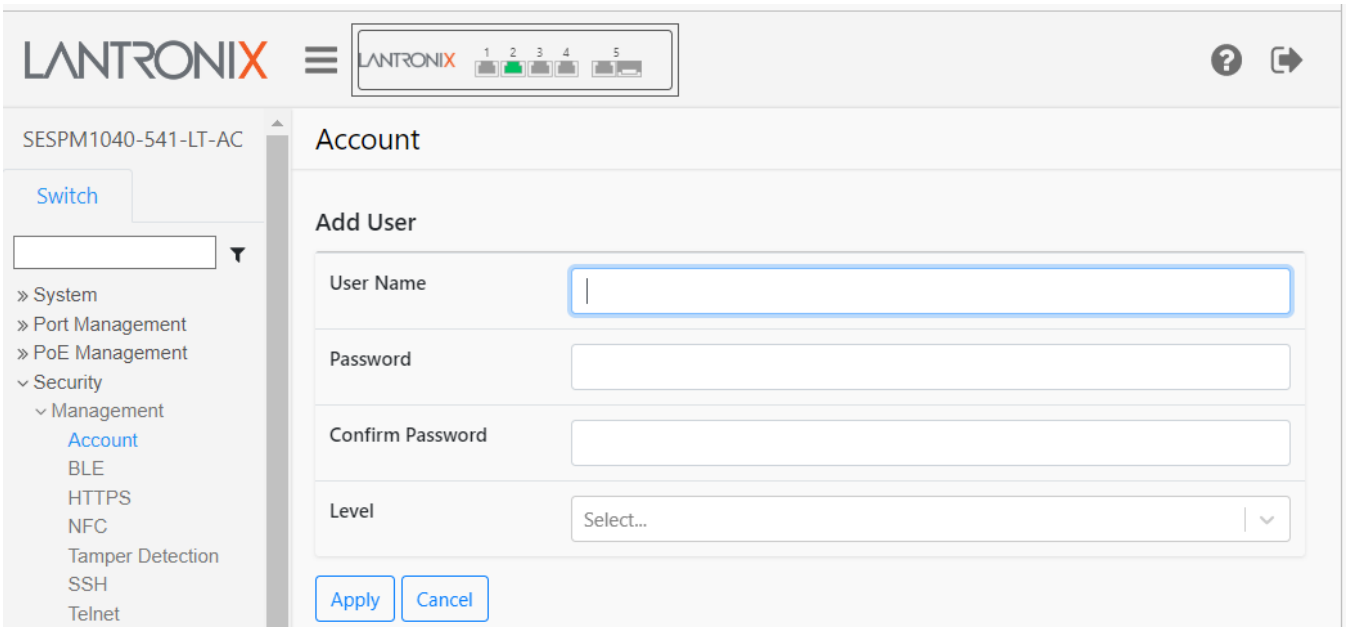
Message: *PoE Input is not supported on this model.* displays if the model is not a -PD.

Switch > Security > Management > Account

This page lets you add, configure, and delete users. Each user requires a username, password, and privilege level. Initially, one user (admin) exists. You can add up to 10 users via the Web UI. The default admin user cannot be deleted.



Click the **Add New User** button to display the Add User page:



Parameter descriptions:

User Name: Enter the name for the new user / account. Do not enter the pound sign (#).

Password: Enter the password for the new user / account. Do not enter the pound sign (#). Displays ******** for every entry.

Confirm Password: Re-enter the password for the new user / account. This entry must match the previous Password entry. Do not enter the pound sign (#).Displays ******** for every entry.

Level: At the dropdown select ***Admin*** to assign administrator level privileges to this new user / account. The admin can perform all switch functions.

Buttons:

Add New User: Click to add and configure a new user to the system.

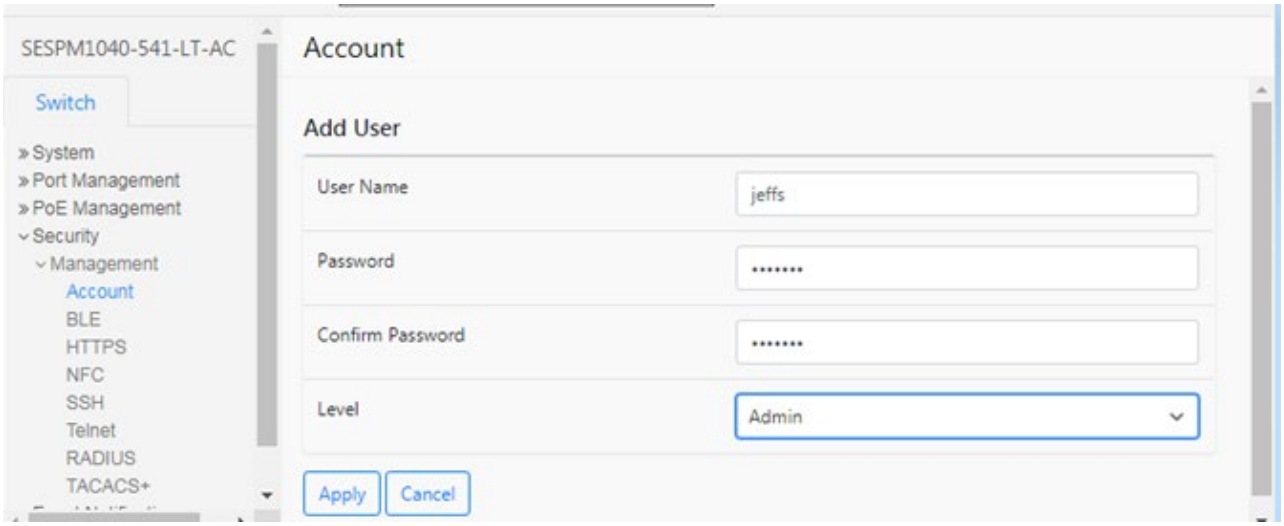
Apply: Click to save the entries on this page to the running-config file.

Cancel: Click to reset the page to all blank fields.

Back: Click to display the previous page.

Example: Add a new user.

1. On the Account page enter the new username and password and confirm the password.



2. Click the Apply button to add the new user to the Account table:

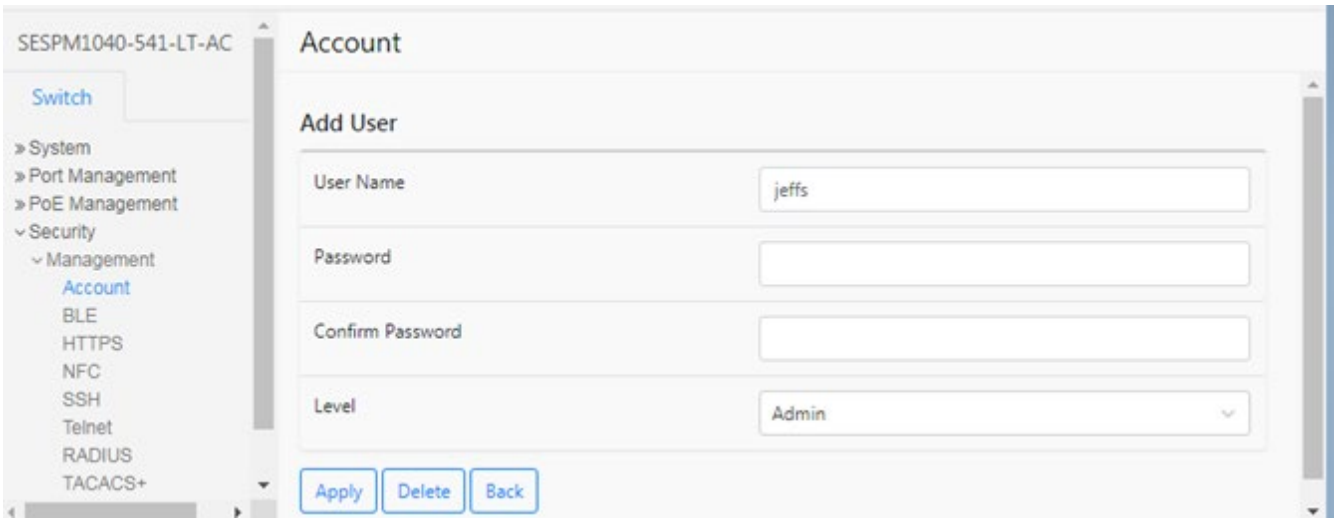
Messages

The message *"Account exists with the "User Name*" displays if you try to create an account with an existing user name.

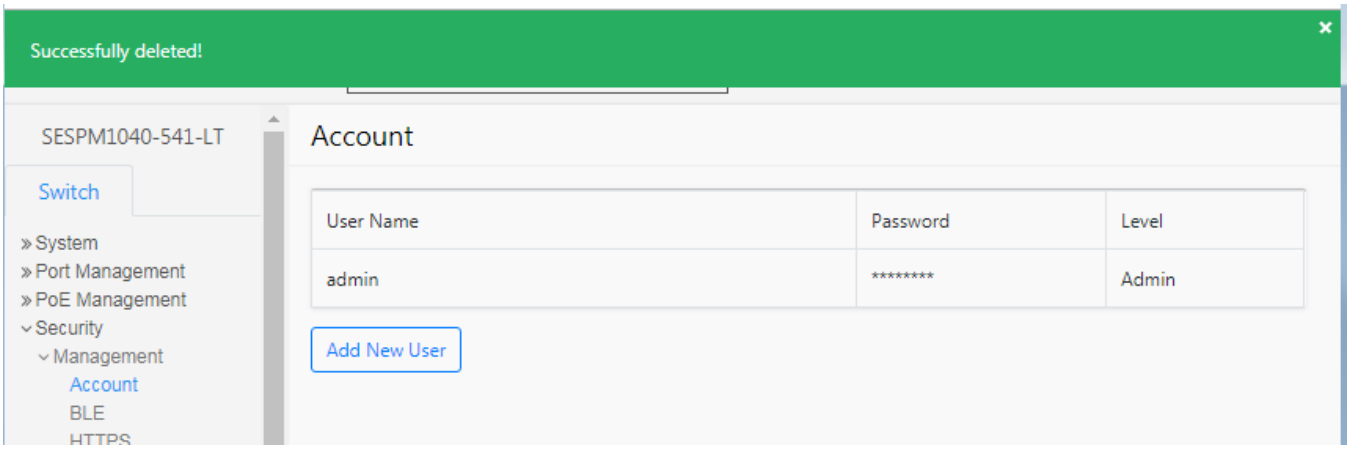
The message *Successfully edited!* displays when the new user is added to the Account table

The message *The two passwords are not the same, please check!* displays if you confirmed the password incorrectly.

Delete a User: **1.** On the Account page, click on the User Name to be deleted. **2.** At the Security > Management > Account page click the Delete button.



The message *Successfully deleted!* displays momentarily after the selected user is deleted.

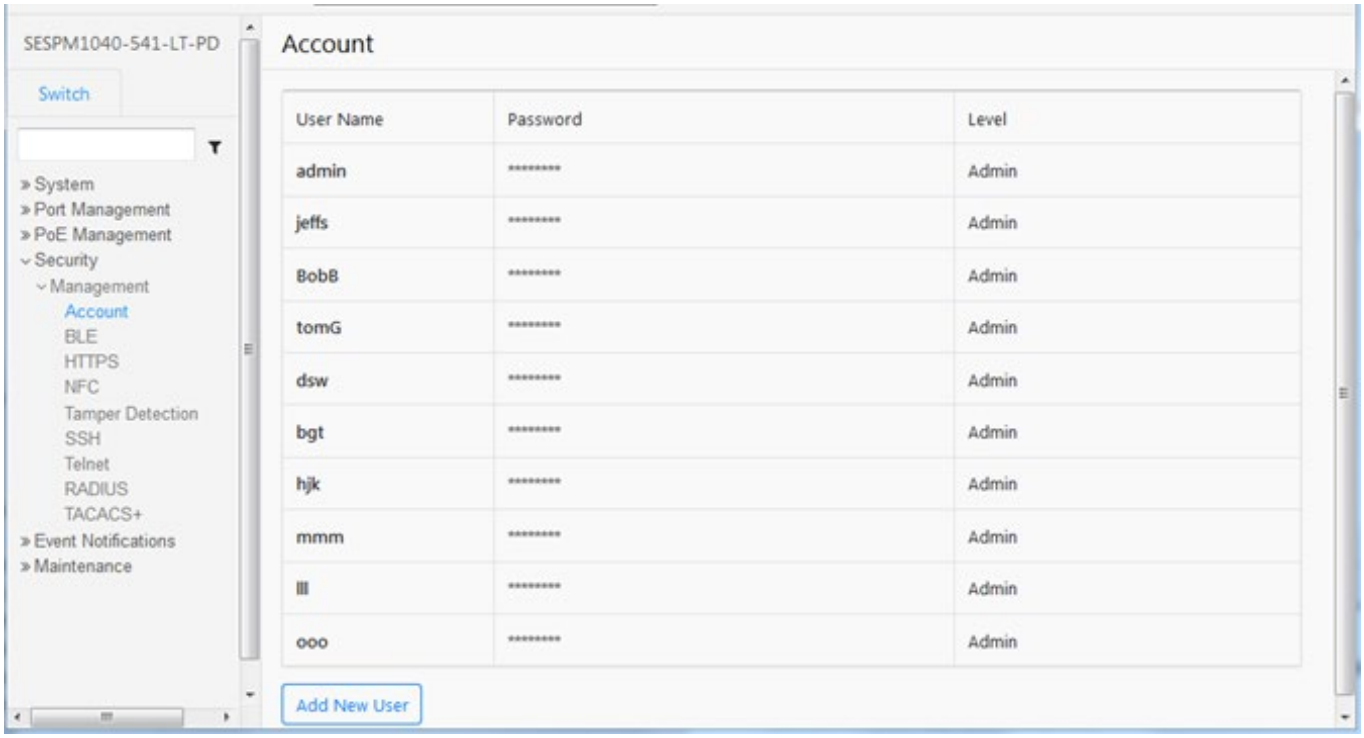


The message *All fields are required!* displays if you did not enter all fields as required.

Example: Edit an existing user's login credentials.

1. On the Account page right click on the User Name to be edited.
2. Edit the user's parameters.

Example: Ten user accounts added with varying User Names, Passwords, and privilege Levels.



Messages

Failed created user displays if you try to add too many users to the table (max. is 10 users).

cannot add user - user table is full.

username add failed - user name already exists.

username add failed.

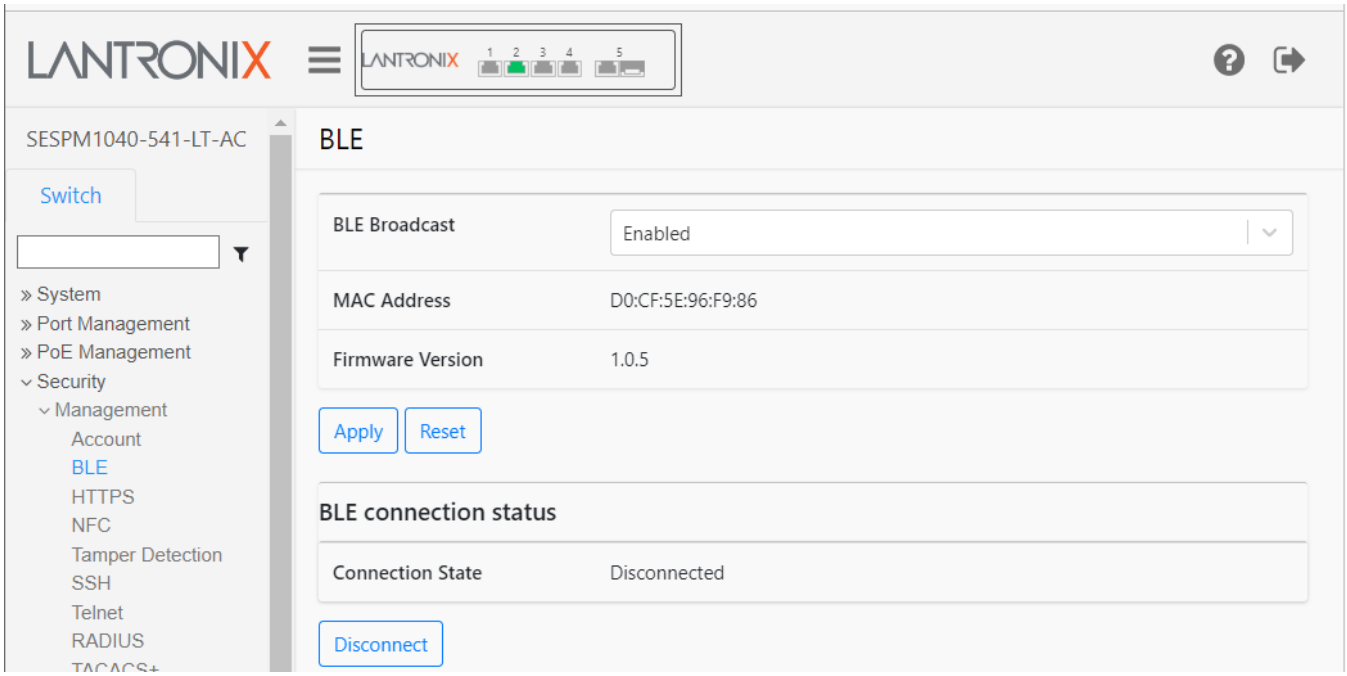
username add failed to activate user

admin can't be deleted

Switch > Security > Management > BLE

This page lets you configure BLE parameters. The Bluetooth Low Energy feature allows remote access to the switch without having to physically connect with a cable, so monitoring and troubleshooting and changes can be made prior to leaving the job site or after ladders or scissor lifts have been removed. The range is approximately 100m. The Lantronix Switch Manager Mobile App interfaces with the NFC and BLE features to allow switch configuration, remote diagnosis and troubleshooting without having to climb a ladder or use a scissor lift to connect to the switch.

See the Switch Manager Mobile App User Guide for more information.



Parameter descriptions:

BLE Broadcast: Select *Enabled* (default) or *Disabled*. **Note**: BLE pairing should be disconnected before attempting to disable BLE. If you try to disable BLE while a device is paired, BLE will not be disabled. Re-enable the BLE, then disconnect any connected devices, then disable BLE again.

MAC Address: The MAC address for BLE in the format 11:22:33:44:55:66.

Firmware Version: The Lantronix BLE version (e.g., 1.05 or *No Response from BLE*).

Connection State: Displays the current BLE state (*Disconnected* or *Connected*). There is a 90-second time out after inactivity. The default connection state is *Disconnected*.

Buttons:

Apply: Saves the entries on this page to the running-config file.

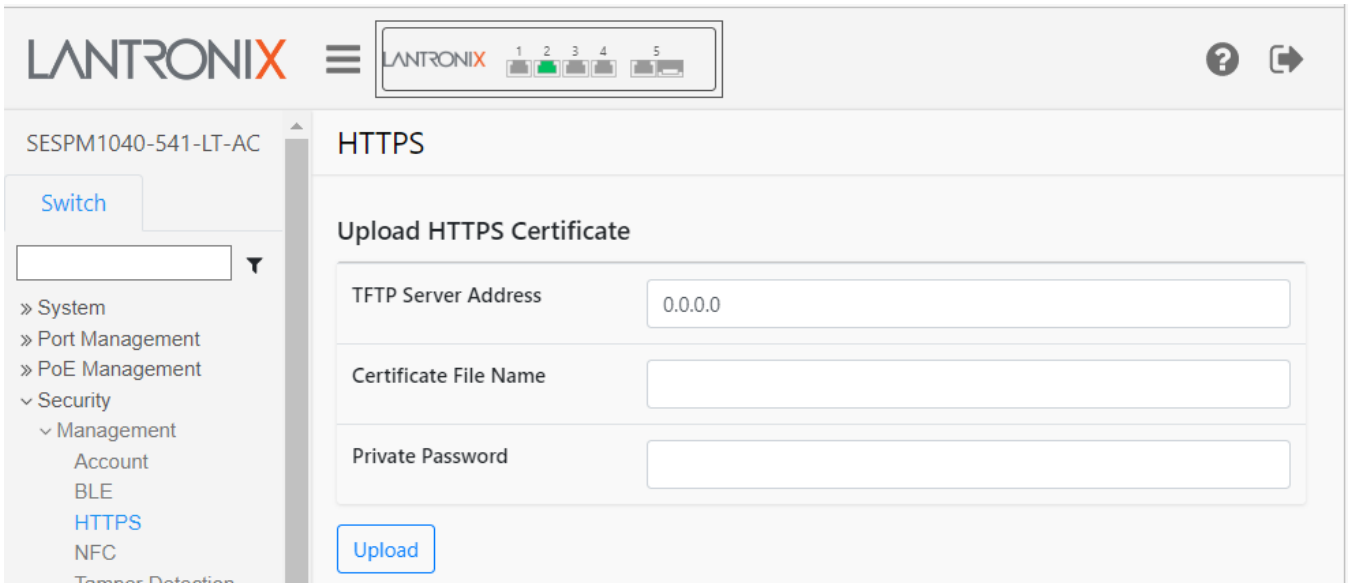
Reset: Resets the page to default parameter settings.

Disconnect: Click to disconnect the current BLE connection.

Switch > Security > Management > HTTPS

This page lets you configure secure HTTP (HTTPS) parameters and copy an HTTPS Certificate.

HTTPS creates a secure channel over an insecure network. Web browsers know how to trust HTTPS websites based on certificate authorities that come pre-installed in their software. Certificate authorities (such as Let's Encrypt, Digicert, Comodo, GoDaddy and GlobalSign) are in this way being trusted by web browser creators to provide valid certificates. HTTPS should not be confused with the little-used Secure HTTP (S-HTTP) specified in IETF RFC 2660. **Note** that if you disable HTTPS here or via the CLI, the Web server is disabled, and Web browser access goes away.



Parameter descriptions:

Upload HTTPS Certificate section

TFTP Server Address: Enter the IP address of an up and running TFTP server.

Certificate File Name: Enter the name of the cert file (e.g., *tn_poe_image.bin*).

Private Password: Enter the private password.

Buttons:

Upload : Click to start the upload process.

Message: If you don't have the little green lock from a trusted SSL certificate, Google Chrome will tag your site as *Not Secure*.

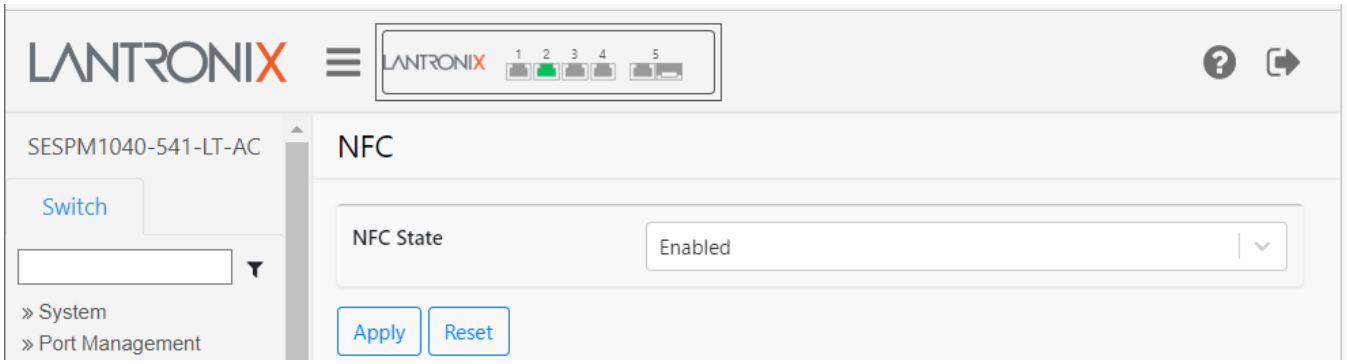
Switch > Security > Management > NFC

This page lets you configure NFC (Near Field Communication) parameters. **Note** that NFC configuration is automatically updated at boot up.

The NFC antenna located inside the cover of the switch lets you configure the switch prior to connecting or powering it up simply by holding a smart device with the Switch App over the NFC antenna and transferring data. It also allows the user to duplicate the configuration across multiple switches. All of this saves the customer time and money, as well as simplifies setup and installation of switch(es).

You can configure the switch without it being powered up. When the NFC-enabled device (smartphone or tablet) and the NFC "tag" or antenna on the switch are in close proximity, a magnetic field is formed and the power from that magnetic field uses modulation to transfer data. The NFC antenna/tag contains a nonvolatile EEPROM which retains the data transferred from the smartphone or tablet even after it moves out of proximity, and the configuration is transferred into switch memory once the switch is fully powered up. Note that NFC is not available after a config is transferred.

NFC is considered very secure and is frequently used for contactless payments (e.g., Apple Pay). A secure channel is established, and encryption is used to send sensitive information. However, we always recommend users have antivirus software and passwords on their devices in case they are lost or stolen.



Parameter descriptions:

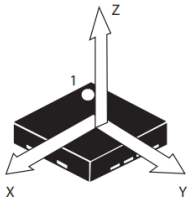
NFC State: At the dropdown select *Enabled* or *Disabled* and click the Apply button. The default is Enabled.

Buttons:

Apply: Saves the entries on this page to the running-config file.

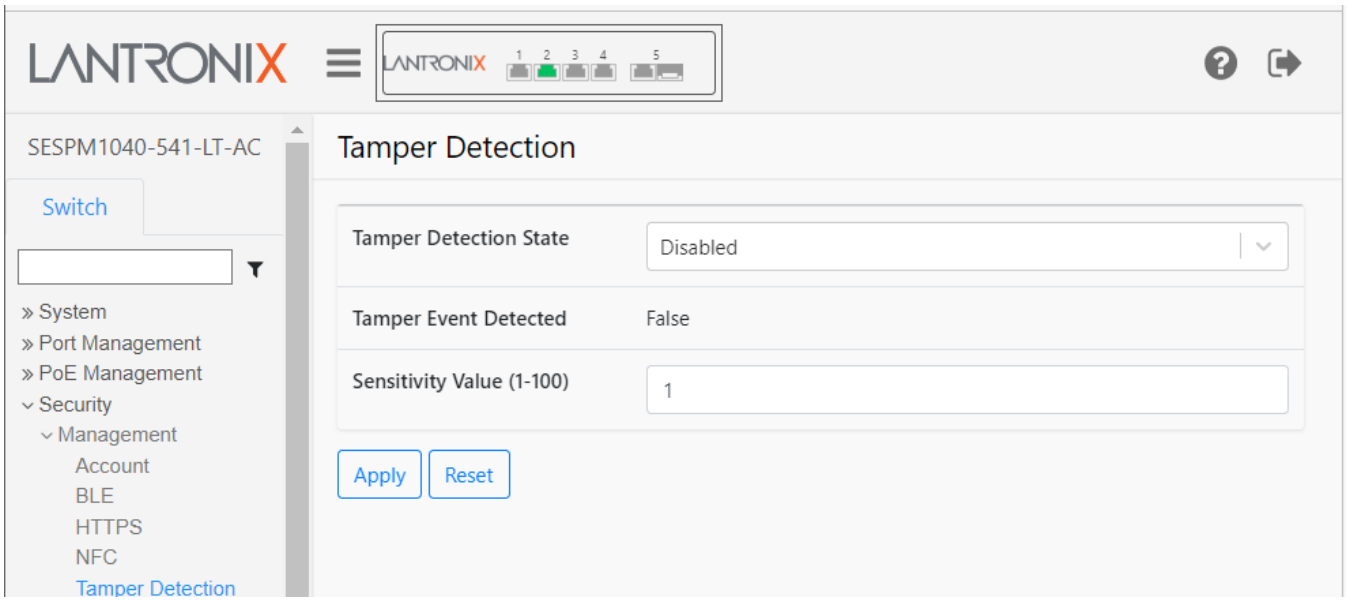
Reset: Click to reset the page to default parameter settings.

Switch > Security > Management > Tamper Detection



This page lets you configure tamper detection. The switch includes a 3-axis linear accelerometer that detects if the switch has exceeded user-selected vibration limits, indicating someone may be tampering with the switch or the switch mount has somehow been compromised.

Tamper detection is disabled by default. The tamper options are state (enable/disable) and threshold 1-100 with 1 being the least sensitive. Tamper detection will generate SNMP traps and syslog entries. Tamper Event Detected is a binary state: True indicates an event was detected; False indicates no event was detected.



Parameter descriptions:

Tamper Detection State: At the dropdown select *Enabled* or *Disabled* as the Tamper Detection operating state. The default is Disabled.

Tamper Event Detected: Displays False until a tamper event is detected and then displays True. Displays False again when the tamper event is cleared.

Sensitivity Value (1-100): Select the Tamper sensitivity threshold in the range 1-100 where 1 is the least sensitive (i.e., takes the most impact to cause an event). The default is 1.

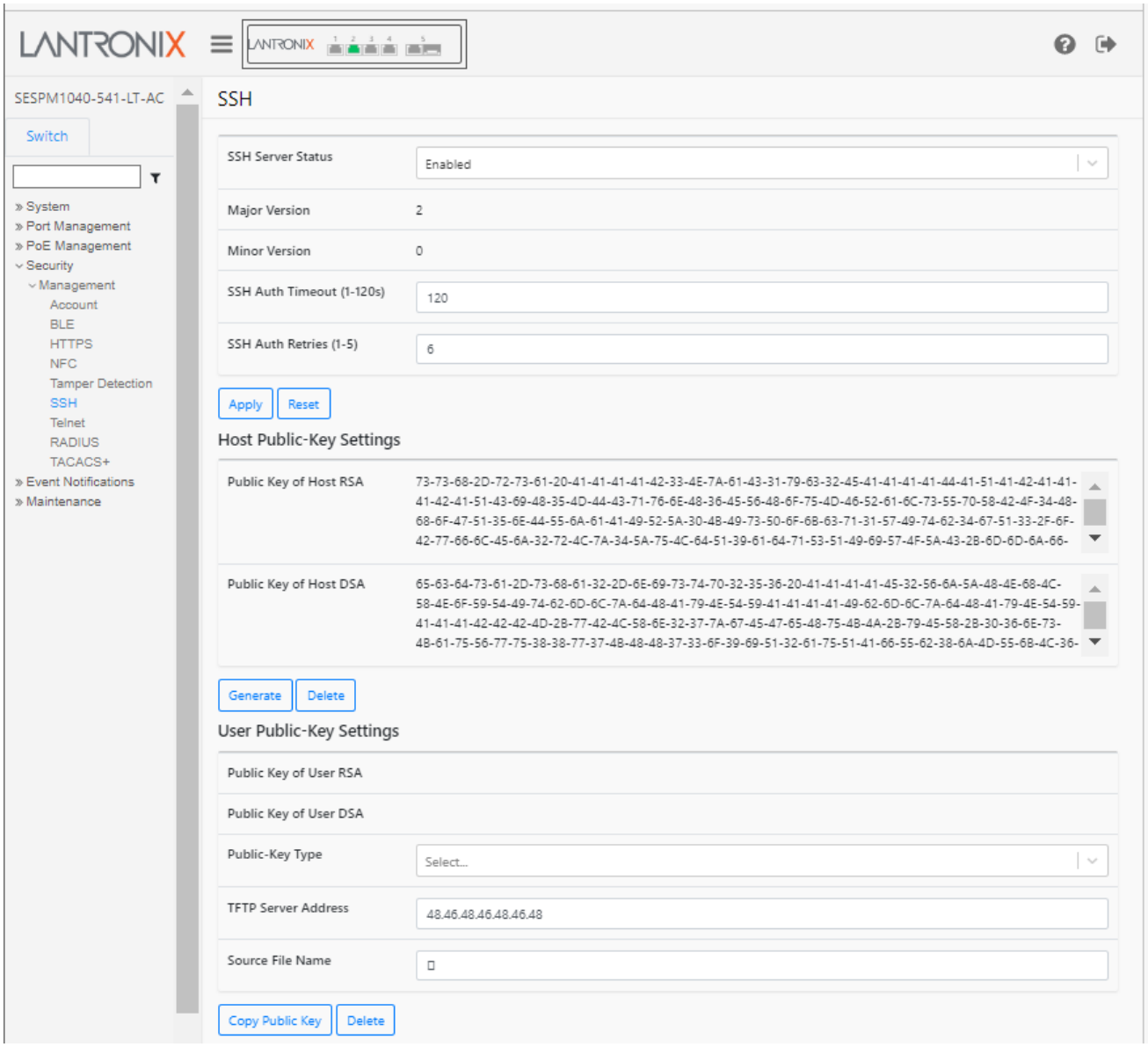
Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Click to reset the page to default parameter settings.

Switch > Security > Management > SSH

This page lets you configure SSH (Secure Shell) parameters. See the end of this section for term definitions.



Parameter descriptions:

SSH section

SSH Server Status: At the dropdown select *Enabled* to enable SSH Authentication globally or select *Disabled*. The default is Enabled.

Major Version: Displays the SSH major version used (the x in x.y).The default is SSH Major Version 2.

Minor Version: Displays the SSH minor version used (the y in x.y). The default is SSH Minor Version 0.

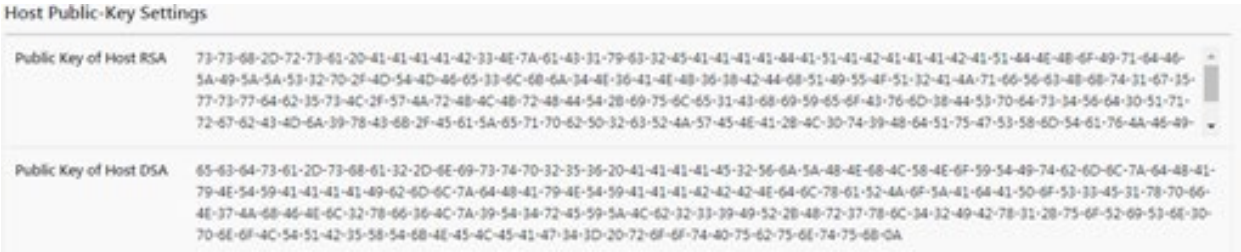
SSH Auth Timeout (1-120s): Enter number of seconds to wait before the Authentication attempt times out. The valid range is 1-120 seconds. The default is 120 seconds.

SSH Auth Retries (1-5): Enter number of Authentication retries before quitting attempts (1-5 retries).

Host Public-Key Settings section

Public Key of Host RSA: displays the RSA Host Public Key.

Public Key of Host DSA: displays the DSA Host Public Key.



User Public-Key Settings section

Public Key of User RSA: displays the RSA User Public Key.

Public Key of User DSA: displays the DSA User Public Key.

Public-Key Type: Select the type of public key to use (RSA or DSA).

TFTP Server Address: Enter the IP address of the TFTP Server. The default is 48.46.48.46.48.46.48.

Source File Name: Enter the filename of the source file. The valid file format is *.rsa* or *.dsa*.

Buttons:

Apply: Click to save the SSH Server parameters on this page to the running-config file.

Reset: Click to reset the page to all blank fields. Displays "*Form data has been reset*".

Generate: Click to generate the configured Host Public Key.

Delete: Click to delete the configured Host Public Key.

Copy Public Key: Click to copy the configured User Public Key and reset the page to default parameter settings.

Delete: Click to delete the configured User Public Key and reset the page to default parameter settings.

Messages:

Failed to create RSA

Failed to create key BIO

encoding incomplete: at least 2 bits missing

Terms:

Secure Shell (SSH) is a cryptographic network protocol for operating network services securely over an unsecured network. The standard TCP port for SSH is 22. SSH provides a secure channel over an unsecured network in a client-server architecture, connecting an SSH client application with an SSH server.

A **Host Key** is an SSH cryptographic key used for authenticating computers in the SSH protocol. Host keys are key pairs, typically using the RSA or DSA algorithm. Each host (i.e., computer) should have a unique host key.

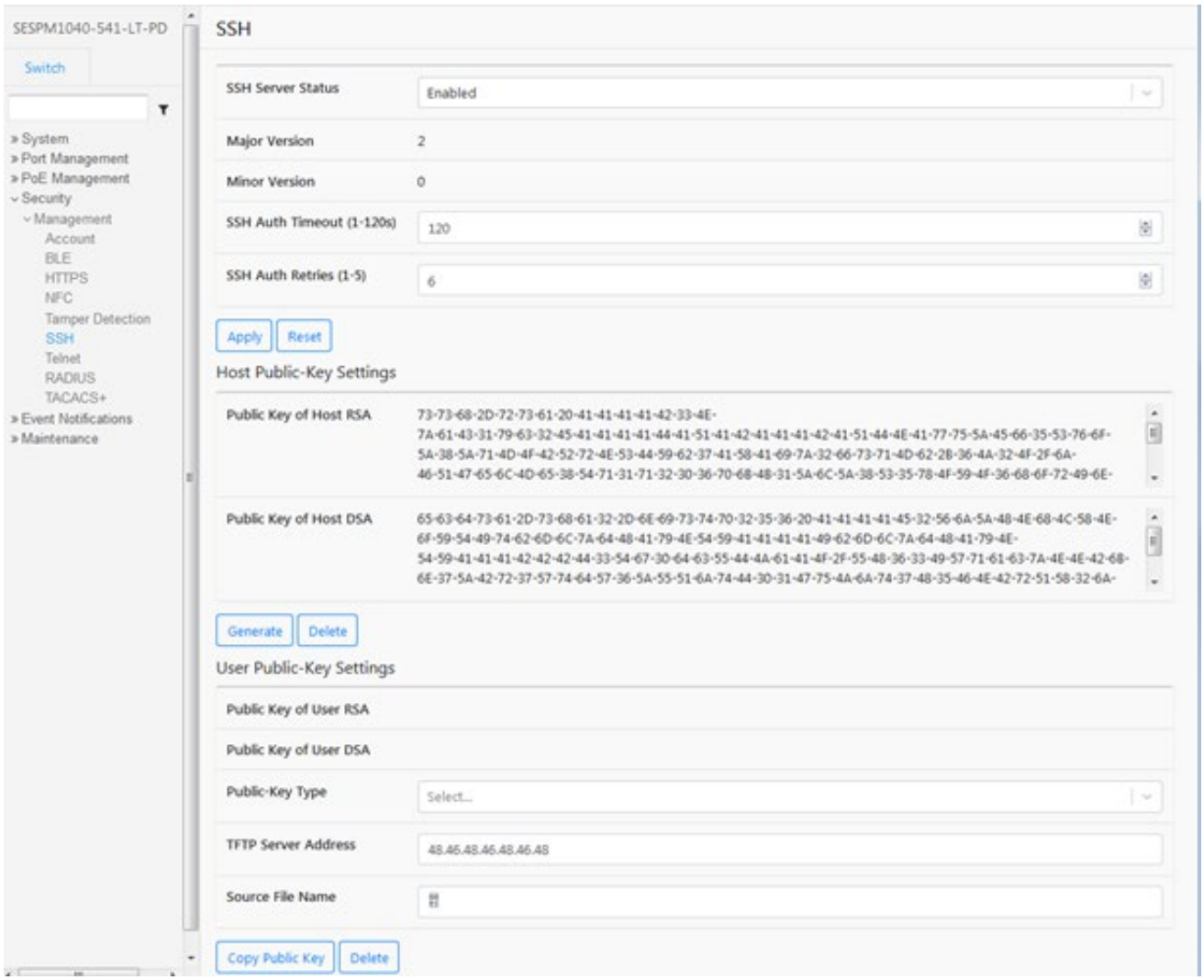
A **Public Key** relies on SSH asymmetric cryptographic algorithms that generate a pair of separate keys (i.e., a key pair), one "private" and the other "public". You keep the private key a secret and store it on the computer you use to connect to the remote system.

RSA is a public-key encryption technology developed by RSA Data Security, Inc. The acronym stands for Rivest, Shamir, and Adelman, the inventors of the technique. The RSA algorithm is based on the fact that there is no efficient way to factor very large numbers.

DSA (Digital Signature Algorithm) is a Federal Information Processing Standard for digital signatures. In August 1991 the National Institute of Standards and Technology (NIST) proposed DSA for use in their Digital Signature Standard (DSS) and adopted it as FIPS 186 in 1994. Four revisions to the initial specification have been released. DSA key generation has two phases. The first phase is a choice of algorithm parameters which may be shared between different users of the system, while the second phase computes public and private keys for a single user.

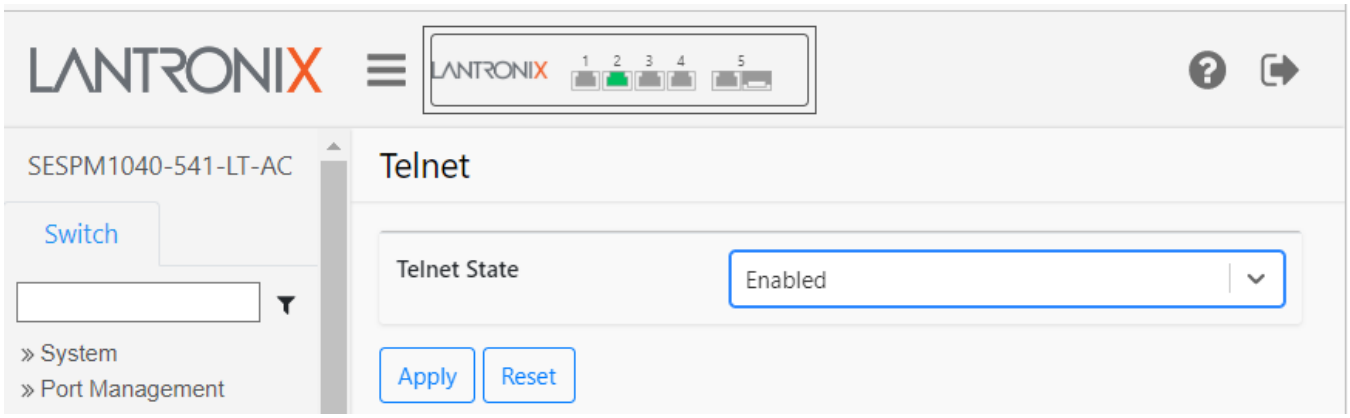
SSH Version 2.x: "Secsh" was the official Internet Engineering Task Force's (IETF) name for the IETF working group responsible for version 2 of the SSH protocol. In 2006, a revised version of the protocol, SSH-2, was adopted as a standard. SSH-2 is incompatible with SSH-1. SSH-2 features both security and feature improvements over SSH-1. Better security, for example, comes through Diffie–Hellman key exchange and strong integrity checking via message authentication codes. New features of SSH-2 include the ability to run any number of shell sessions over a single SSH connection.

Example:



Switch > Security > Management > Telnet

This page lets you enable and disable the Telnet state.



Parameter descriptions:

Telnet State: At the dropdown select Enabled or Disabled. The default is Disabled.

Buttons:

Apply: Saves the entries on this page to the running-config file.

Reset: Click to reset the page to default parameter settings.

Messages:

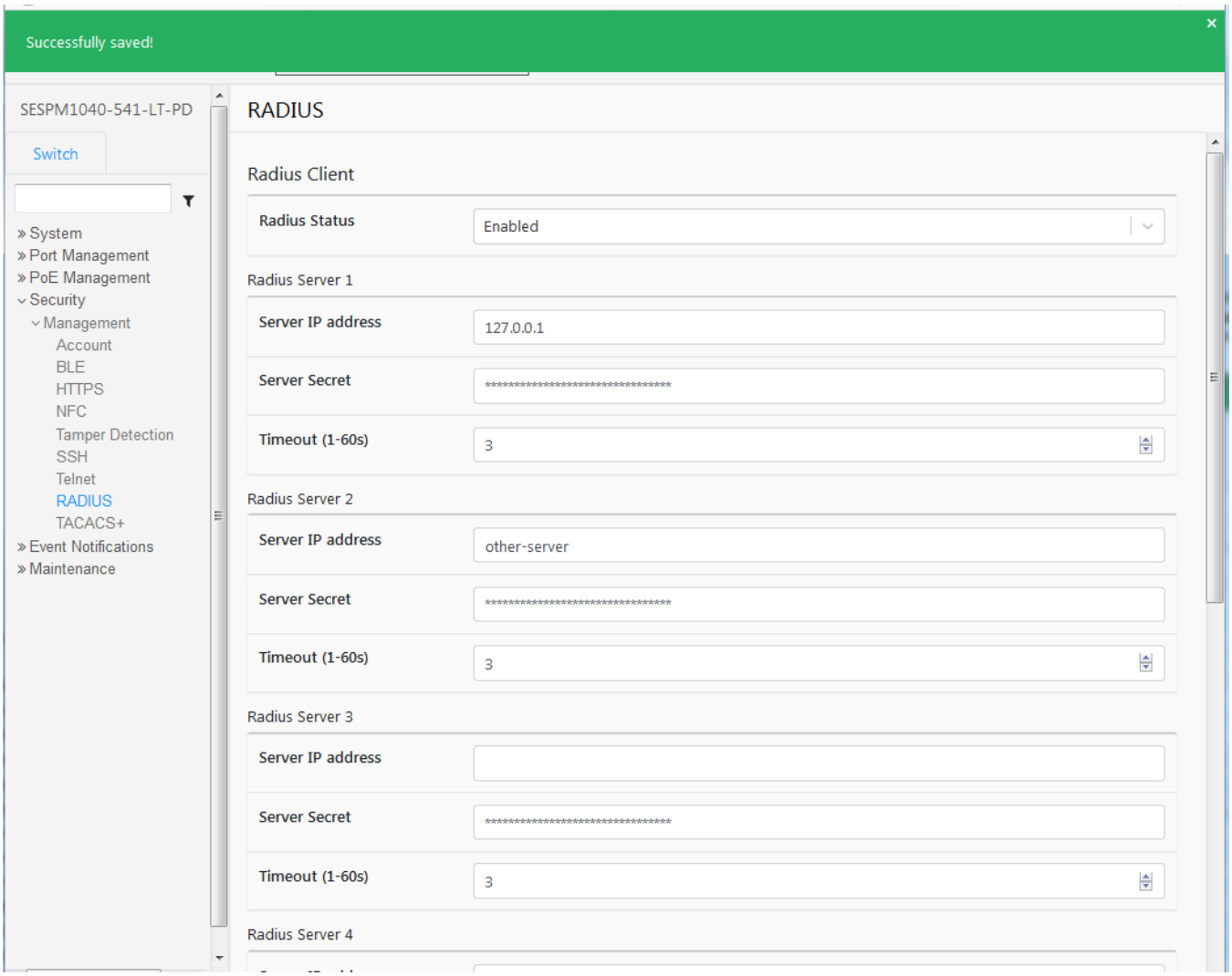
Successfully saved!

Nothing was changed

Form data has been reset

Switch > Security > Management > RADIUS

This page lets you configure up to six RADIUS servers. **Note** that you must successfully configure and save the Radius Client before you can configure and save Radius Servers. By default, the RADIUS page displays with Radius Client Status set to *Disabled*. At the dropdown select *Enabled* and click the Apply button to display the Radius Client and Radius Server config parameters.



Parameter descriptions:

Radius Client

Radius Status: At the dropdown select Enabled. Click the Apply button to save this RADIUS Client parameter. When successfully saved, set the Radius Server parameters below, and the click Apply again.

Radius Server 1-6

Server IP address: Enter the IP address of the RADIUS server for up to six servers.

Server Secret: Enter the RADIUS server secret for up to six servers.

Timeout (1-60s): Enter a server timeout period for one to six servers.

Buttons:

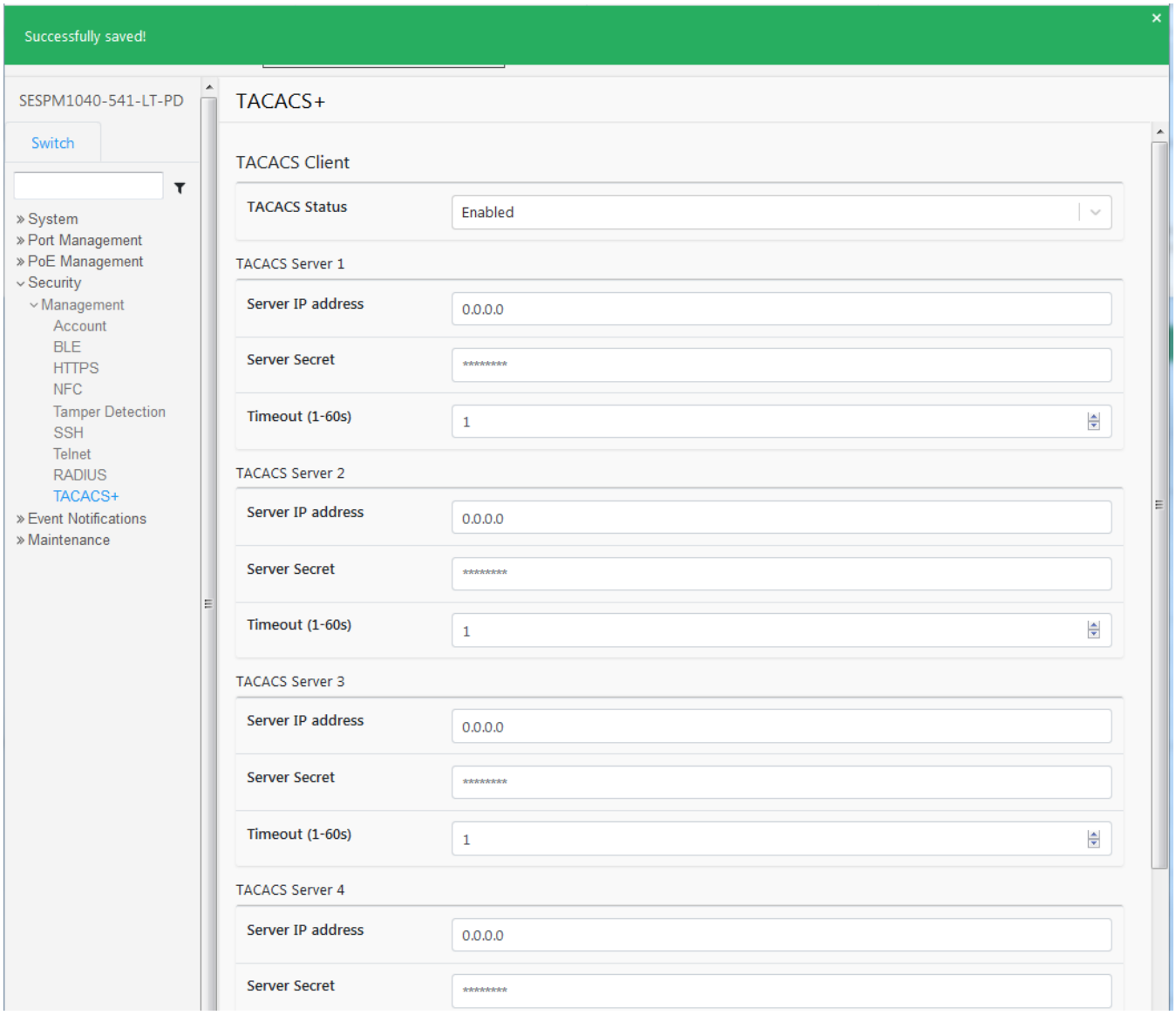
Apply: Click once to save the RADIUS Client parameters on this page to the running-config file.
Click a second time to save the RADIUS Server parameters on this page to the running-config file.

Reset: Click to reset the page to all blank fields. Displays "*Form data has been reset*."

Switch > Security > Management > TACACS+

This page lets you enable and disable the TACACS+ Client and configure up to six TACACS+ Servers. **Note** that you must successfully configure and save the TACACS+ Client before you can configure and save TACACS+ Servers. TACACS+ authentication requires Password Authentication Protocol (PAP) login setup on the TACACS+ server.

By default, the TACACS+ page displays with TACACS Client set to *Disabled*. At the dropdown select *Enabled* and click the Apply button to display the TACACS Client and TACACS Server config parameters.



Parameter descriptions:

TACACS Client

TACACS Status: At the dropdown select Enabled for the TACACS+ Client. Click the Apply button to save this TACACS+ Client parameter. When successfully saved, set the TACACS+ Server parameters below, and the click Apply again.

TACACS Server 1-6

Server IP address: Enter the IP address of the TACACS+ server for up to six TACACS+ servers.

Server Secret: Enter the TACACS+ server secret for up to six TACACS+ servers.

Timeout (1-60s): Enter a server timeout period for one to six TACACS+ servers.

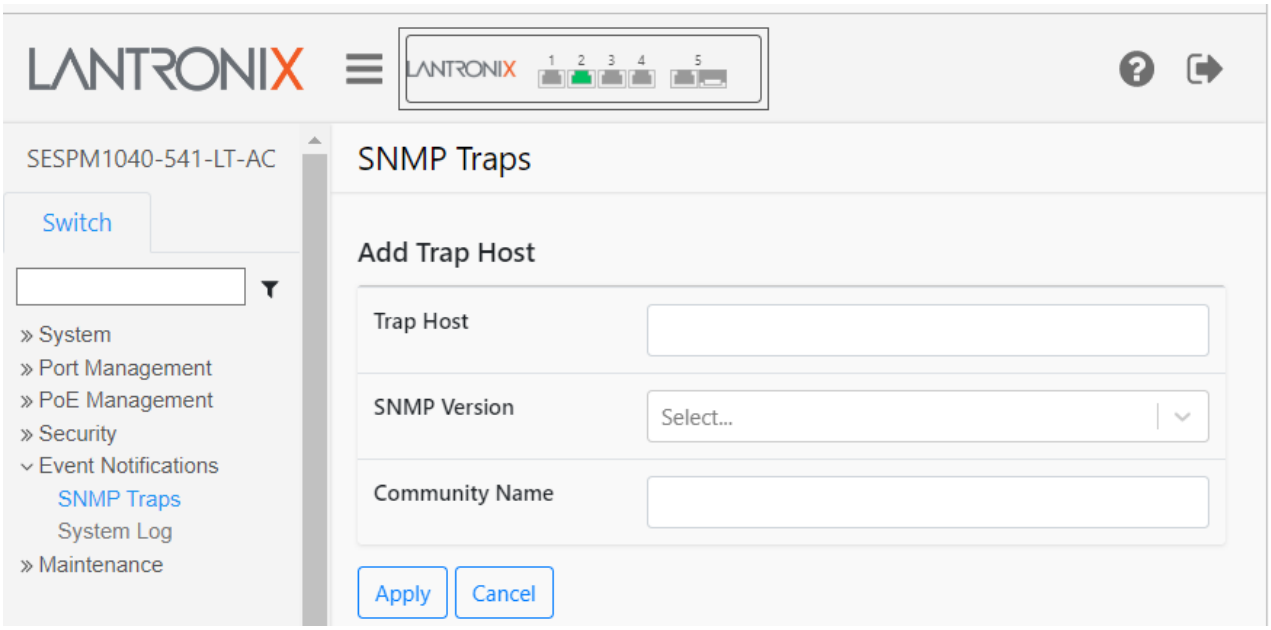
Buttons:

Apply: Click once to save the TACACS+ Client parameters on this page to the running-config file. Click a second time to save the TACACS+ Server parameters on this page to the running-config file. Displays "*Successfully saved!*" if successful. If unsuccessful displays "*Error in setting the values*".

Reset: Click to reset the page to all blank fields. If successful, displays "*Form data has been reset*". If unsuccessful displays "*Error in setting the values*".

Switch > Event Notifications > SNMP Traps

This page lets you add and configure SNMP Traps. At the default page click the Add New Trap button to display the Add Trap Host table.



Parameter descriptions:

Add Trap Host: At the default page click the Add New Trap button to display the Add Trap Host table.

Trap Host : Enter IP address or qualified domain name (QDN).

SNMP Version : At the dropdown select SNMP v1 or v2c for this Trap host.

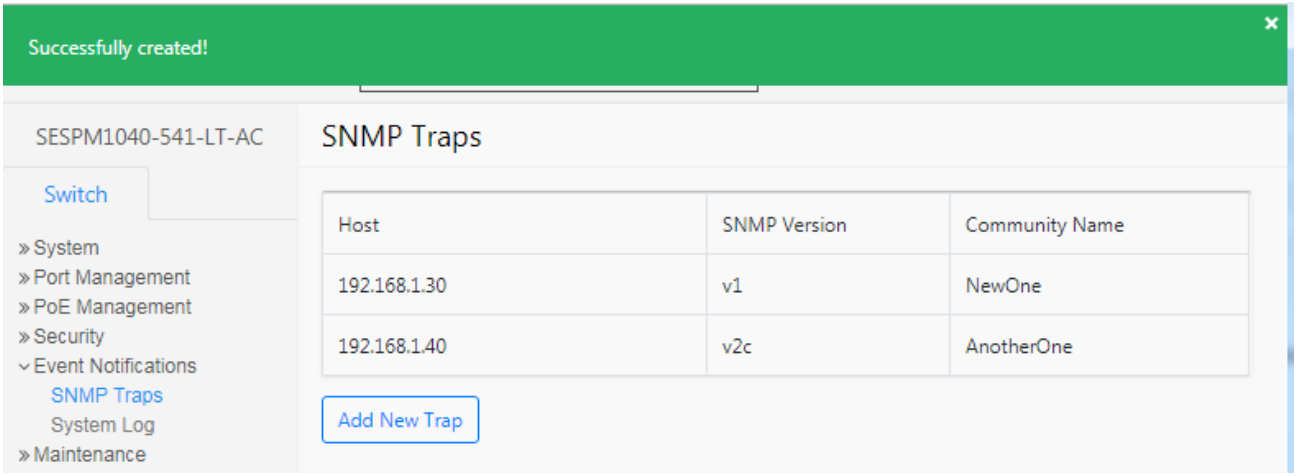
Community Name : Enter the Community Name to be used for this Trap host.

Buttons:

Apply: Click to save the entries on this page to the running-config file.

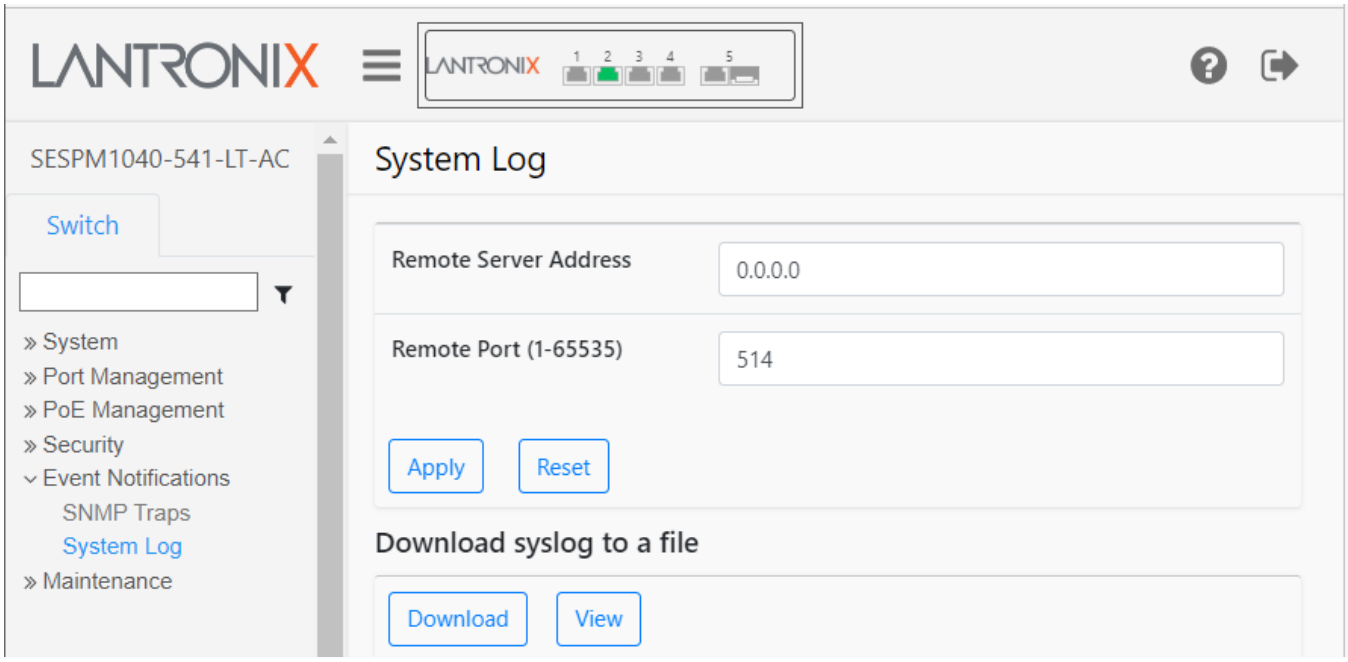
Cancel: Click to cancel any unsaved parameter changes.

Example



Switch > Event Notifications > System Log

This page lets you set Syslog parameters and download syslog to a file.



Parameter descriptions:

System Log section

Remote Server Address : Enter the IP address of a running and configured Syslog Server. The default is 0.0.0.0.

Remote Port (1-65535) : At the dropdown select a Syslog remote port address (e.g., port 514 by default).

Download syslog to a file section

Download : After you have a entered a Remote Server Address and Port for Syslog, click the Download button to start the Syslog file download process. When the download process completes, the System Log page displays with options to Open, Show in Folder, etc.

View : Click to display the Syslog webpage in a separate window (see example below).

Buttons:

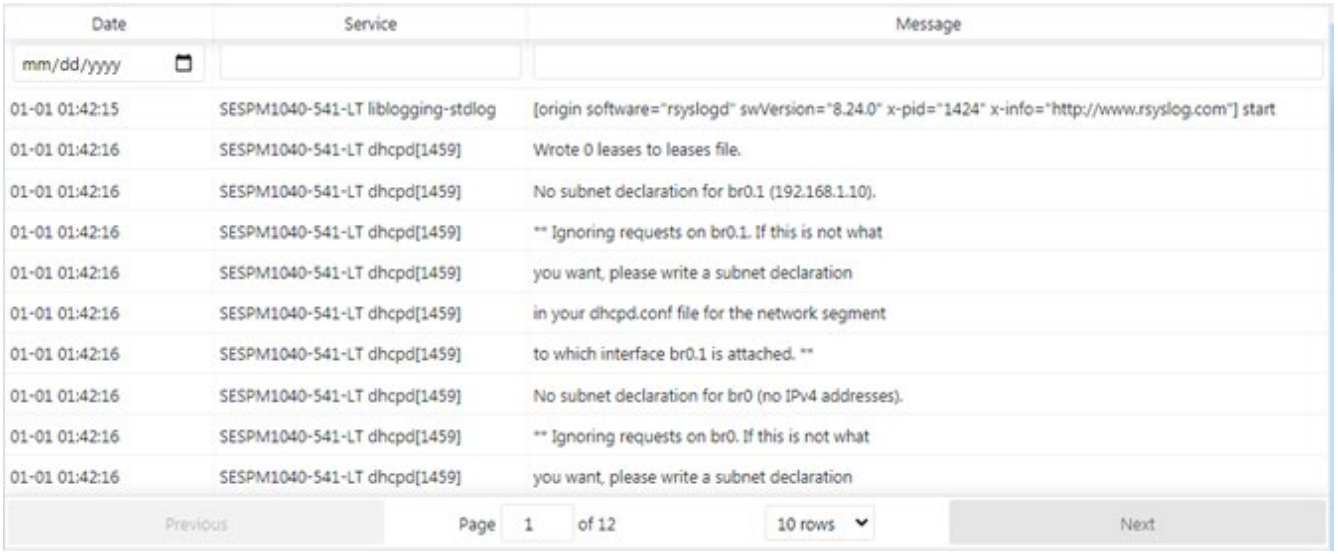
Apply: Saves the entries on this page to the running-config file.

Reset: Resets the page data to previous settings and momentarily displays the message "*Form data has been reset*."

Download : Click the button to start the Syslog file download process.

View: Click the button to open a new browser View Syslog Webpage tab (see below).

Example : View Syslog Webpage



Date	Service	Message
mm/dd/yyyy		
01-01 01:42:15	SESPM1040-541-LT liblogging-stdlog	[origin software="rsyslogd" swVersion="8.24.0" x-pid="1424" x-info="http://www.rsyslog.com"] start
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	Wrote 0 leases to leases file.
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	No subnet declaration for br0.1 (192.168.1.10).
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	** Ignoring requests on br0.1. If this is not what
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	you want, please write a subnet declaration
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	in your dhcpd.conf file for the network segment
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	to which interface br0.1 is attached. **
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	No subnet declaration for br0 (no IPv4 addresses).
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	** Ignoring requests on br0. If this is not what
01-01 01:42:16	SESPM1040-541-LT dhcpd[1459]	you want, please write a subnet declaration

Previous Page 1 of 12 10 rows Next

Parameter descriptions:

Date : the log date in the format *02:14:14*.

: Calendar icon; click to display the calendar for date selection.

Service : the logged service (e.g., *agent3-tn-ion kernel* or *agent3-tn-ion ntpd[1707]*.

Message : the logged message (e.g., *Booting Linux on physical CPU 0x0* or *console [ttyS0] enabled*).

01/01/2019 : Start Date select box; scroll to, enter, or select a date from the calendar dropdown.

12/31/2019 : End Date select box; scroll to, enter, or select a date from the calendar dropdown.

Filter : Filter entry box; enter a key word or other text on which to search.

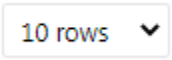
: Click to return to the Syslog page from the View Syslog webpage.

: Click to refresh the page data.

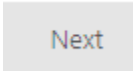
: Click to create a log file that you can open or save to a folder.

Previous : Previous button; click to view the previous page data.

Page 1 of 12 : Page select box; select the page number which you want to view.



: At the dropdown select the number of rows to view per page.

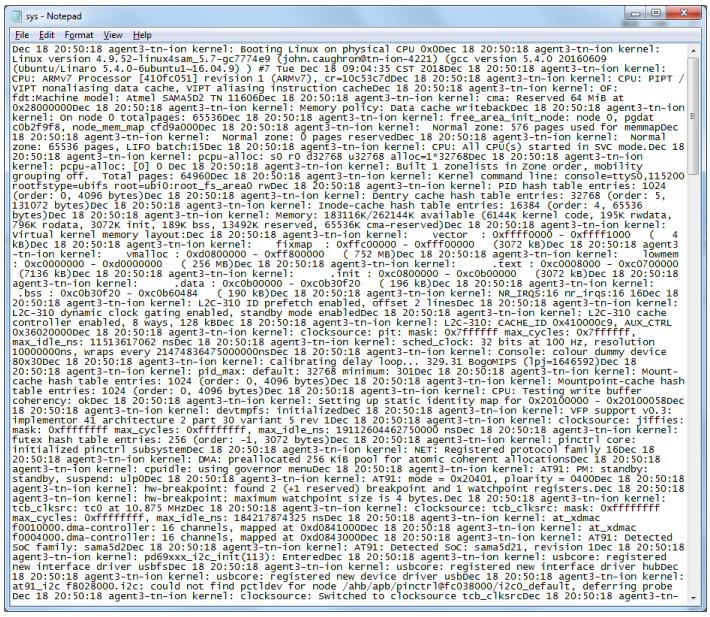


: Next button; click to view the previous page data.

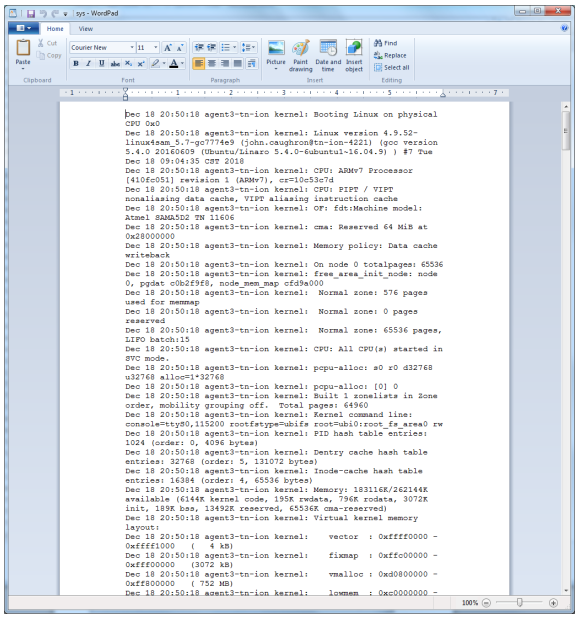
Syslog Examples:

Lantronix

Date	Service	Message
04-16 17:52:15	SESPM1040-541-LT liblogging-stdlog	[origin software="rsyslogd" swVersion="8.24.0" x-pid="1599" x-info="http://www.rsyslog.com"] start
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	ntp engine ready
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	recvmsg 0.0.0.0: Connection refused
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	recvmsg 0.0.0.0: Connection refused
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	recvmsg 0.0.0.0: Connection refused
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	recvmsg 0.0.0.0: Connection refused
04-16 17:52:19	SESPM1040-541-LT ntpd[1684]	recvmsg 0.0.0.0: Connection refused
04-16 17:52:34	SESPM1040-541-LT ntpd[1683]	no reply received in time, skipping initial time setting
04-16 17:52:46	SESPM1040-541-LT liblogging-stdlog	[origin software="rsyslogd" swVersion="8.24.0" x-pid="1750" x-info="http://www.rsyslog.com"] start
04-16 17:52:51	SESPM1040-541-LT bsp_fillinfo	attach platform info in shared memory at 0xb6f74000

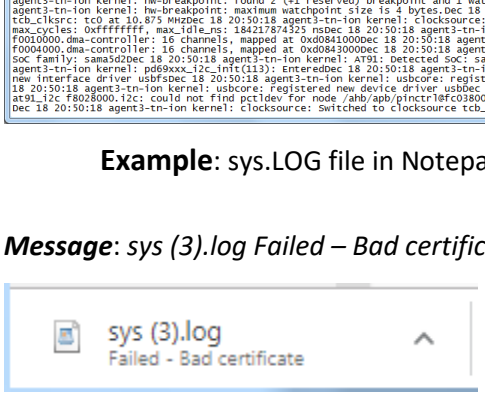


Example: sys.LOG file in Notepad



Example: sys.LOG file in WordPad

Message: *sys (3).log Failed – Bad certificate*



Switch > Maintenance > Configuration > Backup

This page lets you back up the *running-config*, *startup-config*, or *default-config* file. The file types are:

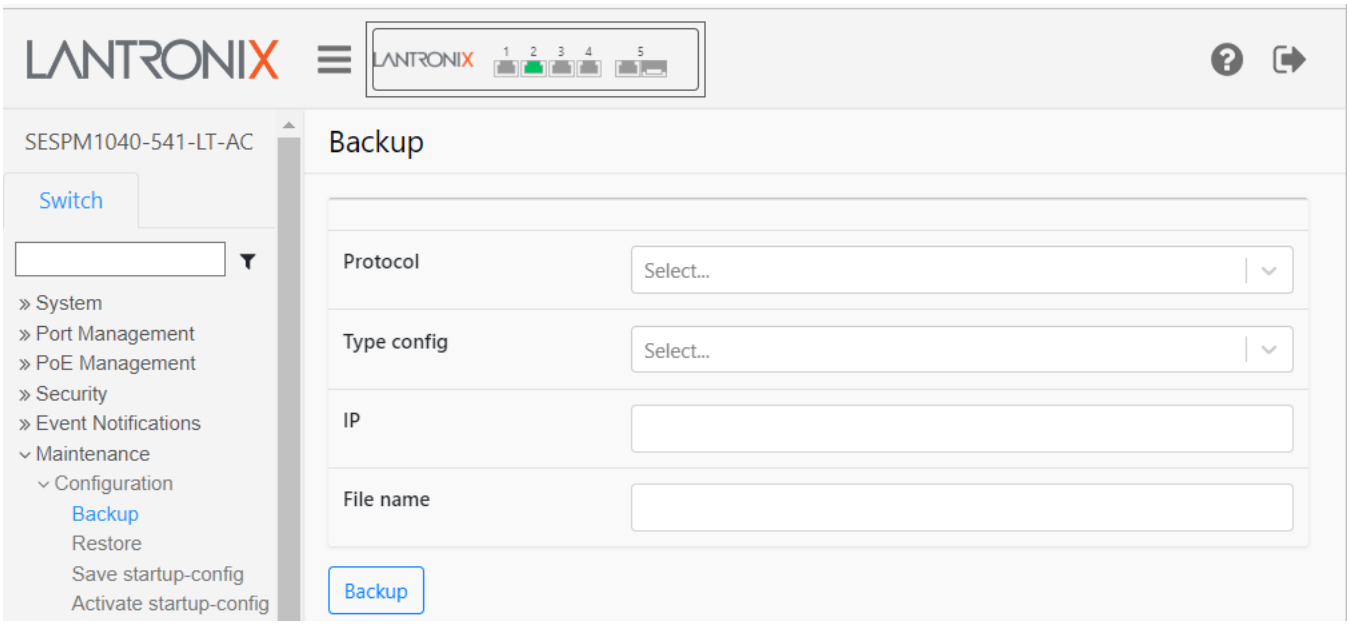
running-config: A virtual file that represents the currently active configuration on the switch. This file is volatile.

startup-config: The startup-config is a versioned persistent file. The current firmware release uses the latest startup-config file version, whereas previous releases generally use an older startup-config file. If an older firmware release was previously running on your switch, then the switch might contain two separate startup-config files—one created by the current release and one created by a previous release.

If the current version startup-config file doesn't exist at boot time, the switch will load a previous version startup-config if present. If no startup-config file exists at boot, then the switch will start up using the last running config. An older startup-config file might not have all the settings used by newer firmware.
For example, a startup-config for release 2.0.x does not contain VLAN settings. And so, it is important to save a new startup-config file as soon as you have established a running configuration that you want to keep.

A new switch has no startup-config file, and so it will start up in default configuration. The startup configuration for the switch is read at boot time. If this file doesn't exist at boot time, the switch will start up in default configuration.

default-config: A read-only file with vendor-specific configuration. This file is read when the system is restored to default settings.



Parameter descriptions:

Protocol : Select ***tftp*** or ***scp*** at the dropdown:

> ***tftp*** : Select TFTP (Trivial File Transfer Protocol) to back up or restore the specified file (un-secure).
>
> ***scp*** : Select SCP (Secure Copy Protocol) to back up or restore the specified file using SCP which is based on the Secure Shell (SSH) protocol. An SCP client program must also be configured and running.

Type config : At the dropdown select *running-config*, *startup-config*, or *default-config* as the type of file to be backed up.

IP : Enter the IP address of the TFTP or SCP server. The server must be configured and running.

File name : Enter the name of the file to be transferred, in the format *sespm1040-541-lt-3.0.0.bin*.

Buttons:

Backup : click to transfer the specified file to the specified server using the selected protocol.
The message "*Backup in progress. DO NOT INTERRUPT!*" displays momentarily.
The message "*Successfully backed up*" displays when successfully completed. Displays "Failed backup." if the Backup was unsuccessful.

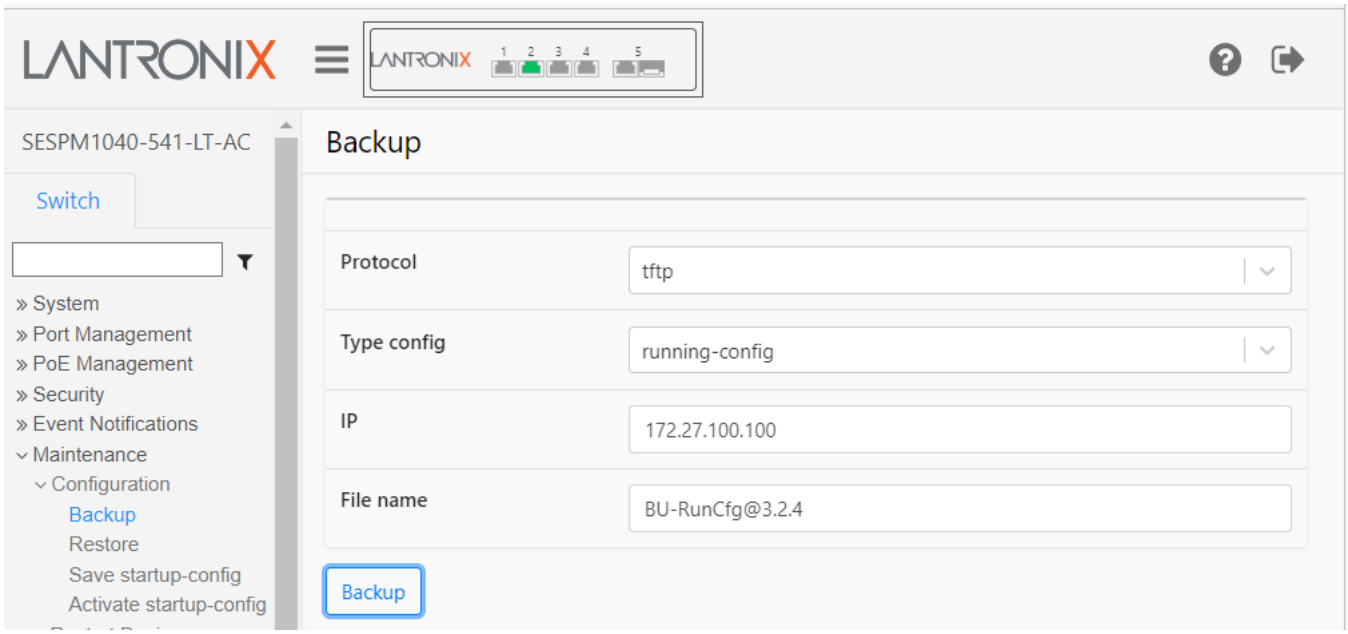
Note: Configuration Backup and Restore currently only work when you select the tftp protocol. The first startup-config file is automatically saved at initial boot. Thereafter, it is replaced whenever you run Save startup-config.

The system will always boot from a startup-config file if one is present. The "Activate startup-config" command is used on demand to apply the startup-config settings to the current running configuration. It allows you to revert to the startup-config without having to restart the switch. Thereafter, any changes you apply to the running config will remain in effect until you revert using either Activate startup-config or Factory Default.

Backup files are simple text files. A file name extension is optional. For Backup, the generated file uses exactly whatever name that you provide. It is up to you to ensure that the file name is unique on the server. One way to do that is by including the device IP address in the file name.

Examples:

sespm_running-config_192.168.1.10
running-config_192.168.1.10_20191018.txt
poe_startup-config_291.168.1.2.dat



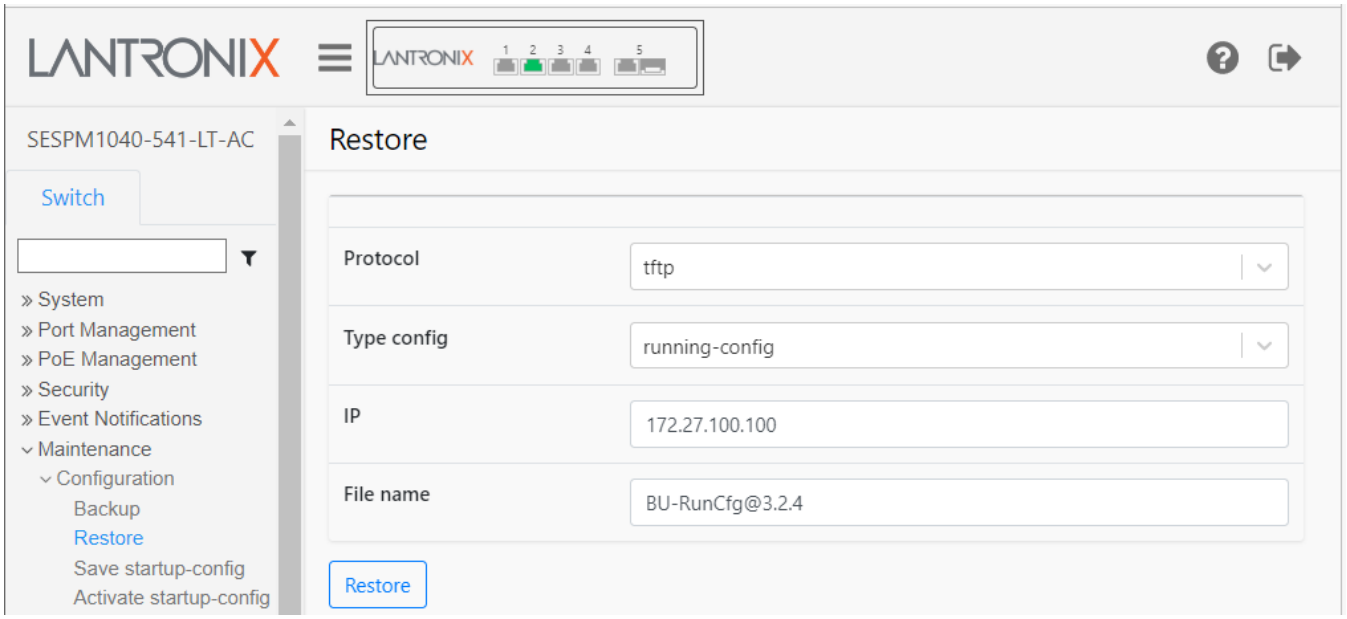
Backup and Restore Summary

The table below lists and briefly explains each command in the Backup and Restore functions.

Web Command	CLI Command	What It Does
Backup running-config	`copy running-config tftp://<server_ip>/<path>`	Generate a backup file of the running config and download it to a server.
Restore running-config	`copy tftp://<server_ip>/<path> running-config`	Upload the specified file from a server and apply it to the running config.
Save startup-config	`copy running-config startup-config`	Generate a backup file of the current running config and save it locally as startup config (no download). (Minor variation of Backup Procedure)
Backup startup-config	`copy startup-config tftp://<server_ip>/<path>`	Download the local startup config file to a server (transfer existing file, regardless of when it was generated).
Restore startup-config	`copy tftp://<server_ip>/<path> startup-config`	Upload the specified file from a server and replace existing local startup config file (does not affect the running config).
Activate startup-config	`copy startup-config running-config`	Apply the local startup config file to the running config (no upload). (Minor variation of Restore Procedure.)
Backup default-config	`copy default-config tftp://<server_ip>/<path>`	Download existing local factory defaults config file to a server.
Restore default-config	`reload defaults [keep-ip]`	Apply the local factory defaults config file to the running config (no upload). (Minor variation of Restore Procedure.)

Switch > Maintenance > Configuration > Restore

This page lets you restore the backed up *running-config* or *startup-config* file. "Keep IP" (revert IP settings to the factory defaults of static IP, 192.168.1.10) is the default mode and currently the only mode.



Parameter descriptions:

Protocol : Select ***tftp*** or ***scp*** at the dropdown:

> ***tftp***: Select TFTP (Trivial File Transfer Protocol) to back up or restore the specified file (un-secure). A tftp client program must also be configured and running.
>
> ***scp***: Select SCP (Secure Copy Protocol) to restore the specified file using SCP which is based on the Secure Shell (SSH) protocol. An SCP client program must be configured and running.

Type config: Displays the selected backup file (*running-config* or *startup-config*).

IP: Enter the IP address of the TFTP or SCP server. The server must be configured and running.

File name: Enter the name of the file to be transferred in the format *sespm1040-541-lt-3.0.0.bin*.

Buttons:

Restore: click to transfer the specified file to the specified server using the selected protocol. A restart is required after a restore running-config or a restore startup-config.

Note: It is important to wait for the operation to complete before restarting or running another function that affects the configuration. The message banner *Success* or *Fail* displays when the operation is complete.

Note: After completing a restore running-config or restore startup-config, and before you restart the device, it is advised to Save startup-config. Otherwise the system will apply a stale startup-config during initialization.

Messages: *Activating. Please wait a few moments..*

Restoring. DO NOT INTERRUPT!

Successfully activated configuration file!

Failed restore.

Successfully restored

Note: Configuration Backup and Restore currently only work when you select the *tftp* protocol.

The first startup-config file is automatically saved at initial boot. Thereafter, it is replaced whenever you run Save startup-config.

Currently, the system boots up with the last running config, and not the saved startup-config. To boot from the startup-config, run Activate startup-config to apply changes in the startup-config file to the native config file for each affected service. Thereafter, any changes you apply to the running config will remain in effect until you revert using either Activate startup-config or Factory Default.

Backup files are simple text files. A file name extension is optional. For Backup, the generated file uses exactly whatever name that you provide. It is up to you to ensure that the file name is unique on the server. One way to do that is by including the device IP address in the file name.

Examples:

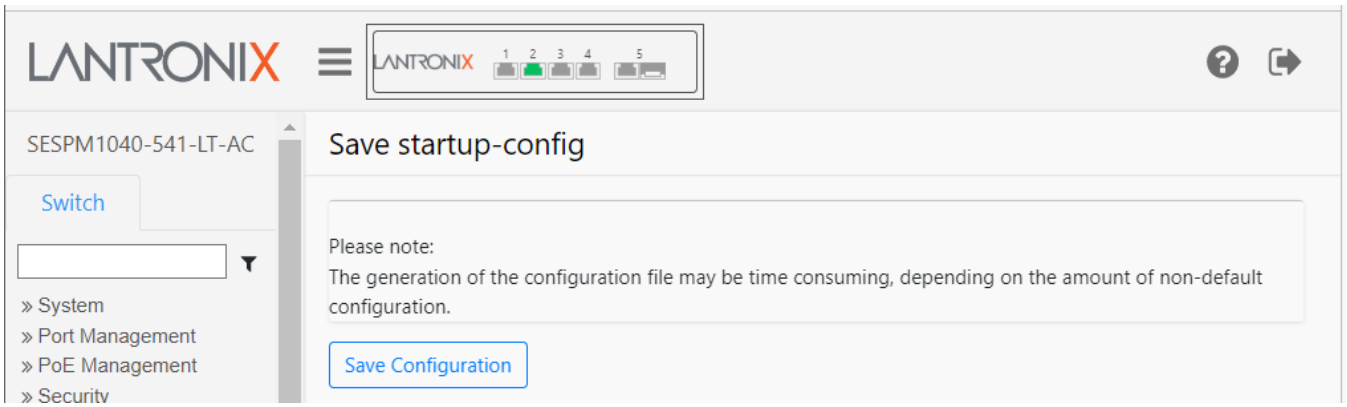
sespm_running-config_192.168.1.10
running-config_192.168.1.10_20191018.txt
poe_startup-config_291.168.1.2.dat

See the "Backup and Restore Summary" on page 203 above.

Switch > Maintenance > Configuration > Save startup-config

This page lets you save the startup-config file to "/etc/tn_poe_startup_config.xml.gz" on the local device. This copies running-config to startup-config, thereby ensuring that the currently active configuration will be used at the next reboot.

Please note: The generation of the configuration file may be time consuming, depending on the amount of non-default configuration.



Parameter descriptions:

None.

Buttons:

Save Configuration: click to save the startup-config file. Currently "Keep IP" is the default mode and currently the only mode.

Currently, the system boots up with the last running config, and not the saved startup-config. To boot from the startup-config, you must Activate the saved startup-config (see below).

Messages:

Saving. Please wait a few moments...

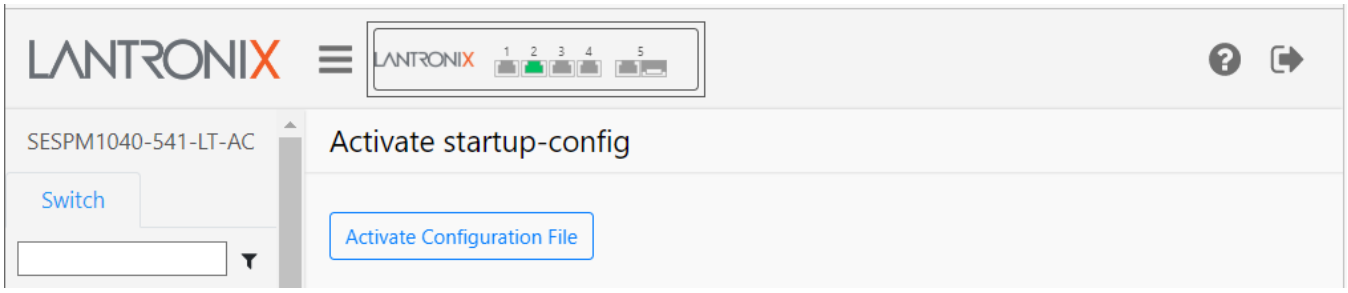
Successfully saved configuration file!

Switch > Maintenance > Configuration > Activate startup-config

This page lets you activate the saved startup-config file.

It is possible to activate any of the configuration files present on the switch, except for running-config which represents the currently active configuration.

Select the file to activate and click Activate Configuration File. This will initiate the process of completely replacing the existing configuration with that of the selected file.



Parameter descriptions:

None.

Buttons:

Activate Configuration File: click to activate the saved startup-config file.

Currently, the system boots up with the last running config, and not the saved startup-config. To boot from the startup-config, you must Activate startup-config.

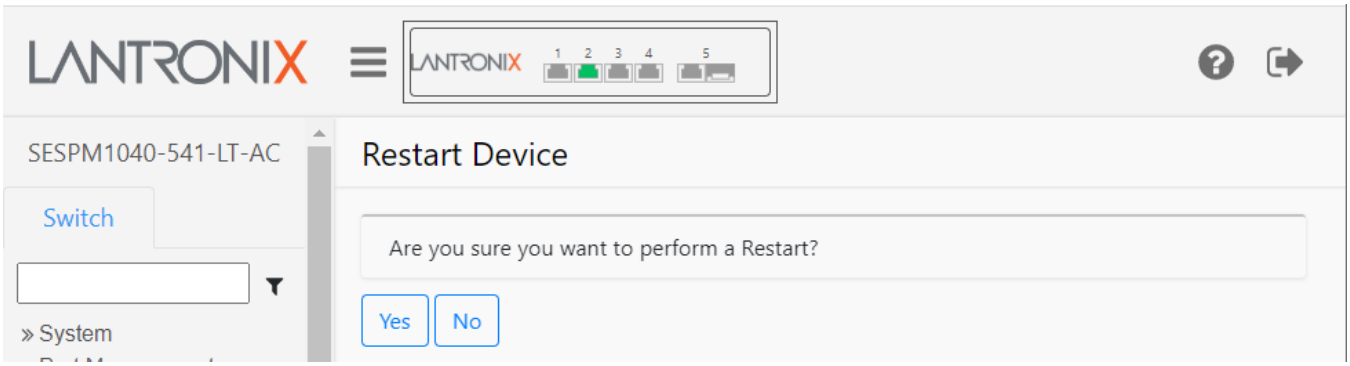
Messages:

Activating. Please wait a few moments...

Successfully activated configuration file!

Switch > Maintenance > Restart Device

This page lets you perform a switch restart. A switch restart will cause the switch to reboot. If you are re-deploying the switch or need to clear the current configurations, use the Factory Default option instead.



Parameter descriptions:

Are you sure you want to perform a Restart? : Displays to give you the option to continue or quit the switch Restart operation. Currently, the system boots up with the last running config, and not the saved startup-config. To boot from the startup-config, you must Activate the saved startup-config. When the Restart successfully completes you are redirected back to Login page.

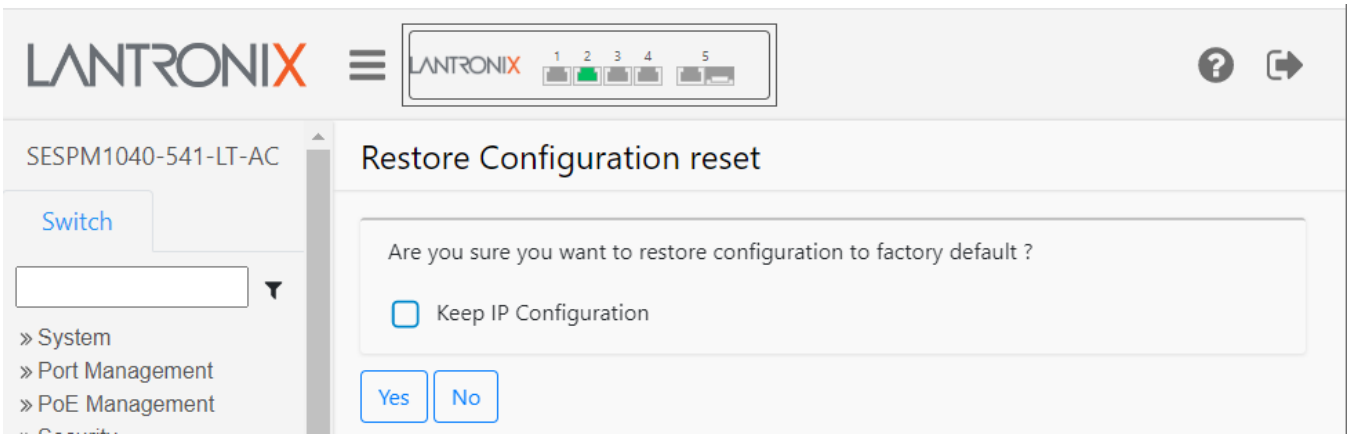
Buttons:

Yes: Click to perform a switch restart.

No: Click to quit (cancel) the switch restart operation.

Switch > Maintenance > Factory Default

This page lets you restore configuration to factory default settings.



Parameter descriptions:

Are you sure you want to restore configuration to factory default? : Displays to give you the option to continue or quit the Restart operation.

Keep IP Configuration: Check the box to retain the existing IP address for the switch after it is reset to factory default settings. The default for this option is unchecked (revert IP settings to the factory defaults of static IP, 192.168.1.10). Select "Keep IP Configuration" to maintain all management interface settings, including the method, address (if method is static), netmask, gateway, and management VLAN.

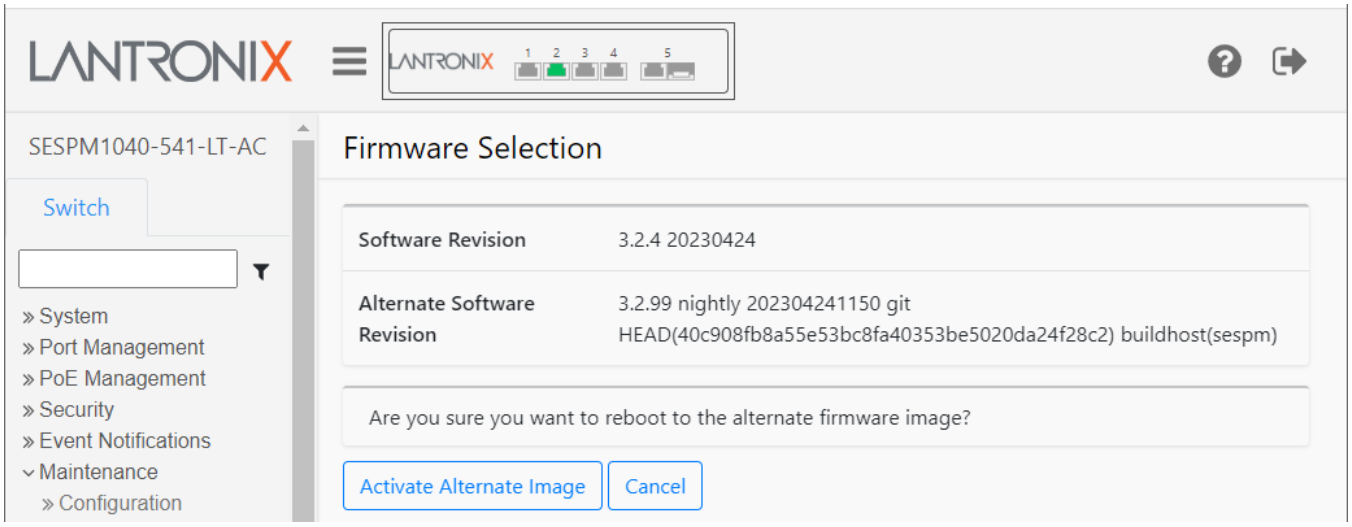
Buttons:

Yes: Click to perform a reset to factory default settings.

No: Click to quit (cancel) the switch reset operation and return to the startup page (System Information page).

Switch > Maintenance > Firmware > Firmware Selection (Swap)

This page lets you switch firmware versions if more than one version exists. This will effectively “swap” the Active Image with the Alternate Image.



Parameter descriptions:

Software Revision: The Active Software Revision and date of release (e.g., *3.0.3 20210605)*.

Alternate Software Revision: The Alternate Software Revision and date of release (e.g., *3.0.2 20210201*).

Are you sure you want to reboot to the alternate firmware image?: Displays to give you the option to continue or Cancel (quit) the firmware swap operation.

Buttons:

Activate Alternate Image: Click to swap the Active Image with the Alternate Image if more than one image exists.

Cancel: Click to quit the firmware swap operation. You are redirected to the System Information page.

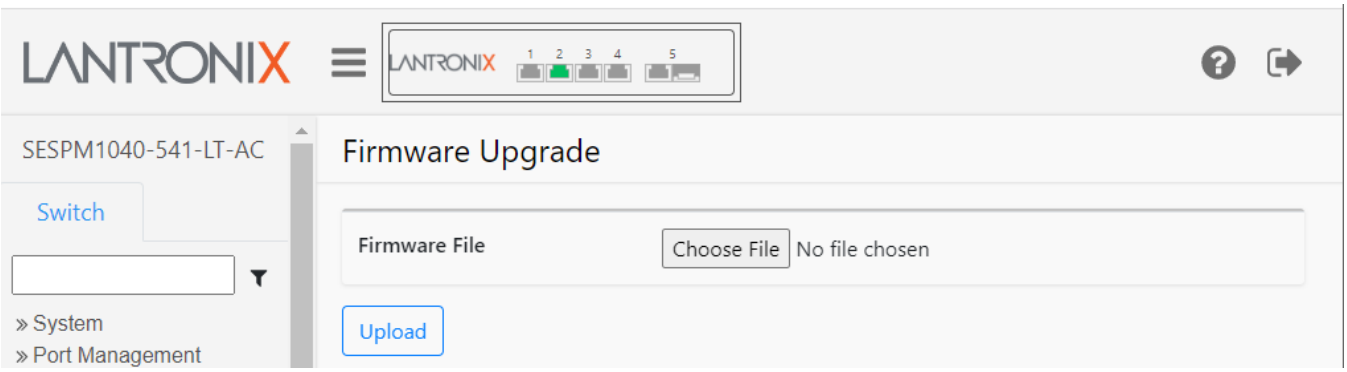
Switch > Maintenance > Firmware > Firmware Upgrade

This page lets you upgrade the Switch firmware. The switch has three firmwares that can be upgraded: Switch, PoE, and BLE firmware. If just the switch firmware needs upgrading the switch will reboot once after the switch firmware upgrade; the switch will reboot twice if both the switch firmware and the BLE firmware are upgraded.

The switch will only update PSE firmware if it can correctly determine the current running version. Otherwise, the message "*Unable to determine running PSE firmware version, exiting PSE firmware update*" displays.

How to Obtain firmware: Send Lantronix a firmware download request based on your current firmware version.

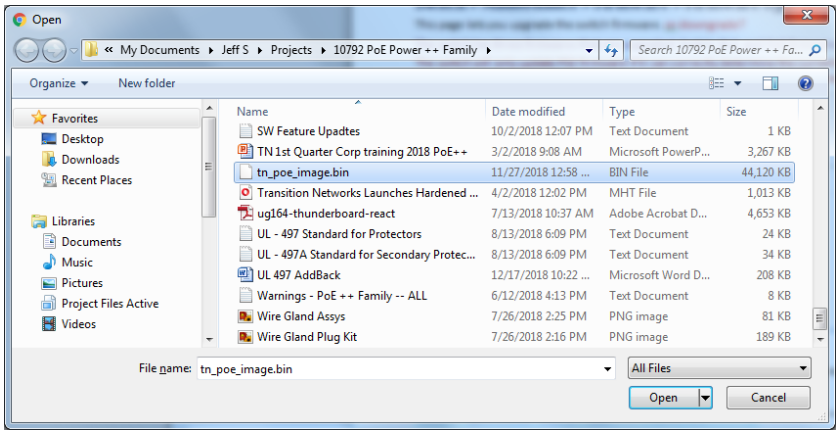
Note: If you are downgrading to an earlier firmware, you may lose some of the functionality of your current firmware. For example, Passive PoE support is not available in firmware versions prior to 3.0.1; if you swap to an earlier firmware version you will lose Passive PoE functionality and should also power cycle the switch to ensure any previous passive PoE setting is disabled.



Parameter descriptions:

Firmware File: Click the Choose File button to navigate to, select, and open a firmware file (in the format *sespm1040-541-lt-3.0.3.bin*).

Choose File button: Click to navigate to, select, and open a firmware file with which to upgrade the switch firmware version.



The message changes from *No file chosen* to the selected filename (e.g., *sespm1040-541-lt-3.0.3.bin*).

Upload button: After you select a file, click to start the firmware upgrade process. The message *Uploading image. Please wait a few moments…* displays momentarily, and then these messages display:

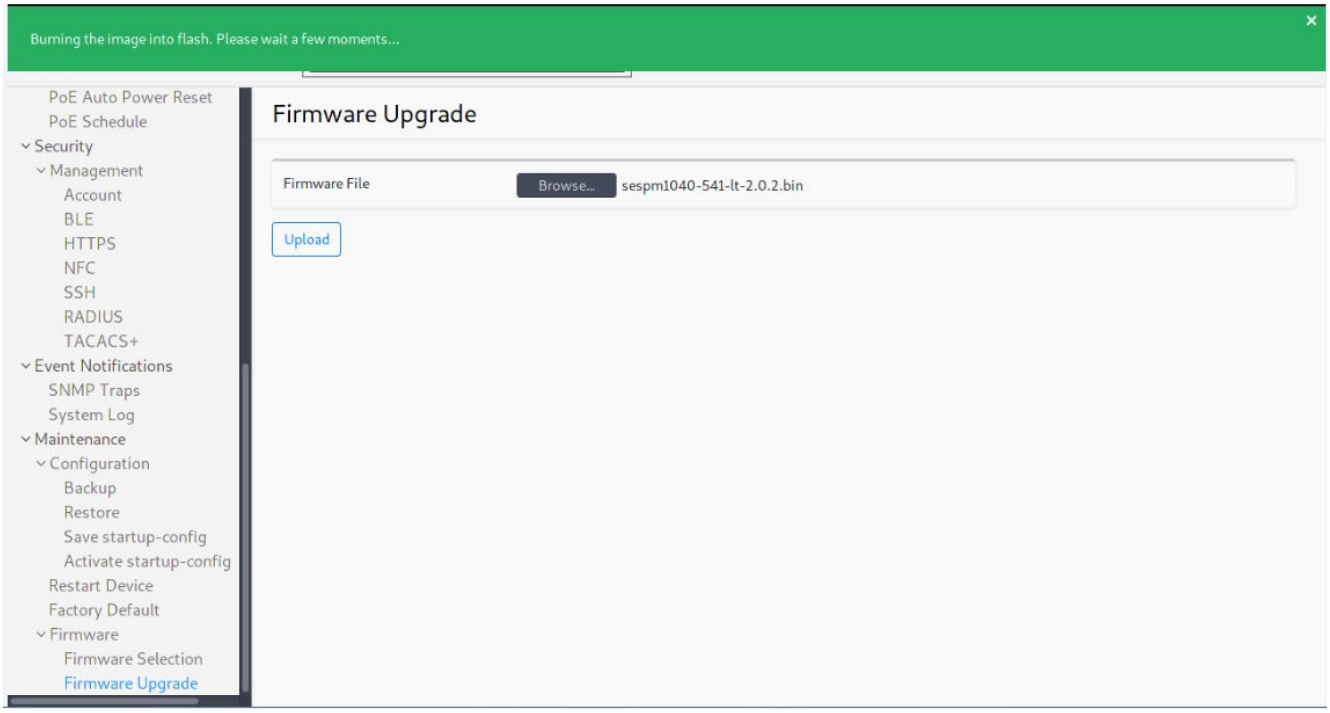
Burning image to flash. DO NOT INTERRUPT!

Upgrade succeeded. The device will now restart.

The switch automatically reboots once after a switch firmware upgrade; the switch will reboot twice if both the switch firmware and the BLE firmware are upgraded.

During most of the upgrade the blue heartbeat LED and green LED next to it on the PCB flash together, then the green LED turns off at or just before the reboot. Then as reboot progresses, both LEDs flash together again. If the two LEDs don't start flashing together again within a couple of minutes of the green LED turning off, a manual reboot is probably needed.

After you click the Upload button, a spinner displays while the firmware file is sent to the Switch. Then the screen below displays.



The switch then actually applies the update, which takes about 4 minutes. The switch will then reboot, and 2-½ minutes or so later you can login. Total update time is 6-½ minutes for the file upload to complete. When the firmware upgrade successfully completes you are redirected back to Login page. If the System Information page does not show the new firmware version, try a page Refresh. If that doesn't work, try Clearing browsing data.

Firmware Upgrade Messages:

Normal Messages: *Uploading image. DO NOT INTERRUPT! (Step 1 of 3)*
Burning image to flash. DO NOT INTERRUPT! (Step 2 of 3)
Device is rebooting... Please wait! (Step 3 of 3)

Message: *File is too big!*

Meaning: The firmware file you selected cannot be loaded because it is too large (likely an improper file).

Recovery: **1.** Click OK to clear the webpage message. **2.** Select a .bin firmware file. The current *sespm1040-541-lt-3.0.0.bin* file is 49.3 Mb. **3.** Click the Upload button. **4.** At the confirmation prompt click OK.

Message: *Firmware Update Complete - System will reboot*

Meaning: The firmware upgrade completed successfully.

Recovery: None; when the reboot ends continue operation.

Messages: *Firmware Update Failed*

Failed upgrade. Result is: UPGRADE_FAILURE

Meaning: The firmware upgrade was unsuccessful.

Recovery: Try the firmware upgrade again.

Message: *Failed upload image. Could you please repeat...*

Meaning: The firmware upgrade was unsuccessful.

Recovery: **1.** Check the file type. **2**. Try the firmware upgrade again.

Message: *Unable to determine running PSE firmware version, exiting PSE firmware update*

Meaning: The switch will only update PSE firmware if it can correctly determine the current running version.

Recovery: Verify your PSE firmware version and either try the firmware upgrade again or leave the current version running.

Message: *Uploading image. DO NOT INTERRUPT!*

Message: *Burning image to flash. DO NOT INTERRUPT!*

Meaning: The firmware upgrade is in progress.

Recovery: None; let the firmware upgrade finish before attempting any other switch functions.

Message: : *Inactive Area contains an invalid or incomplete image. Marked INVALID.*

Meaning: You upgraded FW to the existing version.

Recovery: In the Web UI, hit the browser Back button. In the CLI, hit CTRL-C. The alternate image is marked invalid in U-Boot, but the alternate version will not change to “INVALID” on Web pages and CLI show commands until a restart.

Message: : *Failed upload image. Could you please repeat...*

Meaning: You did not choose a Firmware File before you clicked the Upload button at Firmware Upgrade.

Recovery: Choose a valid Firmware File and then click the Upload button.

Message: : *Filename can’t have whitespace.*

Meaning: You chose a Firmware File with a space character in it at Maintenance > Firmware > Firmware Upgrade.

Recovery: Choose a valid Firmware File with no spaces in it and then click the Upload button.

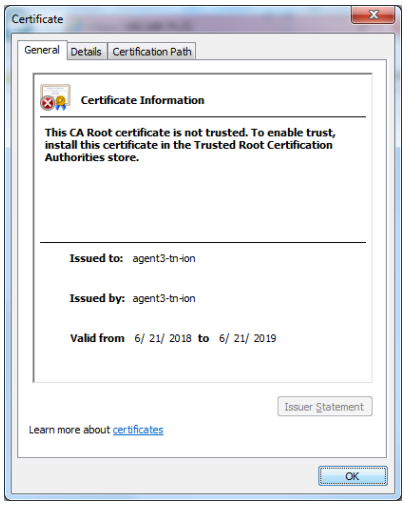
Message: *Failed upgrade. Result is: WRONG_FIRMWARE*

Meaning: You chose an invalid Firmware File.

Recovery: Verify the downloaded filename and extension, choose a valid Firmware File, and then click the Upload button.

Web UI Messages

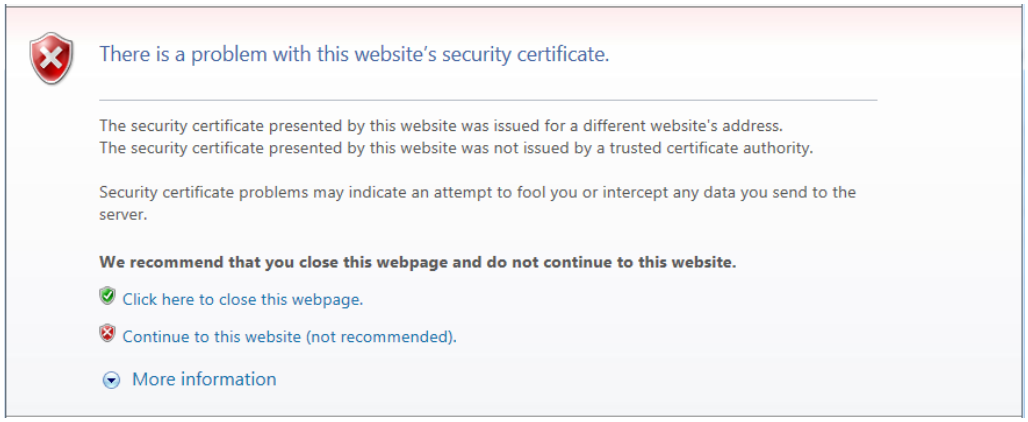
Message: *Certificate Information*



Meaning: Login message; this CA Root certificate is not trusted.

Recovery: **1.** To enable trust, install this certificate in the Trusted Root Certification Authorities store.
2. Click the OK button to trust the certificate.
3. Contact Technical Support.

Message: *There is a problem with your security certificate.*



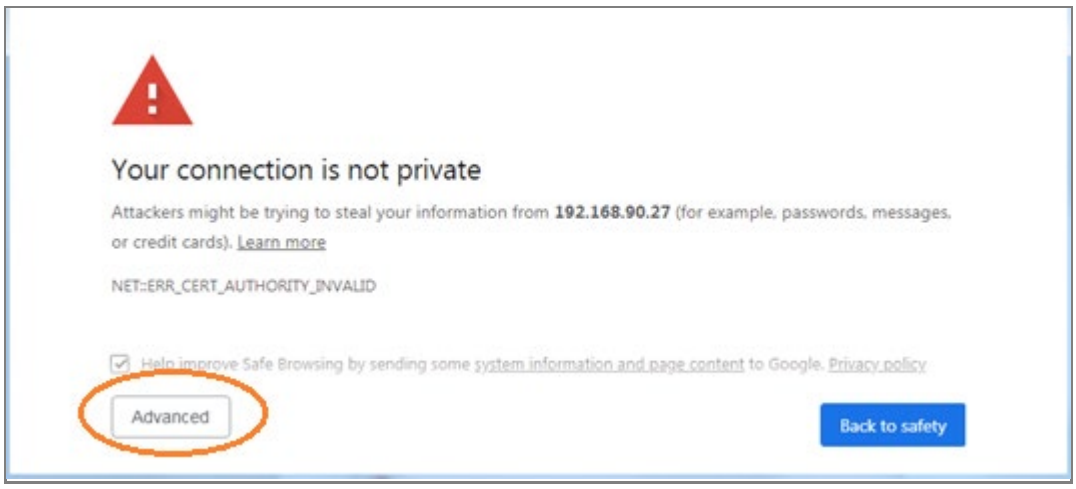
Meaning: Login message; the security certificate presented by this website was issued for a different website's address, or it was not issued by a trusted certificate authority.

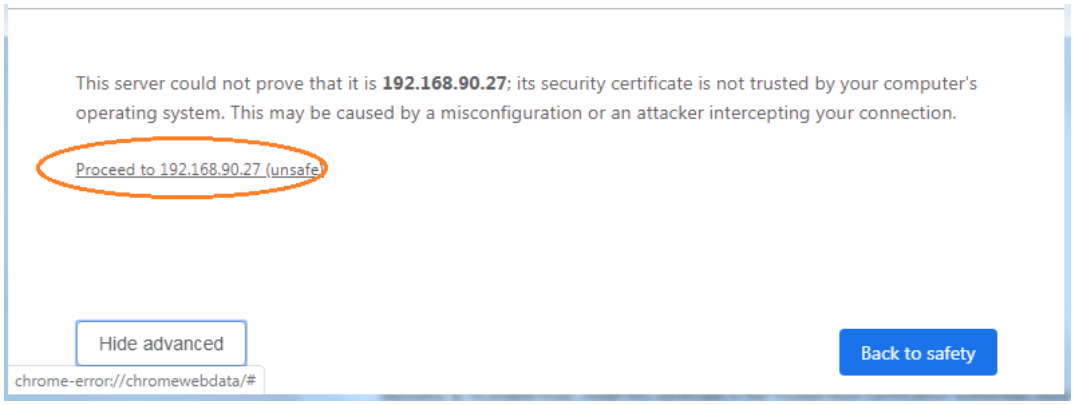
Recovery: **1.** Click "*Continue to this website* ". **2.** Continue Web UI operation.

Message: *Your connection is not private*

Meaning: Login message; this server could not prove that it is <ip address>; its security certificate is not trusted by your computer's operating system.

Recovery: **1.** Click the Advanced button. **2**. Click "Proceed to <ip address> …". **3**. Log back in to the SESPM1040-541-LT-xx Web UI.





3. Additional Information

Q & A

Q1. What are some applications for using the switch?

A1. The switch comes in 3 different configurations: An AC-powered PSE, a DC-powered PSE and a PoE-powered PSE/PD and can be used to connect and provide power to advanced security and surveillance cameras such as PTZ, dome and high-speed cameras, PoE lighting, digital signage, and building access and control systems.

Q2. How much power does the switch provide?

A2. Up to 90W per port on any individual port; up to 180W total on all ports for the -AC powered version, and up to 240W total on the -DC version on all ports simultaneously. The PD-powered version provides up to 80W total but also includes a 12V auxiliary power port for powering heaters, fans and other misc. accessory items.

Q3. If the IEEE 802.3bt spec says a PSE can send up to 90W and a PD can receive 71.3W, why do you say your SESPM1040-541-LT-PD switch can receive 80W?

A3. The IEEE802.3bt standard has an Annex Clause 145.3.8.2.1 for input average power exceptions. In closed systems (e.g., one in which a Lantronix' SESPM1040-541-LT-AC or –DC version switch is providing power to Lantronix' SESPM1040-541-LT-PD switch, this clause allows the PD to determine resistance and draw power up to, but not exceeding, the amount the PSE puts out.

Q4. Does the switch have a fiber port?

A4. The switch comes with (1) 10/100/1000Base-T RJ-45 or 100/1000Base-X Combo Port. In addition, an optional second 10/100/1000Base-T RJ-45 or 1000Base-X Combo Port is available.

Q5. Can all the ports be used at once?

A5 All ports can be used simultaneously with these exceptions:

- The additional combo port module cannot be used along with the 24V Passive PoE module.
- On the PoE-powered PD version, the SFP on the included combo port is only available when using a fiber cable run in parallel with a copper cable to power the unit.

Q6. What does the NFC feature do?

A6. The Near Field Communication antenna located inside the cover of the switch allows the user to configure the switch prior to connecting or powering it up simply by holding a smart device with the Switch App over the NFC antenna and transferring data. It also allows the user to duplicate the configuration across multiple switches. All of this saves the customer time and money, as well as simplifying setup and installation of the switch(es).

Q7.How can you configure the switch without it being powered up?

A7. When the NFC-enabled device (smartphone or tablet) and the NFC "tag" or antenna on the switch are in close proximity, a magnetic field is formed and the power from that magnetic field uses modulation to transfer data. The NFC antenna/tag contains a nonvolatile EEPROM which retains the data transferred from the smartphone or tablet even after it moves out of proximity, and the configuration is transferred into the switch's memory once the switch is fully powered up.

Q8. What does the BLE feature do?

A8. The Bluetooth Low Energy feature allows remote access to the switch without having to physically connect with a cable, so monitoring and troubleshooting and changes can be made prior to leaving the job site or after ladders or scissor lifts have been removed. The range is approximately 100m.

Q9. Are the BLE and NFC features safe and secure enough for my network?

A9. NFC is considered very secure and is frequently used for contactless payments (e.g., Apple Pay). A secure channel is established and uses encryption for sending sensitive information. However, we always recommend users have antivirus software and passwords on their devices in case they are lost or stolen.
BLE uses Advanced Encryption Standard (AES), 128/256, SHA-1, SHA-2 (SHA-224 and SHA-256) and ECC (Elliptic Curve Cryptography) encryption. It uses an authenticated encryption algorithm designed to provide both authentication and confidentiality. AES was adopted by the US Government in 2002 and is used worldwide.

Q10. Does the switch need to be mounted in a cabinet?

A10. No, the switch is housed in its own NEMA 4X/IP66 rated enclosure and can be wall-mounted or pole mounted (requires optional brackets). It also includes 6kV surge protection for lightning protection or other current surges and additional fuse protection to protect from unintentional intrusions from outside power lines.

Q11. How does the parallel power and fiber connection work?

A11 To extend the Ethernet signals beyond the 100m Ethernet cable limitation, a combined fiber cable running in parallel to a copper cable for the power input cable can be used, or parallel power and fiber cables can be used. A fiber cable for the data can be run alongside a typical 16 AWG cable for the power.

Q12. Are there any management features?

A12. Yes, the switch IMS features include Auto Power Reset (APR) to re-boot remote devices and reduce service dispatches. The switch has port management and PoE management, including the ability to preserve and schedule power. Other integrated management software features include management of devices and cable diagnostics for finding cable faults or connection issues.

Q13. What is the app used for?

A13. The Switch Manager Mobile App interfaces with the NFC and BLE features to allow switch configuration, remote diagnosis and troubleshooting without having to climb a ladder or scissor lift to connect to the switch.

Q14. What is the Digital I/O feature used for?

A14 The digital input/digital output has four optical isolators independently configurable as either inputs or outputs and includes an isolated 12V DC power source and can be used for alarms, event notifications, or other customer-designated items.

Q15. How can I tell if someone is tampering with the switch?

A15. The switch includes tamper detection. A 3-axis linear accelerometer detects if the switch has exceeded user-selected vibration limits, indicating someone may be tampering with the switch or if the switch mount has somehow been compromised.

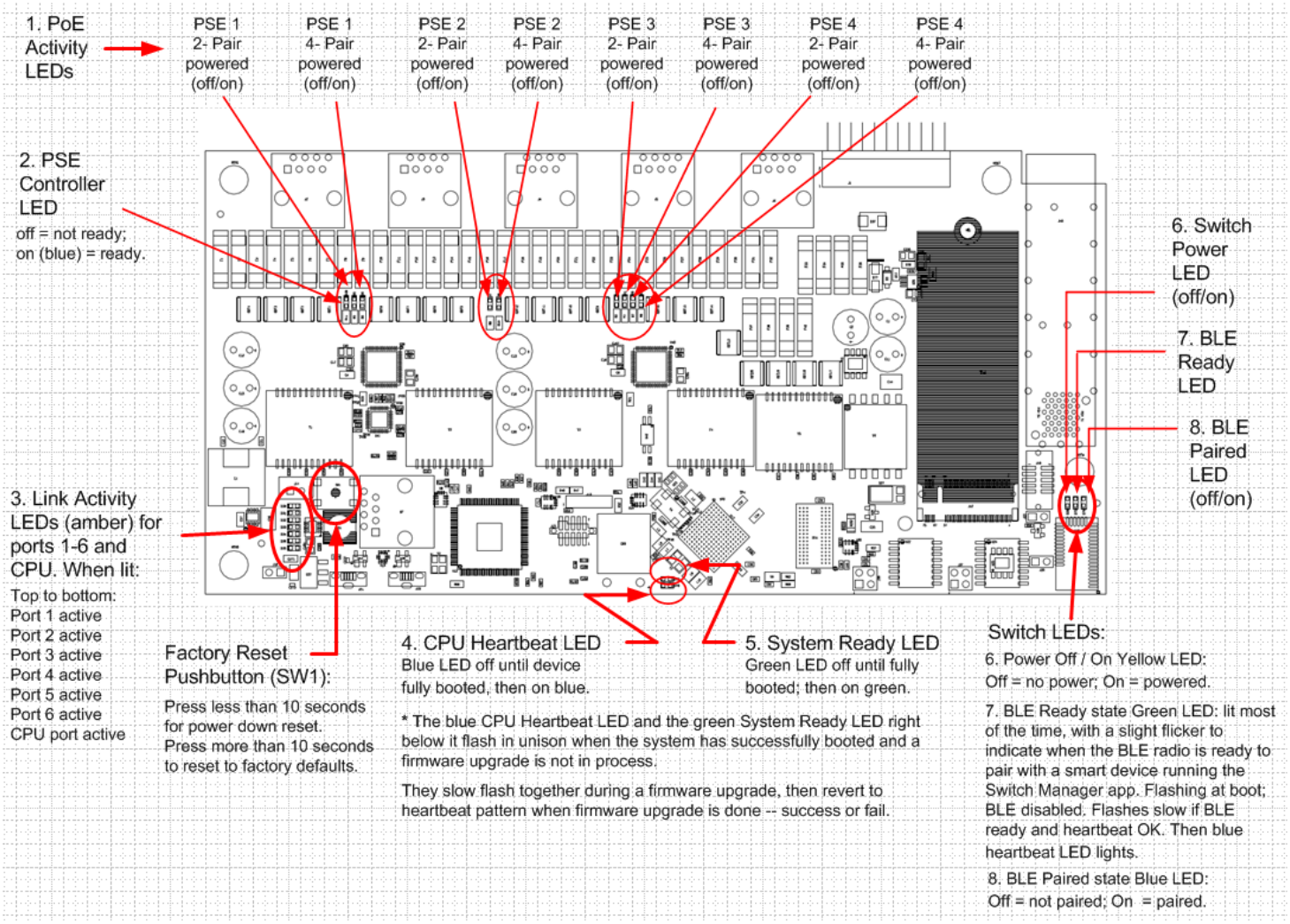
Troubleshooting

Use the NFC app to configure before or during installation. Use the BLE app to troubleshoot after installation. See the Install Guide for PoE Modes, Compliance, Standards and Troubleshooting, and other related topics.

1. Check the Release Notes for any known issues.
2. Make sure your switch model supports the feature or function attempted; see the Install Guide.
3. Verify the install process; see the Install Guide.
4. Run System Diagnostics (ping, cable diagnostics, etc.). See the related section of this manual.
5. Reset the switch. See the related section of this manual.
6. Restore the switch to its factory default settings. See the related section of this manual.
7. Verify your port configuration. See “Port Configuration” on page 5.
8. Verify the “Console Port Setup” on page 5.
9. Verify the “Initial Switch Configuration” page 17.
10. Verify the Web UI Menu System operation starting on page 134. Try refreshing the web browser (clear browsing data).
11. Verify the CLI command syntax, parameters, and mode; see the CLI Configuration section starting on page 17.
12. In your terminal emulator (e.g., PuTTY, TeraTerm, HyperTerm), disconnect and re-connect. See the related terminal emulator documentation. Upgrade your terminal emulator package if possible.
13. Verify the Web UI operation; see the specific Web UI module in the “Web UI Menu System” section starting on page 133.
14. Re-try the attempted operation from another UI (e.g., try CLI command if Web UI function did not work and vice versa).
15. Monitor and document LED conditions; see “LED Troubleshooting“ on page 219.
16. Verify the switch firmwares are the latest versions and upgrade if available.
17. If a suspected PoE issue, see “PoE Troubleshooting” on page 125.
18. Make sure related hardware (IP Camera, WAPs, SFP, Lighting, etc.) is connected and operating correctly. See the related device manuals and helps.
19. Make sure related applications (BLE, NFC, etc.) are configured and running properly.
20. See “NFC Troubleshooting” on page 222 if an NFC issue.
21. See “Bluetooth Troubleshooting” on page 222 if a Bluetooth issue.
22. Contact Tech Support.

LED Troubleshooting

LEDs are provided to report PoE activity, link activity, system readiness, and switch power and BLE pairing.



1. PoE Activity LEDs (PSE Pair Powered LEDs):

PSE Port 1: off = no power; amber = 2-pair powered; green = 4-pair powered.

PSE Port 2: off = no power; amber = 2-pair powered; green = 4-pair powered.

PSE Port 3: off = no power; amber = 2-pair powered; green = 4-pair powered.

PSE Port 4: off = no power; amber = 2-pair powered; green = 4-pair powered.

2. PSE Controller LED:

PSE Controller off = not ready;

PSE Controller on (blue) = ready.

3. Link Activity: amber LEDs from top to bottom:

Port 1: off = no activity; on = link activity.

Port 2: off = no activity; on = link activity.

Port 3: off = no activity; on = link activity.

Port 4: off = no activity; on = link activity.

Port 5 (included combo port): off = no activity; on = link activity.

Port 6 (optional combo port): off = no activity; on = link activity.

CPU Port: off = no CPU activity; on = CPU activity.

4. CPU Heartbeat LED: Blue LED off until device fully booted.

5. System Ready LED: Green LED off until fully booted; then on green.

4 and 5. The blue CPU Heartbeat LED and the green System Ready LED right below it flash in unison when the system has successfully booted and a firmware upgrade is not in process. They slow flash together during a firmware upgrade, then revert to heartbeat pattern when firmware upgrade is done -- success or fail.

Switch LEDs (6, 7, and 8):

6. Power Off / On Yellow LED: Off = no power; On = powered.

7. BLE Ready state Green LED: lit most of the time, with a slight flicker to indicate when the BLE radio is ready to pair with a smart device running the Switch Manager app. Flashing at boot; BLE disabled. Flashes slow if BLE ready and heartbeat OK. Then blue heartbeat LED lights.
BLE Ready state: constant off = not ready; on (green but blinking off about every 10 seconds) = ready.

8. BLE Paired state Blue LED: Off = not paired; On = paired.

PoE Troubleshooting

1. Get as much detail as possible regarding the symptom, including any system messages from the PoE switch. For example, does a PD not power up at all, or does it power up briefly and then power down?
2. Determine if the trouble occurred on initial installation or after the PD had been working normally?
3. If the trouble started after the PD was working, what changed? Were there any hardware or software changes?
4. Verify that the port is not shut down, disabled, or errored.
5. Verify that the Ethernet cable from the PD to the switch port is good.
6. Verify that the total cable length from the switch front panel to the connected PD is not more than 100 meters. Some of the power from the switch port is dissipated in the cable due to wire resistance, especially on cables as long as 100 meters. Only the remaining power is available to the PD. See the Install Guide for details.
7. Verify that the PSE switch power budget can power the PD. If the switch power budget is depleted, additional PDs will not power-on when connected to a PoE port. Verify that the switch power budget (available PoE) is not depleted before or after the PD is connected. Verify that sufficient power is available for the PD type.
8. Verify if non-powered Ethernet devices can establish an Ethernet link on any port and that PoE devices do not power up on the same port.
9. Review alarms reported previously by system messages.
10. If a working device intermittently reloads or disconnects from inline power, verify all electrical connections from the switch to the PD. An unreliable connection results in power interruptions and intermittent PD operation, such as PD disconnects and reloads.
11. Check for changes in the electrical environment at the switch site. What is happening at the PD when the disconnect occurs? Check for error messages reported by the switch at the same time of the disconnect.
12. Verify that an IP Phone is not losing access just before a reload occurs (a network problem, not a PoE problem).
13. Pre-standard and post-standard PDs may use different detection and connect / disconnect methods. Note that PD detection occurs when an Ethernet device is first connected to a PoE port. If a non-PoE device is connected to a PoE port, detection is deactivated. If the non-PoE device is later disconnected and replaced by a PD, the switch may not detect it immediately.
14. Verify that the PD is not causing an overcurrent condition on the port. Specifically: does the VoIP phone initially power on and then disconnect? If so, the problem may be an initial current surge that exceeds a current-limit threshold for the switch port. Some PDs may have excessive “surge in” current when first connected to a PoE port. The switch initially provides power to the port, and then quickly removes power due to a momentary overcurrent condition. The PD starts to power up, but then quickly powers down.
15. The SESPM1040-541LT-xx has voltage and current regulators that detect an overcurrent threshold and disconnect power from the line. This prevents excessive current from being delivered by the PoE port, which could possibly result in damage to port-level components.

NFC Troubleshooting

Check if you have NFC. Not all phones and tablets have NFC. Check your phone's Settings menu:

1. On your Android device, tap on Settings.
2. Tap More.
3. Scroll down and you should see NFC and Android Beam options.

If your device has NFC, check that the chip and Android Beam are activated so that you can use NFC:

1. Go to Settings > More.
2. Tap on the NFC switch to activate it. The Android Beam function will also automatically turn on.
3. If the Android Beam does not automatically turn on, just tap it and select Yes to turn it on.
4. If you still have issues, see the Android NFC webpage.

Bluetooth Troubleshooting

If your Bluetooth accessory won't pair or connect to your Android device:

1. On your Android device, go to Settings > Bluetooth and make sure that Bluetooth is on. If you can't turn on Bluetooth or you see a spinning gear, restart your device. Then try to pair and connect it again.
2. Make sure that your Bluetooth accessory and Android device are close to each other.
3. Turn your Bluetooth accessory off and back on again.
4. Make sure that your Bluetooth accessory is on and fully charged or connected to power. If your accessory uses batteries, see if they need to be replaced. If you still can't pair or connect your Bluetooth accessory: check the Android Help webpage.
5. When using the BLE feature on the Switch Manager App: If your configured switch does not appear in the list of Pairing Devices, select Retry Scan. Once paired, the switch configuration should remain highlighted in green until you Disconnect. If you lose pairing, try closing out of the Switch Manager App, go back into the app and pair again.
6. Contact Tech Support if you still have any of these issues:
   - You can't turn on Bluetooth or the setting is grayed out.
   - You can't connect any Bluetooth accessories with your device.
   - The accessory manufacturer confirmed that your accessory is working correctly.

Cable Diagnostics / Virtual Cable Test

The SESPM1040-541-LT-xx Cable Diagnostics use TDR (Time Domain Reflectometry) for remote identification of potential cable malfunctions. The Cable Diagnostics detects and reports potential cabling issues such as pair swaps, pair polarity, and excessive skew. It can also detect cable opens, shorts, or impedance mismatch in the cable and report accurately within one meter the distance to the fault.

See Switch > Port Management > Cable Diagnostics on page 156 for Web UI operation. See Virtual Cable Test (VCT) Commands on page 117 for CLI operation.

SNMP Configuration

SNMP Traps and Informs

<to be provided> May 17, 2019: Add warm start and cold start traps.

SNMP MIBs / OIDs

<to be provided>.

SNMP Error Messages

1 Error in packet.\nReason: %s\n
SNMP SetTimeout: No Response from %s\n", ss->peername);
snmp_add_var Error 2 \n

SNMP NOTIFICATIONS

ionTamperDetectEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"device tamper detection will send this trap."
::= { tnIonMgmtNotifications 42 }

ionBleDetectEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"BLE connection will send this trap."
::= { tnIonMgmtNotifications 43 }

ionPoeAprDiscoveryEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"APR discovery failure will send this trap."
::= { tnIonMgmtNotifications 44 }

ionPoeAprPingEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"APR ping monitor failure will send this trap."
::= { tnIonMgmtNotifications 45 }

ionPoeOverPowerEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"POE over power limit will send this trap."
::= { tnIonMgmtNotifications 46 }

ionPoeDigitalIoEvt NOTIFICATION-TYPE
STATUS current
DESCRIPTION
"POE Digital IO input trap."
::= { tnIonMgmtNotifications 47 }

Compliance Information

See the Install Guide for all regulatory agency compliance information.

3rd Party Software Packages

Open Source Software Packages

Open Source packages=ncurses-base login libpam-radius-auth libpam-tacplus util-linux hostname libc-bin bash findutils grep sed diffutils atftp less mount base-passwd openntpd openssh-client openssh-server openbsd-inetd telnetd-ssl ethtool vlan iproute2 bridge-utils iputils-ping mtd-utils libreadline-dev libncurses5-dev u-boot-tools vim apt sysvinit-core sysvinit-utils libpam-modules libpam-runtime rsyslog ifupdown ifupdown-extra nginx fcgiwrap resolvconf libssl-dev nfs-common localepurge libnfnetlink0 iptables libtinfo5 psmisc gdbserver strace symlinks tcpdump atftp e2fsprogs gzip libcurl4-gnutls-dev libaugeas-dev augeas-lenses augeas-tools xz-utils cifs-utils isc-dhcp-client libpam0g-dev liboping0 liboping-dev tzdata libxml2-utils

Debian packages=ncurses-base login libpam-radius-auth libpam-tacplus util-linux hostname libc-bin bash findutils grep sed diffutils atftp less mount base-passwd openntpd openssh-client openssh-server openbsd-inetd telnetd-ssl ethtool iproute2 bridge-utils iputils-ping mtd-utils libreadline-dev libncurses5-dev u-boot-tools vim apt sysvinit-core sysvinit-utils libpam-modules libpam-runtime rsyslog nginx fcgiwrap resolvconf libssl-dev nfs-common localepurge libnfnetlink0 iptables libtinfo5 psmisc gdbserver strace symlinks tcpdump atftp e2fsprogs gzip libcurl4-gnutls-dev libaugeas-dev augeas-lenses augeas-tools xz-utils cifs-utils isc-dhcp-client libpam0g-dev liboping0 liboping-dev tzdata libbsd-dev net-tools iputils-arping bind9-host libcurl3 netcat-traditional

Tech Support

See the Install Guide

Recording Device and System Information

See the Install Guide

Contact Us

See the Install Guide

Warranty

See the Install Guide

Glossary of Terms

Note that the mention or definition of a term here does not imply that the switch supports that particular feature.

802.11b standard has a maximum raw data rate of 11 Mbit/s and uses the same media access method defined in the original standard. 802.11b products appeared on the market in early 2000, since 802.11b is a direct extension of the modulation technique defined in the original standard. The dramatic increase in throughput of 802.11b (compared to the original standard) along with simultaneous substantial price reductions led to the rapid acceptance of 802.11b as the definitive wireless LAN technology. Devices using 802.11b experience interference from other products operating in the 2.4 GHz band. Devices operating in the 2.4 GHz range include microwave ovens, Bluetooth devices, baby monitors, cordless telephones, and some amateur radio equipment.

802.11g modulation standard was ratified in June 2003. This works in the 2.4 GHz band (like 802.11b) but uses the same OFDM based transmission scheme as 802.11a. It operates at a maximum physical layer bit rate of 54 Mbit/s exclusive of forward error correction codes, or about 22 Mbit/s average throughput. 802.11g hardware is fully backward compatible with 802.11b hardware, and therefore is encumbered with legacy issues that reduce throughput by ~21% when compared to 802.11a.

802.11n is an amendment that improves upon the previous 802.11 standards by adding multiple-input multiple-output antennas (MIMO). 802.11n operates on both the 2.4 GHz and the 5 GHz bands. Support for 5 GHz bands is optional. Its net data rate ranges from 54 Mbit/s to 600 Mbit/s. The IEEE has approved the amendment, and it was published in October 2009. Prior to the final ratification, enterprises were already migrating to 802.11n networks based on the Wi-Fi Alliance's certification of products conforming to a 2007 draft of the 802.11n proposal.

BLE (Bluetooth Low Energy): Bluetooth® Low Energy (LE) enables short-burst wireless connections and uses multiple network topologies. The Bluetooth LE broadcast topology supports localized information sharing and is well suited for beacon solutions, such point-of-interest (POI) information and item-finding and way-finding services. Bluetooth Low Energy (Bluetooth LE, BLE, formerly marketed as “Bluetooth Smart” is a wireless personal area network technology designed and marketed by the Bluetooth Special Interest Group (Bluetooth SIG) aimed at novel applications in the healthcare, fitness, beacons, security, and home entertainment industries. Compared to Classic Bluetooth, Bluetooth Low Energy is intended to provide considerably reduced power consumption and cost while maintaining a similar communication range. Mobile OS support: iOS, Android, Windows Phone, BlackBerry, MacOS, Linux, Windows 8, and Windows 10 natively support BLE.

Endspan: PSE type located at the end of the twisted-pair channel. For example, a switch.

IEEE 802.3bt: Trade names of PoE++, 4PPoE. Types 1, 2, 3, and 4. Max speed of 10GBASE-T. Power on 4 out of 4 pairs, up to 960mA / pair (480mA / wire); PSE: Max of 99.9 W, PD: Max of 71 W.

IP 66: IP (Ingress Protection) ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). IP ratings are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt, etc.) and moisture. The numbers that follow IP each have a specific meaning. The first indicates the degree of protection (of people) from moving parts, as well as the protection of enclosed equipment from foreign bodies. The second defines the protection level that the enclosure enjoys from various forms of moisture (drips, sprays, submersion etc.).

IP66 Enclosure: IP rated as "dust tight" and protected against heavy seas or powerful jets of water. These enclosures are constructed for indoor or outdoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment; to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, and hose-directed water; and that will be undamaged by the external

formation of ice on the enclosure. See https://www.nema.org/Products/Documents/nema-enclosure-types.pdf for more information. See NEMA Standards Publication 250-2003, "Enclosures for Electrical Equipment (1000 Volts Maximum)". This Standards Publication as well as all other NEMA publications are available from IHS @ 800 854-7179 or http://www.global.ihs.com.

Midspan: PSE type located between a non-PoE switch and a PD. Also called a PoE injector.

NDEF: (NFC Data Exchange Format) is a light-weight binary format, used to encapsulate typed data. It is specified by the NFC Forum, for transmission and storage with NFC, however it is transport agnostic. NDEF defines messages and records. An NDEF Record contains typed data, such as MIME-type media, a URI, or a custom application payload. An NDEF Message is a container for one or more NDEF Records.

NEMA 4X: In Non-Hazardous Locations, the specific enclosure Type, its applications, and the environmental conditions it is designed to protect against, when completely and properly installed. Type 4X Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an additional level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.

NFC (Near Field Communication) is a form of contactless communication between devices like smartphones or tablets. Contactless communication allows a user to wave the smartphone over a NFC compatible device to send information without needing to touch the devices together or go through multiple steps setting up a connection. NFC technology lets smartphones and other enabled devices communicate with other devices with a NFC tag. NearFieldCommunication.org is devoted to educating individuals, small businesses, and large companies alike on the merits of near field communication. For more information about the official standards and regulations surrounding near field communication, check out the NFC Forum.

Passive PoE: describes Ethernet power sources (like PoE switches or PoE injectors) that send raw unnegotiated energy down Ethernet cables to connected devices. The device connected to that cable will receive the electricity, whether it is able to handle it or not. If using a Passive PoE, make sure you properly understand the voltage requirement for your device before you plug it in.

PD (Powered Device): A device that receives power from a PSE over the twisted-pair copper cabling channel (e.g., an IP phone, WAP, or IP camera).

PSE (Power Sourcing Equipment): A device that delivers (sources) power over a twisted-pair copper cabling channel to a powered device (e.g., a switch).

PoDL (Power over Data Lines) : The amendment defines methodology for the provision of power via a single twisted-pair to connected Data Terminal Equipment (DTE) with IEEE 802.3 interfaces. PoDL is not compatible with Ethernet applications, including IEEE Std 802.3™ PoE (DTE Power via MDI), operating over 2- or 4-pairs of balanced twisted-pair cable. See IEEE Std 802.3bu-2016.

PoH (Power over HDBaseT): PoE technology was enhanced even further to create the PoH specification. To function, PoE technology requires that the PDs – cameras, screens or wireless access points. For example, assume a worst-case cabling infrastructure. With PoH, a PD can identify cable length and resistance, and draw power as needed (if it keeps overall power consumption at 100W or below). PoH is comparable to PoE for delivery of power 30W or less when two pairs are used. For higher power delivery, PoH is unique to the HDBaseT standard to bring more power to the devices requiring it. For spans of ≤ 100 m, HDBaseT technology brings uncompressed full high-definition digital audio and video, 100BaseT Ethernet, USB, power, etc. together using a single network cable and RJ45 connectors. The PoH standard was created by the HDBaseT Alliance in

2011. PoH delivers up to 100W over all four pairs in a category cable. By using all four pairs, two power interfaces are available to provide twice the power offered by two-pair solutions. If multiple PDs need power, PoH allows devices to be daisy-chained together and all powered through higher-power extenders (95W).

RP-SMA (Reverse Polarity SMA) is a variation of the SMA connector which reverses the gender of the interface. The term "reverse polarity" refers only to the gender of the connector's contact pin and not to the signal polarity.

Tag Types are contactless cards based on currently available products capable of storing NDEF (NFC Data Exchange Formatted) data. See the NFC Forum for Tag 4 information.

From IEEE P802.3bt/D3.7 Sept 2018:

Ampacity: the maximum current, in ampere, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

Dual-signature PD: A PD that has independent detection signatures, class signatures, and maintains power signatures on each pairset.

Link section: the portion of the link between the PSE Power Interface (PI) and the PD PI.

Pairset: Either of two valid 4-conductor connections, Alternative A or Alternative B, as listed in IEEE 802.3, 145.2.4. The PSE Alternative A and Alternative B connections are referred to as Mode A and Mode B, respectively, at the PD.

Power Sourcing Equipment (PSE): A DTE or midspan device that provides power to a single link section which may also carry data.

Single-signature PD: A PD that simultaneously shares the same detection signature, class signature, and maintains power signature between both pairsets.

Type 1 PD: A PD that requests Class 0 to Class 3 during Physical Layer classification and that is not a PoDL PD.

Type 1 PSE: A PSE that supports Class 0 to Class 3 power levels and provides power over 2 pairs.

Type 2 PD: A PD that requests Class 4 during Physical Layer classification, supports 2-Event Classification, and supports Data Link Layer classification.

Type 2 PSE: A PSE that supports Class 0 to Class 4 power levels and provides power over 2 pairs.

Type 3 PD: A single-signature PD that requests Class 1 to Class 6, or a dual-signature PD that requests Class 1 to Class 4 on both Modes, during Physical Layer classification. Additionally, the PD implements Multiple-Event classification, and accepts power on both Modes simultaneously.

Type 3 PSE: A PSE that supports up to Class 6 power levels, supports short MPs, and may support 4-pair power.

Type 4 PD: A single-signature PD that requests Class 7 or Class 8, or a dual-signature PD that requests Class 5 on at least one Mode during Physical Layer classification. Additionally, the PD implements Multiple-Event classification, is capable of Data Link Layer classification, and accepts power on both Modes simultaneously.

Type 4 PSE: A PSE that supports at least Class 7 power levels, in addition to lower PD Classes, short MPS, and 4-pair power.

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