

Mitel StreamLine

ADMIN GUIDE

Release 1.1



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Mitel StreamLine Admin Guide

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INTRODUCTION

The Mitel® StreamLine products are L2 Ethernet switches that deliver Ethernet connectivity and IEEE 802.3af power to the IP end point over a single pair of telephony grade wire with four times the reach of traditional data switches. The Mitel StreamLine products were designed to allow an organization to deploy Mitel's IP telephony solutions over voice grade wiring plant where the costs of upgrading the wiring plant are either cost prohibitive or an upgrade is just not practical. In addition to Mitel's IP phones, the StreamLine switches can also support any other IEEE 802.3af compliant devices such as IP cameras, IP speakers or IP wireless access points.

The StreamLine switch supports the IEEE 802.3af Power¹ over Ethernet standard using phantom power. This means that the StreamLine solution will support numerous phones from the Mitel 5000 series, 5200 series and the 5300 series, as well of qualified SIP devices.

Consult the Mitel Communications Director Engineering Guidelines for the complete list of Mitel IEEE 802.3af compliant IP phones.

Note: the Mitel UC360 Collaboration Point is not an IEEE 802.3af compliant device and as a result is not currently supported by the StreamLine switch.

NEW IN THIS RELEASE

For this release, Mitel StreamLine Switch supports the following new features:

- STP/RSTP
- Management Port
- Firefox Browser
- Port Locking
- Fiber Uplinks
- IP Network configuration support under the Network Panel as well as the CLI
- Import/Export Configuration
- Firmware Update

¹ Power over Ethernet technology allows devices such as IP Phones to receive power as well as data over an existing Ethernet LAN infrastructure. The standard for Power over Ethernet is IEEE 802.3af, and Mitel 5xxx series IP Phones conform to this standard.

There are two methods of providing power in the standard:

- “Phantom” power across existing Ethernet wires (RJ-45 pins 1, 2, 3 and 6). This is the method typically used by the Mitel StreamLine Switch.
- “Spare pair” power where power is supplied across RJ-45 pins 4, 5, 7 and 8. This is the method typically used by mid-span devices that sit between a non- 802.3af Ethernet switch and the end device.

SWITCH FEATURES

- Two versions of StreamLine switches: 24 downlink ports and 48 downlink ports
- The downlink ports run at 10 Mb/s full duplex
- The downlink Ports provide Ethernet services and Power over a single pair of telephony grade cable, refer to Footnote¹ below.
- The downlink ports provide up to 4 times the reach of traditional data switches – up to 1,200 ft (365 meters)
- 2 x 1 Gb/s Ethernet uplink ports over CAT-5e UTP cabling
- 2 x 1 Gb/s Ethernet IEEE 802.3z compliant receptacles for accepting Small Form Factor optical transceivers, allowing uplink connections ranging from 550 metres to 5 kilometers
- Gb/s Uplink ports support both STP and RSTP allowing for uplink connection redundancy
- Management serial console
- 10/100 Mb management port
- Remote management capability
- SNMP support

¹ StreamLine is supported on both CAT-3 or better, and CW1308 cabling, of up to 365 m (1,200ft) & 24 gauge or better. For more technical details, please consult the [StreamLine Site Survey](#) document.

CONVENTIONS USED IN THIS DOCUMENT

TYPOGRAPHICAL CONVENTIONS

Any monospace font (i.e. Lucida Console) are commands that are executable, and to be typed into the command prompt as written.

QUALIFYING ELEMENTS

`< >` are used to denote single-value entries of a specific item, as explained within the bracket.

`{ }` are used to denote a set or list or range of entries for a specific item.

`[]` are used to denote an optional entry.

COMMAND COMPLETION AND ERROR MESSAGES

Commands that have been entered successfully result in no output, you will be returned to the console.

Should there be an error in regards to syntax supplied the help file will output the correct format for you.

In the case of correct syntax but incorrect values, you will be given an appropriate message to change the values to within acceptable ranges.

ADDITIONAL REFERENCES

The term “switch” refers to the Mitel StreamLine 24-Port/48-Port Switch.

The StreamLine switch has four Gigabit Ethernet Uplink connectors on the front panel. The ports designated GbE 1 and GbE 2 are for copper media; the ports designated GBIC 1 and GBIC 2 are for fiber media.

Only two ports can be active at any given time. The Administrator can use them as follows:
GbE 1 and GbE 2 or
GBIC 1 and GBIC 2 or
GbE 1 and GBIC 2 or
GbE 2 and GBIC 1.

Management screens typically refer to GbE 1 and GbE 2; however, these screens are also applicable to GBIC 1 and GBIC 2.

References to GbE ports in this document indicate either GbE or GBIC or both. GBIC may also be written as Gbic.

SCOPE

This administration guide describes the configuration of the StreamLine Unit. The graphical user interface (GUI) provides a simple, intuitive, easy-to-use interface to manage, control and monitor the switch. The StreamLine switch also provides a Command Line Interface (CLI) for the installer to manage the switch.

AUDIENCE

The guide is intended for Operating personnel (sometimes called craft persons).

PRE REQUIRED KNOWLEDGE

The reader must be familiar with the basic operations of a Layer 2 Ethernet switch.

ACCESS TO HARDWARE INTERFACE

Access to the hardware interface is by a computer with a telnet terminal.

GUI FEATURES AND STRUCTURE

The GUI is an intuitive, easy-to-navigate interface that does not require a steep learning curve. It was designed to provide users with three general capabilities: monitor, control, and manage. The layout is organized in pages, tabs and panels for easy horizontal navigation, while the majority of operations can be performed with a click of the mouse.

The GUI is currently supported in the following browsers:

- Google Chrome™ version 21 and above
- Mozilla Firefox® version 16 and above

The GUI has 5 top level navigation pages:

- System – Overview, key system statistics and control of downlink ports.
- Ethernet – Providing switch configuration and management, uplink and downlink port management, and Ethernet statistics.
- VLAN – Allowing users to view, establish and assign VLANs.
- Admin – Allowing users to setup, configure and manage the switch, enable the services and view detailed log activities.
- Help – Help specific to the current tab, with understanding of the GUI functionality.

GUI – LOGGING INTO THE SWITCH

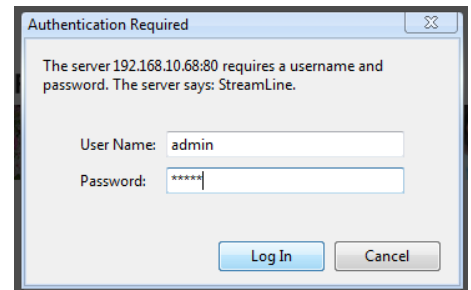
Access to in-band management is through the gigabit uplink ports.

LOGGING IN FOR THE FIRST TIME

- Change the IP address of your PC or Laptop to 192.168.100.2
- Connect your Ethernet port on the PC or Laptop to the GBE1 port on the StreamLine.

SUBSEQUENT LOGINS

1. Open Google Chrome™ or Mozilla Firefox® browser
2. Enter the IP address of the switch in the address bar (The default IP address of the switch is 192.168.100.1.)
3. Enter admin as the username
4. Enter the password (the default password is admin).

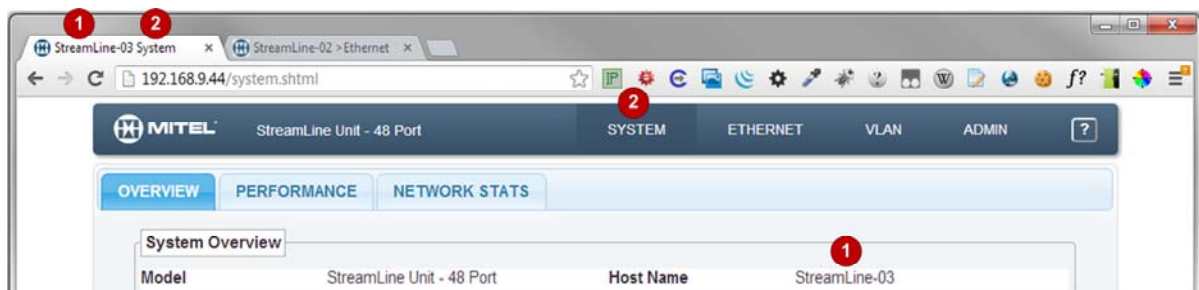


SWITCH AND PAGE IDENTIFICATION

Multiple switches will show as additional windows or browser tabs. Each tab title will indicate the hostname of the StreamLine Unit for easy identification while managing multiple switches.

Each tab title is composed of:

1. Hostname of the switch
2. Currently active page on the switch.



GUI – SYSTEM PAGE

STREAMLINE GUI LANDING PAGE

This page provides a high level overview of switch details, which is primarily used for monitoring and controlling the system.

There are three tabs that can be found on the System Page:

- OVERVIEW
- PERFORMANCE
- NETWORK STATS

The screenshot displays the Mitel StreamLine GUI System Page. The browser address bar shows the URL `192.168.10.68/system.shtml`. The page has a navigation bar with tabs for **System**, **Ethernet**, **VLAN**, and **Admin**. Below this, there are three sub-tabs: **OVERVIEW**, **PERFORMANCE**, and **NETWORK STATS**. The **OVERVIEW** tab is active, showing system and network details.

System:		Network:	
Model	StreamLine Unit - 48 Port	Host Name	StreamLine9
Product Number	50006594	IP Address	192.168.10.68
Serial Number	11512512	MAC Address	02:22:13:AF:AA:37
Up Time	4 Days, 1H:59M:35S	Subnet Mask	255.255.255.0
Current Time	Mon Sep 03 2012 17:35:41	Default Gateway	192.168.10.1
CPU Load	0.68	IP Address (mgmt)	192.168.1.1
Memory	Used: 31.322MB Free: 23.691MB	PSE Voltage	54 Volts
Temperature	41 C	PSE Power	Used: 80.865W Free: 436.885W
Contact	http://www.mitel.com/services-support/technical-support/ Tel: 1-866-641-8082 Mon-Fri 8am-6pm ET		

Below the system information, there is a section for port status. It shows **UPLINK** ports (F1, G1, M) and **DOWNLINK** ports (13 ports UP). The downlink ports are numbered 1 through 48, with a status indicator for each. A tooltip for port 43 shows: **[43] UP: 0 Days, 4H:14M:44S**, **MAC: 08:00:0F:42:D7:D1**, **LD = 5**.

Time	Message
Thu Aug 30 2012 15:36:37	Maximum CPU Load: 1.75
Mon Sep 03 2012 16:12:06	Memory low watermark: 22650.88 KB
Fri Aug 31 2012 12:59:59	Maximum power consumed: 123.993 Watts
Thu Aug 30 2012 15:36:34	Maximum Temperature: 45 C



CAUTION: The Management Port default IP address of 192.168.1.1 may conflict with other network devices/IP addresses and it needs to be changed. Refer to “Steps to Change the Management Port IP Address” section of the Quick Install Guide.

OVERVIEW TAB: SYSTEM PANEL

This panel provides an overview of the read-only, real-time, and configurable fields relevant to the switch.

System:		Network:	
Model	StreamLine Unit - 48 Port	Host Name	StreamLine-101
Product Number	50006594	IP Address	192.168.10.68
Serial Number	11512512	MAC Address	02:22:13:AF:AA:37
Up Time	1 Days, 22H:59M:13S	Subnet Mask	255.255.255.0
Current Time	Wed Aug 29 2012 15:15:20	Default Gateway	192.168.10.1
CPU Load	0.85	IP Address (mgmt)	192.168.1.1
Memory	Used: 32.743MB Free: 22.270MB	PSE Voltage	54 Volts
Temperature	43 C	PSE Power	Used: 32.316W Free: 485.434W
Contact	http://www.mitel.com/services-support/technical-support/ Tel: 1-866-641-8082 Mon-Fri 8am-6pm ET		

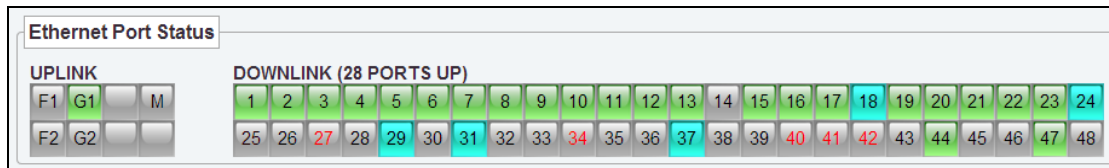
Field Title	Field Description	Field Type
Model	The model of the StreamLine Unit.	Read-Only
Product Number	The product number of the StreamLine Unit.	Read-Only
Serial Number	The serial number of the StreamLine Unit.	Read-Only
Up Time	The system uptime of the StreamLine Unit.	Real-Time
Current Time	The current date and time according to the StreamLine Unit.	Real-Time
CPU Load	The current load on the CPU.	Real-Time
Memory	The current used and free memory on the StreamLine Unit.	Real-Time
Temperature	The current temperature of the StreamLine Unit.	Real-Time
Contact	The contact information for the StreamLine Unit.	Configurable
Host Name	The current host name of the StreamLine Unit.	Configurable
IP Address	The current IP address of the StreamLine Unit.	Configurable
MAC Address	The current MAC address of the StreamLine Unit.	Read-Only
Subnet Mask	The current subnet mask of the StreamLine Unit.	Configurable
Default Gateway	The current default gateway of the StreamLine Unit.	Configurable
IP Address (mgmt)	The current management port IP address of the StreamLine Unit.	Configurable
PSE Voltage	The current output voltage of the StreamLine Unit.	Read-Only
PSE Power	The current power usage of the StreamLine Unit.	Real-Time



Note: Fields in the System Panel are configurable only in their corresponding forms. In the actual System Panel they are read only.

OVERVIEW TAB: PORT PANEL

This panel provides the status of the uplink and downlink ports, and allows control of the downlink ports.



VIEWING PORT STATUS



Note: In the screen shown above, the UPLINK ports F1 and F2 refer to ports GBIC 1 and GBIC 2, and the port G1 and G2 refer to ports GbE 1 and GbE 2.

- A downlink port summary is provided (in brackets) next to “DOWNLINK” header. For example, the screen above shows the summary of 28 PORTS UP.
- A port info box will appear when you move your cursor over the port providing link details, MAC address of main device and a historical link down count for the port
- Port status can be easily identified by the color of the port number and port box.

COLOR

PORT STATUS



Black text, grey box

Port is available with power; nothing is attached to the port.



Red text, grey box

Port power is disabled.



Black text, blue box

Dongle is attached to the port; nothing is attached to the dongle.



Black text, green box

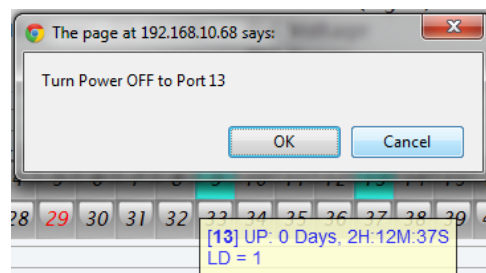
Dongle is attached to the port; an IP device is connected to the dongle.

Number changes from **black** to **red**

To monitor the health of the port, the port number gradually changes from black to red. As the number of link downs increase, the text (port number) will gradually change from black to red. If red, the line has to be checked as it means line has fault and is disabled.

CONTROLLING POWER TO DOWNLINK PORTS

- Double-click on the port you want to turn off or on. A prompt will appear asking for confirmation;
- Click **OK** to activate the request, or **Cancel** to stop. The port status will change accordingly on the panel.



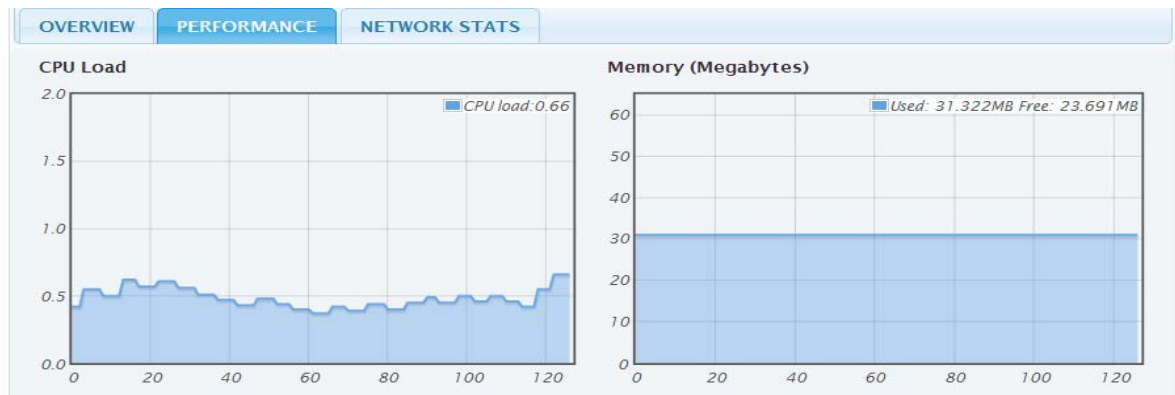
OVERVIEW TAB: MESSAGE PANEL

This panel provides maximum or minimum thresholds for key indicators such as CPU load, memory, power consumption and temperature. The date and time is shown for each indicator and the information is updated in real-time.

Time	Message
Tue Aug 28 2012 07:07:39	Maximum CPU Load: 1.94
Wed Aug 29 2012 16:19:43	Memory low watermark: 20647.936 KB
Wed Aug 29 2012 13:06:29	Maximum power consumed: 140.192 watts
Tue Aug 28 2012 13:27:07	Maximum Temperature: 45 C

PERFORMANCE TAB: CPU LOAD & MEMORY PANELS

These panels provide the last two minutes of historical data and are updated in real-time. You can cross-check the historical data in the message panel on the overview tab. The legends show current values.



CPU Load

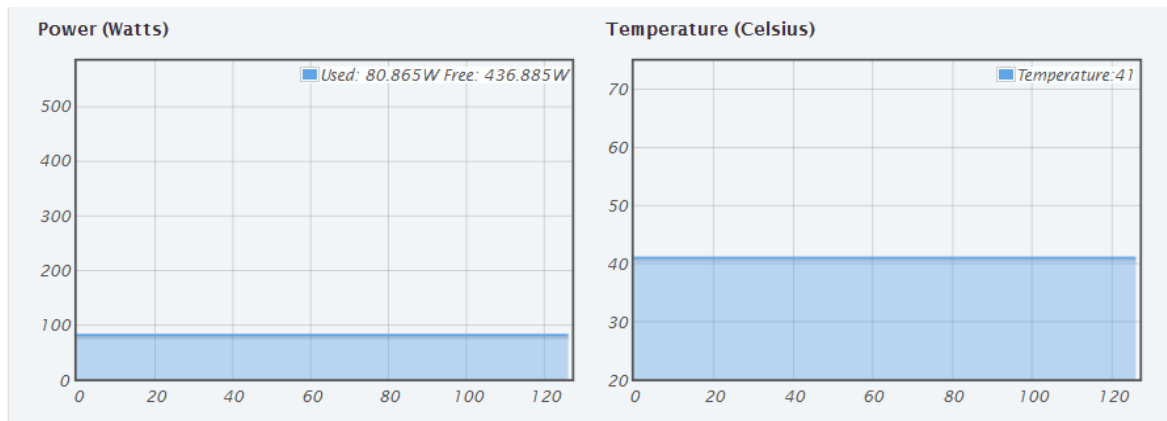
- The CPU Load Panel provides an overview of current and historical CPU load.
- This value represents the number of processes waiting in queue; in a healthy environment, CPU load should not be consistently above 1.0.

Memory (Megabytes)

- The Memory Panel provides an overview of current and historical memory usage; it also allows you to visualize available memory.
- A flat line with few peaks and valleys is normal in a healthy system.
- If memory usage keeps increasing, this may cause system instability. In these cases, note the used vs. free values in the legend and call system support.

PERFORMANCE TAB: POWER & TEMPERATURE PANELS

These panels provide the last two minutes of historical data and are updated in real-time. You can cross-check the historical data in the message panel on the overview tab. The legends show current values.



Power (Watts)

- The Power Panel provides an overview of the current and historical total power consumed by the switch and all devices connected to it.
- Expect variations in this, as activities on the switch change. Peaks and valleys are normal to see as you are adding/removing devices.
- You can use the legend to identify the free power availability and manage accordingly.

Temperature (Celsius)

- The Temperature Panel provides an overview of the current and historical switch temperature.
- If the temperature remains above 55, you should observe the physical switch environment to ensure proper ventilation and cooling.
- A flat line with few peaks and valleys is normal in a healthy system, as long as the temperature remains below 55.

NETWORK STATS TAB: PORT ACTIVITY PANEL

This panel provides real-time activity of each of the uplink and downlink ports. GbE1¹ and ports 1 to 24 are shown on the left, while GbE2¹ and ports 25 to 48 are shown on the right.

OVERVIEW PERFORMANCE NETWORK STATS											
Port	Link	RX Packets	RX Errors	TX Packets	TX Errors	Port	Link	RX Packets	RX Errors	TX Packets	TX Errors
GbE1	↑	1170968	0	1025133	0	GbE2	↓	0	0	14	0
1	↓	0	0	6	0	25	↑	0	0	197627	0
2	↓	0	0	6	0	26	↑	0	0	197627	0
3	↓	0	0	6	0	27	↑	19413	0	194259	0
4	↓	0	0	6	0	28	↑	26645	0	186967	0
5	↓	0	0	6	0	29	↓	0	0	6	0
6	↓	0	0	6	0	30	↓	0	0	6	0
7	↓	0	0	6	0	31	↑	19405	0	194219	0
8	↓	0	0	6	0	32	↑	19689	0	193930	0
9	↓	0	0	6	0	33	↑	19313	0	194308	0
10	↓	0	0	6	0	34	↑	19296	0	187786	0
11	↓	0	0	6	0	35	↑	27308	0	186309	0
12	↓	0	0	6	0	36	↑	26761	0	186856	0
13	↓	0	0	6	0	37	↓	0	0	6	0
14	↓	0	0	6	0	38	↓	0	0	6	0
15	↓	0	0	6	0	39	↑	0	0	197625	0
16	↓	0	0	6	0	40	↓	0	0	6	0
17	↓	0	0	6	0	41	↓	0	0	178708	0
18	↓	0	0	6	0	42	↓	0	0	6	0
19	↓	0	0	6	0	43	↑	19600	0	194017	0
20	↓	0	0	6	0	44	↓	0	0	6	0
21	↓	0	0	6	0	45	↓	0	0	6	0
22	↓	0	0	6	0	46	↑	28552	0	185059	0
23	↓	0	0	6	0	47	↓	0	0	6	0
24	↓	0	0	6	0	48	↓	0	0	6	0

The following information is shown for each port.

- Link** Port status is indicated by the arrow (up arrow = port is up; down arrow = port is down).
- RX Packets** **RX Packets** Total number of packets received without errors. Captured in real-time and updated approximately every second.
- RX Errors** **RX Errors** Total number of packets received with errors. Captured in real-time and updated approximately every second. The number of packets received with errors should be low in comparison to the total number of packets received without errors. Any negative values should be interpreted as zero.
- TX Packets** **TX Packets** Total number of packets transmitted without errors. Captured in real-time and updated approximately every second.
- TX Errors** **TX Errors** Total number of packets transmitted with errors. Captured in real-time and updated approximately every second. The number of packets transmitted with errors should be low in comparison to the total number of packets transmitted without errors. Any negative values should be interpreted as zero.

¹ References to GbE ports in this document indicate either GbE or GBIC or both.



Note: In order to clear the Network Stats, go to *System Settings on page 26*. The “Uplink Counters” will reset the GbE1 and GbE2 ports. The “Downlink Counters” will reset downlink ports 1 – 48.

This panel provides real-time updates for uplink ports data traffic, in which both receive and transmit packets are reported. You will see total packets, error packets, and broadcast and multicast packets reported for both receive and transmit.

As a general rule of thumb for packet errors, you should have less than 1 error per 5000 packets transmitted. If a high error count persists on a particular port, further troubleshooting may be required. Use the contact information provided in the System Panel on the Overview Tab, or reach out to your technical support team.

GUI – ETHERNET PAGE

ABOUT THE ETHERNET PAGE

The default tab on the Ethernet Page is uplink port configuration. This panel is where you would configure the switch IP Address, Net Mask, Broadcast IP Address, and Default Gateway IP Address.

The Ethernet page contains two tabs: Uplink Ports and Downlink Ports.



Note: The Management Port IP address and the uplink port IP address should never be on the same subnet. For example, if the data LAN is having issues, then the management port can still be reached.

UPLINK PORTS TAB: CONFIGURE NETWORK INTERFACE PANEL

IMPORTANT: IF YOU DO NOT CLICK **SAVE CHANGES**, ANY CHANGES MADE ON THIS TAB WILL BE LOST AFTER A SYSTEM REBOOT.

UPLINK PORTS

DOWNLINK PORTS

Configure GbE Interface

IP Address: 192.168.100.4

Net Mask: 255.255.255.0

Broadcast: 192.168.100.255

GbE1 Medium: Copper

GbE2 Medium: Copper

APPLY

Configure Management Port

IP Address: 192.168.10.91

Net Mask: 255.255.255.0

Broadcast: 192.168.10.255

Default PVID: 1001

APPLY

Configure IP Route

Default Gateway: 192.168.10.1

Interface: GbE

APPLY

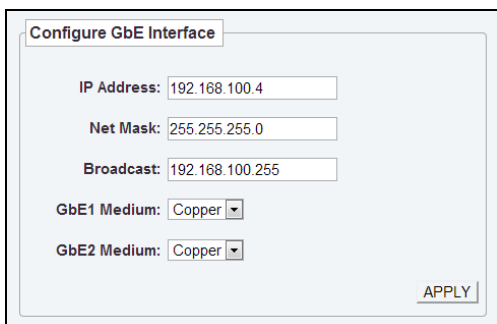
SAVE CHANGES

Caution !

- If the IP address is changed, the new IP address will be required to log back into the box.
- The management port IP address and the uplink port IP address must be not on the same subnet.
- You may have your gateway assigned to only one interface, either the GbE ports or the Management port.
- The **Default PVID** field for the Management port is **1001** and cannot be changed.
- If you switch the interface between **Copper** and **Fiber**, it may take several seconds to regain connectivity.
- If you switch from **Fiber** to **Copper**, you will need to restart your switch for the changes to take affect after saving.
- If you do not click **SAVE CHANGES**, some changes you have made on this tab may be lost after a system reboot.

CONFIGURE GbE¹ INTERFACE

Use to configure the switch network interface.



1. Modify any of the fields (**IP Address**, **Net Mask**, **Broadcast IP Address**, **GbE1 Medium**, **GbE2 Medium**).



Notes:

- If the IP address is changed, the new IP address will be required to log back into the box.
- The management port IP address and the uplink port IP address should never be on the same subnet. This ensures the management port can still be reached if the data LAN experiences issues.

2. Select copper for GbE1 and GbE2 to enable the use of copper media
Select fiber for GbE1 and GbE2 to enable the use of fiber media,
3. Click **APPLY**.

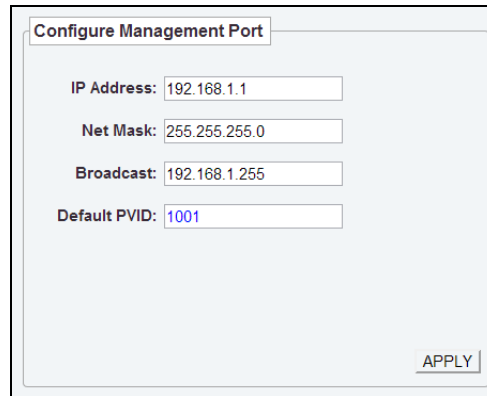
CONFIGURE MANAGEMENT PORT



CAUTION: The Management Port default IP address of 192.168.1.1 may conflict with other network devices/IP addresses and it needs to be changed. Refer to “Steps to Change the Management Port IP Address” section of the Quick Install Guide.

Use to configure the management port IP address.

¹ References to GbE ports in this document indicate either GbE or GBIC or both.



Configure Management Port

IP Address: 192.168.1.1

Net Mask: 255.255.255.0

Broadcast: 192.168.1.255

Default PVID: 1001

APPLY

1. Modify any of the fields (**IP Address, Net Mask, Broadcast**).

**Notes:**

- If the IP address is changed, the new IP address will be required to log back into the box via the management port.
- The management port IP address and the uplink port IP address should never be on the same subnet. This ensures the management port can still be reached if the data LAN experiences issues.

2. Click **APPLY**.

CONFIGURE IP ROUTE

Use to configure the default gateway IP address and to select the interface to apply it to.



Configure IP Route

Default Gateway: 192.168.10.1

Interface: GbE

APPLY

1. Modify any of the fields (**Default Gateway, Interface**).

**Notes:**

- The Default Gateway can be assigned to only one interface. The interface can be either GbE, GBIC, or Mgmt.
- If the IP address is changed, the new IP address will be required to log back into the box via the management port.
- The management port IP address and the uplink port IP address should never be on the same subnet. This ensures the management port can still be reached if the data LAN experiences issues.

2. Click **APPLY**.

Downlink Ports TAB: 1-24 PORT AND 25-48 PORT PANELS

IMPORTANT: IF YOU DO NOT CLICK **SAVE CHANGES**, ANY CHANGES MADE ON THIS TAB WILL BE LOST AFTER A SYSTEM REBOOT.

UPLINK PORTS

DOWNLINK PORTS

Dongles: 24; Endpoints: 22; 113.148W; 44C

Port	MAC Address	Uptime Days HH:MM:SS	LD	Port	MAC Address	Uptime Days HH:MM:SS	LD
1	08:00:0F:42:86:5C	1 13:04:15	8	25			0
2	08:00:0F:62:DA:FE	0 12:49:03	11	26			0
3	08:00:0F:62:AA:8C	1 13:04:15	9	27			0
4	08:00:0F:5E:57:80	1 13:04:15	9	28			0
5	08:00:0F:42:85:EC	1 13:04:15	9	29			0
6	08:00:0F:2F:95:87	1 13:04:14	10	30			0
7	08:00:0F:42:D7:D1	1 00:28:04	8	31			0
8			18	32			0
9	08:00:0F:62:EE:25	1 13:04:15	9	33			0
10	08:00:0F:5E:5E:5F	0 10:16:23	14	34			0
11	08:00:0F:22:CD:25	1 06:40:16	12	35			0
12	08:00:0F:5F:74:F2	1 07:26:51	11	36			0
13	08:00:0F:5E:26:DC	1 13:04:14	9	37			0
14	08:00:0F:42:99:C9	0 16:38:35	11	38			0
15	08:00:0F:62:AC:26	1 02:13:03	15	39			0
16	08:00:0F:42:7F:4A	0 00:10:19	28	40			0
17	08:00:0F:61:B4:D4	1 10:12:09	10	41			0
18	08:00:0F:30:BD:8F	1 13:04:15	10	42			0
19			11	43			0
20	08:00:0F:36:62:22	1 13:04:15	8	44			0
21	08:00:0F:62:BE:A2	0 06:05:55	9	45			0
22	08:00:0F:61:B4:DC	1 13:04:15	8	46			0
23	08:00:0F:42:79:C5	1 13:04:15	9	47			0
24	08:00:0F:5E:5E:6D	0 04:04:29	11	48			0

TURN ON ALL
TURN OFF ALL
RESET ALL
LOCK ALL
UNLOCK ALL
MAC ADDR TABLE
SAVE CHANGES

This tab allows for management of the downlink ports. Above the port details table on the upper-right side is a quick summary of the number of dongles connected, endpoints connected to the dongles, the total power being consumed, and the temperature of the switch. It is important to remember that if power is off on a port, the dongle and endpoint, if connected to this port, will not be included in the count totals. This information is updated in real-time.

Double click a port number to bring up link statistics for the specific port.

Stats - Port 5

```
Feb 12 10:00:55 Link down
Feb 12 10:01:00 Link up
Feb 12 10:10:54 Link down
Feb 12 10:10:57 Link up
Feb 12 10:11:00 Link down
Feb 12 15:26:24 Link up
```

PORT LOCKDOWN

The Port Lockdown feature supports the ability to “lockdown” a single MAC address to a port so that the device cannot be moved elsewhere. As such, a new device cannot be installed at that location without the Administrator re-configuring the port on the StreamLine switch.

Port Lockdown can be leveraged to support location verification services, thus ensuring only qualified endpoints are allowed access. In the case where proper identification is required, it further assures the authenticity and location of the connected device.



Note: When MAC locking is active on a specific port, only the device associated with the locked MAC address will be allowed access to the StreamLine port, this means that:

- If a user were to plug a PC into the PC port on an IP phone, and the port that this IP phone is connected to has Port Lockdown enabled, then the PC will be denied network access by the StreamLine switch.
- If an IP phone is connected to a StreamLine port that has Port Lockdown enabled, then once the Administrator has replaced the IP phone with a new phone it will be necessary to unlock the port and lock it again based on the replacement Phone’s MAC address.

In summary Port Lockdown provides the Administrator with the ability to:

- Implement a more robust E911 strategy
- Provide a high level of security through network access control based on end point MAC addresses
- Control an end user’s ability to connect a PC to an IP phone port.

The Administrator should be aware of the following behaviors associated with Port Lockdown:

- The factory default setting for Port Lockdown is disabled.
- Forcing the StreamLine switch to return to factory default settings via the front panel reset button will cause Port Lockdown to revert to the default state.
- To enable Port Lockdown on a particular port that has an IP Phone connected to it; the Administrator should use the management GUI to enable Lockdown based on the IP Phone’s MAC address.

For security reasons the Administrator may want to enable Port Lockdown on a port that will not be used, in this case the Administrator should use the Command Line Interface to associate a MAC address with this port, the Administrator will need to use a MAC address that is known to Administrator and is under the Administrator’s ownership.

When port Lockdown is enabled on a port, the MAC address used by the StreamLine switch to Lockdown this port will be persistent across Streamline switch reboots provided that the Administrator has saved the StreamLine switch configuration.



Control power to the port. Click to turn the power on or off.

or

Click **TURN ON ALL PORTS** or **TURN OFF ALL PORTS** to turn all ports on or off.



Indicates the link status. Click to reset the port.

or

Click **RESET ALL PORTS** to reset all ports at once.



or



Use this button to lock or unlock MAC address to a port.

or

Click **LOCK ALL** or **UNLOCK ALL** to lock/unlock all ports at once.

Note: if the port is locked and an IP phone is being supported, then you can not connect a PC to the back of the IP phone.

MAC Address

MAC address of the IP device connected to the dongle associated with this port.

Note: Only when the MAC address expires or is moved will the port be changed to red.

UPTIME

Amount of time a device has been connected to the dongle.

LD

Number of link-down events (these occur when the dongle goes through a link transition).

MAC ADDR TABLE

You can download a CSV file containing the MAC address table for the switch.

1. Click **GET MAC ADDRESS TABLE**.

The filename for the exported file uses the convention **<hostname>.csv** (example: switch.csv). This allows you to easily identify which switch the file was exported from.

2. When the file download is complete, the file should be shown in the bottom-left corner of your browser (Chrome) or in the Downloads window (Firefox). Double-click the file to open it.

GUI – VLAN PAGE

VLAN Table TAB: VLAN SUMMARY PANEL

The VLAN Page was designed to simplify the management of VLANs reducing the potential for error.

The VLAN Table panel is where you would add or delete a VLAN; the VLAN number, type of VLAN, and port summary details are provided in the table. If no VLAN is highlighted, only the add or delete all buttons will show; if a specific VLAN is chosen then the edit or change to default buttons activate.

[illegible]

WHITE BACKGROUND Port is not a member.

BLUE BACKGROUND Port is a member.

BLACK TEXT	Port is a PVID.
-------------------	-----------------

GREY TEXT Port is only a member of the VLAN.

A confirmation prompt will appear for add, default, delete, delete all tabs.

RESTRICTED VLAN

VLAN 1001 is reserved for internal use by the StreamLine Switch.

ADDING A VLAN

You can add a new static VLAN.

1. Click **ADD**.
2. Enter the VLAN number and click **OK**.
3. Click **SAVE CHANGES**.
4. Click the VLAN and click **EDIT** to assign ports to the VLAN

The VLAN to PORT tab appears with the VLAN panel open. You can now assign ports to the VLAN (see ***VLAN TO PORT** Tab on page 21*)

EDITING A VLAN

1. Click a VLAN. The selected VLAN will now be enclosed in a black border.
2. Click **EDIT**.

The VLAN to PORT tab appears with the VLAN panel open. You can now assign ports to the VLAN (see ***VLAN TO PORT** Tab on page 21*)

SETTING THE DEFAULT VLAN

The default VLAN is used for ports not assigned to any other VLAN. VLAN 1 is the system default; however, you can select a different default VLAN if desired.

1. Click the VLAN you want to set as the default.
2. Click **DEFAULT**.
3. Click **SAVE CHANGES**.

DELETING VLANS

You can delete a static VLAN; you cannot delete the default VLAN.

1. Click the VLAN you want to delete, then click **DELETE**.

or

Click **DELETE ALL** to delete all static VLANs.

2. Click **SAVE CHANGES**.

IMPORTANT: ANY CHANGES ARE VALID UNTIL THE NEXT REBOOT; AT THAT TIME, THE SYSTEM WILL DEFAULT TO THE LAST SAVED CONFIGURATION. TO ENSURE ANY MODIFICATIONS YOU MAKE REMAIN CONTINUOUS, REMEMBER TO SAVE ALL CHANGES.

VLAN TO PORT TAB

This tab allows you to assign ports to VLANs created in the VLAN Table tab, with one VLAN represented per panel. The panels are in a collapsible format with the VLAN organized in descending order; there is a panel for every VLAN that has been established. You can add or remove ports individually or all at once.

The screenshot displays the 'VLAN TO PORT' tab. On the left, a list of VLANs includes VLAN 1, VLAN 9, VLAN 27, VLAN 45, VLAN 189 (selected), and VLAN 1001. The selected VLAN 189 is expanded to show a table of ports. The table has two rows: GbE1 (ports 1-24) and GbE2 (ports 25-48). Each port has a checkbox. Ports 1-10 and 25-34 are shaded blue, indicating they are assigned to the selected VLAN. Below the table are buttons for 'ALL', 'NONE', 'ADD', 'REMOVE', 'REFRESH', and 'SAVE CHANGES'.

VIEWING VLAN PORT DETAILS

Each VLAN is shown as a separate panel.

1. Click the panel header (the VLAN number) to expand the panel.
2. A table with all ports is shown. The ports that are members of the VLAN have a shaded background. Ports that are not members have a white background.

ASSIGNING PORTS TO A VLAN

1. Click one or more ports in the VLAN panel.
or
Click **ALL** to select all ports. (Click **NONE** to clear all ports.)
A checkmark is shown on selected ports.
2. Click **ADD**. The added ports now have a shaded background.
3. Click **SAVE CHANGES**.

REMOVING PORTS FROM A VLAN

1. Click one or more ports in the VLAN panel.
Or
Click **ALL** to select all ports. (Click **NONE** to clear all ports.)
A checkmark is shown on selected ports.
2. Click **REMOVE**. The removed ports now have a white background.
3. Click **SAVE CHANGES**.

REFRESHING VLAN INFORMATION

VLAN information on this tab is not updated in real-time. Click **REFRESH** to update the information (for example, to see any changes made by other users).

IMPORTANT: ANY CHANGES ARE VALID UNTIL THE NEXT REBOOT; AT THAT TIME, THE SYSTEM WILL DEFAULT TO THE LAST SAVED CONFIGURATION. TO ENSURE ANY MODIFICATIONS YOU MAKE REMAIN CONTINUOUS, REMEMBER TO SAVE ALL CHANGES.

Assign PVID TAB: VLAN 1 PANEL (EXAMPLE)

VLAN TABLE
VLAN to PORT
ASSIGN PVID

PVID Table

PORT	GbE1	GbE2
PVID	1	1

PORT	1	2	3	4	5	6	7	8	9	10	11	12
PVID	1	1	1	1	1	1	1	1	1	1	1	1

PORT	13	14	15	16	17	18	19	20	21	22	23	24
PVID	1	1	1	1	1	1	1	1	1	1	1	1

PORT	25	26	27	28	29	30	31	32	33	34	35	36
PVID	1	1	1	1	1	45	45	45	45	1	1	1

PORT	37	38	39	40	41	42	43	44	45	46	47	48
PVID	1	1	1	189	189	189	189	189	189	1	1	1

VLAN 1

Ports

GbE1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GbE2	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

ALL
NONE
ASSIGN
REFRESH

SAVE CHANGES

VLAN 9
VLAN 27
VLAN 45
VLAN 189

PVID TABLE

Static panel showing each port's PVID. Each port has only one PVID. By default, every port is assigned the system default VLAN as the PVID. (The default VLAN is set on the **VLAN TABLE** Tab: VLAN Summary Panel on page 19.)

VIEWING PORT PVID DETAILS FOR A VLAN

Each VLAN is shown as a separate panel.

1. Click the panel header (the VLAN number) to expand the panel.
2. A table with all ports is shown. The ports that belong to the PVID have a shaded background. Ports that do not belong to the PVID have a white background.

ADDING OR MODIFYING A PORT PVID

IMPORTANT: THE SWITCH MAY LOSE CONNECTIVITY IF YOU CHANGE THE PVID OF THE GbE⁵ PORTS. USE CAUTION WHEN CONSIDERING MAKING CHANGES TO THESE PORTS.

1. Click one or more ports in the VLAN panel.

or

Click **ALL** to select all ports, with the exception of GbE1 and GbE2. (Click **NONE** to clear all ports.)

A checkmark is shown on selected ports.

2. Click **ASSIGN**. The new PVID is established and the added ports now have a shaded background.
3. Click **SAVE CHANGES**.

REFRESHING VLAN INFORMATION

VLAN information on this tab is not updated in real-time. Click **REFRESH** to update the information (for example, to see any changes made by other users).



Note: Selecting *All* will select all ports, with the exception of GbE1 and GbE2.

IMPORTANT: ANY CHANGES ARE VALID UNTIL THE NEXT REBOOT; AT THAT TIME, THE SYSTEM WILL DEFAULT TO THE LAST SAVED CONFIGURATION. TO ENSURE ANY MODIFICATIONS YOU MAKE REMAIN CONTINUOUS, REMEMBER TO SAVE ALL CHANGES.

⁵ References to GbE ports in this document indicate either GbE or GBIC or both.

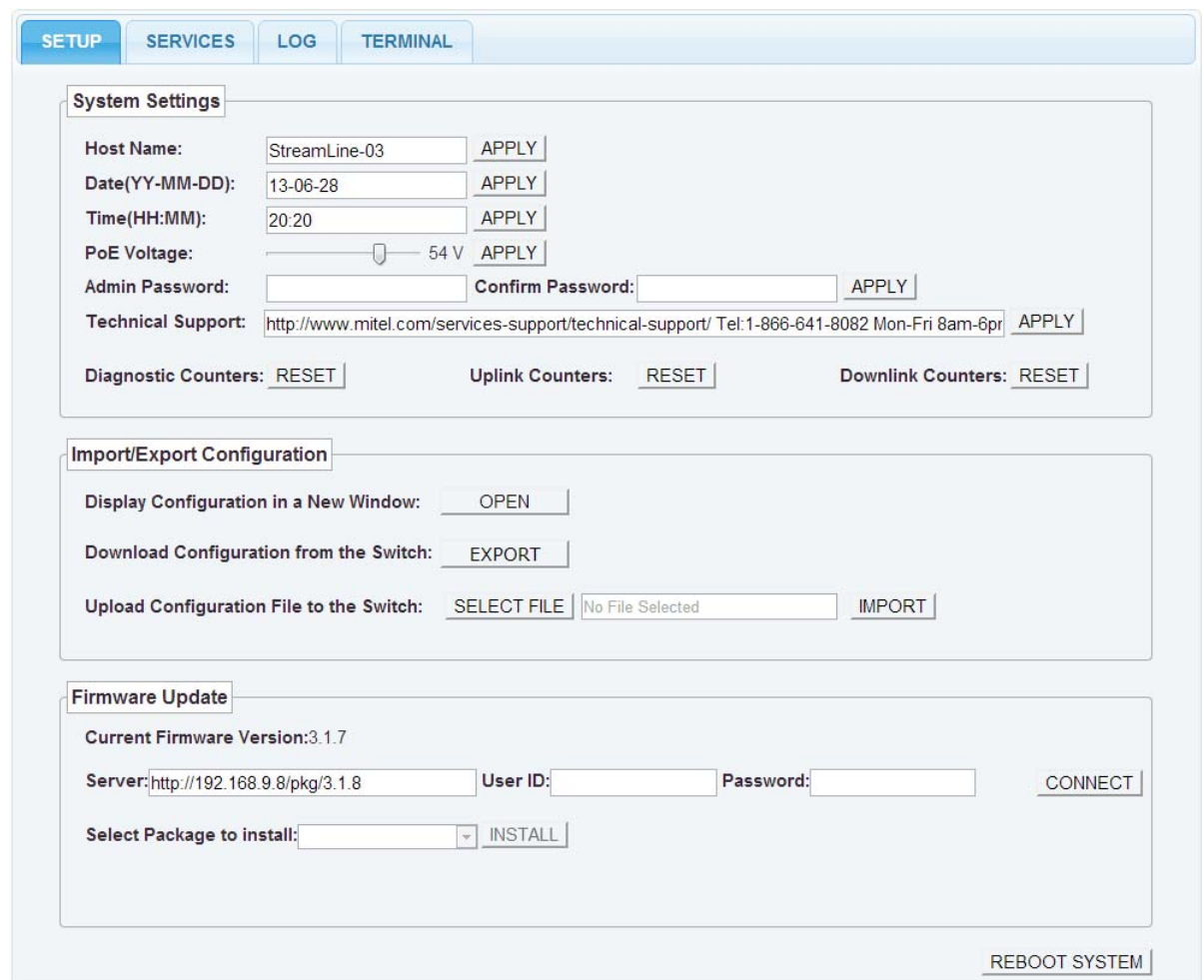
GUI – ADMIN PAGE

The Admin page allows you to configure switch settings, control services, configure servers, view the switch event log, and use the command line interface.

The Admin page contains four tabs:

- SETUP
- SERVICES
- LOG
- TERMINAL

Setup TAB: SETUP CONFIGURATION PANEL



The screenshot displays the 'SETUP' tab of the Mitel StreamLine Admin GUI. The interface features a top navigation bar with four tabs: 'SETUP' (active), 'SERVICES', 'LOG', and 'TERMINAL'. Below the navigation bar, the 'System Settings' section contains fields for 'Host Name' (StreamLine-03), 'Date' (13-06-28), 'Time' (20:20), 'PoE Voltage' (54 V), 'Admin Password', 'Confirm Password', and 'Technical Support' (http://www.mitel.com/services-support/technical-support/ Tel:1-866-641-8082 Mon-Fri 8am-6pm). Each field has an 'APPLY' button. Below these fields are three buttons: 'Diagnostic Counters: RESET', 'Uplink Counters: RESET', and 'Downlink Counters: RESET'. The 'Import/Export Configuration' section includes 'Display Configuration in a New Window: OPEN', 'Download Configuration from the Switch: EXPORT', and 'Upload Configuration File to the Switch: SELECT FILE' (with a file selection area showing 'No File Selected' and an 'IMPORT' button). The 'Firmware Update' section shows 'Current Firmware Version: 3.1.7', a 'Server' field (http://192.168.9.8/pkg/3.1.8), 'User ID', 'Password', and a 'CONNECT' button. Below these is a 'Select Package to install:' dropdown menu and an 'INSTALL' button. At the bottom right of the page is a 'REBOOT SYSTEM' button.

System Settings

Host Name: StreamLine-03

Date(YY-MM-DD): 13-06-28

Time(HH:MM): 20:20

PoE Voltage: 54 V

Admin Password: Confirm Password:

Technical Support: http://www.mitel.com/services-support/technical-support/ Tel:1-866-641-8082 Mon-Fri 8am-6pm

Diagnostic Counters: Uplink Counters: Downlink Counters:

Import/Export Configuration

Display Configuration in a New Window:

Download Configuration from the Switch:

Upload Configuration File to the Switch: No File Selected

Firmware Update

Current Firmware Version: 3.1.7

Server: http://192.168.9.8/pkg/3.1.8 User ID: Password:

Select Package to install:

SYSTEM SETTINGS

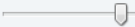
Use to configure basic switch settings. After modifying a setting, click **APPLY**. The updates will be applied immediately to the switch.

System Settings

Host Name: StreamLine-03

Date(YY-MM-DD): 13-06-28

Time(HH:MM): 20:20

PoE Voltage:  54 V

Admin Password: Confirm Password:

Technical Support: <http://www.mitel.com/services-support/technical-support/> Tel: 1-866-641-8082 Mon-Fri 8am-6pm

Diagnostic Counters:

Uplink Counters:

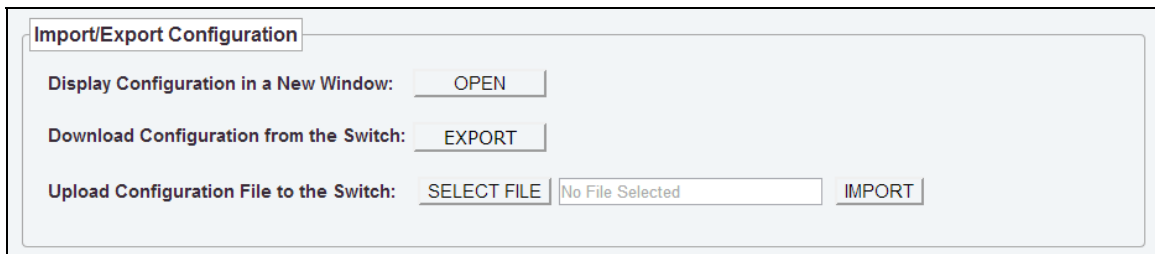
Downlink Counters:

Host Name	Switch host name.
Date	Switch date (YY-MM-DD)
Time	Switch time (HH:MM).
PoE Voltage	Defaults to 54V which is the recommended voltage for PoE. Ranges from 48 – 56V; use slider to adjust. Click APPLY .
Admin Password Confirm Password	To change the password, enter the new password in both of these fields. Note: You will be prompted to log back into the Web GUI after changing the password.
Technical Support	Contact information (e.g. technical support).
Diagnostic Counters	Resets only the diagnostic counters.
Uplink Counters	Resets all counters for the gigabit ports (transmit/receive counts, errors, broadcasts, and multicasts).
Downlink Counters	Resets all downlink counters (transmit/receive counts and errors).

IMPORT/EXPORT CONFIGURATION

You can import or export the current switch configuration. This allows you to download the existing configuration, make changes, and then upload the new configuration.

IMPORTANT: WHEN EDITING THE CONFIGURATION FILE, THE EXISTING SYNTAX MUST BE STRICTLY FOLLOWED OR YOU MAY LOSE ACCESS TO THE SWITCH. THE FILE MUST BE SAVED IN UNIX FILE FORMAT; USING A PROGRAM SUCH AS DOS2UNIX/UNIX2DOS OR NOTEPAD++ TO EDIT THE FILE IS RECOMMENDED.



Import/Export Configuration

Display Configuration in a New Window:

Download Configuration from the Switch:

Upload Configuration File to the Switch:

1. Click **EXPORT** to save a copy of the current switch configuration.
2. The filename for the exported file uses the convention **<hostname>.cfg** (example: switch.cfg). This allows you to easily identify which switch the file was exported from.
3. When the file download is complete, the file should be shown in the bottom-left corner of your browser (Chrome) or in the Downloads window (Firefox). Double-click the file to open it.
4. You can modify the following settings in the configuration file:
 - switch host name and IP address
 - information for the NTP Server, SNMP Service, Syslog Server, and VLAN, and Port Enable/Disable
5. To import or upload the modified configuration file to the switch, click **SELECT FILE** and select the configuration file to upload. Verify that you have selected the correct file.
6. Click **IMPORT**. When the upload is complete, the configuration changes are applied immediately to the switch.
7. To view the current switch configuration, click **DISPLAY CONFIGURATION IN A NEW WINDOW**. You can copy the text from this window to paste into another application or document.

FIRMWARE UPDATE

Use to view current firmware or to update firmware packages. Firmware can be updated using HTTP or FTP.

Current Firmware Version Displays currently installed version number.

Server Displays most recent URL connection.

User Enter only if required. (If User ID and Password had been set up).

ID/Password Click **CONNECT**.

Select Package to Install You can selectively install any package that is available. Click **INSTALL**.



Note: Progress of package installation will be shown by a blue bar at the bottom of the Firmware Update screen.

Firmware Update

Current Firmware Version: 3.1.5

Server: User ID: Password:

Select Package to install:

Installing web.3.1.5.bin

pal	ntp	dpkg	rtc	log	web	bist	pmon	bcm11	bridged	lldp	snmp	reset	stp	staticmac
-----	-----	------	-----	-----	-----	------	------	-------	---------	------	------	-------	-----	-----------

REBOOTING THE SYSTEM

To reboot the system, click **REBOOT SYSTEM**. Click **OK** to confirm.

Firmware Update

Current Firmware Version: 3.1.5

Server: User ID: Password:

Select Package to install:

Services TAB: SERVICES, LOG SERVER, NTP, STP/RSTP AND SNMP PANELS

SETUP
SERVICES
LOG
TERMINAL

Service:	TELNET	HTTP	LOG	LLDP	NTP	STP	SNMP	Description
Enable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Enable on System Startup
Run	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	Start or Stop this Service

Remote Log Server

IP Address:
Port:

Network Time Protocol

IP Address:
NTP Servers:

96.44.157.90
216.235.14.36
96.44.157.90
96.44.142.5
66.178.0.74
208.87.120.127

Spanning Tree Protocol

Switch Protocol from
Bridge Priority:

Simple Network Management Protocol

Receiver IP Address:
Enable Receiver ☒

SERVICES

Use to control all the services for the switch including TELNET, HTTP, LOG, LLDP, NTP, STP/RSTP and SNMP.

Service:	TELNET	HTTP	LOG	LLDP	NTP	STP	SNMP	Description
Enable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Enable on System Startup
Run	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	<input type="button" value="STOP"/>	Start or Stop this Service

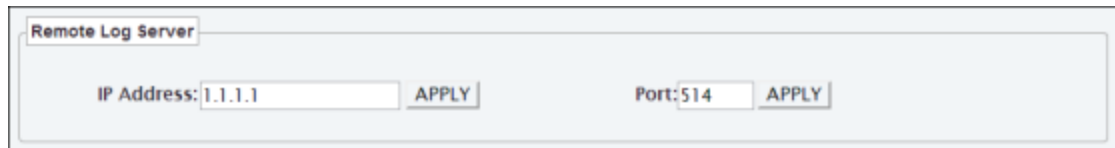
Enable Click to enable/disable a service. This determines whether the service is enabled or disabled on system startup. The Log service is always enabled.

IMPORTANT: If you disable the HTTP service, the Simple Network Manager will not function after a reboot. If you stop the HTTP service, you will instantly lose connectivity to the Simple Network Manager.

Run Click to start or stop a service. Note that the start or shutdown of services is not instantaneous and may take up to one minute.

REMOTE LOG SERVER

Use to set up a remote log server. Changes are applied immediately.

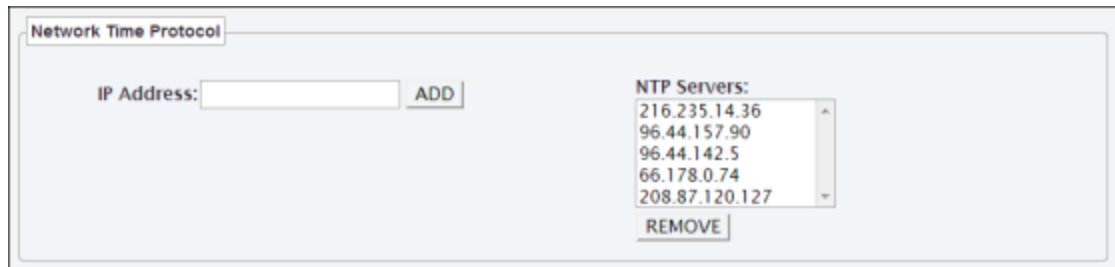


The 'Remote Log Server' configuration window contains two input fields. The first is 'IP Address' with the value '1.1.1.1' and an 'APPLY' button next to it. The second is 'Port' with the value '514' and an 'APPLY' button next to it.

1. Enter the IP address of the remote log server and click **APPLY**.
2. (Optional) Change the port number and click **APPLY**. The default port number is 514.

NETWORK TIME PROTOCOL

Use to configure multiple NTP servers.



The 'Network Time Protocol' configuration window features an 'IP Address' input field with an 'ADD' button. To the right, there is a list titled 'NTP Servers' containing five IP addresses: 216.235.14.36, 96.44.157.90, 96.44.142.5, 66.178.0.74, and 208.87.120.127. Below the list is a 'REMOVE' button.

1. To add a server, enter the IP address and click **ADD**.
2. To remove a server, select a server from the list and click **REMOVE**.

SPANNING TREE PROTOCOL AND RAPID SPANNING TREE PROTOCOL

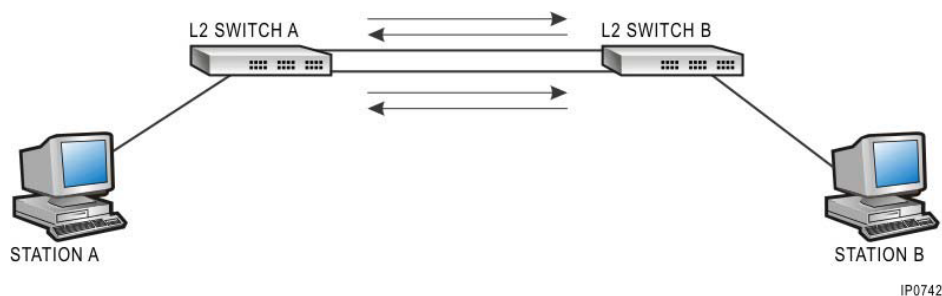
Background

The Spanning Tree Protocol (STP) and the Rapid Reconfiguration of Spanning Tree Protocol (RSTP) are Layer 2 Link Level Protocols that are specified by the IEEE (STP: 802.1d-2004) (RSTP: 802.1w). These protocols run on network bridges and switches, and they are designed to prevent network loops.

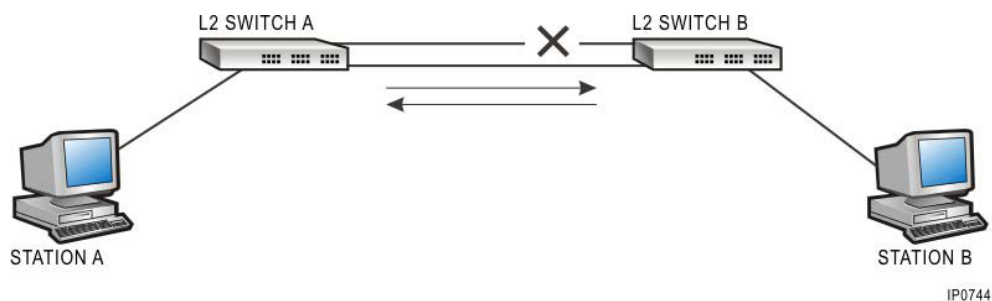
STP and RSTP allow for physical path redundancy by placing any redundant network paths in standby mode. This is done by blocking traffic on redundant ports, should the non-redundant or 'live' network connection fail; then STP/RSTP will enable the redundant network path and re-converge the network so that connectivity is restored.

STP and RSTP serve the same purpose. The difference between the two protocols has to do with how quickly the algorithms can converge on a network. RSTP re-converges networks faster than STP does.

In an Ethernet network that is not using STP or RSTP, multiple active paths between devices are not allowed since multiple paths will cause network loops. See the following Figure. Network loops are unacceptable because a broadcast or multicast packet sent from Station "A" to Station "B" will be forwarded by Switch "B" to Station "B" and also back to Switch "A"; when Switch "A" receives the packet, it will then forward the packet back to Switch "B" and the cycle will repeat for infinity causing a broadcast storm.



Should a currently active network path fail due to a Bridge/Switch failure or a network cabling failure, STP or RSTP will enable the network path that was previously held in a standby mode and the network connectivity will be restored. The following Figure shows how STP or RSTP breaks a potential network loop by blocking traffic on one of the ports on Switch "B".



Configuring STP or RSTP on the StreamLine Switch

The StreamLine switch supports both STP and RSTP. The StreamLine Administration GUI allows the Administrator to select the version of Spanning Tree (STP or RSTP) and whether or not Spanning Tree will be enabled on system startup. The factory default for Spanning Tree is disabled upon startup.

Use the following form to select the version of the Spanning Tree Protocol, the factory default is RSTP.

Spanning Tree Protocol	
Switch Protocol from <u>RSTP to STP</u>	Bridge Priority: <input type="text" value="32768"/> <input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="APPLY"/>

1. To change the protocol, click the Switch Protocol button. The button name changes based on the currently selected protocol. For example, if the current protocol is RSTP, the option "Switch Protocol from RSTP to STP" will be shown.
2. The above form also allows the Administrator to change the StreamLine switch's Bridge Priority. To change the Bridge Priority, use the up and down arrows to increase/decrease the priority in increments of 4096, then click APPLY.



Note: It is very important that the Administrator have a complete understanding of how STP or RSTP is configured in the customer's network before enabling STP or RSTP and/or altering the Bridge Priority on the StreamLine Switch.



Caution: Enabling STP in a live network will cause service disruptions to the end users while the network is converging. To avoid impacting users, enabling of STP should be conducted outside of core hours or during a scheduled maintenance period. The System Administrator should consult the MCD Resiliency Guidelines for information on how to optimally configure STP/RSTP.

3. The Administrator will need to use the Command Line Interface to check and/or configure the remaining Spanning Tree parameters. The StreamLine switch supports RSTP 802.1w-2001 and STP 802.1d-2004. By default STP uses Long Mode Port Costs. The STP/RSTP factory default values are shown in the following table.

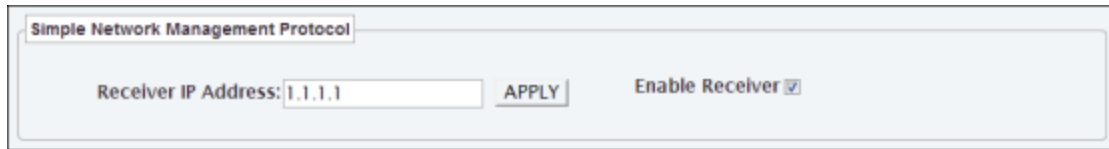
PARAMETER	STP 802.1D-2004 LONG MODE PORT COSTS	RSTP 802.1W-2001
STP/RSTP Enable	Disabled	Disabled
Bridge Priority	32768	32768
Bridge Maximum Age	20 seconds	20 seconds
Bridge Hello Time	2 seconds	2 seconds
Bridge Forward Delay	15 seconds	15 seconds
Port Enable	Enabled	Enabled
Port Fast	Disabled	Disabled
Port Cost 10 Mb/s	2,000,000	2,000,000
Port Cost 100 Mb/s	200,000	200,000
Port Cost 1 Gb/s	20,000	20,000
Port Priority	128	128

4. If the Administrator needs to use STP with Short Mode Port Costs, then the Port costs will need to be manually configured via the command line interface. The following table shows how the StreamLine switch should be configured for STP operation with Short Mode Port Costs.

PARAMETER	STP 802.1D-1998 SHORT MODE PORT COSTS
STP/RSTP Enable	Disabled
Bridge Priority	32768
Bridge Maximum Age	20 seconds
Bridge Hello Time	2 seconds
Bridge Forward Delay	15 seconds
Port Enable	Enabled
Port Fast	Disabled
Path Cost 10 Mb/s	100
Path Cost 100 Mb/s	19
Path Cost 1 Gb/s	4
Port Priority	128

SIMPLE NETWORK MANAGEMENT PROTOCOL

Use to modify the simple network management protocol.

A screenshot of a web-based configuration interface for the Simple Network Management Protocol. The interface has a light blue header bar with the title "Simple Network Management Protocol". Below the header, there is a text input field labeled "Receiver IP Address:" containing the value "1.1.1.1". To the right of the input field is a button labeled "APPLY". Further to the right is a checkbox labeled "Enable Receiver" which is currently checked, indicated by a small square icon.

1. To change the receiver IP address, enter the address and click **APPLY**.
2. To enable/disable the receiver, click the **Enable Receiver** checkbox.



Note: The StreamLine Switch currently supports RFC 1213 and RFC 1493. RFC1213 uses RFC1213-MIB and RFC1493 uses BRIDGE-MIB.

Log TAB: LOG DETAILS PANEL

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```

Apr 12 00:50:32 ntpd[216]: adjusting local clock by 51769.412611s
Apr 12 00:50:32 ntpd[216]: adjtime failed: Invalid argument
Apr 12 00:53:33 ntpd[216]: adjusting local clock by 51768.843620s
Apr 12 00:53:33 ntpd[216]: adjtime failed: Invalid argument
Apr 12 00:57:16 ntpd[216]: adjusting local clock by 51768.505426s
Apr 12 00:57:16 ntpd[216]: adjtime failed: Invalid argument
Apr 12 00:59:39 ntpd[216]: adjusting local clock by 51767.958877s
Apr 12 00:59:39 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:02:44 ntpd[216]: adjusting local clock by 51767.475223s
Apr 12 01:02:44 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:05:53 ntpd[216]: adjusting local clock by 51767.007707s
Apr 12 01:05:53 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:09:03 ntpd[216]: adjusting local clock by 51766.684010s
Apr 12 01:09:03 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:11:13 ntpd[216]: adjusting local clock by 51766.150512s
Apr 12 01:11:13 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:14:59 ntpd[216]: adjusting local clock by 51765.675624s
Apr 12 01:14:59 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:17:56 ntpd[216]: adjusting local clock by 51765.428534s
Apr 12 01:17:56 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:20:05 ntpd[216]: adjusting local clock by 51764.905236s
Apr 12 01:20:05 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:22:54 ntpd[216]: adjusting local clock by 51764.621549s
Apr 12 01:22:54 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:25:05 ntpd[216]: adjusting local clock by 51764.297431s
Apr 12 01:25:05 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:28:09 ntpd[216]: adjusting local clock by 51763.565689s
Apr 12 01:28:09 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:31:50 ntpd[216]: adjusting local clock by 51763.039390s
Apr 12 01:31:50 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:36:03 ntpd[216]: adjusting local clock by 51762.680340s
Apr 12 01:36:03 ntpd[216]: adjtime failed: Invalid argument

```

Get last: 60
SUBMIT

Log entries containing:
and
SEARCH

MARKER

[DOWNLOAD LOG FILE](#)

SELECTING THE NUMBER OF EVENTS TO DISPLAY

1. In the **Get last** list, select the number of events to display on the Log tab. You can enter a value or use the arrows to increase/decrease the value in increments of 10.
2. Click **SUBMIT**. The Log tab is updated immediately.

SEARCHING LOG ENTRIES

1. You can enter multiple search terms in the **"Log entries containing"** window. Search terms are case sensitive and spaces are significant.
2. Click **SEARCH**. The Log tab is updated immediately.
3. Search results are shown in green text and the log entries are in black.

SETUP SERVICES **LOG** TERMINAL

```

Apr  9 21:19:53 dropbear[23033]: Password auth succeeded for 'admin' from 192.168.9.100:65455
Apr  9 21:19:53 sudo:      admin : TTY=unknown ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr  9 23:23:26 sudo:      admin : TTY=pts/1 ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr 10 14:40:19 dropbear[23033]: Exit (admin): Error reading: Connection timed out
Apr 10 20:47:50 dropbear[12341]: Password auth succeeded for 'admin' from 192.168.9.100:60476
Apr 10 20:47:50 sudo:      admin : TTY=unknown ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr 11 01:32:40 dropbear[19107]: Password auth succeeded for 'admin' from 192.168.9.100:55689
Apr 11 01:32:41 sudo:      admin : TTY=unknown ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr 11 01:48:16 dropbear[12341]: Exit (admin): Error reading: Connection timed out
Apr 11 14:52:07 dropbear[19107]: Exit (admin): Error reading: Connection timed out
Apr 11 21:32:55 dropbear[3182]: Password auth succeeded for 'admin' from 192.168.9.100:58833
Apr 11 21:32:55 sudo:      admin : TTY=unknown ; PWD=/home ; USER=root ; COMMAND=/bin/su -

Apr  9 05:44:29 sudo:      admin : TTY=pts/1 ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr  9 15:33:08 dropbear[8593]: Exit (admin): Error reading: Connection timed out
Apr  9 21:19:53 dropbear[23033]: Password auth succeeded for 'admin' from 192.168.9.100:65455
Apr  9 21:19:53 sudo:      admin : TTY=unknown ; PWD=/home ; USER=root ; COMMAND=/bin/su -
Apr  9 23:23:26 sudo:      admin : TTY=pts/1 ; PWD=/home ; USER=root ; COMMAND=/bin/su -

Apr 12 01:41:50 ntpd[216]: adjusting local clock by 51761.523430s
Apr 12 01:41:50 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:46:03 ntpd[216]: adjusting local clock by 51761.184851s
Apr 12 01:46:03 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:49:44 ntpd[216]: adjusting local clock by 51760.698454s
Apr 12 01:49:44 ntpd[216]: adjtime failed: Invalid argument
Apr 12 01:51:28 ntpd[216]: adjusting local clock by 51760.442903s
Apr 12 01:51:28 ntpd[216]: adjtime failed: Invalid argument
  
```

Get last: 60 SUBMIT Log entries containing: admin and Apr 9 SEARCH

MARKER

[DOWNLOAD LOG FILE](#)

ADDING MARKERS TO THE LOG

You can add markers to mark particular points in the log. For example, you could use markers to mark the start and end points of certain events you would like to monitor. Markers are added to the log shown on the Log tab and also to the log stored on the remote log server.

1. Enter the marker text.
2. Click **MARKER**. The marker is added to the log.

DOWNLOADING THE LOG FILE

Click **DOWNLOAD LOG FILE** to save a copy of the log file shown on the Log tab. The filename for the exported file uses the convention **<hostname>.log** (example: switch.log). This allows you to easily identify which switch the file was exported from.



Note: You can continue using the Simple Network Manager while the file is downloading. When the file download is complete, the file should be shown in the bottom-left corner of your browser (Chrome) or in the Downloads window (Firefox). Double-click the file to open it.

Terminal TAG: TERMINAL DETAILS PANEL

The Terminal tab provides you with a command line interface you can use to configure the switch and diagnose switch issues. You can also use this tab to add notes to the switch.

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Command: pal- show-gigaport

DemoUnit-03> show-bridged
Bridged Mode Disabled

DemoUnit-03> show-service-status
Usage: pal-show-service-status {all|telnet|http|log|lldp|ntp|stp|snmp}

DemoUnit-03> show-service-status all

```
telnet running
http running
log running
lldp running
ntp running
stp running
snmp running
```

DemoUnit-03> show-gigaport

port	medium	link	speed	scan	autoneg	stp
mgmt	copper	down	-	HW	Yes	Forward
GbE1	copper	up	1G	SW	Yes	Forward
GbE2	copper	down	-	SW	Yes	Forward

SAVE

Notes

Notes on the switch can be created here
These notes are persistent and will survive a reset or power cycle.

SAVE

USING THE COMMAND LINE INTERFACE

1. Double-click in the **Command** field to see a list of available commands.
2. Click a command in the list to select it.
3. If necessary, enter any options for the command.



Note: See "[Command Reference](#)" on [page 39](#) for a list of command options and syntax.

4. Press **ENTER** to run the command.

The results of the command appear in the area below the command. When a new command is run, the results are appended to the results from the previous command.

You can now do the following:

- Modify the text in the results area (make changes, delete text, add comments, copy and paste, etc.). Right-click in the results area to view editing options such as copy, paste and spell-check.
- Click **SAVE** to save the results in a text file. When the file download is complete, the file should be shown in the bottom-left corner of your browser (Chrome) or in the Downloads window (Firefox). Double-click the file to open it. The filename for the exported file uses the convention **hostname_terminal_date_time.txt**. This allows you to easily identify which switch the file was exported from.

ADDING NOTES TO THE SWITCH

You can save notes on the switch. These notes are seen by all operators with access to the Simple Network Manager.

1. Type a note in Notes area. You can modify the note the same way you can modify the command results (make changes, delete text, add comments, copy and paste, etc.). Right-click in the Notes area to view editing options such as copy, paste and spell-check.
2. Click **SAVE**.

CLI – COMMAND REFERENCE

The following commands can be used in the command line interface in *Admin > Terminal* (see page 37).



Notes:

- Commands must be entered exactly as shown in the Usage column.
- <> denote single-value entries of a specific item, as explained within the brackets.
- { } denote a set or list or range of entries for a specific item.
- [] denote an optional entry.
- If you enter a command using incorrect syntax, the correct syntax will be shown.
- If you enter incorrect values for a command, you will receive a message stating that the values are not within the acceptable range.

PAL

Purpose: This command is the main interface for PAL.

Usage: `pal help {cmd|short|long|configure|examine|persistent}`

PAL-CONF-EDIT

Purpose: This command is used to modify user persistent configuration.

Usage: `pal -conf-edit {show|clear}`

Usage: `pal -conf-edit delete <LINE NUMBER>`

<LINE NUMBER> is a single-value entry of the line number you wish to delete.

PAL-CONF-EXPORT

Purpose: This command is used to export/import persistent user configuration into/from `tmp/streamline.cfg`.

Usage: `pal -conf-export {export|import}`

PAL-CONF-SAVE

Purpose: This command is used to save the configuration of the switch.

Usage: `pal -conf-save`

PAL-SERVICE-HTTP

Purpose: This command is used to enable or disable HTTP service on the switch.

Usage: `pal -service-http {start|stop|restart|enable|disable}`

PAL-SERVICE-LLDP

Purpose: This command is used to enable or disable LLDP service on the switch.

Usage: `pal -service-ll dp {start|stop|restart|show|enable|disable}`

Usage: `pal -service-ll dp show {1-48|all}`

PAL-SERVICE-LOG

Purpose: This command is used to configure, enable or disable LOG service on the switch.

Usage: `pal -service-log {start|stop|restart}`

Usage: `pal -service-log remote-syslog-show`

Usage: `pal -service-log remote-syslog-ip <IP>`

Usage: `pal -service-log remote-syslog-port <PORT>`

<IP> is a single-value entry of the IP address of the target syslog server.

<PORT> is a single-value entry of the syslog port number on the remote syslog server. The default is port 514.



Note: If you change the syslog remote IP, you are required to restart the log service.

PAL-SERVICE-NTP

Purpose: This command is used to enable or disable NTP service on the switch.

Usage: `pal -service-ntp {start|stop|restart|enable|disable}`

PAL-SERVICE-SNMP

Purpose: This command is used to enable or disable SNMP service on the switch.

Usage: `pal -service-snmp {start|stop|restart|enable|disable}`

Usage: `pal -service-snmp receiver {enable|disable|show}`

Usage: `pal -service-snmp receiver-ip <ADDRESS>`

PAL-SERVICE-STP

Purpose: Configuration of Spanning Tree via the command line is done using the 'pal-service-stp' command. Detailed command usage is shown below.

<code>pal -service-stp {GbE1 GbE2} {enable disable}:</code>	Used to remove one of the gigabit uplink ports from the spanning tree array.
<code>pal -service-stp service {start stop enable disable}:</code>	Used to start or stop spanning tree, enable or disable spanning tree. The proper process to enable spanning tree is to first enable it and then to start it.
<code>pal -service-stp proto {stp rstp}:</code>	This command is used to select the spanning tree protocol being used on the switch.
<code>pal -service-stp port-priority <VALUE>:</code>	This command is used to set the bridge priority on the switch.
<code>pal -service-stp showbridge:</code>	This command is used to see the current spanning tree status on the switch.
<code>pal -service-stp showcfg {all bridge-priority protocol age forward-delay GbE1-cost GbE2-cost}:</code>	Used to show the configuration of spanning tree on the switch.
<code>pal -service-stp age <6-40>:</code>	Used to set the age time on the switch.
<code>pal -service-stp forward-delay <4-30>:</code>	Used to set the forwarding delay on the switch.
<code>pal -service-stp port-cost {GbE1 GbE2} <0-200000000>:</code>	Used to set the individual port cost of the switch for fine tuning spanning tree. Any value greater than 200,000,000 will be rounded down to 200,000,000.

<VALUE> is a single-value entry of the priority you wish to assign. This value ranges from 0-61440 and can be incremented by 4096. The default is 32768.

PAL-SERVICE-TELNET

Purpose: This command is used to enable or disable telnet service on the switch.

Usage: `pal -service-telnet {start|stop|restart|enable|disable}`

PAL-SET-BRIDGED

Purpose: This command is use to switch between managed and unmanaged modes.

Usage: `pal -set-bridged {bridged/outband/disable}pal-set-contact`

Bridged Mode: All network services disabled and no management via ethernet.

Outband Mode: All network services on GbE disabled. Management available via MGMT port.

Disabled: Normal operation.

PAL-SET-CONTACT

Purpose: This command is used to update a contact's name (point of contact) for the switch.

Usage: `pal -set-contact <CONTACT>`

<CONTACT> is a single-value entry of the person's name that will be the point of contact for the switch.

PAL-SET-GIGAPORT

Purpose: This command is used to enable or disable uplink ports on the switch; switch between copper and fiber interfaces; add, remove, and set the default VLAN of the gigaports.

Usage: `pal -set-gi gaport {GbE1|GbE2|mgmt} {enabl e|di sabl e}`

Usage: `pal -set-gi gaport {GbE1|GbE2} {copper|fi ber}`

Usage: `pal -set-gi gaport GbE add-vl an <VLANI D> {tagged|untagged}`

Usage: `pal -set-gi gaport GbE remove-vl an <VLANI D>`

Usage: `pal -set-gi gaport GbE defaul t-vl an <VLANI D>`

<VLANID> is a single-value entry of the VLANID you wish to configure.

PAL-SET-L2AGE

Purpose: This command is used to set the value for the L2 age timer.

Usage: `pal -set-l 2age <SECONDS>`

PAL-SET-PORT

Purpose: This command is used to enable or disable downlink ports 1-48.

Usage: `pal -set-port <RANGE> {on|off}`

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

PAL-SET-PORT-COUNTERS-CLEAR

Purpose: This command is used to clear port counters.

Usage: `pal -set-port-counters-cl ear`

PAL-SET-SNMP

Purpose: This command is used to set SNMP system values.

Usage: pal -set-snm p sysdescr <STR I NG>

Usage: pal -set-snm p rdcommuni ty <STR I NG>

Usage: pal -set-snm p wrcommuni ty <STR I NG>

Usage: pal -set-snm p locati on <STR I NG>

Usage: pal -set-snm p contact <STR I NG>

<STRING> can not contain special characters.

PAL-SET-STATICMAC

Purpose: This command is used to lock MAC addresses to specific ports.

Usage: pal -set-stati cmac unl ock {<1-48>|al l }

Usage: pal -set-stati cmac l ock {<1-48>} <MAC> [VLAN]

Usage: pal -set-stati cmac l ock al l

<MAC> must be specified with xx:xx:xx:xx:xx:xx notation. If VLAN is unspecified, pvid is used.

PAL-SET-PORT-VLAN

Purpose: This command is used to set and remove vlan settings from a downlink port. Note that you need to have already used the command pal-set-vlan create 200 for the above to work.

Usage: pal -set-port-vl an <RANGE> add-vl an <VLANI D> { tagged|untagged}

Usage: pal -set-port-vl an <RANGE> remove-vl an <VLANI D>

Usage: pal -set-port-vl an <RANGE> defaul t-vl an <VLANI D>

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

<VLANI D> is a single-value entry of the VLANID you wish to configure.

PAL-SET-SYS-DATE

Purpose: This command is used to set the date and time on the switch. The clock is a 24 hour clock.

Usage: pal -set-sys-date {YYYY-MM-DD}

{YYYY-MM-DD} is a range of dates, where YYYY represents the year (i.e. 1988), MM represents the month (i.e. 02 for February), and DD represents the day (i.e. 19).

PAL-SET-SYS-GATEWAY

Purpose: This command is used to set the gateway IP of the switch.

Usage: `pal -set-sys-gateway {GbE|mgmt} <GATEWAY>`

<GATEWAY> can only be assigned to 1 interface at a time.

PAL-SET-SYS-HOSTNAME

Purpose: This command is used to set the hostname of the switch. Note that some special characters are not supported. Not supported known list: `&*()`.

Usage: `pal -set-sys-hostname <HOSTNAME>`

<HOSTNAME> is a single-value entry of the hostname you wish to configure.

PAL-SET-SYS-IP

Purpose: This command is used to set the IP of the switch.

Usage: `pal -set-sys-i p {GbE|mgmt} <I PADDRESS> <NETMASK> <BROADCAST>`

Usage: `pal -set-sys-i p mgmt <I PADDRESS> <NETMASK> <BROADCAST>`

<I PADDRESS>, <NETMASK> and <BROADCAST> are all single-value entries for these addresses.

PAL-SET-SYS-PASSWD

Purpose: This command is used to change the user password.

Usage: `pal -set-sys-passwd <USERNAME> <PASSWORD>`

<USERNAME> is the single-value entry of the username of the switch.

<PASSWORD> is the single-value entry of the new password of the switch.

PAL-SET-SYS-TIME

Purpose: This command is used to set the system time of the switch.

Usage: `pal -set-sys-ti me {HH: MM}`

{HH: MM} is a range of times, where HH represents the hour (i.e. 15 is 3:xx pm), and MM represents the minutes (i.e. 45 is x:45).

PAL-SET-SYS-TIMEZONE

Purpose: This command is used to set the system timezone of the switch.

Usage: pal -set-sys-ti mezone l i s t

Usage: pal -set-sys-ti mezone ti mezone <TIMEZONE>

Using list will display timezone options, then set using appropriate choice.

PAL-SET-VLAN

Purpose: Used to create, delete, and delete all VLANs on the switch.

Usage: pal -set-vl an create <VLANID>

Usage: pal -set-vl an del ete <VLANID>

Usage: pal -set-vl an defaul t <VLANID>

Usage: pal -set-vl an cl ear

<VLANID> is a single-value entry of the VLANID you wish to configure.

PAL-SET-VOLTAGE

Purpose: Used to set the voltage of the downlink ports.

Usage: pal -set-vol tage <DECI VOLTS>

<DECI VOLTS> must be between 480 and 560.

Example: 495 Decivolts is 49.5 Volts.

PAL-SHOW-BRIDGED

Purpose: Used to display the current bridged mode.

Usage: pal -show-bri dged

PAL-SHOW-CONTACT

Purpose: This command is used to show a contact's name (point of contact) for the switch.

Usage: pal -show-contact

PAL-SHOW-GIGAPORT

Purpose: This command is used to give uplink port status.

Usage: pal -show-gi gaport

PAL-SHOW-L2AGE

Purpose: This command is used to show uplink port status.

Usage: `pal -show-l 2age`

PAL-SHOW-PORT

Purpose: To get downlink port status and statistics.

Usage: `pal -show-port <RANGE>`

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

PAL-SHOW-PORT-COUNTERS

Purpose: This command is used to show port counters.

Usage: `pal -show-port-counters <RANGE>`

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

PAL-SHOW-PORT-STATISTICS

Purpose: This command is used to show port statistics.

Usage: `pal -show-port-statistics <RANGE>`

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

PAL-SHOW-PORT-STATUS

Purpose: This command is used to show port status.

Usage: `pal -show-port-status <RANGE>`

<RANGE> is a single-value entry of a port you wish to configure. This value ranges from 1-24 on a 24-Port switch and 1-48 on a 48-Port switch.

PAL-SHOW-SERVICE-STATUS

Purpose: This command is used to show the current state of specified service (or all services) on the switch.

Usage: `pal -show-service-status {all | telnet | http | log |lldp |ntp |stp |snmp}`

PAL-SHOW-SERVICE-STARTUP

Purpose: This command is used to show the state of specified service (or all services) at start-up.

Usage: pal -show-service-startup {all | telnet | http | ldap | ntp | stp | snmp}

PAL-SHOW-SNMP

Purpose: This command is used to display the set SNMP system values.

Usage: pal -show-snmp {sysdescr | rdcommunity | wrcommunity | location | contact}

PAL-SHOW-STATICMAC

Purpose: This command is used to show port MAC lock status.

Usage: pal -show-staticmac {<1-48> | all}

PAL-SHOW-SYS-DATE

Purpose: This command is used to get the system date and time.

Usage: pal -show-sys-date

PAL-SHOW-SYS-GATEWAY

Purpose: This command is used to get the gateway of the switch and which port it is bound to.

Usage: pal -show-sys-gateway

PAL-SHOW-SYS-HOSTNAME

Purpose: This command is used to get the hostname of the switch.

Usage: pal -show-sys-hostname

PAL-SHOW-SYS-IP

Purpose: This command is used to get the IP addressing information from the switch.

Usage: pal -show-sys-ip

PAL-SHOW-SYS-TEMP

Purpose: This command is used to get the temperature of the switch.

Usage: pal -show-sys-temp

PAL-SHOW-SYS-TIMEZONE

Purpose: This command is used to display the current timezone of the switch.

Usage: pal -show-sys-timezone

PAL-SHOW-VLAN

Purpose: This command is used to show VLAN port configuration.

Usage: pal -show-vlan

PAL-SHOW-VLAN-DEFAULT

Purpose: This command is used to show default VLANs configuration.

Usage: pal -show-vlan-default

<1-48> and all are port defaults, where system is the system default.

PAL-SHOW-VOLTAGE

Purpose: This command is used to show the downlink voltage in Decivolts.

Usage: pal -show-voltage

PAL-VERSION

Purpose: This command is used to show the version of the software on the switch.

Usage: pal-version

CLI – UPGRADING PROCEDURE

CLI COMMAND: PAL-PKG

Purpose: Used to upgrade, remove, and show the installed software packages on the switch.

Usage: pal -pkg {show_remote|show_installed|install_all|remove_all}

Usage: pal -pkg install <REMOTE_PACKAGE_NAME>

Usage: pal -pkg remove <LOCAL_PACKAGE_NAME>

Usage: pal -pkg configure <URI VERSION>

<REMOTE_PACKAGE_NAME> is a single-value entry of the remote package name you wish to install, residing on your HTTP or FTP server.

<LOCAL_PACKAGE_NAME> is a single-value entry of the local package name you wish to remove, residing on your switch.

<URI VERSION> is a single-value entry of the URL of the files, residing on the server.

Please note that before upgrading, it is recommended to export the StreamLine configuration file.

Note: Full packages will be released with every major software release; these packages will not require a certain previous version to be installed. Incremental upgrade packages will constitute non-critical but recommended upgrades.

DISPLAYING CURRENT INSTALLED VERSION

For incremental upgrade, the user needs to know the current installed version of firmware on the unit so the next upgrade can be installed. With the incremental style of upgrade, each upgrade must be done in order, and not skip upgrades to the latest pal-version.

```
Example: # pal -version
         X.X.X
         #
```

CONFIGURING TO UPGRADE

The current servers supported are HTTP, FTP. On that server, create a subdirectory with a name of your choosing and place the upgrade file into that directory.

Example: <http://192.168.0.10/upgrade/streamline.X.X.X.bin>
<http://192.168.0.10/upgrade/sources>

From the StreamLine command line, you can now configure the package upgrade utility to point it to the upgrade server and subfolder. This is done with the pal-pkg command with the configure option. For the URL you will need to specify the server type (FTP://, HTTP://) as well as IP address.

```
pal-pkg configure <URL> <SUBFOLDER>
```

```
Example: # pal -pkg configure http://192.168.0.10 upgrade
#
```

To verify the upgrade server and streamline are now configured properly for upgrade, you can issue the following command which will display the upgrade file on the server.

```
Example: # pal -pkg show_remote
streamline.X.X.X.bin
#
```

INSTALLING UPGRADE PACKAGE

After the streamline can access the server, you can now do the upgrade. This is done with the following command. If a restart is required, the user will be notified after installing and starting the upgrade. Upgrades in this fashion are done incrementally.

```
pal-pkg install all
```

```
Example: # pal -pkg install streamline.X.X.X.bin
Installing UPGRADE .....[OK]
Starting UPGRADE .....[OK]
#
```

UPGRADE RECOVERY & FULL VERSION INSTALL

It is recommended that all upgrades are done in the incremental fashion. In case of problems, the below instructions can be followed.

If the situation arises where an upgrade fails, or incremental upgrade is not possible, a full upgrade package with the following naming convention will be available.

```
streamline.X.X.X.full.bin
```

Holding down the reset button during the bootup process will cause a factory default of the unit.

```
Example: # pal -pkg show
streamline.X.X.X.full.bin
# pal -pkg install streamline.X.X.X.full.bin
Installing X.X.X.FULL ..... [OK]
Starting X.X.X.FULL ..... [OK]
Restart is needed
#
```