



# HP V1810-48G Switch

## Management and Configuration Guide



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May 2011

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# Preface

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## About This Document

HP V1810-48G switch software provides rich layer 2 and Quality of Service (QoS) functionality for switches operating in small business networks. This guide describes how to configure HP V1810-48G switch software features by using the Web-based graphical user interface (GUI).

### Audience

The information in this guide is primarily intended for System administrators and Support providers who are responsible for configuring, operating, or supporting a network using HP V1810-48G switch software. An understanding of the software specifications for the networking device platform, and a basic knowledge of Ethernet and networking concepts, are presumed.

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## About Your Switch Manual Set

The switch manual set includes the following:

- Quick Setup Guide - a printed guide shipped with your switch. Provides illustrations for basic installation and setup guidelines.
- Regulatory and Safety Information - printed documentation shipped with your switch. Includes Regulatory statements and standards supported by the switch, along with product specifications.
- Installation and Getting Started Guide - (HP Web site only). Provides detailed installation guide for your switch, including physical installation on your network, basic troubleshooting, product specifications, supported accessories, Regulatory and Safety information.
- Management and Configuration Guide - This guide describes how to manage and configure switch features using a Web browser interface.
- Release Notes - (HP Web site only). Provides information on software updates. The Release Notes describe new features, fixes, and enhancements that become available between revisions of the above guides.

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**Note**

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For the latest version of all HP documentation, visit the HP Web site at [www.hp.com/networking/support](http://www.hp.com/networking/support). Then select your switch product.

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## Overview of Switch Software Features

HP V1810-48G switches include support for the following features:

Feature	Supported?
802.1Q VLAN Tagging	Yes
802.1p Packet priority	Yes
Config file	1
Config file backup (TFTP/HTTP)	Yes
DHCP Client	Yes
Diagnostic Tools	Yes
Event Log	Yes
Factory-Default IP Address	192.168.2.10
Factory-Default Subnet Mask	255.255.255.0
Green Features (port power down, LEDs off)	Yes
Interface for Management Access	Web browser only
Jumbo Frames (up to 9216 bytes)	Yes
Port Trunking (LACP)	Yes
Ports per trunk (maximum)	8
Trunks per switch (maximum)	16
LLDP	Yes
Locator LED	Yes
Loop Protection	Yes
MAC Address table (maximum)	16384
Network Management Applications (LLDP, SNMP)	Yes
Password	Yes
Ping	Yes
Port Configuration	Yes
Port Mirroring	Yes
Port Status	Yes
Security: Denial of Service (DoS)	Yes
Security: Storm Control Protection	Yes
SNMP	Read Only



Feature	Supported?
Software Downloads (TFTP, HTTP)	Yes
SSL (Secure Socket Layer)	Yes
Syslog	Yes
System Information	Yes
Time Protocol (SNTP)	Yes
Troubleshooting	Yes
VLANs (maximum)	64
Auto Port Power-Down	Yes



# Getting Started

This chapter describes how to make the initial connections to the switch and provides an overview of the Web interface.

---

## Connecting the Switch to a Network

To enable remote management of the switch through a Web browser, the switch must be connected to the network. The switch is pre-configured with an IP address for management purposes. After initial configuration, the switch can also be configured to acquire its address from a DHCP server on the network.

By default, the switch is assigned the following static IP information for access to the Web interface:

- IP address: **192.168.2.10**
- Network mask: **255.255.255.0**
- Gateway: **0.0.0.0**

1. Connect the switch to the management PC or to the network using any of the available network ports.
2. Power on the switch.
3. Set the IP address of the management PC's network adaptor to be in the same subnet as the switch.  
***Example:*** Set it to IP address 192.168.2.12, mask 255.255.255.0.
4. Enter the IP address shown above in the Web browser. See [page 1-2](#) for browser requirements.

Thereafter, use the Web interface to configure a different IP address or configure the switch as a DHCP client so that it receives a dynamically assigned IP address from the network.

---

### Note

- If you enable DHCP for IP network configuration, the switch must be connected to the same network as the DHCP server. You will need to access your DHCP server to determine the IP address assigned to the switch.
  - The switch supports LLDP (Link Layer Discovery Protocol), allowing discovery of its IP address from a connected device or management station.
  - If DHCP is used for configuration and the switch fails to be configured, the IP address 192.168.2.10 is reassigned.
- 

After the switch is able to communicate on your network, enter its IP address into your Web browser's address field to access the switch management features.

## Getting Started With the Web Interface

This section describes the following Web pages:

- “Logging On” on page 4
- “Interface Layout and Features” on page 5

### Logging On

---

#### Note

Please use one of the following browsers to access the Web interface:

- Internet Explorer 7.0, 8.0
  - Firefox 3.0, up to 3.5
  - JavaScript must be enabled on the browser to access the Web interface correctly.
- 

Follow these steps to log on through Web interface:

1. Open a Web browser and enter the IP address of the switch in the Web browser address field.
2. On the Login page, enter the password (if one has been set), and then click **Login**.

By default, there is no password. After the initial log on, the administrator may configure a password.

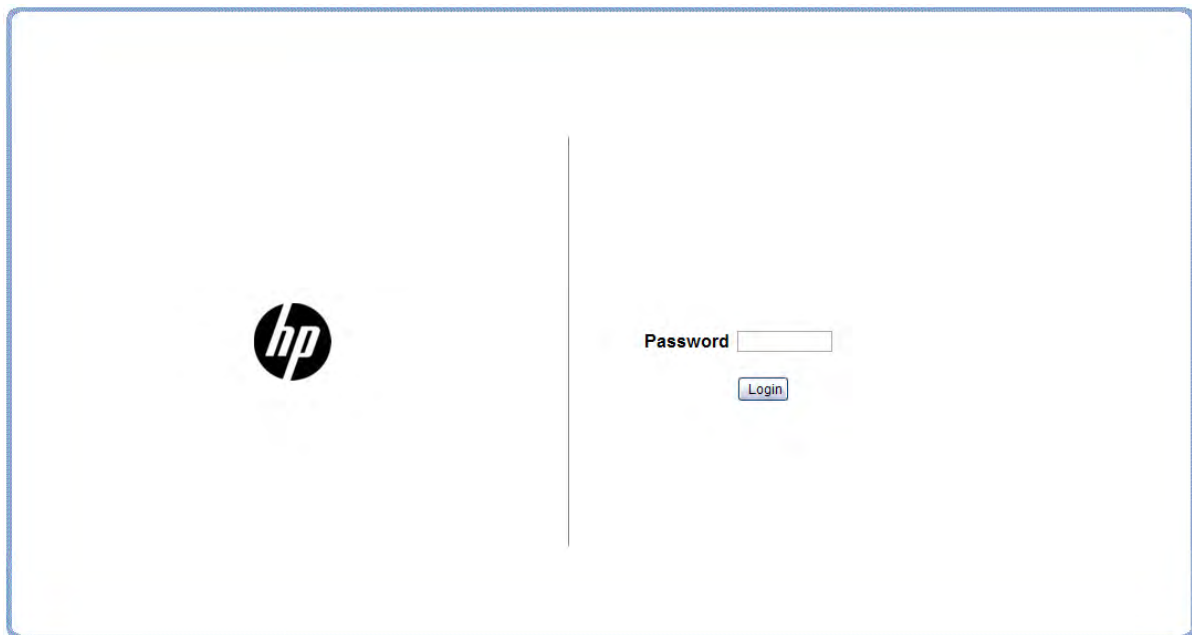
---

#### Note

To set passwords, see [“Password Manager” on page 10-8](#).

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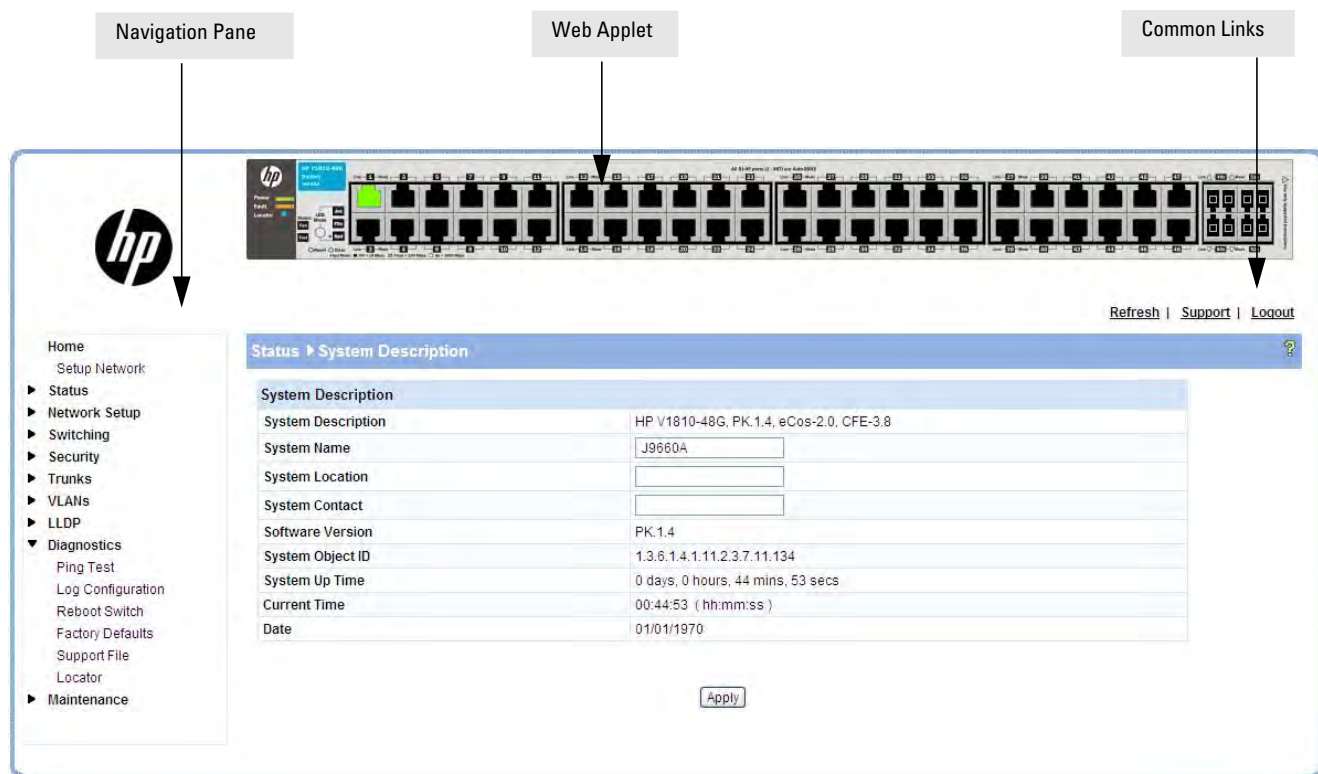
**Figure 1-1. Login Page**



## Interface Layout and Features

Figure 1-2 shows the initial view.

**Figure 1-2. Interface Layout and Features**





Click on any topic in the navigation page to display related configuration options.

The System Description page displays when you first log on and when you click **Home** or **Status > System Description** in the navigation pane. See “[System Description](#)” on page 2-1 for more information.

You can click the **Setup Network** link beneath **Home** to display the **Get Connected** page, which you use to set up a management connection to the switch. You can also click **Network Setup > Get Connected** to display this page. See “[Get Connected](#)” on page 3-1 for more information.

The Web Applet displays summary information for the switch LEDs and port status in a graphical format. For information on the Web Applet, see “[Web Applet](#)” on page 1-4.

## Common Page Elements


- Click  on each page to display a help panel that explains the fields and configuration options on the page.
- Click  to send the updated configuration to the switch. Configuration changes take effect immediately.

## CAUTION

Configuration changes take effect immediately and are saved to the system configuration file after a 1-minute delay. See [“Saving Changes”](#) below.

- Click **Refresh** to refresh the page with the latest information from the switch.
- Click **Support** to access the HP ProCurve Web site (Internet access required).
- Click **Logout** to end the current management session.

## Saving Changes

When you click , changes are saved automatically to the system configuration file in flash memory. However, to help prevent excessive writing to flash memory, the software waits 1 minute after a change is applied to enable aggregating it with other changes before writing them together to flash. To have changes saved immediately to the system configuration file, you can use the Save Configuration page:

1. Click **Maintenance > Save Configuration** in the Navigation pane.
2. On the Save page, click [Save Configuration](#).

## User-Defined Fields

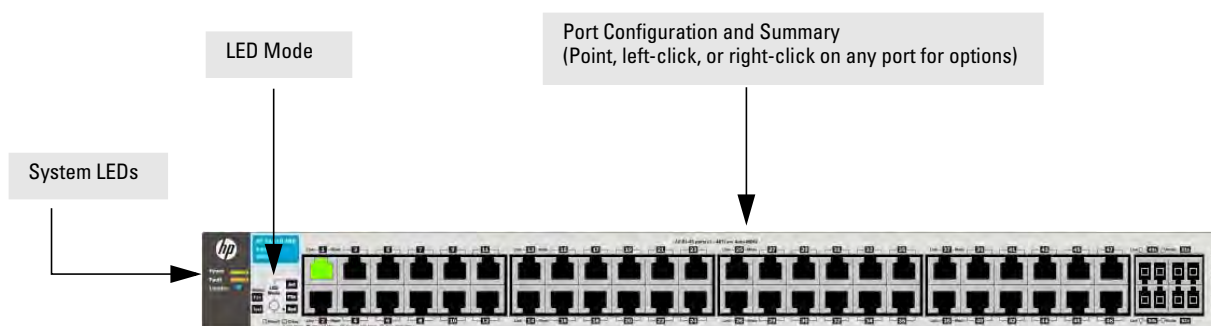
User-defined fields can contain 1–31 characters, unless otherwise noted on the configuration Web page. All characters may be used except for the following (unless specifically noted for that feature):

\	<	*	
/	>	?	

## Web Applet

The Web Applet, as shown in [Figure 1-3](#), displays at the top of the every page. It is a graphic representation of the switch and provides information regarding the status parameters of individual ports. The Web Applet enables easy system configuration and Web-based navigation.

### Figure 1-3. Web Applet



- **Port Configuration and Summary**—You can point to any port to display the following information about the port:
  - Auto Negotiation Status
  - Speed

Left-click a port to display its Port Configuration page, or right-click and select from the menu to display its Port Configuration Page or the Port Summary page for all ports.

- System LEDs—You can point to the System LEDs area to view information about the switch LEDs.

---

**Note**

---

The System LED area provides general, static information about the LEDs only. The display does not change to reflect the current state of the LEDs.

Switch LEDs include the following:

- Power (Green)
    - On—The switch is receiving power.
    - Off—The switch is NOT receiving power.
  - Fault (Orange)
    - Blinking—A fault has occurred, other than during self-test.
    - On—Failure during self-test.
    - Off—The switch is operating properly.
  - Locator (Blue)—When on, the switch is in Locate Mode so that it can be physically located. This mode can be enabled using the Web interface. See [“Locator” on page 9-6](#).
  - Fan (Green)
    - On—The fan is operating properly.
    - Blinking—A fan failure has occurred.
  - Test (Green)
    - On—The self-test is executing during switch initialization.
    - Blinking—A self-test failure has occurred.
    - Off—The switch passed the self-test during initialization and has booted successfully.
- 
- LED Mode—Each port has two LEDs. The function of the right LED (called the Mode LED) changes depending on the LED mode selected for the switch. Use the LED Mode button on the switch to select a mode (Act, FDx, Spd).

---

**Note**

The LED modes area provides general, static information about the LEDs. The display does not change to reflect the current state of the LEDs. The physical LED Mode behavior is described below.

On the switch, the active LED mode is indicated by three LEDs:

- **Act**—Activity. When Act mode is selected, the Mode LED for each port will blink upon port activity.
- **FDx**—Full Duplex. When FDx mode is selected, the Mode LED for each active port will illuminate only when the port is operating in full-duplex mode.
- **Spd**—Speed. When Spd mode is selected, the Mode LED for each active port will illuminate when the port is operating at 100 Mbps (blinking) or 1000 Mbps (solid on), or will be off when the port is operating at 10 Mbps.

If the LED Mode button is not pressed for 10 minutes, the LED mode automatically returns to Activity mode.

If LED Power Down mode is enabled (see [“Green Features” on page 4-6](#)), which turns off the port LEDs, pressing the LED Mode button temporarily restores the LED Mode feature.

---

**Note**

The left-port LED is not depicted in the Web Applet. It indicates link status, as follows:

- **On**—The port is enabled and receiving a link indication or other signal from the connected device.
  - **Blinking**—The port has experienced a self-test fault.
  - **Off**—The port has no active network cable connected, is not receiving link signal, or is disabled.
-




## Status Pages

You can use the Status pages to view system information and statistics.

### System Description

The System Description page displays when you first log on and when you click **Home** or **Status > System Description** in the navigation pane. It displays basic information such as the software version and system up time. In addition, the system name, location, and contact can be configured on this page.

**Figure 2-1. System Description Page**

**Status ▶ System Description** 

System Description	
System Description	HP V1810-48G, PK.1.4, eCos-2.0, CFE-3.8
System Name	<input type="text" value="J9660A"/>
System Location	<input type="text"/>
System Contact	<input type="text"/>
Software Version	PK.1.4
System Object ID	1.3.6.1.4.1.11.2.3.7.11.134
System Up Time	0 days, 0 hours, 49 mins, 47 secs
Current Time	00:49:47 ( hh:mm:ss )
Date	01/01/1970

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

## Log

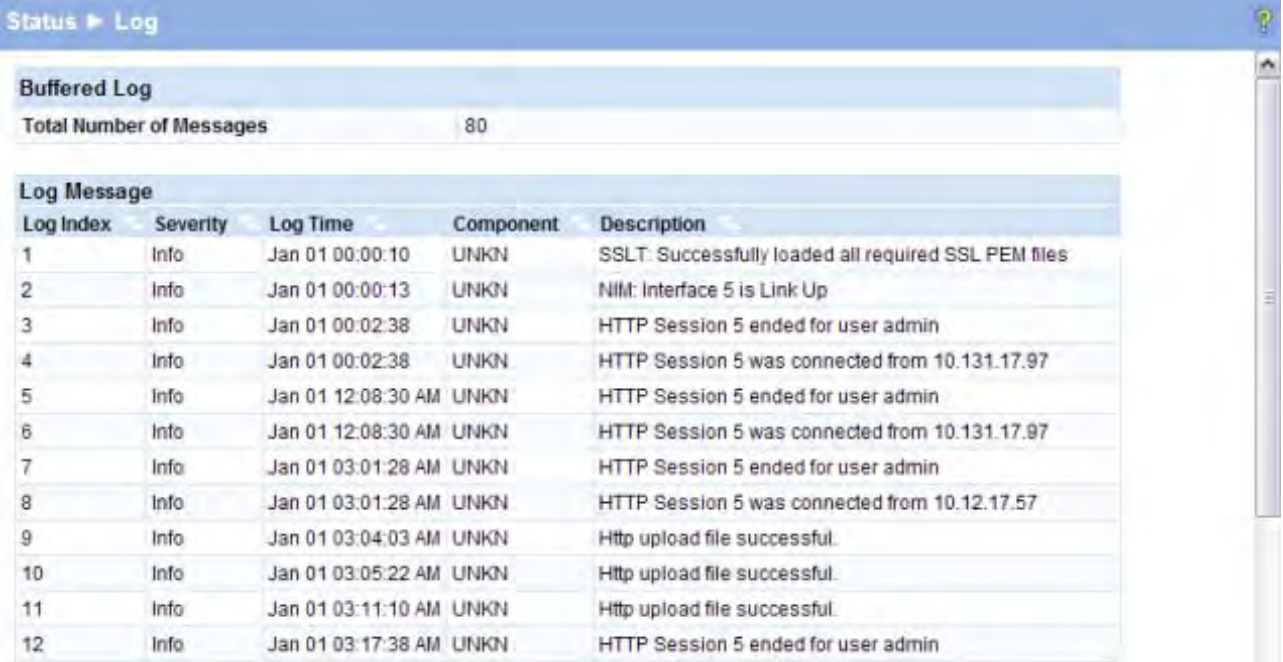
The Log table displays logged system messages, such as configuration failures and user sessions. The log page displays the 100 most recent log entries. The newest log entry, by default, is displayed at the bottom of the list.

### Note

If more than 100 logs accumulate, their Log Index numbers continue to increment beyond 100 and the oldest entries are deleted (for example, if 200 log entries were generated since the system was last restarted or the log file was cleared, then the log file would display entries 101–200).

To display this page, click **Status > Log** in the navigation pane.

Figure 2-2. Log Page



The screenshot shows the 'Status > Log' page. At the top, there's a 'Buffered Log' section with a 'Total Number of Messages' of 80. Below this is a table titled 'Log Message' with columns: Log Index, Severity, Log Time, Component, and Description. The table contains 12 rows of log entries. The interface also includes a search bar and a 'Clear' button on the right side.

Log Index	Severity	Log Time	Component	Description
1	Info	Jan 01 00:00:10	UNKN	SSLT: Successfully loaded all required SSL PEM files
2	Info	Jan 01 00:00:13	UNKN	NIM: Interface 5 is Link Up
3	Info	Jan 01 00:02:38	UNKN	HTTP Session 5 ended for user admin
4	Info	Jan 01 00:02:38	UNKN	HTTP Session 5 was connected from 10.131.17.97
5	Info	Jan 01 12:08:30 AM	UNKN	HTTP Session 5 ended for user admin
6	Info	Jan 01 12:08:30 AM	UNKN	HTTP Session 5 was connected from 10.131.17.97
7	Info	Jan 01 03:01:28 AM	UNKN	HTTP Session 5 ended for user admin
8	Info	Jan 01 03:01:28 AM	UNKN	HTTP Session 5 was connected from 10.12.17.57
9	Info	Jan 01 03:04:03 AM	UNKN	Http upload file successful.
10	Info	Jan 01 03:05:22 AM	UNKN	Http upload file successful.
11	Info	Jan 01 03:11:10 AM	UNKN	Http upload file successful.
12	Info	Jan 01 03:17:38 AM	UNKN	HTTP Session 5 ended for user admin

- Click the arrows next to the column headings to sort the list by the column, in ascending or descending order.
- Click **Clear** to delete all log messages.
- Click the **Refresh** link above the page to re-display the page with new logs.

For information on configuring log settings, see “[Log Configuration](#)” on page 9-2.

## Port Summary

The Port Summary page displays a port summary at the top of the page and provides configuration and status information for each port. Scroll down the page to view the Port Statistics table, which provides per-port statistics on packets transmitted and received.

To display this page, click **Status > Port Summary** in the navigation pane.

A configuration summary and status of all physical and logical ports are displayed in [Figure 2-3](#).

**Figure 2-3. Port Summary Page**

Status ▶ Port Summary

Port Summary

Interface	Physical Type	Port Status	AutoNeg Status	Link Speed	MTU
1	Copper	Up	Enable	100MbpsHalfDuplexCopper	1518
2	Copper	Down	Enable		1518
3	Copper	Down	Enable		1518
4	Copper	Down	Enable		1518
5	Copper	Down	Enable		1518
6	Copper	Down	Enable		1518
7	Copper	Down	Enable		1518
8	Copper	Down	Enable		1518
9	Copper	Down	Enable		1518
10	Copper	Down	Enable		1518
11	Copper	Down	Enable		1518
12	Copper	Down	Enable		1518
13	Copper	Down	Enable		1518
14	Copper	Down	Enable		1518
15	Copper	Down	Enable		1518
16	Copper	Down	Enable		1518
17	Copper	Down	Enable		1518
18	Copper	Down	Enable		1518
19	Copper	Down	Enable		1518
20	Copper	Down	Enable		1518
21	Copper	Down	Enable		1518
22	Copper	Down	Enable		1518
23	Copper	Down	Enable		1518

Port Statistics

Interface	Received Packets w/o Errors	Received Packets with Errors	Broadcast Received Packets	Transmitted Packets w/o Errors	Transmitted Packets with Errors	Collisions	Transmitted Pause Frames	Received Pause Frames
1	28596	1	347	16571	0	2	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0

Trunk Statistics

Trunk	Received Packets w/o Errors	Received Packets with Errors	Broadcast Received Packets	Transmitted Packets w/o Errors	Transmitted Packets with Errors	Collisions
Trunk1	0	0	0	0	0	0

Clear

**Table 2-1. Port Summary Fields**

Field	Description
<b>Port Summary</b>	
<b>Interface</b>	Displays list of physical and logical interfaces supported or configured on a particular platform.
<b>Physical Type</b>	Displays whether the port is operating in copper mode or fiber mode.
<b>Port Status</b>	The physical status (Up or Down) of the port.
<b>AutoNeg Status</b>	Displays whether Auto negotiation is enabled or disabled on the port.
<b>Link Speed</b>	The physical speed at which the port is operating.
<b>MTU</b>	The Maximum Transmission Unit (MTU), also referred to as Max Frame size acceptable on the specified port.
<b>Port Statistics and Trunk Statistics</b>	
<b>Note:</b> The following statistics are collected for both individual port and for trunks.	
<b>Interface/Trunk</b>	The list of physical and logical interfaces supported on that platform.
<b>Received Packets w/o Error</b>	The packet count received on the port with out any packet errors.
<b>Received Packets with Error</b>	The packet count received on the port with errors.
<b>Broadcast Received Packets</b>	The packet count for Broadcast packets received on the port.
<b>Transmitted Packets w/o Errors</b>	The packets transmitted out of that port with out any packet errors.
<b>Transmitted Packets with Errors</b>	The number of packets transmitted out of the port with packet errors.
<b>Collisions</b>	The count of collided packets.
<b>Transmitted Pause Frames</b>	(For ports only) The number of Ethernet pause frames transmitted.
<b>Received Pause Frames</b>	(For ports only) The number of Ethernet pause frames received.

- Click **Clear** to reset all statistics to their initial values.
- Click the **Refresh** link above the page to re-display the page with the latest port information.

For instructions on configuring port settings, see [“Port Configuration” on page 4-1](#).

## LLDP Statistics

The Link Layer Discovery Protocol (LLDP) Statistics page displays summary and per-port information for LLDP frames transmitted and received on the switch. To display this page, click **Status > LLDP Statistics** in the navigation pane.

**Figure 2-4. LLDP Statistics Page**

Status ▶ LLDP Statistics

LLDP Global Statistics

Insertions	3
Deletions	0
Drops	0
Age Outs	0
Time Since Last Update	0 Days 00:04:39 ( hh:mm:ss )

LLDP Interface Statistics

Interface	Transmitted Frames	Received Frames	Discarded Frames	Errors	Age outs
1	447	890	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0

**Table 2-2. LLDP Statistics Page Fields**

Field	Description
<b>LLDP Global Statistics</b>	
<b>Insertions</b>	The number of times the complete set of information advertised by a particular MAC Service Access Point (MSAP) has been inserted into tables associated with the remote systems.
<b>Deletions</b>	The number of times the complete set of information advertised by a particular MSAP has been deleted from tables associated with the remote systems.
<b>Drops</b>	The number of times the complete set of information advertised by a particular MSAP could not be entered into tables associated with the remote systems because of insufficient resources.
<b>Age Outs</b>	The number of times the complete set of information advertised by a particular MAC Service Access Point (MSAP) has been deleted from tables associated with the remote systems because the information timeliness interval has expired.
<b>Time Since Last Update</b>	Time when an entry was created, modified, or deleted in the tables associated with the remote system.
<b>LLDP Interface Statistics</b>	
<b>Interface</b>	Interface or port number.
<b>Transmitted Frames</b>	Number of LLDP frames transmitted on the corresponding port.
<b>Received Frames</b>	Number of valid LLDP frames received by this LLDP agent on the corresponding port, while the LLDP agent is enabled.
<b>Discarded Frames</b>	Number of LLDP frames discarded for any reason by the LLDP agent on the corresponding port.
<b>Errors</b>	Number of invalid LLDP frames received by the LLDP agent on the corresponding port, while the LLDP agent is enabled.

- Click **Clear** to reset all statistics to their initial values.
- Click the **Refresh** link above the page to re-display the page with current data from the switch.

For instructions on configuring LLDP, see [“LLDP Configuration” on page 8-1](#).

# Trunk

The Trunk Status page displays the configuration summary and status of each trunk. To display this page, click **Status > Trunk** in the navigation pane.

Figure 2-5 displays the configuration summary and status of a trunk named Trunk1. This trunk is configured in dynamic mode and has 3 and 5 interfaces as its active members.

Figure 2-5. Trunk Status Page



Trunk Status							
Trunk	Name	Type	Admin Status	Link Status	Static Mode	Trunk Members	Active Ports
Trunk1	Video1	Dynamic	Enable	Down	Disable	6,7	6,7

Table 2-3. Trunk Port Configuration Fields

Field	Description
Trunk	An ID assigned to the trunk by the system when the trunk is created.
Name	A user-created name for the trunk.
Type	<ul style="list-style-type: none"><li>Indicates whether the trunk is Static or Dynamic.</li><li>Dynamic trunks use the Link Aggregation Control Protocol (LACP, IEEE standard 802.3ad). An LACP-enabled port automatically detects the presence of other aggregation-capable network devices in the system and exchanges Link Aggregation Control Protocol Data Units (LACPDU)s with links in the trunk. The PDUs contain information about each link and enable the trunk to maintain them.</li><li>Static trunks are assigned to a bundle by the administrator. Members do not exchange LACPDU)s. A static trunk does not require a partner system to be able to aggregate its member ports.</li></ul>
Admin Status	Displays whether the trunk has been enabled or disabled administratively. When disabled, no traffic will flow. The messages that members of the trunk exchange in order to manage the trunk (LACPDU)s will be dropped, but the links that form the Trunk will not be released. The default is Enable.
Link Status	Displays whether the link is up or down.
Static Mode	Displays whether Static mode has been enabled on the trunk. When static mode is enabled, the trunk does not transmit or process received LACPDU)s. The member ports do not transmit LACPDU)s and all the LACPDU)s it may receive are dropped. A static trunk does not require a partner system to be able to aggregate its member ports.
Trunk Members	List of members ports in the trunk.
Active Ports	List all active member ports in the trunk.

For information on configuring trunks, see “Trunk Configuration” on page 6-1.

# MAC Table

The MAC Table displays the MAC addresses associated with incoming packets on each port. Entries are kept until they are aged-out based on the MAC Table Aging Interval, which cannot be configured and set to 300 seconds by default.

To display the MAC Table, click **Status > MAC Table** in the navigation pane.

Figure 2-6. MAC Table Page

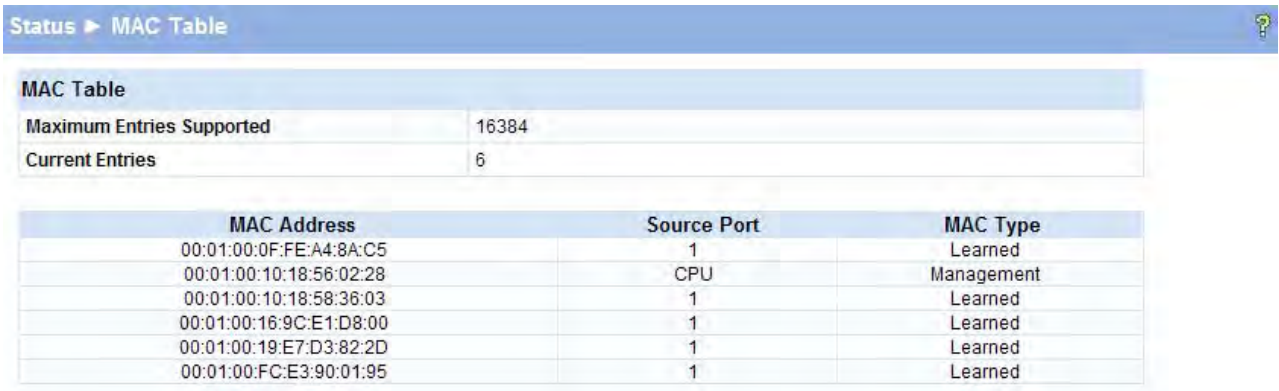


Table 2-4. MAC Table Fields

Field	Description
MAC Address	The list of MAC addresses learned on a particular interface.
Source Port	The source interface on which the particular MAC address has been learned. CPU is a special source port used for internal management on the switch.
MAC Type	Shows whether the MAC address is dynamically learned or whether this is a management address.

- Click the Refresh link above the page to re-display the page with current data from the switch.

# Loop Protection

The Loop Protection status page displays the whether Loop Protection is enabled or disabled on each port, the action to be taken, and how the feature is configured to operate on each port.



Figure 2-7. Loop Protection Page

Interface	Configured Action Taken	Protection Feature Mode	Tx Mode	Received Total	Transmitted Total	Loop Count	Loop Detected
1	Shutdown Port	Disable	Enable	0	0	0	FALSE
2	Shutdown Port	Disable	Enable	0	0	0	FALSE
3	Shutdown Port	Disable	Enable	0	0	0	FALSE
4	Shutdown Port	Disable	Enable	0	0	0	FALSE
5	Shutdown Port	Disable	Enable	0	0	0	FALSE
6	Shutdown Port	Disable	Enable	0	0	0	FALSE
7	Shutdown Port	Disable	Enable	0	0	0	FALSE
8	Shutdown Port	Disable	Enable	0	0	0	FALSE
9	Shutdown Port	Disable	Enable	0	0	0	FALSE
10	Shutdown Port	Disable	Enable	0	0	0	FALSE
11	Shutdown Port	Disable	Enable	0	0	0	FALSE
12	Shutdown Port	Disable	Enable	0	0	0	FALSE
13	Shutdown Port	Disable	Enable	0	0	0	FALSE
14	Shutdown Port	Disable	Enable	0	0	0	FALSE
15	Shutdown Port	Disable	Enable	0	0	0	FALSE
16	Shutdown Port	Disable	Enable	0	0	0	FALSE
17	Shutdown Port	Disable	Enable	0	0	0	FALSE
18	Shutdown Port	Disable	Enable	0	0	0	FALSE
19	Shutdown Port	Disable	Enable	0	0	0	FALSE
20	Shutdown Port	Disable	Enable	0	0	0	FALSE
21	Shutdown Port	Disable	Enable	0	0	0	FALSE
22	Shutdown Port	Disable	Enable	0	0	0	FALSE

Table 2-5. Loop Protection Fields

Field	Description
<b>Interface</b>	List of ports on the switch.
<b>Configured Action Taken</b>	The action that is set to occur when a loop is detected on the port with Loop Protection enabled: <ul style="list-style-type: none"> <li>• <b>Shutdown port</b>—The port will be shut down for the configured period.</li> <li>• <b>Log</b>—The event will be logged and the port remains operational.</li> <li>• <b>Shutdown and log</b>—The event will be logged and the port is shut down for the configured period.</li> </ul>
<b>Protection Feature Mode</b>	Shows whether loop protection is enabled or disabled on the port.
<b>Tx Mode</b>	Shows whether the port is configured to forward packets to the multicast destination MAC address designated for the Loop Protection feature.
<b>Received Total</b>	The number of packets received on the interface for which the packet's source MAC address matches the destination multicast MAC address designated for the Loop Protection feature.
<b>Transmitted Total</b>	The number of packets forwarded on the interface to the multicast destination MAC address designated for the Loop Protection feature.
<b>Loop Count</b>	The number of loops detected on this interface since the last system boot or since statistics were cleared.
<b>Loop Detected</b>	Shows whether a loop has been detected on the port within the configured Shutdown Time.

- Click **Clear** to reset all counters to 0.

- Click the **Refresh** link above the page to re-display the page with the latest status from the switch.

For instructions on configuring this feature and a description of these fields, see “[Loop Protection](#)” on [page 4-7](#).

## Dual Image

The Dual Image status page displays the status of the two system images (image1 and image2). To display this page, click **Status > Dual Image** in the navigation bar.

As shown in [Figure 2-8](#), Image1 is the Current-active image and will continue to be the Current-active image after a reboot.

Figure 2-8. Dual Image Status Page

Status > Dual Image			
Dual Image Status			
Active		Next-Active	
image1		image1	
Dual Image Descriptions			
Image	Version	Description	
Image1	PK.1.3	default image	
Image2	PK.1.4	production image	

Table 2-6. Dual Image Status Fields

Field	Description
Active	The currently active image name.
Next-active	The next active image name. The Administrator can configure the image to take effect the next time the system is booted. It may be a different than the currently active image (for example, if the administrator configures the backup image to take effect upon the next reboot).
Image1/Image2 Version	The software version of the images.
Image1/Image2 Description	The configured descriptions for the images.

For instructions on configuring the active image, see “[Dual Image Configuration](#)” on [page 10-9](#).

# Clock

The Clock status page displays the current time, time zone, and Daylight Savings Time settings. To display this page, click **Status > Clock** in the navigation bar.

**Figure 2-9. Clock Status Page**



The screenshot shows the 'Status > Clock' page. It contains three sections: 'Current Time' with fields for Time (07:06:22 PM (hh:mm:ss)), Date (7 Mar 2011), and Time Source (SNTP); 'Time Zone' with fields for Time Zone ((GMT-05:00) Eastern Time (US and Canada)) and Acronym (East); and 'Daylight Saving Time' with a field for Daylight Saving Time (Disabled).

Current Time	
Time	07:06:22 PM ( hh:mm:ss )
Date	7 Mar 2011
Time Source	SNTP
Time Zone	
Time Zone	(GMT-05:00) Eastern Time (US and Canada)
Acronym	East
Daylight Saving Time	
Daylight Saving Time	Disabled

**Table 2-7. Clock Status Fields**

Field	Description
Current Time	
Time	The current time. This value is determined by an SNTP server. When SNTP is disabled, the system time increments from 00:00:00, 1 Jan 1970, which is set at bootup.
Date	The current date.
Time Source	If the system time is derived from a SNTP server, then “SNTP” displays. If not, then “No time source” displays.
Time Zone	
Time Zone	The time zone configured on the switch.
Acronym	The acronym configured on the system for the time zone (e.g., PST, EDT).
Daylight Savings Time	
Daylight Savings Time	Shows whether Daylight Savings Time is enabled and the mode of operation: <ul style="list-style-type: none"><li>• <b>Disabled</b>—No clock adjustment will be made for Daylight Savings Time.</li><li>• <b>Recurring</b>—The settings will be in effect for the upcoming period and subsequent years.</li><li>• <b>Non-Recurring</b>—The settings will be in effect for only one period (i.e., they will not carry forward to subsequent years).</li></ul>

Field	Description
<b>Start Time settings / End Time settings</b>	<p>Shows the following to indicate when the change to Daylight Savings time occurs and when it ends. The fields that display here depend on which Daylight Savings Mode is configured.</p> <ul style="list-style-type: none"><li>• <b>Week</b>—The number of weeks into the month when the change to/from Daylight Savings Time occurs. (This field is available only when the Daylight Savings Time mode is set to <b>Recurring</b>.)</li><li>• <b>Day</b>—The day of the week when the change to/from Daylight Savings Time occurs.</li><li>• <b>Month</b>—Set the month when the change to/from Daylight Savings time occurs.</li><li>• <b>Hours</b>—Set the hour of the day when the change to/from Daylight Savings Time occurs.</li><li>• <b>Minutes</b>—Set the minutes in the hour when the change to/from Daylight Savings Time occurs.</li></ul>
<b>Offset</b>	The time amount of time in minutes to advance the clock during Daylight Savings Time.

For instructions on configuring the system time, see [“Simple Network Time Protocol” on page 3-3](#), [“Time Zone” on page 3-4](#), and [“Daylight Saving Time” on page 3-5](#).

# Network Setup

You can use the Network Setup pages to configure how a management computer connects to the switch and how the switch connects to a server to synchronize its time.

## Get Connected

Use the Get Connected page to configure settings for the network interface. The network interface is defined by an IP address, mask, and gateway. Any one of the switch's front-panel ports can be selected as the management port for the network interface. The configuration parameters associated with the switch's network interface do not affect the configuration of the front-panel ports through which traffic is switched or forwarded, except that for the management port, the PVID will be the management VLAN.

To display this page, click Network Setup > Get Connected.

As shown in the example configuration in [Figure 3-1](#), the switch has been configured to acquire its IP address through DHCP. In this example, access to the management software is restricted to members of VLAN 1.

**Figure 3-1. Get Connected Page**

Network Details	
Protocol Type	<input type="radio"/> Static <input checked="" type="radio"/> DHCP
IP Address	10.27.36.58 (X.X.X.X)
Subnet Mask	255.255.255.0
Gateway Address	10.27.36.1
MAC Address	00:10:18:56:02:28

Web Parameters	
Session Timeout	5 ( 0 - 60   Default : 5 ) minutes

Management Access	
Management VLAN ID	1
Management Port	None

SNMP	
Enable	<input checked="" type="checkbox"/>
Community Name	public ( 0 to 20 alphanumeric characters, commas, hyphens and spaces )

Apply

**Table 3-1. Get Connected Fields**

Field	Description
<b>Network Details</b>	
<b>Protocol Type</b>	<p>Select the type of network connection:</p> <ul style="list-style-type: none"> <li>• <b>Static:</b> Select this option to enable the IP address, mask, and gateway fields for data entry.</li> <li>• <b>DHCP:</b> Select this option to enable the switch to obtain IP information from a DHCP server on the network.</li> </ul>
<b>IP Address</b> <b>Subnet Mask</b> <b>Gateway Address</b>	<p>If the protocol type is Static, enter the IP information associated with the network port. These fields are not editable (grayed out) when DHCP is selected in the previous option.</p> <p><b>CAUTION:</b> Changing the protocol type or IP address discontinues the current connection; you can log on again using the new IP information.</p>
<b>MAC Address</b>	The burned-in universally administered MAC address of this switch.
<b>Web Parameters</b>	
<b>Session Timeout</b>	Specify the amount of time in minutes that a connection to the Web interface remains active, assuming no user activity.
<b>Management Access</b>	
<b>Management VLAN ID</b> <b>Management Port</b>	<p>Access to the management software is controlled by the assignment of a VLAN ID and the selection of a management port. By default, the management VLAN ID is 1. Note that all ports are members of VLAN 1 by default; the administrator may want to create a different VLAN to assign as the management VLAN and associate it to a management port.</p> <p>Any one physical port can be selected as the management port.</p> <p><b>Note:</b> All ports that are members of VLAN 1 (the management VLAN) will have management access to the switch even though the management port is configured as port 1.</p> <p>See <a href="#">“Example—Creating a Management VLAN” on page 7-5</a> for complete instructions on creating a management VLAN.</p>
<b>SNMP</b>	
<b>Enable</b> <b>Community Name</b>	<p>If enabled, the administrator can view switch data using an SNMPv1/v2c manager. The switch supports read-only access to a limited set of MIBs. You can specify a community name or use the default name, <b>public</b>.</p> <p>The switch supports the following MIBs:</p> <ul style="list-style-type: none"> <li>• BRIDGE-MIB</li> <li>• EtherLike-MIB</li> <li>• IF-MIB</li> <li>• RFC1213-MIB</li> <li>• RMON-MIB (RMON History as in v1)</li> </ul>

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

# Simple Network Time Protocol

The V1810 switch software supports the Simple Network Time Protocol (SNTP). SNTP ensures accurate network device clock time synchronization up to the millisecond. Time synchronization is performed by a network SNTP server. The software operates only as an SNTP client and cannot provide time services to other systems.

## Note

SNTP acquires the Coordinated Universal Time (UTC) from an SNTP server. Configure the Time Zone (see [page 3-4](#)) and Daylight Saving Time (see [page 3-5](#)) to configure the offsets for your local time zone.

To display the SNTP page, click **Network Setup > SNTP** in the navigation pane.

**Figure 3-2. SNTP Page**

Network Setup > SNTP

SNTP Configuration	
Enable SNTP	<input checked="" type="checkbox"/>
SNTP/NTP Server	10.131.11.17 (X.X.X.X)
Server Port	123 (1 - 65535   Default: 123)
Time Format	24 Hour
Current Date/Time	Jan 01 00:00:00 1970
Attempts	8
Last Failure	Request timed out
Failures	4

Apply

**Table 3-2. SNTP Fields**

Field	Description
<b>Enable SNTP</b>	Select to enable SNTP client mode. Clear to disable SNTP client mode. When disabled, the system time increments from 00:00:00, 1 Jan 1970, which is set at bootup.
<b>SNTP/NTP Server</b>	Specify the IP address of the SNTP server to send requests to.
<b>Server Port</b>	Specify the server's UDP port to listen for responses/broadcasts (range 1–65535, default = 123).
<b>Time Format</b>	Select either 24-hour ("military" time) format or 12-hour (standard) format.
<b>Current Date/Time</b>	The switch-adjusted time and date when delivered by the time server.
<b>Attempts</b>	The number of requests made to the SNTP sever since the switch was rebooted.
<b>Last Failure</b>	The status of the last request to the SNTP server.
<b>Failures</b>	The number of failed SNTP requests made to this server since last reboot.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

- Click the **Refresh** link above the page to re-display the page with current settings from the switch.

To view a summary of clock information, click **Status > Clock** in the navigation pane.

---

# Time Zone

Use this page to configure your local time zone. The switch must be configured to acquire the time from an SNTP server.

To display the Time Zone page, click **Network Setup > Time Zone** in the navigation pane.

**Figure 3-3. Time Zone Page**



**Table 3-3. Time Zone Fields**

Field	Description
Time Zone	Select the time zone for your location.
Acronym	Specify an acronym for the time zone.

- Click **Apply** to save any the changes for the current boot session; the changes take effect immediately.
- Click the **Refresh** link above the page to re-display the page with current settings from the switch.

To view a summary of clock and time zone information, click **Status > Clock** in the navigation pane.



## Daylight Saving Time

Use this page to configure if and when Daylight Saving Time (DST) occurs for your time zone. When configured, the system time will adjust automatically during Daylight Saving Time.

To display the Time Zone page, click **Network Setup > Daylight Saving Time** in the navigation pane. The page displays differently depending on the mode selected in the Daylight Saving Time field. In the following figure, the mode is set to Recurring.

**Figure 3-4. Daylight Saving Time Page**

Network Setup > Daylight Saving Time

**Daylight Saving Time Configuration**

Daylight Saving Time: Recurring

**Start Time settings**

Week: 1  
Day: Sun  
Month: Jan  
Hours: 0  
Minutes: 0

**End Time settings**

Week: 1  
Day: Sun  
Month: Jan  
Hours: 0  
Minutes: 0

**Offset settings**

Offset: 1 (1 - 1440) Minutes

Apply

**Table 3-4. Daylight Saving Time Fields**

Field	Description
<b>Daylight Saving Time</b>	Select how DST will operate: <ul style="list-style-type: none"><li>• <b>Disabled</b>—No clock adjustment will be made for DST.</li><li>• <b>Recurring</b>—The settings will be in effect for the upcoming period and subsequent years.</li><li>• <b>Non-Recurring</b>—The settings will be in effect for only one period (i.e., they will not carry forward to subsequent years).</li></ul>
<b>Start Time settings / End Time settings</b>	Set the following to indicate when the change to DST occurs and when it ends. When <b>Recurring</b> is selected as the DST mode, the following fields display: <ul style="list-style-type: none"><li>• <b>Week</b>—Set the week of the month, from 1 to 5, when the change to/from DST occurs.</li><li>• <b>Day</b>—Set the day of the week when the change to/from DST occurs.</li><li>• <b>Month</b>—Set the month when the change to/from DST occurs.</li><li>• <b>Hours</b>—Set the hour of the day when the change to/from DST occurs.</li><li>• <b>Minutes</b>—Set the minutes in the hour when the change to/from DST occurs.</li></ul> When <b>Non-Recurring</b> is selected as the DST mode, the following fields display: <ul style="list-style-type: none"><li>• <b>Month</b>—Set the month when the change to/from DST occurs.</li><li>• <b>Date</b>—Set the day of the month when the change to/from DST occurs.</li><li>• <b>Year</b>—Set the year in which these settings will take effect.</li><li>• <b>Hours</b>—Set the hour of the day when the change to/from DST occurs.</li><li>• <b>Minutes</b>—Set the minutes in the hour when the change to/from DST occurs.</li></ul>
<b>Offset</b>	Specify the time amount of time in minutes to advance the clock during DST.

- Click **Apply** to save any the changes for the current boot session; the changes take effect immediately.
- Click the **Refresh** link above the page to re-display the page with current settings from the switch.

To view a summary of clock and DST information, click **Status > Clock** in the navigation pane.

## Switching Pages

You can use the Switching Pages to configure port operation and capabilities.

### Port Configuration

Use the Port Configuration page to view and configure parameters for port operation. To access this page, click **Switching > Port Configuration** in the navigation pane.

**Figure 4-1. Port Configuration Page**

Switching > Port Configuration

Port Configuration

Interface: 1

Physical Type: Copper

Link Status: Up

Admin Mode: ☒

Link Speed: Auto

Apply

#### Note

The display and the content of this page changes based on the physical port selected. For example, if the selected port is an optional copper/fiber port and fiber is being used, than the Link Speed selections will display only valid options for that port.

**Table 4-1. Port Configuration Fields**

Field	Description
Interface	Select the interface to configure.
Physical Type	Describes the port type (i.e., Copper or Fiber).
Link Status	Displays <b>Up</b> or <b>Down</b> to indicate operational status.
Admin Mode	Select to enable access to the port on the network. Clear to disable the port.

Field	Description
Link Speed	Configure the duplex mode and transmission rate for the selected port. (These options may change depending on the port type.) <ul style="list-style-type: none"><li>• <b>Auto</b>—The rates and duplex mode will be auto-negotiated.</li><li>• <b>10HDX</b>—10Mbps, half-duplex</li><li>• <b>10FDX</b>—10Mbps, full-duplex</li><li>• <b>100FDX</b>—100Mbps, full-duplex</li><li>• <b>1000FDX</b>—1000Mbps, full duplex (for fiber ports)</li></ul> <p><b>Note:</b> The port's maximum capability is advertised.</p>

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

To view a summary of port information, click **Status > Port Summary** in the navigation pane.

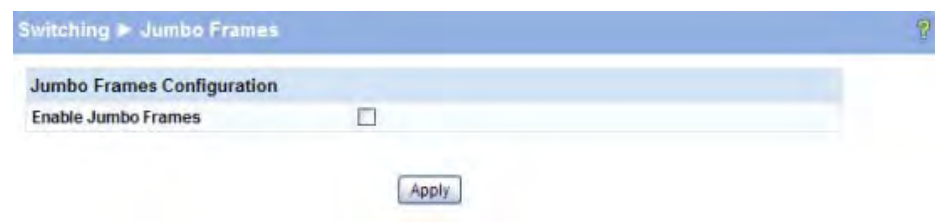
## Jumbo Frames

Use the Jumbo Frames page to enable the switch to forward jumbo Ethernet frames. The jumbo frames feature extends the standard Ethernet Maximum Transmission Unit (MTU) from 1518 bytes (1522 bytes with a VLAN header) to 9216 bytes. If it is enabled, any device connecting to the same broadcast domain should also support jumbo frames.

This feature is disabled by default.

To access this page, click **Switching > Jumbo Frames** in the navigation pane.

**Figure 4-2. Jumbo Frames Page**



**Table 4-2. Jumbo Frames Fields**

Field	Description
Enable Jumbo Frames	Select to enable the switch to forward jumbo frames up to 9216 bytes.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

---

## Port Mirroring

Port mirroring sends a copy of all packets sent and/or received on one port (the source port) to another port (the destination port) for monitoring and analysis by an external network analyzer. Multiple switch ports can be configured as source ports, with each port mirrored to the same destination. You can also mirror the internal CPU traffic to an external port for debugging the CPU.

---

### CAUTION

- **When configuring port mirroring, avoid oversubscribing the destination port to prevent the loss of mirrored data.**
  - **While a port is used as the destination port for mirrored data, the port cannot be used for any other purpose; the port will not receive and forward traffic.**
- 

To display this page, click **Switching > Port Mirroring** in the navigation pane.

In the example configuration in [Figure 4-3](#), port mirroring is configured to mirror TX and RX packets on Source Port 1 to Destination Port 4.

Figure 4-3. Port Mirroring Page

Switching ► Port Mirroring

Port Mirroring Configuration

Enable Mirroring

Destination Port

None

Source Port	Direction
1	None
2	None
3	None
4	None
5	None
6	None
7	None
8	None
9	None
11	None
13	None
15	None
16	None
17	None
18	None
19	None
20	None
21	None
22	None
23	None
24	None
25	None
26	None
27	None
28	None
29	None

Source Port	Direction
30	None
31	None
32	None
33	None
34	None
35	None
36	None
37	None
38	None
39	None
40	None
41	None
42	None
43	None
44	None
45	None
46	None
47	None
48	None
49	None
50	None
51	None
52	None
CPU	None
Trunk1	None

Apply

Table 4-3. Port Mirroring Fields

Field	Description
Enable Mirroring	Select to enable port mirroring capability globally on the switch. Clear to disable the feature.
Destination Port	Select the port to which packets will be mirrored.
Source Port Direction	<p>For each source port you want to mirror to the destination port, select the direction of the packets to be mirrored:</p> <ul style="list-style-type: none"><li>• <b>Tx and Rx</b>— All packets transmitted and received on the source port are mirrored.</li><li>• <b>Rx</b>— Only packets received on the source port are mirrored.</li><li>• <b>Tx</b>— Only packets transmitted on the source port are mirrored.</li><li>• <b>None</b>— No packets are mirrored from this port (default).</li></ul> <p>The port selected as the Destination Port is greyed-out and unavailable for selection.</p> <p>Ports that are included as part of a trunk cannot be selected individually as source ports, but trunks can be selected as source ports.</p> <p><b>Note:</b> The Source Port <i>CPU</i> can be mirrored to an external port to debug traffic to and from the CPU.</p>

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

---

## Flow Control

When a port becomes oversubscribed, it may begin dropping all traffic for small bursts of time during the congestion condition. This can lead to high-priority and/or network control traffic loss. When 802.3x flow control is enabled, a lower-speed switch can communicate with a higher-speed switch by requesting that the higher-speed switch refrain from sending packets. Transmissions are temporarily halted to prevent buffer overflows.

---

### Note

Flow control works well on when the Link Speed is auto-negotiated.

Use the Flow Control page to enable or disable this functionality. To access the page, click **Switching > Flow Control** in the navigation pane. As shown in the example configuration in [Figure 4-4](#), flow control is enabled globally, which would enable flow control on all the ports in the switch.

Figure 4-4. Flow Control Page



Table 4-4. Flow Control Fields

Field	Description
Enable Flow Control	Select to enable flow control on the switch. Clear to disable the feature.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

## Green Features

The switch software allows the user to enable or disable Green Features. When LED Power-Down is enabled, LEDs on the switch are turned off. If Green Features are enabled, the switch consumes less power than in normal high-performance mode. The switch can also be configured to conserve power on a per-port basis by placing ports into a lower power state when no link partner is detected through enabling Auto Port Power-Down mode.

To configure Green Features, click **Switching > Green Features** in the navigation pane.

Figure 4-5. Green Features

Green Features Configuration

LED Power-Down

Disable

Mode LED Time

10

( 1 - 30 | Default : 10 ) minutes

Auto Port Power-Down

Mode

Disable

Apply

Table 4-5. Green Features Fields

Field	Description
Green Features Configuration	
LED Power-Down	Enable or disable LED Power-Down on the switch. When LED Power-Down is enabled, LEDs on the switch are turned off.
Mode LED Time	Specify the time in minutes that port LEDs illuminate if the LED Mode button is pressed while LED Power-Down is enabled.
Auto Port Power-Down	
Mode	Enable or disable Auto Port Power-Down mode. If enabled, port transceivers (other than SFP ports) that do not detect a link are placed in low-power mode. When the switch detects a pulse on the link, all port functions resume at normal power.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.



## Loop Protection

Loops in a network can consume switch resources and degrade performance. Detecting loops manually can be very cumbersome and time consuming. The V1810-48G switch software provides an automatic Loop Protection feature.

Loop Protection may be enabled or disabled globally and on a port-by-port basis. When enabled globally, the software sends loop protection packets to a reserved layer 2 multicast destination address on all the ports on which the feature is enabled. Transmission of the packet can be disabled selectively on certain ports, even when Loop Protection is enabled.

If this multicast packet comes back to the switch with any of the ports' MAC addresses as the source, the switch determines that a loop has occurred. The port that received the loop protection packet from the switch can be shut down for a configured period, or a log entry can be made.

Ports on which Loop Protection is disabled drop the loop protection packets silently.

To configure Loop Protection, click **Switching > Loop Protection** in the navigation pane.

**Figure 4-6. Loop Protection**

Global Configuration			
Loop Protection	Disable		
Transmission Time	5	( 1 - 10   Default : 5 ) seconds	
Shutdown Time	180	( 0 - 604800   Default : 180 ) seconds	

Interface Configuration			
Loop Protection Select	One by One		

Interface	Loop Protection	Action	Tx Mode
1	Disable	Shutdown Port	Enable
2	Disable	Shutdown Port	Enable
3	Disable	Shutdown Port	Enable
4	Disable	Shutdown Port	Enable
5	Disable	Shutdown Port	Enable
6	Disable	Shutdown Port	Enable
7	Disable	Shutdown Port	Enable
8	Disable	Shutdown Port	Enable
9	Disable	Shutdown Port	Enable
10	Disable	Shutdown Port	Enable
11	Disable	Shutdown Port	Enable
12	Disable	Shutdown Port	Enable
13	Disable	Shutdown Port	Enable

Table 4-6. Loop Protection Fields“

Field	Description
<b>Loop Protection</b>	Select to enable globally enable this feature.
<b>Transmission Time</b>	Enter the time interval, in seconds, between sending Loop Protection packets.
<b>Shutdown Time</b>	Set the number of seconds that a port remains shut down if a loop has been detected on the port.
<b>Loop Protection Select</b>	Select how you want to configure Loop Protection: <ul style="list-style-type: none"><li>• <b>All</b>—Enables all interfaces with Loop Protection.</li><li>• <b>One by One</b>—Enables you to configure Loop Protection on ports individually (default).</li><li>• <b>None</b>—Disables Loop Protection on all interfaces.</li></ul>
<b>Interface / Loop Protection</b>	Select <b>Enable</b> for each port on which you want to use this feature.
<b>Action</b>	If Loop Protection is enabled on a port, select one of the following actions to occur when a loop is detected: <ul style="list-style-type: none"><li>• <b>Log</b>—The event is logged and the port remains operational.</li><li>• <b>Shutdown port</b>—The port is shut down for the configured period.</li><li>• <b>Log and Shutdown Port</b>—The event is logged and the port it shut down for the configured period.</li></ul>
<b>Tx Mode</b>	If Loop Protection is enabled on a port, select <b>Enable</b> to allow the port to forward packets to the multicast destination MAC address designated for the Loop Protection feature. Select <b>Disable</b> to disallow forwarding.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

To view a summary of how this feature is configured on each port, click **Status > Loop Protection** in the navigation pane.

# Security

The V1810-48G switch software includes a robust set of built-in denial-of-service (DoS) and storm-control protections, and allows configuring secure HTTP (HTTPS) management sessions.

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## Advanced Security

The V1810-48G switch software provides the following built-in security features:

- Storm Control—This feature protects against condition where incoming packets flood the LAN, causing network performance degradation. The software includes Storm Control protection for unicast, broadcast, and multicast traffic. If the rate of incoming traffic on an interface increases beyond the threshold (5% of the port speed), the traffic is dropped.
- Auto Denial-of-Service (DoS) protections—A DoS attack is an attempt to saturate the switch with external communication requests to prevent the switch from performing efficiently, or at all. You can enable Auto DoS protection that prevents common types of DoS attacks.

---

### CAUTION

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**The DoS feature does not generate any notifications (such as error messages, syslog messages, SNMP traps) if a DoS attack occurs.**

To display the Advanced Security page, click **Security > Advanced Security** in the navigation pane.

**Figure 5-1. Advanced Security Page**

Security > Advanced Security

Storm Control

Enable ☐

Auto DoS

Enable ☐

Apply

**Table 5-1. Advanced Security Fields**

Field	Description
<b>Storm Control</b>	Select <b>Enable</b> to activate Storm Control protection for broadcast and multicast globally in the system. The threshold is 5% of the port speed; i.e., only 5% of the traffic will be received. Clear to not use the Storm Control feature.
<b>Auto DoS</b>	<ul style="list-style-type: none"><li>• Select <b>Enable</b> to enable denial of service attack protection, or clear to disable DoS protection.</li></ul>

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

---

## Secure Connection

The V1810-48G switch software allows the administrator to enable or disable Secure HTTP protocol (HTTPS). When enabled, the administrator can establish a secure connection with the switch using the Secure Sockets Layer (SSL) protocol. Secure HTTP can help ensure that communication between the management system and the switch is protected from eavesdropping and man-in-the-middle attacks. The V1810-48G switch software supports SSL version 3.0.

SSL enables the switch to generate and store a certificate that functions as a digital passport, enabling client Web browsers to verify the identity of the switch before accessing it.

---

### Note

SSL is described in client/server terminology, where the SSL-enabled switch is the server and a Web browser is the client.

The certificate provides information to the browser such as the server name, the trusted certificate authority (CA) that issued the certificate, the date it was issued, and the switch's public key.

The browser and server use this information to negotiate a secure connection in the following manner:

- The browser verifies the certificate authority's authenticity by checking it against its own list of CAs. (Web browsers such as Microsoft Internet Explorer and Mozilla Firefox maintain data on trusted CAs.)
- After validating the CA, the browser and switch negotiate the highest level of security available to both. The browser uses the public key to encrypt a random number and send it to the switch. The switch uses a private key stored in memory (not advertised on the certificate) to decrypt it. From this process, the browser and switch determine an algorithm for encrypting and decrypting all further communication during the HTTPS session.

To enable secure HTTPS connections via SSL, the HTTPS Admin mode must be enabled on the switch, and the Web server must have a public key certificate. The switch can generate its own certificates, or you can generate these externally and download them to the switch.

- Certificates generated by the switch are *self-signed*; that is., the validity of the information provided in the certificate is attested to by the switch itself.
- Downloaded certificates can also be self-signed (by a server other than the switch), or they can be *root certificates*. A root certificate has been digitally signed by a CA, and is therefore considered to provide a higher level of security.

You can also download the encryption parameter files that provide algorithms for encrypting the key exchanges.

To manage HTTP parameters and certificates, you use both the Secure Connection page and the Update Manager page. To display the Secure Connection page, click **Security > Secure Connection** in the navigation pane.

**Figure 5-2. Secure Connection**

**Table 5-2. Secure Connection Fields**

Field	Description
<b>HTTPS Admin Mode</b>	Select <b>Enable</b> to allow secure HTTPS sessions. (Verify that the Certificate Present field is set to <i>True</i> .) Select <b>Disable</b> to prevent HTTPS sessions, even if a certificate is present.
<b>Session Soft Timeout</b>	Specify the number of minutes after which an HTTPS session times-out if there is no user activity.
<b>Session Hard Timeout</b>	Specify the number of minutes after which an HTTPS session times-out, regardless of recent user activity.
<b>Certificate Present?</b>	<b>True</b> —A certificate is available for use with HTTPS sessions. <b>False</b> —No certificate is available on the switch.
<b>Certificate Generation Status</b>	Indicates that a certificate is being generated or that no certificate generation is in progress.

- If the value of the **Certificate Present?** field is **True**, you can click **Delete** to delete the existing certificate.
- If you click **Download Certificates**, the Update Manager page will be displayed to enable you to download a certificate file to the switch. See [“Downloading SSL Certificates and Diffie-Hellman Files” on page 5-4](#).
- If you click **Generate Certificates**, the switch creates its own self-signed public key certificate. See [“Generating Certificates” on page 5-5](#).
- If you enable or disable HTTPS Admin Mode, or change the timeout settings, click **Apply** to save the changes for the current boot session; the changes take effect immediately.

## Note

It is advisable to download or regenerate a certificate when the previous certificate has expired, or when you have reason to suspect that security has been breached and the certificate has been taken for use by another server.

See the following sections for instructions on downloading and generating certificates.

## Downloading SSL Certificates and Diffie-Hellman Files

You can use the Update Manager page to download a public key certificate that has been signed by another server, or a root certificate that has been signed by a certificate authority. You can also download Diffie-Hellman (DH) encryption parameter files, which establish the algorithms for encrypting key exchanges.

Before you download a file to the switch, the following conditions must be true:

- The file is on the server in the appropriate directory.
- The file is in the correct format.
- The switch has a path to the server.

Use the following procedures to download an SSL certificate or DH files.

1. Click **Download Certificates**.

The Update Manager page displays.

**Figure 5-3. Using Update Manager to Download Certificates**

Maintenance > Update Manager

Update

Update Method	TFTP
Server IP	(X.X.X.X)
File Path	(0 to 160 alphanumeric characters)
File Name	(1 to 32 alphanumeric characters)
Update Type	Code
Image	Backup

Download

2. Select the protocol to use, based on the server type that the certificate is stored on: **TFTP** or **HTTP**.
3. For an HTTP upload, browse for the file on your local computer or network.  
For a TFTP upload, enter the **Server IP** address, and specify the File Path and **File Name**.
4. From the **Update Type** field on the File Download page, select one of the following:
  - **SSL Trusted Root Certificate PEM File:** SSL Trusted Root Certificate File (PEM Encoded)—An SSL certificate that has been digitally signed by a certificate authority.
  - **SSL Server Certificate PEM File:** SSL Server Certificate File (PEM Encoded)—An SSL certificate that has been signed by another server.
  - **SSL DH Weak Encryption Parameter PEM File** or **SSL DH Strong Encryption Parameter PEM File**—DH certificates provide the algorithms for encrypting key exchanges and are used independent of the certificate. The weak version uses a cipher strength of 512 bits and the strong version uses a cypher strength of 1024 bits. Browser settings determine which DH file parameters are requested at the start of the SSL session.
5. Click **Download**.  
To view that status of the update, you can view the **Status > Log** page.

6. To return to the Secure HTTP Configuration page, click **Security > Secure Connection** in the navigation pane.
7. To enable the HTTPS admin mode, select **Enable** from the **HTTPS Admin Mode** field, and then click **Apply**.

## Generating Certificates

To have the switch generate the certificates:

1. Click **Generate Certificates**.

The page refreshes with the message “Certificate has been generated.”

2. Click **Apply** to complete the process.

When the process is complete, the page refreshes with the message “No certificate generation in progress,” and the **Certificate Present** field displays as **True**.

---

### Note

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When a certificate is present a Delete button appears to enable deleting the certificate.





# Trunks

Trunks allow for the aggregation of multiple full-duplex Ethernet links into a single logical link. Network devices treat the aggregation as if it were a single link, which increases fault tolerance and provides load sharing capability. You assign the trunk VLAN membership after a trunk is created.

A trunk interface can be either static or dynamic, but not both.

- Dynamic trunks use the Link Aggregation Control Protocol (LACP, IEEE standard 802.3ad). An LACP-enabled port automatically detects the presence of other aggregation-capable network devices in the system and exchanges Link Aggregation Control Protocol Data Units (LACPDU)s with links in the trunk. The PDUs contain information about each link and enable the trunk to maintain them.
- Static trunks are assigned to a bundle by the administrator. Members do not exchange LACPDU)s. A static trunk does not require a partner system to be able to aggregate its member ports.

All members of a trunk must be either static or dynamic.

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## Note

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If the maximum number of trunks that the platform supports are configured, additional trunks are not allowed.

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## Trunk Configuration

Use the Trunk Configuration page to create one or more full duplex Ethernet links to be aggregated together. Up to 16 trunks can be created and each trunk can aggregate up to eight physical ports.

After you create the trunk, it appears in a list at the bottom of the page where you can modify its properties or delete it. Use the Trunk Membership page to assign ports to the trunk.

To access the Trunk Configuration page, click **Trunk > Trunk Configuration** in the navigation pane.

As shown in the example configuration in [Figure 6-1](#), a trunk named Trunk1 has already been created.

**Figure 6-1. Trunk Configuration Page**

Trunks > Trunk Configuration

**Configuration**

Create ☐

Trunk Name  (1 to 15 alphanumeric characters)

Number of Trunks created

Interface	Trunk Name	Trunk Members	Admin Mode	Static Capability	Modify	Delete
Trunk1	Trunk1	10,12,14	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Table 6-1. Trunk Configuration Fields**

Field	Description
<b>Configuration</b>	
<b>Create</b>	Select to enable the fields for creating a new trunk.
<b>Trunk Name</b>	Specify a name for the trunk.
<b>Number of Trunks created</b>	The number of trunks created. The maximum number of trunks is platform-dependent.
<b>Trunk List</b>	
<b>Interface</b>	The interface number for the trunk. Interface numbers are assigned sequentially.
<b>Trunk Name</b>	The name of the trunk. You can select <b>Modify</b> to change the name of a trunk.
<b>Trunk Members</b>	The ports assigned to the trunk. Use the Trunk Membership page to assign ports to the trunk.
<b>Admin Mode</b>	<p>The administrative mode of the port (enabled or disabled). Newly created trunks are up by default.</p> <p>When disabled, no traffic will flow and LACPDUs will be dropped, but the links that form the Trunk will not be released.</p> <p>To change this setting, select <b>Modify</b>, select or clear <b>Admin Mode</b>, then click <b>Apply</b>.</p>
<b>Static Capability</b>	<p>When enabled, the trunk does not transmit or process received LACPDUs. The member ports do not transmit LACPDUs and all the LACPDUs it may receive are dropped. A static trunk does not require a partner system to be able to aggregate its member ports.</p> <p>When disabled, the interface will automatically be configured in dynamic mode. In dynamic mode, the interface transmits and processes LACPDUs and requires a partner system.</p> <p>To change this setting, select <b>Modify</b>, select or clear <b>Static Capability</b>, then click <b>Apply</b>.</p>
<b>Modify</b>	Select this box to enable modifying the Static Capability or Admin Mode settings. Click <b>Apply</b> if you change any settings.
<b>Delete</b>	Select this box and click <b>Apply</b> to delete the trunk.

- Click **Apply** if you create a new Trunk or modify any existing trunk settings.

## Trunk Membership

Use this page to specify the switch ports that are included in each trunk. To access the page, click **Trunk > Trunk Membership** in the navigation pane.

As shown in the example configuration in [Figure 6-2](#), ports 10, 12, and 14 have been added to Trunk1.

**Figure 6-2. Trunk Membership Page**

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Port Trunk										M		M		M												
LACP	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

Port	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Port Trunk																										
LACP	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

Apply

### Note

For trunks that are enabled with Static capability, the LACP option is not available.

**Table 6-2. Trunk Membership Fields**

Field	Description
Trunk ID	Select a trunk to configure its member ports.
Port Trunk	<p>For each port that you want to be a member of the selected trunk, click the <b>Port Trunk</b> box to display an <b>M</b>. To remove a port from a trunk, click again to leave the box blank.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"><li>Ports that are configured for Port Mirroring (either as a destination or a source port) cannot be configured as trunk ports and are greyed-out.</li><li>Ports added to a trunk lose their port VLAN memberships and are assigned to the trunk group VLAN membership. Ports removed from a Trunk automatically become members of the default VLAN.</li><li>All the ports participating in a trunk must have the same speed.</li></ul>
LACP	<p>This field displays only for dynamically configured trunks; it does not display for trunks that are enabled with Static capability.</p> <p>Click the <b>LACP</b> box to configure whether each port sends LACPDUs (an <b>L</b> displays). When the box is blank, the port can only be statically configured as a member of the trunk.</p>

- Click **Apply** to save any changes to the currently selected trunk. The changes take effect immediately.

To view trunk status information, click **Status > Trunk Status** in the navigation pane.

## Virtual LAN

On a Layer 2 switch, Virtual LAN (VLAN) support offers some of the benefits of both bridging and routing. Like a bridge, a VLAN switch forwards traffic based on the Layer 2 header, which is fast, and like a router, it partitions the network into logical segments, which provides better administration, security and management of multicast traffic.

A VLAN is a set of end stations and the switch ports that connect them. Many reasons exist for the logical division, such as department or project membership. The only physical requirement is that the end station and the port to which it is connected both belong to the same VLAN.

Each VLAN in a network has an associated VLAN ID, which displays in the IEEE 802.1Q tag in the Layer 2 header of packets transmitted on a VLAN. An end station may omit the tag, or the VLAN portion of the tag, in which case the first switch port to receive the packet may either reject it or insert a tag using its default VLAN ID. A given port may handle traffic for more than one VLAN, but it can only support one default VLAN ID.

The switch supports up to 64 VLANs.

---

## VLAN Configuration

Use the VLAN Configuration page to define VLAN groups. VLAN 1 is the default VLAN of which all ports are members. You can create up to 64 VLANs.

To display the VLAN Configuration page, click **VLANs > VLAN Configuration** in the navigation pane. As shown in the example configuration in [Figure 7-1](#), three VLANs are available.

**Figure 7-1. VLAN Configuration Page**

The screenshot shows the 'VLANs > VLAN Configuration' page. It includes a form to create a new VLAN with fields for 'Create VLAN' (checkbox), 'Create VLAN ID' (text box with range 2-4093), and 'Number of VLANs' (text box with value 3). Below the form is a table of existing VLANs:

VLAN ID	VLAN NAME	Set Name	Delete VLAN
1	Default	<input type="checkbox"/>	<input type="checkbox"/>
100	Management	<input type="checkbox"/>	<input type="checkbox"/>
200	Private	<input type="checkbox"/>	<input type="checkbox"/>

An 'Apply' button is located at the bottom of the page.

Table 7-1. VLAN Configuration Fields

Field	Description
Create VLAN	Select this box to create a new VLAN.
Create VLAN ID	Specify the numeric VLAN Identifier from 2 to 4093 and click <b>Apply</b> to create the VLAN. <b>Note:</b> VLAN ID 1 is pre-configured on the switch and is always named "Default." The default VLAN cannot be deleted.
Number of VLANs	The current number of VLANs. Up to 64 VLANs can be created.
VLAN Name Delete VLAN Set Name	After the VLAN ID has been created using the previously described fields, you can apply a name to it or delete it. <ul style="list-style-type: none"><li>To delete a VLAN, select the <b>Delete VLAN</b> box and click <b>Apply</b>. The default VLAN cannot be deleted.</li><li>To specify a VLAN name, select the <b>Set Name</b> box, type a name in the VLAN Name field, and click <b>Apply</b>. A VLAN name can have up to 32 alphanumeric characters, including blanks.</li></ul>

- Click **Apply** to save any changes to the for the currently selected trunk. The changes take effect immediately.

## VLAN Ports

Use the VLAN Ports page to view the Port VLAN ID that a port will assign to untagged frames that it forwards, and to configure the port priority.

To access the VLAN Ports page, click **VLANs > VLAN Ports** in the navigation pane.

Figure 7-2. VLAN Ports Page

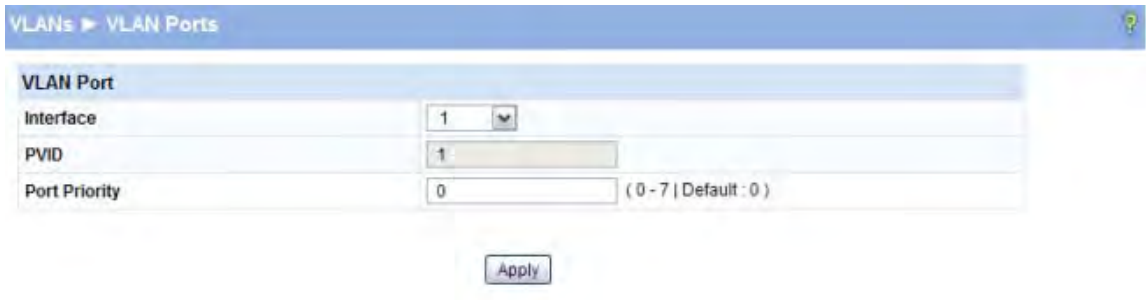


Table 7-2. VLAN Ports Fields

Field	Description
Interface	Select the port on which to configure the VLAN settings.
PVID	The VLAN ID that this port will assign to untagged frames or priority-tagged frames received on this port (range 1–4093, default = 1). The PVID is not user-configurable and always corresponds to VLAN ID of the port's untagged VLAN membership. You assign ports to VLANs on the VLAN Participation / Tagging page. The PVID value displays as <b>None</b> if all the VLANs are configured as tagged on this port or if this port is configured as the destination port in a port mirroring configuration.
Port Priority	Specify the default 802.1p priority assigned to untagged packets arriving at the port. A value of 0 indicates the lowest priority, commonly used for routine traffic, and 7 indicates the highest priority, often reserved for application such as voice and video. (0–7, default = 0)

---

**Note**

Ingress Filtering is enabled on all ports; therefore, a frame is discarded if the port is not a member of the VLAN that the frame is associated with. In a tagged frame, the VLAN is identified by the VLAN ID in the tag. In an untagged frame, the VLAN is the Port VLAN ID specified for the port that received this frame.

- 
- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

---

## Participation / Tagging

Use this page to include ports or trunks in particular VLANs and to specify the tagging policy for outgoing packets on a port or trunk.

---

**Note**

- All ports are members of VLAN1 by default.
- Each port must be a member of at least one VLAN. An error message is displayed if a user attempts to exclude a port from participation in its only VLAN.
- Ports belonging to a trunk cannot be assigned membership in a VLAN, although the trunk itself can be a member of one or more VLANs. When a member port is added to a Trunk, it loses any previous VLAN memberships and acquires those of the trunk. When deleted from a trunk, a port loses the VLAN memberships of the trunk and acquires untagged membership in VLAN 1.

---

To access the Participation / Tagging page, click **VLANs > Participation / Tagging** in the navigation pane.

As shown in the example configuration in [Figure 7-3](#), VLAN 100 is selected for configuration. Ports 3, 4, and 5 are configured as untagged members of VLAN100, and Trunk1 is also a member. Ports 10, 12, and 14 are greyed-out because they are included in Trunk1 and receive their VLAN assignments from the trunk. Port 6 is greyed-out because it is configured as a destination port in a port mirroring configuration, and cannot be assigned to a VLAN.

Figure 7-3. Participation/Tagging Page

VLANs ▶ Participation / Tagging

VLAN Tagging

VLAN

100

E

Tag / Untag / Exclude All

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	E	E	U	U	U		E	E	E		E		E		E	E	E	E	E	E	E	E	E	E	E	E
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Trunk1	U																									

Apply

Table 7-3. Participation/Tagging Fields

Field	Description
VLAN	Select the VLAN to configure.
Tag / Untag / Exclude All	<p>For a port or trunk to participate in a VLAN, its tagging policy must be defined. By default, all ports and trunks are configured as untagged members of VLAN1, and are excluded from all other newly created VLANs.</p> <p>You can use the <b>Tag / Untag / Exclude All</b> box to configure all ports at once. Click this box until the appropriate options displays:</p> <ul style="list-style-type: none"><li>• <b>E</b>—exclude all ports from this VLAN.</li><li>• <b>T</b>—participate in the selected VLAN and tag all frames.</li><li>• <b>U</b>—participate in the selected VLAN and leave all outgoing frames untagged. Each port can have only one untagged VLAN membership. If a port is an untagged member of a VLAN and a second VLAN is selected for untagged membership, then the first VLAN membership is automatically changed to E (Exclude).</li></ul> <p>Then, you can use the Port boxes to refine the ports participation and tagging settings.</p>
Port	<p>Use the individual port boxes to specify whether a port will participate in this VLAN by identifying the tagging policy as described above, or by excluding the port from the VLAN.</p> <p>Refer to the online help for further information about Participation / Tagging settings.</p>

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately..



## Example—Creating a Management VLAN

A management VLAN can be created to restrict user access. Access restrictions can be applied to a set of users capable of accessing the V1810-48G switch software. Follow these steps to create a management VLAN.

---

### Note

- Prior to configuring a management VLAN/port, ensure that the port being configured is connected to a network that is accessible through that port and management VLAN; otherwise, you will lose connectivity instantly upon configuration.
  - If more than one port are configured as untagged VLAN members of management VLAN (through the VLAN Participation / Tagging page), users can have management access through all these ports irrespective of the configured management port
- 

1. Use the VLAN Configuration page to create a VLAN ID for use as the management VLAN.
2. Display the Network Setup > Get Connected page and do the following:
  - In the **Management VLAN ID** field, specify the VLAN ID created in [Step 1](#).
  - In the **Management Port** field, select the port you want to use as the management port.

Wait a few moments for the switch to configure the new management VLAN/port before attempting to log in.

## Virtual LAN

Example—Creating a Management VLAN

## Link Layer Discovery Protocol (LLDP)

The IEEE 802.1AB defined standard, Link Layer Discovery Protocol (LLDP), allows stations residing on an IEEE 802 LAN to advertise major capabilities and physical descriptions. This information is viewed by a network manager to identify system topology and detect bad configurations on the LAN.

LLDP is a one-way protocol; there are no request/response sequences. Information is advertised by stations implementing the transmit function, and is received and processed by stations implementing the receive function. The transmit and receive functions can be enabled/disabled separately per port. By default, both transmit and receive are enabled on all ports. The application is responsible for starting each transmit and receive state machine appropriately, based on the configured status and operational state of the port.

---

### LLDP Configuration

Use the LLDP Configuration page to specify global LLDP parameters and to configure the protocol on individual ports.

To display the LLDP Configuration page, click **LLDP > LLDP Configuration** in the navigation pane. Note that LLDP is enabled by default on all ports.

Figure 8-1. LLDP Configuration Page

LLDP ▶ LLDP Configuration

Global Mode

Transmit Interval

30

( 5 - 32768 | Default : 30 )

Transmit Hold

4

( 2 - 10 | Default : 4 )

Re-Initialization Delay

2

( 1 - 10 | Default : 2 )

Notification Interval

5

( 5 - 3600 | Default : 5 )

Interface Mode

Interface	Transmit Enable	Receive Enable	Enable Notification	Transmit Mgmt Info
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
17	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
18	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
22	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
23	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Table 8-1. LLDP Configuration Fields

Field	Description
<b>Global</b>	
<b>Transmit Interval</b>	Specify the interval at which frames are transmitted. The default is 30 seconds, and the valid range is 5–32768 seconds.
<b>Transmit Hold</b>	Specify the multiplier on the transmit interval to, which is used to compute the TTL (range 2–10, default = 4).
<b>Re-Initialization Delay</b>	Specify the delay before a re-initialization (range 1–10 seconds, default = 2).
<b>Notification Interval</b>	Specify a limit for the transmission of notifications (range 5–3600 seconds, default = 5).
<b>Interface</b>	
<b>Interface</b>	The list of all physical and trunk interfaces on the system.
<b>Transmit Enable</b>	Enable or disable the transmission of LLDP PDUs. The default is enabled.
<b>Receive Enable</b>	Enable or disable the ability of the port to receive LLDP PDUs. The default is enabled.
<b>Enable Notification</b>	Enable to have LLDP generate a log file entry.
<b>Transmit Mgmt Info</b>	Enable or disable the transmission of management information with the LLDP PDUs. The default is enabled.

- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

To view LLDP statistics, click **Status > LLDP Statistics** in the navigation pane.

# LLDP Local Device

Use the LLDP Local Device page to view information about devices on the network for which the switch has received LLDP information.

To display this page, click **LLDP > Local Device** in the navigation pane.

Figure 8-2. LLDP Local Device Information Page

LLDP > Local Device			
Local Device Summary			
Chassis ID	00:10:18:56:02:28		
Chassis ID Subtype	MAC Address		
Capabilities Supported	bridge		
Capabilities Enabled	bridge		
LLDP Interface	Port Description	Port ID	Port ID Subtype
1	Port #1	1	Local
2	Port #2	2	Local
3	Port #3	3	Local
4	Port #4	4	Local
5	Port #5	5	Local
6	Port #6	6	Local
7	Port #7	7	Local
8	Port #8	8	Local
9	Port #9	9	Local
10	Port #10	10	Local
11	Port #11	11	Local
12	Port #12	12	Local
13	Port #13	13	Local
14	Port #14	14	Local
15	Port #15	15	Local
16	Port #16	16	Local
17	Port #17	17	Local
18	Port #18	18	Local
19	Port #19	19	Local
20	Port #20	20	Local
21	Port #21	21	Local
22	Port #22	22	Local
23	Port #23	23	Local
24	Port #24	24	Local
25	Port #25	25	Local
26	Port #26	26	Local
27	Port #27	27	Local
28	Port #28	28	Local

Table 8-2. LLDP Local Device Information Fields

Field	Description
Local Device Summary	
Chassis ID	The source of the chassis identifier.
Chassis ID Subtype	The type of the source of the chassis identifier.
Capabilities Supported	Displays the system capabilities of the local system.
Capabilities Enabled	Displays the system capabilities of the local system that are supported and enabled.

Field	Description
<b>LLDP Interface Description</b>	
<b>LLDP Interface</b>	The interface on which LLDP 802.1AB frames can be transmitted.
<b>Port Description</b>	The description of the selected port associated with the local system.
<b>Port ID</b>	The source of the port identifier.
<b>Port ID Subtype</b>	Displays the type of the source of the port ID.


- Click the **Refresh** link above the page to update the page with the latest data from the switch.

## LLDP Remote Device

Use the LLDP Remote Device page to view information about remote devices for which the switch has received LLDP information. To display the LLDP Remote Device page, click **LLDP > Remote Device** in the navigation pane.

As shown in the example configuration in [Figure 8-3](#), the remote device is connected to interface 1.

**Figure 8-3. LLDP Remote Device Page**



The screenshot shows the 'LLDP > Remote Device' page. It contains a table titled 'Remote Device Summary' with the following data:

Local Interface	Chassis ID	Port ID	Port Description	System Name	Capabilities Supported	Capabilities Enabled	System IP
1	00:10:18:58:36:01	1	Port#1	J9660A	bridge	bridge	192.168.2.10
1	00:FC:E3:90:01:93	1/0/17					

**Table 8-3. LLDP Remote Device Fields**

Field	Description
<b>Local Interface</b>	The port on the local system that received the LLDP data from the remote system.
<b>Chassis ID</b>	The chassis component associated with the remote system.
<b>Port ID</b>	The physical address of the port on the remote device that sent the LLDP data.
<b>Port Description</b>	The port description configured on the remote device. If the port description is not configured, the field is blank.
<b>System Name</b>	The system description configured on the remote device. If the system description is not configured, the field is blank.
<b>System Capabilities</b>	The capabilities on the remote device.
<b>Capabilities Enabled</b>	The capabilities on the remote device that are enabled.
<b>System IP</b>	The IP address of the remote device.

## Link Layer Discovery Protocol (LLDP)

### LLDP Remote Device

- Click the **Refresh** link above the page to re-display the page with current settings from the switch.



# Diagnostics

## Ping Test

Use the Ping Test page to determine whether another device on the network is reachable. Ping provides a synchronous response when initiated.

To display the Ping Test page, click **Diagnostics > Ping Test** in the navigation pane. The following example shows the output of the ping test.

**Figure 9-1. Ping Test Page**

**Ping**

IP Address	10.131.11.69	(XXXX)
Count	1	(1 - 5   Default: 1)
Interval (in sec)	3	(1 - 60   Default: 3)
Size (in bytes)	0	(0 - 5120   Default: 0)

**Ping Results**

```
Reply From 10.131.11.69: icmp_seq = 0. time= 290000 usec.
Tx = 1, Rx = 1 Min/Max/Avg RTT = 290/290/290 msec
```

Apply

**Table 9-1. Ping Test Fields**

Field	Description
<b>IP Address</b>	Specify the IP address of the host you want to reach.
<b>Count</b>	Specify the number of packets to send. (Range 1 - 5 packets, Default = 1)
<b>Interval</b>	Specify the delay between ping packets. (Range 1–60 seconds, Default = 3 seconds)
<b>Size</b>	Specify the size of the ping packet to be sent. (Range 0–5120, Default = 0)

- Click **Apply** to ping the specified host. The output includes the following data:
  - IP Address—The IP address of the device that was pinged.
  - Sequence—The Internet Control Message Protocol (ICMP) number of the packet, starting from 0.
  - Time—The ping reply status.
  - Transmitted Packets—The number of packets sent.
  - Received Packets—Number of packets received.
  - Min/Max/Avg RTT—Specifies the Minimum, Maximum, Average Round Trip Time (msec).

---

## Log Configuration

The V1810-48G switch software supports logging system messages to the Log file or forwarding messages over the network using the Syslog protocol. Syslog messages can be captured by a designated host on the network that is running a Syslog daemon.

---

### Note

The log file is limited to 100 entries. The most recent 100 log entries are displayed; index numbering may not be 1-100. See your syslog entries to view more than 100 log messages.

---

To display the Log Configuration page, click **Diagnostics > Log Configuration** in the navigation pane.

**Figure 9-2. Log Configuration Pages**

The screenshot shows the 'Diagnostics > Log Configuration' page. It features a 'Logging' section with the following settings:

- Enable Buffered Logging:** Checked (checkbox).
- Buffered Logging level:** Set to 'Info' (dropdown menu).
- Enable SysLog:** Unchecked (checkbox).
- SysLog Host:** A text input field containing '(X.X.X.X)'.
- SysLog level:** Set to 'Emergency' (dropdown menu).

An 'Apply' button is located at the bottom center of the configuration area.

Table 9-2. Log Configuration Fields

Field	Description
<b>Enable Buffered Logging</b>	Specify which type of system messages are logged by using the Buffered Logging Level setting: <ul style="list-style-type: none"><li>• Emergency: Alerts the user of the highest level of system error classified as urgent.</li><li>• Alert: Alerts the user of a high level of system error.</li><li>• Critical: Alerts the user of a high level of system error which must be immediately addressed.</li><li>• Error: Alerts the user of an error in the system.</li><li>• Warning: Warns the user of an impending system error of a specified operation.</li><li>• Notice: Notifies the user of a system error.</li><li>• Info: Provides the user with system information.</li><li>• Debug: An internal note to reconcile programming code.</li></ul>
<b>Buffered Logging Level</b>	Specify a logging level (Emergency–Debug as previously described). A log records messages equal to or above a configured console logging level.
<b>Enable Syslog</b>	Select to enable the switch to send Syslog messages.
<b>Syslog Host</b>	Specify the IP address of a host on the network running a Syslog daemon that will capture the messages.
<b>Syslog Level</b>	Specify a Syslog logging level (Emergency–Debug as described above). A log records messages equal to or above a configured console logging level.

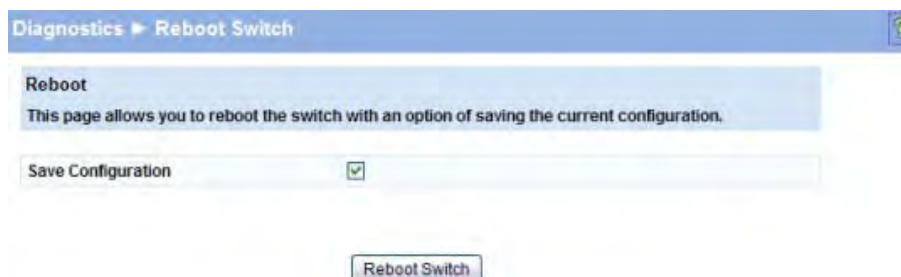
- Click **Apply** to save any changes for the current boot session; the changes take effect immediately.

---

## Reboot Switch

Use this feature to perform a software reboot of the switch. If you applied configuration changes, wait at least 1-minute before rebooting to ensure that the changes are saved to the system configuration file, or use the Maintenance > Save Configuration page to save them immediately. To access this page, click **Diagnostics > Reboot Switch**.

Figure 9-3. Reboot Switch Page



---

**Note**

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If you have downloaded a configuration file and want those settings to take effect after the next reboot, be sure to clear the **Save Configuration** check box. Otherwise, the configuration file will be overwritten and the switch will reboot with the current configuration instead of the downloaded configuration.

- Select **Save Configuration** if you want the current configuration to be saved prior to the reboot.
- Click **Reboot Switch** to reboot the switch. Any current HTTP sessions are terminated.

---

## Factory Defaults

Two configuration files are kept in system memory: one contains custom settings; the other contains the factory defaults. Use this page to restore all settings to the factory defaults. To access this page, click **Diagnostics > Factory Defaults**.

---

**CAUTION**

---

Backup the current configuration file prior to restoring the factory defaults configuration. See “[Backup Manager](#)” on page 10-1 for instructions.

**Figure 9-4. Factory Defaults Page**



- Click **Reset Configuration** to restore the system to the default settings.

---

## Support File

Use the support file page to display summary information for the switch on a single page. The support file page includes the following data:

- System description
- The active Image and the image that will be active after a reboot, and the user-configured descriptions of these images.
- Buffered log messages
- Logging configuration details
- IP configuration details
- Management Access VLAN ID and port
- SNMP configuration
- Sntp configuration
- Port configuration details
- Port and trunk statistics
- Jumbo frames configuration details
- Storm Control Mode administrative status
- AutoDoS Mode administrative status
- Green mode administrative status
- PHY Auto-Powerdown administrative status
- Flow Control administrative status
- MAC address forwarding table and summary statistics
- VLAN configuration and membership details
- Trunk configuration details
- LLDP configuration, global statistics, and local and remote device summaries
- Port mirroring configuration
- Loop protection status per interface

To access this page, click **Diagnostics > Support File** in the navigation pane.

This data also displays on status pages for each particular feature. For descriptions of these items, refer to the related sections in this document.

To save the Support File data to a file, click **Save As** located at the bottom of the page.

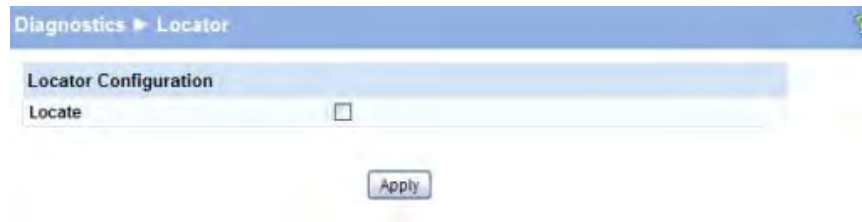
You can print the text from your text editor. Alternatively, your browser may support printing only the frame that contains the data (that is, it excludes the navigation pane and Web Applet) directly from the Web page. Right-click the data area to see if your browser provides this option.

## Locator

The Locator LED is a special LED that enables locating the device physically. When enabling the Locate setting via the Web interface, the Locate LED on the switch blinks for 30 minutes and then turns off.

To access this page, click **Diagnostics > Locator** in the navigation pane.

**Figure 9-5. Locator Page**



- Select **Locate** and click **Apply** to cause the Locator LED on the switch to blink for 30 minutes.

# Maintenance Pages

## Backup Manager

Backup Manager page provides a means to save a backup copy of the switch’s image or configuration files on a local system or network directory. To access this page, click the **Maintenance > Backup Manager**.

The page displays different options depending on the protocol and image or file type selected for the backup. As shown in the example in [Figure 10-1](#), TFTP (Trivial File Transfer Protocol) has been selected as the backup method for saving the code (entire image) onto a server.

**Figure 10-1.Backup Manager Page**



**Table 10-1.Backup Manager Fields**

Field	Description
<b>Backup Method</b>	Select the protocol to use: <ul style="list-style-type: none"> <li>• <b>HTTP</b>— The file is downloaded over the current browser session.</li> <li>• <b>TFTP</b>— This requires a TFTP server operating on the system/network.</li> </ul>
<b>Server IP</b> (TFTP backup only)	If a TFTP backup is to be performed, enter the IP address of the TFTP server.
<b>File Name</b> (TFTP backup only)	If a TFTP backup is to be performed, enter the file name with which backup must be saved. This can differ from the actual file name on the switch.
<b>Backup Type</b>	Select the image or file to be backed up: <ul style="list-style-type: none"> <li>• <b>Code</b>— The entire image is backed up (default name <i>switchdrv.r.stk</i>).</li> <li>• <b>Configuration</b>— Only the configuration file is backed up (default name <i>config.bin</i>).</li> </ul>
<b>Image Name</b>	If Code is selected as the Backup Type, select one of the two images stored in memory: <ul style="list-style-type: none"> <li>• <b>Active</b>— The currently active image is backed up.</li> <li>• <b>Backup</b>— The backup image is backed up. name <i>config.bin</i>).</li> </ul>

- For a backup using HTTP, click **Apply** to begin the backup process. A window displays with a prompt to save the file in the desired location.
- For backup using TFTP, ensure that the TFTP server is running and click **Apply**. Use a TFTP application to initiate the backup.

---

## Note

If using Internet Explorer, when you attempt a backup operation from a secure HTTP session using the HTTP protocol, you may receive the following error message, even though the document is available and downloaded from the server:

**Internet Explorer cannot download filename from <site name>. Internet Explorer was not able to open this Internet site. The requested site is either unavailable or cannot be found. Please try again later.**

This error happens due to security limitations with Internet Explorer. Recent versions do not have this problem. To perform the operation, configure the following settings in your browser:

1. Click **Tools > Internet Options** and display the **Advanced** tab.
2. In the Security settings, select **Do not save encrypted pages to disk**.
3. Try the backup operation again.
4. After the backup operation is complete, restore your settings to the original values to avoid Web performance issues.

If you use a browser other than Microsoft Internet Explorer, such as Firefox or Mozilla, the download of the attachment should work as expected.

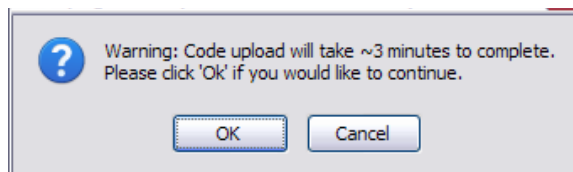
---

## Example—Backing Up a Configuration File

Follow these instructions to back up a configuration file.

1. In the **Backup Method** field, select the protocol to use to upload the file to the system. To save the file on a local or network drive, select **HTTP**. To save the file on a TFTP server, select **TFTP**.
2. If TFTP is selected, specify the IP address of the TFTP server and the name to assign to the file when it is saved.
3. Select **Configuration** in the Backup Type field.
4. Click **Apply**.

A window like following displays (the text may differ depending on the selected protocol and backup type):





- Click **OK**. For an HTTP transfer, browse to the location where you want to save the file.

A progress bar indicates that the backup is in progress and the page displays the following message:

**Code (Configuration) upload through HTTP (TFTP) is in Progress.**  
**Please wait...**

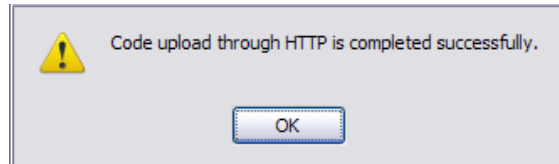
---

**CAUTION**

---

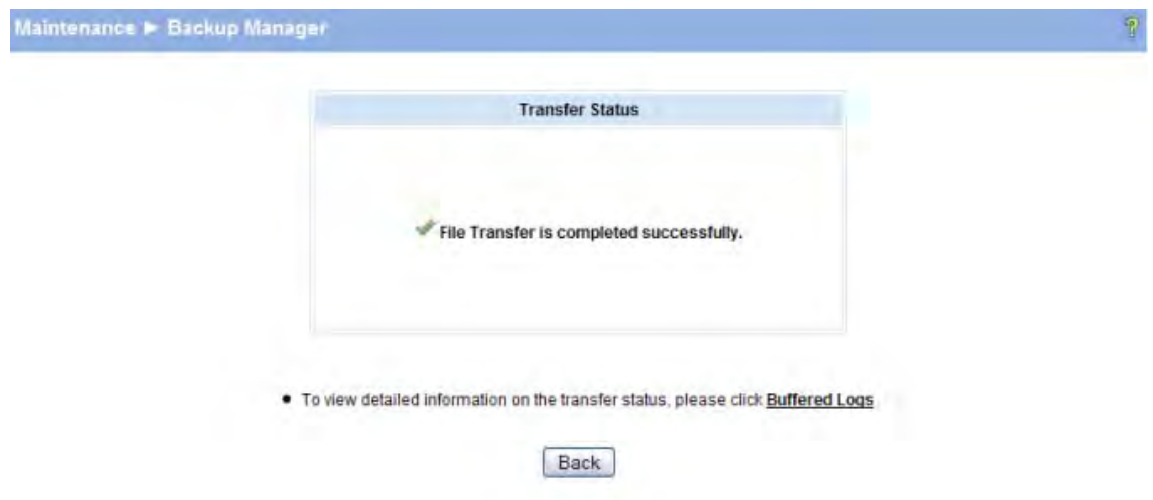
**Do not disturb the browser window while the transfer is in progress.**

When the backup is complete, a window like the following displays.



- Click **OK**.

The Backup Manager page displays the following status message:



- Click **Back** to re-display the Backup Manager page.

---

**Note**

---

To restore a backed-up code or configuration file, use [Update Manager](#).

# Update Manager

Update Manager enables a new image or configuration file to be uploaded from the local system or network to the switch. To access this page, click **Maintenance > Update Manager** in the navigation pane.

Update Manager displays different options depending on the transfer protocol, file or image type selected for an update. In the example in [Figure 10-2](#), the inactive (or “Backup”) image on the switch is being updated with the file named *switchdrv.r.stk* from a TFTP server. For example, if the *image1* file is being used as the currently-active image running on the switch, then the *image2* file is the backup file to be updated.

Figure 10-2.Update Manager Page

Maintenance ▶ Update Manager ?

Update

Update Method	TFTP ▼
Server IP	<input type="text"/> (X.X.X.X)
File Path	<input type="text"/> (0 to 160 alphanumeric characters)
File Name	<input type="text"/> (1 to 32 alphanumeric characters)
Update Type	Code ▼
Image	Backup ▼

Download

Table 10-2.Update Manager Fields

Field	Description
Update Method	Select the protocol to use: <ul style="list-style-type: none"><li><b>HTTP</b>—The file is downloaded using HTTP from a local or remote drive.</li><li><b>TFTP</b>—The file is downloaded using TFTP from a TFTP server operating on the system/network.</li></ul>
Browse for file (HTTP upload only)	If HTTP is used for the software update, click <b>Browse</b> to select the designated file. <b>Note:</b> If the file name differs from the default name on the switch, the file will be renamed to the default name when uploaded (see the <b>Update Type</b> field description).
Server IP (TFTP upload only)	If a TFTP download is performed, enter the IP address of the TFTP server.
File Name (TFTP upload only)	If a TFTP download is performed, enter the path to the file on the TFTP server.
File Name (TFTP upload only)	If a TFTP download is performed, enter the name of the software update file on the TFTP server.

Field	Description
<b>Update Type</b>	<p>Select the file type to be updated:</p> <ul style="list-style-type: none"> <li>• <b>Code</b>—Update the software image file specified.</li> <li>• <b>Configuration</b>—Update up the configuration file.</li> <li>• To update an SSL certificate or key encryption file, select the certificate type (for a description of these files, see “<a href="#">Secure Connection</a>” on page 5-2):</li> <li>• <b>SSL Trusted Root Certificate PEM File</b>—SSL Trusted Root Certificate File which is encoded using the Privacy Enhanced Mail (PEM) protocol.</li> <li>• <b>SSL Server Certificate PEM File</b>—SSL Server Certificate File (PEM-encoded).</li> <li>• <b>SSL DH Weak Encryption Parameter PEM File</b>—SSL Diffie-Hellman Weak Encryption Parameter File (PEM encoded).</li> <li>• <b>SSL DH Strong Encryption Parameter PEM File</b>—SSL Diffie-Hellman Strong Encryption Parameter File (PEM encoded).</li> </ul>
<b>Image</b> (for Code updates only)	<p>If <b>Code</b> is selected as the update type, select which of the two images stored on the switch is to be updated:</p> <ul style="list-style-type: none"> <li>• <b>Active</b>—The uploaded image will replace the currently active image.</li> <li>• <b>Backup</b>—The uploaded image will replace the backup image.</li> </ul>

## Example—Updating the Switch Software

### CAUTION

It is recommended that you back up the image file before updating it. See “[Backup Manager](#)” on page 10-1 for instructions.

Follow these instructions to update the switch software (that is, a firmware code image):

1. In the **Update Method** field, select the protocol to use to upload the file to the system. If the file is located on a local or network drive, select **HTTP**. If the file is located on a TFTP server, select **TFTP**.
2. If TFTP is selected, specify the IP address of the TFTP server, the path to the file, and the name of the file as it appears on the server.

If HTTP is selected, browse to locate the file on your network or local drive.

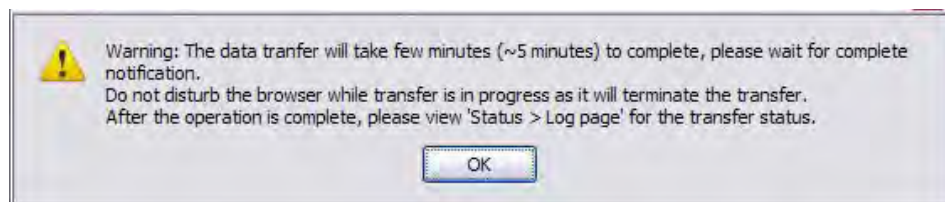
3. In the Update Type field, select **Code**.
4. In the **Image** field, choose **Backup** or **Active**.

If you choose **Backup**, the inactive (backup) image file will be updated. In the example in [Figure 10-2 on page 10-4](#), the Backup image file is selected for update.

If you choose **Active**, the active image file will be updated.

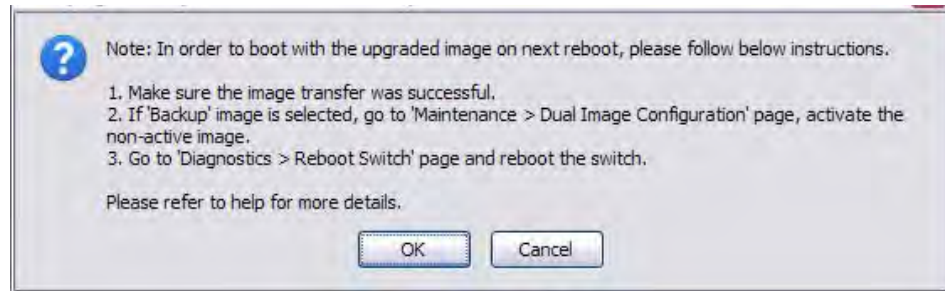
5. Click **Download**.

A warning page like the following displays (the text may differ depending on the protocol selected):



6. Click **OK**.

The following page displays:



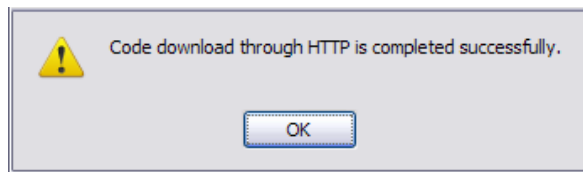
7. Click **OK**.

The following message displays on the Update Manager page:

**Code (Configuration) download through HTTP (TFTP) is in Progress.**

**Please wait...**

When the transfer is complete, a window like the following displays:



8. Click **OK**.

Update Manager displays the following status message:



9. Click **Back** to re-display the Update Manager page.

Note that, in this example, the image was downloaded as the inactive (backup) image. To complete the update process and to activate the backup image as the operating software, use the Dual Image Configuration page.

In the following example, *Image1* is the active image, and *Image2* is the newly updated backup image. By clicking **Activate**, *Image2* will be activated on the next reboot (and *Image1* will become the inactive backup image).

Dual Image Configuration	
Image Name	Image2
Active Image	image1
Image Description	production image (0 to 32 characters)
Image Version	PK.1.4

10. (Optional) Add a description for the selected image (*Image2*) and click **Apply**.
11. Click **Activate** to activate the selected image on the next reboot.  
**Note:** You can verify the next active image by viewing the **Status > Dual Image** screen.
12. Click **Diagnostics > Reboot Switch**, and then click **Reboot Switch** to complete the update.

**Reboot**  
This page allows the user to reboot the switch with an option of saving the current configuration.

Save Configuration ☒

Wait for the switch to reboot. You will lose your connection.

Internet Explorer cannot display the webpage

What you can try:

[More information](#)

Then, refresh your browser to re-display the Web interface. Upon reboot, the previously-active image (*Image1*, in this example) will become the inactive (backup) image.

## Password Manager

Use the Password Manager to change the password used to access the Web interface. To access this page, click the **Maintenance > Password Manager**.

Figure 10-3 shows the Password Manager page.

**Figure 10-3.Password Manager Page**



The screenshot shows a web interface titled "Maintenance > Password Manager". Below the title bar, there is a section labeled "User Accounts". Inside this section, there are three input fields: "Old Password", "New Password", and "Confirm New Password". Each field has a text box and a character count indicator to its right, which reads "( 8 to 64 Alphanumeric Characters )". Below these fields is a button labeled "Apply".

---

### Note

---

Passwords must be at least 8 characters but no more than 64 characters long. Passwords are case sensitive.

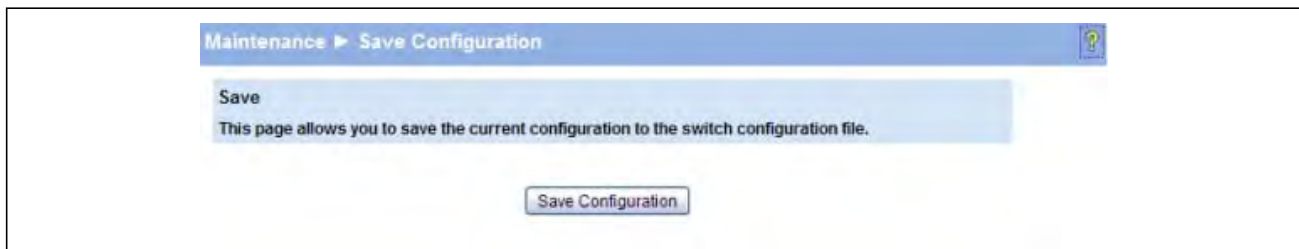
- Enter the old password and the new password twice, and click **Apply**. At the next log on, use the new password.

## Save Configuration

When you click **Apply** on any of the configuration pages, your changes are saved automatically to the system configuration file in flash memory. However, to help prevent excessive writing to flash memory, the software waits 1 minute after a change is applied to enable aggregating it with other changes before writing them together to flash. If the switch reboots before the applied changes are saved, the changes will be lost.

To have changes saved immediately to the system configuration file, you can use the Save Configuration page. To access this page, click **Maintenance > Save Configuration**.

**Figure 10-4.** Save Configuration Page



- Click **Save Configuration** to save the changes made during this session.

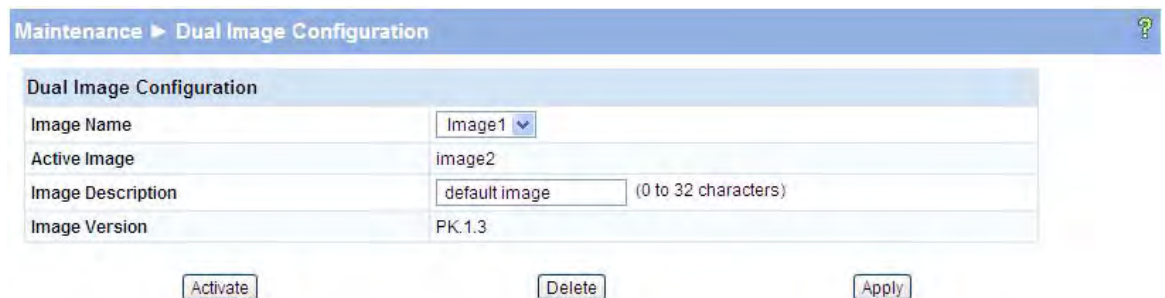
## Dual Image Configuration

Use the Dual Image Configuration page to name and change the next bootup image. To access this page, click **Maintenance > Dual Image Configuration**.

The Dual Image Configuration allows activating either of the stored images: Image1 or Image2. When one image is activated, the other image serves as a backup; if Image1 either fails or does not boot, then the other image can be activated.

As shown in [Figure 10-5](#), the current active image is Image2. Image1 can be set to be activated, deleted, or an image description can be applied.

**Figure 10-5.** Dual Image Configuration Page



**Table 10-3. Dual Image Configuration Fields**

Field	Description
<b>Image Name</b>	Select the image you want to perform an action on. You can activate the selected image, delete it, or configure a description of it. Options are Image1 and Image2.
<b>Active Image</b>	The currently active image.
<b>Image Description</b>	Specify a description of the image selected in the Image Name field.
<b>Image Version</b>	The software version associated with the active image.

- Click **Activate** to activate the selected image selected in the Image Name field. Be sure to configure the Image Description field to the version of the image loaded so that users can easily distinguish between the images.
- Click **Apply** to apply a description to the image selected in the **Image Name** field.
- Click **Delete** to delete the image selected in the **Image Name** field.

To view dual image status information, click **Status > Dual Image Status** in the navigation pane.





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