

Getting Started Guide

ProCurve Wireless EDGE Services zl Modules

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Applicable Products

ProCurve Wireless Edge Services zl Module (J9051A)
ProCurve Redundant Wireless Edge Services (J9052A)
zl Module

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Introduction

This *Getting Started Guide* supports the following ProCurve zl Modules:

- ProCurve Wireless Edge Services zl Module (J9051A).
- ProCurve Redundant Wireless Edge Services zl Module (J9052A).

The ProCurve Wireless Edge Services zl Module (Module) enables a ProCurve Switch 5400zl Series or 8200zl Series to operate with ProCurve Radio Ports as a centrally-administered wireless LAN system. Installing this Module in a ProCurve Switch 5400zl/8200zl results in a wireless services-enabled switch, capable of managing ProCurve Radio Ports to deliver 802.11 wireless access to stations.

A ProCurve Redundant Wireless Edge Services zl Module provides failover or high availability options for a ProCurve Module within a wireless LAN system.

Building a Wireless LAN System

The ProCurve Module transforms a ProCurve 5400zl/8200zl Series switch into a wireless services enabled switch. Together with one or more radio ports (RPs), this wireless services-enabled Module creates a wireless LAN System.

The Module has two different radio port licenses, J9053A and J9090A. The J9053A is a license for 12 radio ports, the default, and J9090A is a license for 48 radio ports. Including its default radio port license, each Module can support up to 156 radio ports with additive RP licenses. Each radio can support up to 64 stations simultaneously, although each station uses a certain amount of limited bandwidth.

A wireless network can include several Modules. These Modules can function independently, or you can combine them in several ways. You can join up to twelve Modules in a group to provide redundancy. You can also group Modules in a Layer 3 mobility domain, which enables wireless stations to roam from a Module in one Ethernet subnetwork to a Module in a different subnetwork.

A wireless LAN system can provide these services:

- Association—Mobile users must be able to locate and connect to the wireless network.
- Authentication—Typically, users and the wireless access provider should authenticate each other so that each knows that it is connecting to the correct peer.
- Encryption—Wireless network traffic may be encrypted to protect it from interception.
- Bridging—Traffic crossing from the wireless network to the wired network should be placed in the proper subnetwork, or virtual LAN (VLAN), and appropriately controlled.

As the interface between the wireless and the wired network, the Module manages these services. After bridging traffic to the wired network, the Module can also provide Layer 3 capabilities, such as Dynamic Host Configuration Protocol (DHCP) services, Network Address Translation (NAT), and filtering with a firewall.

Wireless Services-Enabled Switch

A wireless services-enabled zl switch is a 5400zl/8200zl switch with a Module installed. When used with a number of distributed radio ports (RP) providing the desired wireless LAN coverage, all of the ProCurve Radio Ports are centrally managed through the Module. With the addition of a Module, every wired port in a 5400zl/8200zl switch can support both wired and wireless network traffic.

VLANs

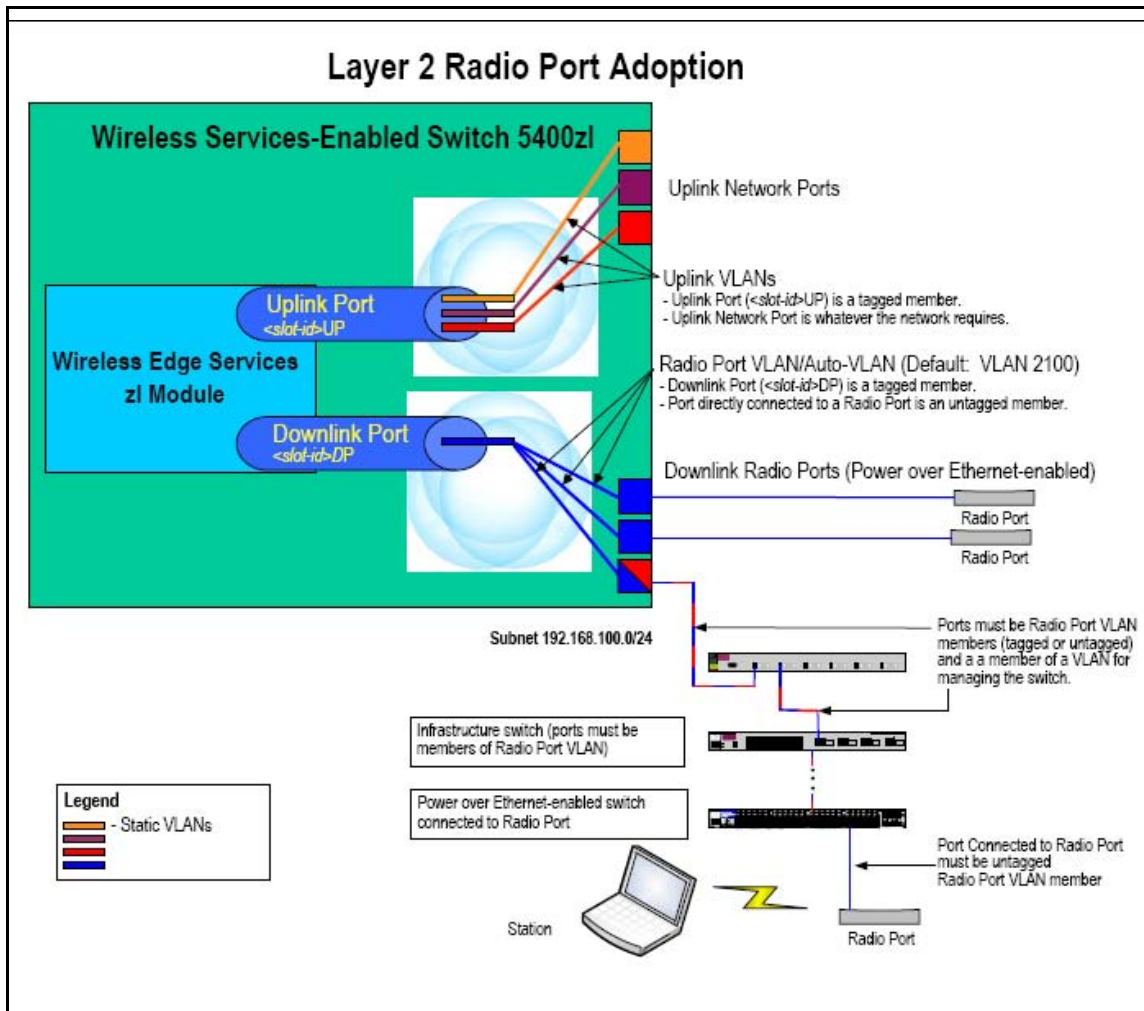
VLANs on the zl switch create paths between the Module, radio ports, and the network. The Module requires two VLANs: Radio Port VLANs and Uplink VLANs. The Radio Port VLAN sends and receives radio port traffic. Uplink VLANs are used to send and receive traffic from the network.

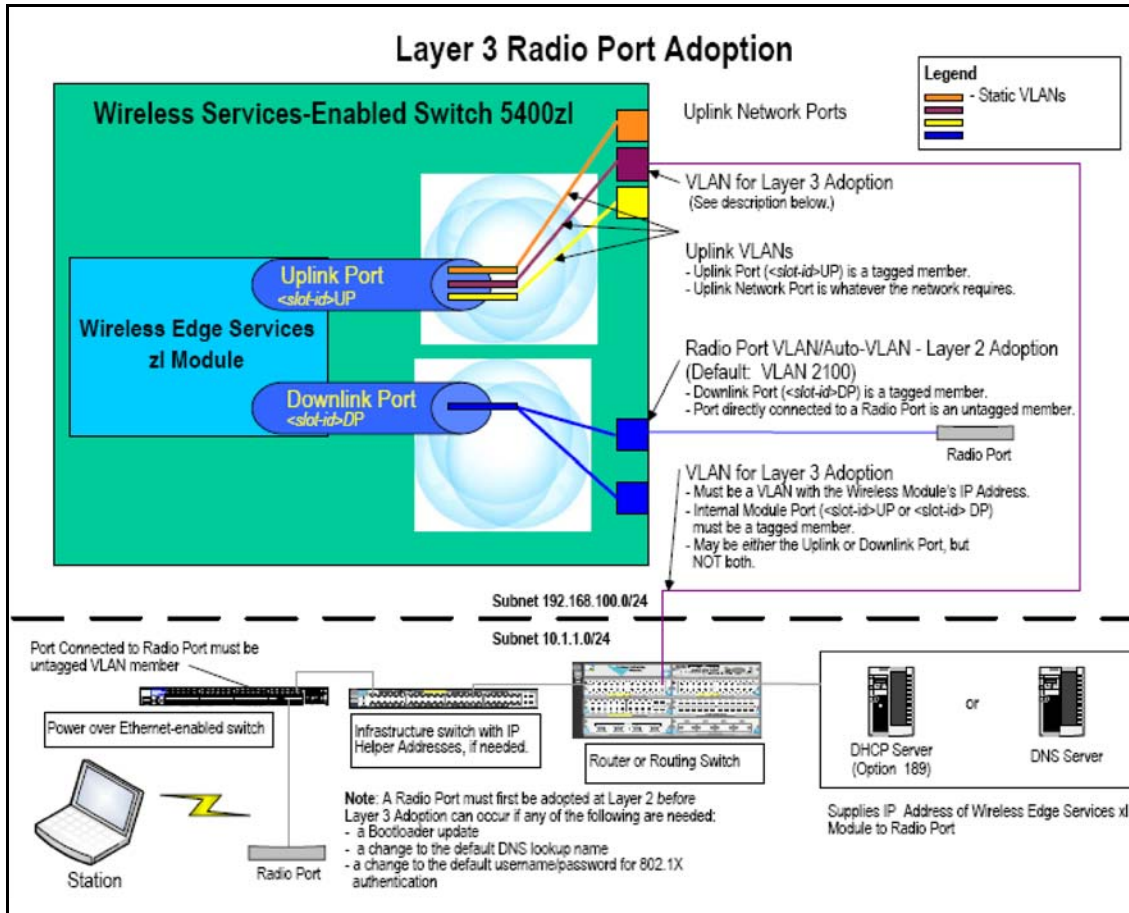
The Radio Port VLAN provides connectivity to the radio ports and client stations. Radio ports must be members of the Radio Port VLAN to be adopted by and communicate with a Module. When software version K.12.40 (or later) is loaded, the ProCurve zl switch uses LLDP (Link Layer Discovery Protocol) and auto-provisioning to create a default Radio Port VLAN (VID 2100) when a radio port is connected directly to the switch. Auto-provisioning also creates a default Radio Port VLAN when a Module is detected in a zl switch chassis. If VLAN2100 is unavailable, the next available VLAN is used.

When a radio port is not connected directly to a wireless services-enabled zl switch:

- the Radio Port VLAN must be configured on any switch between the radio port and the wireless services-enabled switch.
- the radio port must be an *untagged* member of the Radio Port VLAN on the switch where it is connected.

The illustration below shows VLAN requirements when using a radio port attached to an infrastructure, PoE-capable switch.





The <slot-id> refers to the slot in the zl Switch where the Module is located.

Setting the VLANs in the Module does not set the VLANs in the zl Switch. Normally, the administrator will set the VLANs in the zl Switch first, then set the VLANs in the Module to correspond with the switch VLAN settings.

Radio Ports

ProCurve Radio Ports provide the radio-based infrastructure to support wireless client connectivity and RF environment sensing and reporting. The table below summarizes their features.

RADIO PORTS
<p>A radio port has 1 or 2 radios. ProCurve radio ports are:</p> <ul style="list-style-type: none"> • ProCurve Radio Port 210 (J9004A) - Single-radio (802.11b/g) radio port; embedded 2.4 GHz diversity antennae • ProCurve Radio Port 220 (J9005A) - Dual-radio (a+b/g) radio port; external antenna • ProCurve Radio Port 230 (J9006A) - Dual-radio (a+b/g) radio port; embedded 2.4 and 5 GHz diversity antennas <p>ProCurve offers a range of indoor and outdoor external antennas.</p>
4 BSSIDs per radio; a total of 8 BSSIDs per dual-radio ports.
PoE (802.3af) power required.
A maximum of 156 radio ports (RP) can be adopted by a Module. A Module is licensed to support 12 radio ports by default. Support for additional radio ports requires the purchase of a 12 RP License (J9053A) or a 48 RP license (J9090A) up to the maximum of 156 radio ports.
When a radio is adopted, a configuration, as specified by the administrator or a default configuration, is applied to the radio.

WLANs

A WLAN provides security, authentication, SSID (service set identifier) and other network policies. A WLAN, with a unique SSID, RF configurable parameters, authentication, and security policies, may be used to provide specific wireless service to different users in an organization. For example, one WLAN might provide wireless services for employees, while another provides service for managers or visitors who require access to the Internet. WLAN features are summarized in the table below.

WLANs
RADIUS Authentication <ul style="list-style-type: none"> • 802.1X EAP • Web Auth (open) for hotspots • RADIUS-based ACLs using ProCurve Identity Driven Management
Encryption <ul style="list-style-type: none"> • WEP • WPA/WPA2-TKIP • WPA2-AES • WPA2/AES-TKIP (802.11i Mixed Mode)
WLAN Configuration Modes <ul style="list-style-type: none"> • Up to 16 WLANs can be configured per Radio.
Quality of Service (QoS) <ul style="list-style-type: none"> • SpectraLink Voice Priority (SVP) • Wireless Multi Media (WMM) extensions • Quality of Service Weighting • Two multicast addresses for Voice wireless stations

Initially, all WLANs are disabled. After configuring a WLAN in the Module, it must be enabled.

WLAN Configuration Modes. The Module has two modes for configuring the assignment of radio resources to WLANs:

1. Normal Mode - This is the factory default mode. In this mode, the assignment of WLANs to radio port radios is done automatically. Only WLAN1 to WLAN16 can be used. All enabled WLANs are available at all radios.
2. Advanced Configuration Mode. - In this mode, the administrator assigns WLANs to radios manually. The administrator enables a WLAN and assigns it to a radio. A WLAN assigned to a radio cannot be disabled until the assignment is removed.

Further details on Module features are available in the *ProCurve Wireless Edge Services zl Module Management and Configuration Guide*, available for download at www.procurve.com.

Managing a Wireless LAN System

An administrator uses a wireless services-enabled zl Switch to manage radio ports in a Wireless LAN System from one centralized interface. This provides the following:

- System-wide configuration, enabling coordinated configuration of WLAN policies, and security across multiple radio devices.
- System-wide view, providing security and unapproved-AP detection.
- System-wide access control and security policies across wired and wireless infrastructure, providing easier network security management when ProCurve Identity Driven Manager is used.

Radio Port Licensing

A wireless services-enabled switch has a maximum number of radio ports that it may adopt, based on the licenses installed.

- Only a Module (J9051A) has licenses.
- When a Module moves from one slot to another, or from one zl Switch to another, its licenses remain the same.
- A non-removable, 12 radio port license is installed at the factory. The purchase and installation of a 12 RP License product increases the number of radio port licenses in a Module by 12. The total number of radio port licenses supported is 156.
- Licenses can be uninstalled and reinstalled in another Module in groups of 12 or 48.
- A Redundant Wireless Edge Services zl Module is not licensed and cannot independently adopt radio ports. However, these modules can adopt radio ports as part of a Redundancy Group (see the next section).

Redundancy

Two wireless services-enabled switches can cooperate to reduce the chance of disruption in the wireless service in the event of a switch or an intervening network failure. A Module and one or more Redundant Modules, up to twelve units, can be configured as members of a Redundancy Group. In the event of a failure, radio ports previously adopted by the failed wireless services-enabled switch automatically migrate to another member of the Redundancy Group.

- A Module by default does not participate in any Redundancy Group and is standalone. For a set of Modules to become a Redundancy Group, the administrator must configure each of the Modules. Multiple groups may be formed and operated independently. Each group is identified by a unique Group ID.
- A Redundancy Group consists of a primary and one or more redundant Modules, up to a total of 12 Modules. The additional redundant Modules add bandwidth as well as network resiliency. You may use primary Modules in place of the redundant Modules, but the extra licenses do not add to the license level of the group. The Module with the highest license level sets the license level for the group.
- A Redundancy Group member can be in 'Active' or 'Standby' mode. All 'Active' members actively adopt the radio ports and load-balance among the radio ports, up to the group's authorization level. All 'Standby' members adopt radio ports only when an 'Active' member fails or a radio port has not been adopted by any Module in the network.

Getting Started

Use the following steps to install the equipment and build three example configurations.

1. Review the equipment list, connect the equipment, verify the ProCurve zl Switch software supports the Module.
2. Boot up the system.
3. Determine the Module's IP address.
4. Launch the Module's Web browser interface.
5. Set up the Country Code and other wireless network administrative data.
6. Verify adoption of radio ports.
7. Configure the Module. Three example configurations are illustrated.
 - "Configuration 1 - Normal Mode with one WLAN and two radio ports." on page 19.
 - "Configuration 2 - Normal Mode with five WLANs and two radio ports." on page 21.
 - "Configuration 3 - Adding redundancy." on page 23.

Step 1 - Review the equipment list, connect the equipment, verify the ProCurve zl Switch software.

The following is an example equipment list for building a wireless LAN system with a wireless services-enabled switch.

- ProCurve zl Switch (such as 5406zl, 5412zl, or 8212zl).
- ProCurve Module (J9051A).
- ProCurve Radio Port 230 (J9006A) or 210 (J9004A).
- ProCurve zl Modules for wired connectivity, for example, ProCurve Switch zl 24 port Gig-T PoE Module (J8702A).
- PC for connecting to the console port and an Ethernet port on the wireless services-enabled switch.
- Serial port and Ethernet cables.

The system may also have the following equipment:

- ProCurve Redundant Module (J9052A).
- ProCurve Radio Port 220 (J9005A) with external antennas.

A wireless services-enabled zl Switch (such as 5406zl, 5412zl or 8212zl) has the following recommended minimum requirements:

- ProCurve switches must be connected to a network with DHCP services enabled, or have a local DHCP service to provide IP addresses.
- ProCurve switches must have at least one module for connecting to the wired network.
- Except for the mini-GBIC or 10-Gig ports, all of the module ports on the ProCurve zl switches are enabled for PoE.

Verify zl Switch Software

Start a console session. The following CLI commands show the switch software version. The ProCurve zl switch software must be version K.12.40 or later.

```
ProCurve# show version
Image stamp:    /sw/code/build/btm(esp1_g2)
                Jul 26 2007 15:41:58
                K. 12. 40
                255
Boot Image:    Primary
ProCurve#
```

Step 2 - Boot up the system.

1. For zl switch LED indications during boot up, refer to the zl switch *Installation and Getting Started Guide* supplied with the switch. When the switch completes self-test, the **Power** LED stays on, and the **Fault**, **Locator**, and **Test** LEDs are off.

2. The port LEDs on the switch modules go through their self-test.

After self-test, if a port is connected to an active network device, its **Link** LED stays on and its **Mode** LED behaves according to the mode selected. In the default mode (Activity), the **Mode** LED should flicker showing network activity on the port.

If the ports are not connected to active network devices, the LEDs will remain off.

3. On the Module, the **Locate Ports** and **LED Mode** LEDs initially turn on. The **Module Status** LED will turn initially turn on (red) to start the bootup process, and then will turn off.

After self-test and bootup have successfully completed, the **Module Status** LED will turn on (green), and the **LED Mode** LEDs may flicker showing activity on the **Uplink** and **Downlink** ports.

4. On a Radio Port, both LEDs blink about once every 5 seconds, indicating that the Radio Port is *adopted* and ready for use.

For details on the LEDs behavior of the radio ports, refer to the Radio Port *Installation and Getting Started Guide* for the respective models (210, 220, and 230).

Step 3 - Determine Module IP address.

The Module IP address is set automatically by a DHCP server or by a manual setting via CLI commands.

1. By default, the Module obtains an IP address from a DHCP server. These DHCP services may be provided from a network provider or from a local DHCP server. To determine the IP address of the Module, connect a PC or terminal to the console port on the ProCurve zl Switch and open a console session. The following is a sample start up screen.

```

Connected at 9600 baud
HP J8697A ProCurve Switch 5406zl
Firmware revision K.12.40
Copyright (C) 1991-2007 Hewlett-Packard Co. All Rights Reserved.
                RESTRICTED RIGHTS LEGEND
Use, duplication, or disclosure by the Government is subject to
restrictions as set forth in subdivision (b) (3) (ii) of the Rights in
Technical Data and Computer Software clause at 52.227-7013.
                HEWLETT-PACKARD COMPANY, 3000 Hanover St., Palo Alto, CA 94303
We'd like to keep you up to date about:
  * Software feature updates
  * New product announcements
  * Special events
Please register your products now at: www.ProCurve.com
Press any key to continue
ProCurve#

```

The CLI command prompt, **ProCurve#**, is at the zl Switch Manager context level.

Type the following CLI commands to determine the Module IP address for a Module in the 'C' slot of the zl Switch. For this setup the Module IP address is 10.168.2.5.

```

ProCurve(config)# wireless-services c
ProCurve(wireless-services-C)#show ip interface
Interface          IP-Address/Mask      Status      Protocol
vlan1              10.168.2.5/21 (DHCP) up           up
ProCurve(wireless-services-C)#

```

2. If no DHCP service is available or if the administrator wishes to manually set the Module IP Address, it can be specified by using the CLI, as shown below in the following CLI commands. In this example, the IP address is set to 10.245.22.14.

```

ProCurve(wireless-services-C) (config)#interface vlan1
ProCurve(wireless-services-C) (config-if)#ip address 10.245.22.14/21
ProCurve(wireless-services-C) (config-if)#show ip interface
Interface          IP-Address/Mask      Status      Protocol
vlan1              10.245.22.14/21     up           up
ProCurve(wireless-services-C) (config-if)#

```

Step 4 - Launch Module's Web browser interface.

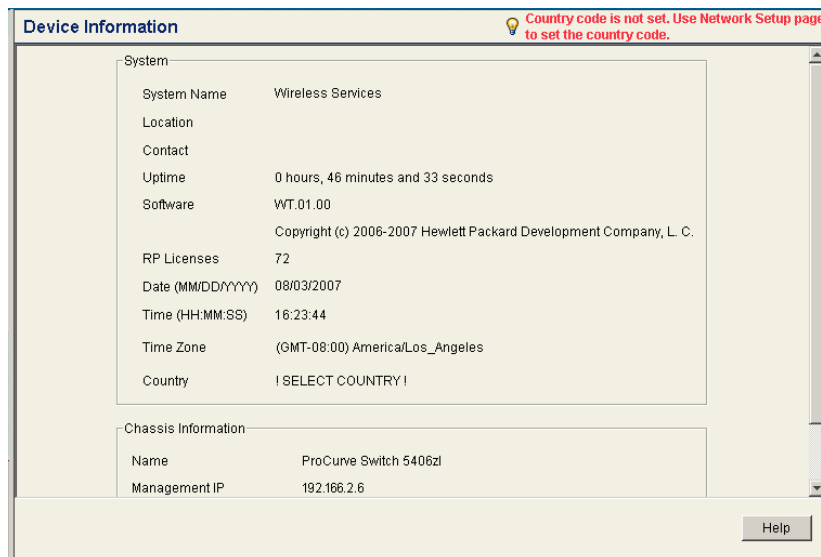
1. Open a browser on the network connected PC, and type in the URL for the Module.
2. A Java applet is required to open the Module web browser. If the PC does not have this software, JVM will be automatically downloaded to the PC via an Internet connection.
3. If a "Warning-Security" screen appears, click **Yes** to proceed.
4. The illustration below is the Wireless Edge Services zl Module login page.



Enter the default **User ID** (`manager`) and **Password** (`procurve`), and select **Login**. These entries are case-sensitive.

It is recommended the administrator change the **Password** (see “Change Password” below)

The *Device Information* screen for the Module appears.



Device Information Country code is not set. Use Network Setup page to set the country code.

System	
System Name	Wireless Services
Location	
Contact	
Uptime	0 hours, 46 minutes and 33 seconds
Software	WT.01.00
	Copyright (c) 2006-2007 Hewlett Packard Development Company, L. C.
RP Licenses	72
Date (MM/DD/YYYY)	08/03/2007
Time (HH:MM:SS)	16:23:44
Time Zone	(GMT-08:00) America/Los_Angeles
Country	! SELECT COUNTRY !

Chassis Information	
Name	ProCurve Switch 5406zl
Management IP	192.166.2.6

Help

Note the message in the upper right corner of the screen, **Country Code not set. Use Network setup page to set Country Code.** See “Step 5 - Set up Country Code and other wireless network administrative data” on page 16. below.

Note

This device requires the administrator to select the appropriate Country Code during the initial setup of the Module. Once the country code has been entered, the Module will automatically limit the available channels, ensuring compliant operation in the selected country. Incorrectly entering the Country Code may result in illegal operation and may cause harmful interference to other systems.

The administrator is obligated to ensure that a radio is operating in accordance with channel, power, indoor/outdoor restrictions and license requirements for the intended country. For more information, see the documentation for the ProCurve Radio Ports at www.procurve.com.

The *Device Information* screen also provides the administrator with additional information, as noted below. These definitions are also available on the **Help** menu.

System:

- **System Name** - A user-specified name for the module.
- **Location** - A user-specified description for the location of the module.
- **Contact** - A user-specified name for an administrator of the module.
- **Uptime** - System Uptime is the current uptime for the system name defined within the System Name field. Uptime is the cumulative time since the network was last unavailable. This is not configurable by the administrator.
- **Software** - The software field is a read-only field which displays the current software version loaded on the Wireless Services Module.
- **RP Licenses** -The license identifies the maximum number of radio ports that the Module can adopt.
- **Date (MM/DD/YY)** - A user-specified date in month, day, and year.
- **Time (HH:MM:SS)** - A user-specified time in hours, minutes, and seconds.
- **Time Zone** - A user-selected time zone.
- **Country** - A user-selected country/region code for operation of this module.

Chassis Information:

- **Name** - The Name is the chassis or switch name in which the Wireless Edge Services Module is installed. Chassis names are used to differentiate the switch from the system name that could possibly be used on more than one switch. The Chassis Name (as well as all the information in the Chassis Information field) is retrieved from the switch.
- **Management IP** - The IP Address defined for the Management IP unique to this chassis.
- **Wireless Services Module** - Identifies the chassis slot in which the Wireless Services Module is installed, for example, **Slot C**.

The Web browser interface screens have the following features:

- A navigation panel on the left, which allows the administrator to setup and manage the Module.

This publication will use the following format to identify a screen: *Navigation Pane Tab #1 > Navigation Pane Tab #2 (if applicable) > Screen Tab (in the middle of screen, if applicable)*. For example, to change the password, the administrator is directed to screen, *Management > Web-Users > Local Users*.

- A main screen provides information and appropriate fields to add information, and buttons for specific action.
- Most screens have a **Help** button in the lower right corner. Select the **Help** button to access additional information.
 - In the **Help**, select the **Content** tab to access information on the subjects in the Navigation Pane. Select the appropriate subject, and double click to view the **Help** information.
 - Select **Search** tab to location information based upon a specific topic. Enter the search term, and select the search criteria to obtain the search results. Highlight the Topic Title, and select **Open** to view the **Help** information.
- Many screens have an **Apply** button. Click **Apply** to save any changes made within a screen.
- On screens that have a **Revert** button, click **Revert** to undo any changes and to revert back to the last saved configuration.

Reboot and Shutdown

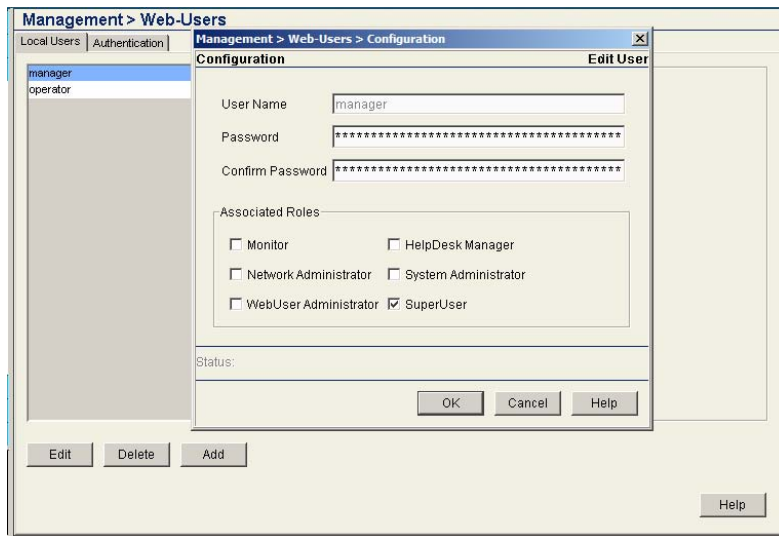
Use the *Management* screen to reboot or shutdown the Wireless Edge Services Module.

- **Reload** - Click **Reload** to reboot the Wireless Services Module.
- **Shutdown** - Click **Shutdown** to halt (stop) the Wireless Services Module.

Change Password

It is recommended the administrator change the default **Password**.

1. Select *Management > Web-Users > Local Users*. On this screen highlight **manager** and select **Edit**.



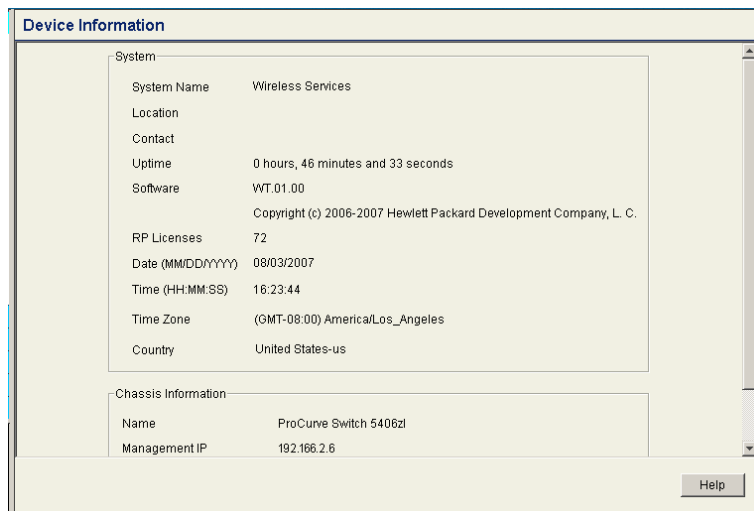
2. Enter a password, using the **Password** and the **Confirm Password** fields. Select **OK**. The new password is assigned and will be required the next time you log on.

Step 5 - Set up Country Code and other wireless network administrative data

In this step, the following the Module is set up with the Country Code and other administrative data.

1. From the Navigation Pane, select *Network Setup*
2. Select appropriate Country Code in the **Country** list.
3. Enter data for the **System Name**, **Location**, and **Contact**.
4. Select **Apply** to save the settings for this session.
5. Select **Save** to save the settings in a non-volatile memory in the Module.

The Country Code and administrative data is now displayed on the *Device Information* screen:



The screenshot shows a web-based interface titled "Device Information". It is divided into two main sections: "System" and "Chassis Information".

System Information:

System Name	Wireless Services
Location	
Contact	
Uptime	0 hours, 46 minutes and 33 seconds
Software	WT.01.00
	Copyright (c) 2006-2007 Hewlett Packard Development Company, L. C.
RP Licenses	72
Date (MM/DD/YYYY)	08/03/2007
Time (HH:MM:SS)	16:23:44
Time Zone	(GMT-08:00) America/Los_Angeles
Country	United States-us

Chassis Information:

Name	ProCurve Switch 5406zl
Management IP	192.166.2.6

A "Help" button is located at the bottom right of the screen.

Step 6 - Verify Radio Port adoption.

To verify that the radio ports have been adopted by the Module, select *Device Information > Radio Adoption Statistics*.

Device Information > Radio Adoption Statistics

Adopted RP | Unadopted RP

Show Filtering Options << Page 1 of 1 Go >>

MAC Address	Model	Serial	HW Version	IP Address	Bootloader	Protocol Version	SW Version	Radio Indices
00-14-C2-A0-1B-3E	ProCurve Radio Port 230	0014C2A01B3E	A0	N.A	01.00-1945r	RP-EX ver-0, lo...	01.00-1945r	1,2
00-14-C2-A0-2B-BA	ProCurve Radio Port 230	0014C2A02BBA	A0	N.A	01.00-1945r	RP-EX ver-0, lo...	01.00-1945r	3,4

Filtering is disabled Page 1 of 1 loaded.

Export

Number of adopted RPs: 2

Help

If some of the radio ports are not found on this screen, check the status of the LEDs on the missing radio ports.

- If both the LEDs blink about once every 5 seconds, the Radio Port is *adopted* and ready for use.
- If the amber light is continuously blinking, with the green light out, the radio port is in the *unadopted* mode. In this case, please refer to the appropriate *Radio Port Installation and Getting Started Guide* for troubleshooting information. The guides are available at www.procurve.com.

Step 7 - Configure the Module.

You must configure the Module to assign user-specified WLANs to Radio Ports. This section provides configuration examples using *Normal Mode*, which is suitable in most cases. You simply configure and enable WLANs, and adopted RPs begin to support those WLANs automatically. In Normal Mode configuration, the Module and RPs are limited to 16 WLANs.

Advanced Mode is performed manually, to control WLAN assignment to Radio Ports or to extend the number of WLANs. For more information, see the *Management and Configuration Guide* for the Wireless Edge Services zl Module.

Configuration 1 - Normal Mode with one WLAN and two radio ports.

1. Configure a WLAN. While many optional settings can be configured, a WLAN requires an SSID, a VLAN in which traffic will be forwarded, and security options for authentication and encryption. To configure a WLAN, go to *Network Setup > WLAN Setup > Configuration*.

Index	Enabled	SSID	Description	VLAN	Authentication	Encryption
1	✓	Faculty1	Faculty	VLAN 1	None	WEP64
2	✗	SSID 2		VLAN 1	None	None
3	✗	SSID 3		VLAN 1	None	None
4	✗	SSID 4		VLAN 1	None	None
5	✗	SSID 5		VLAN 1	None	None
6	✗	SSID 6		VLAN 1	None	None
7	✗	SSID 7		VLAN 1	None	None
8	✗	SSID 8		VLAN 1	None	None
9	✗	SSID 9		VLAN 1	None	None
10	✗	SSID 10		VLAN 1	None	None
11	✗	SSID 11		VLAN 1	None	None
12	✗	SSID 12		VLAN 1	None	None
13	✗	SSID 13		VLAN 1	None	None
14	✗	SSID 14		VLAN 1	None	None
15	✗	SSID 15		VLAN 1	None	None
16	✗	SSID 16		VLAN 1	None	None

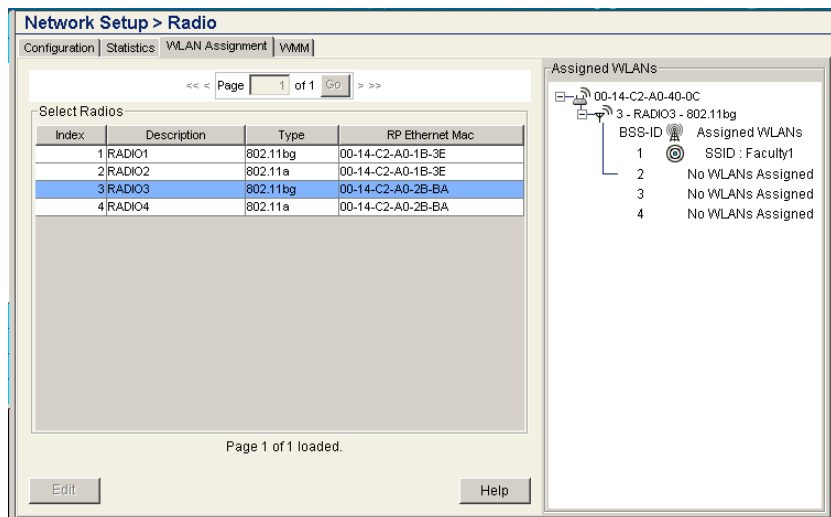
Filtering is disabled

Buttons: Edit, Enable, Disable, Global Settings, Help

2. Click and highlight **Index 1**. Select **Edit** or double-click on the **Index** line and an *Edit* screen appears. WLAN1 is specified in the categories of **Configuration, Advanced, Authentication, and Encryption**. For this example, enter the following settings:
 - **SSID** = Faculty1
 - **Description** = Faculty
 - **VLAN ID** = 1
 - **Encryption** = WEP 64-bits (Use the **Config** button to configure encryption settings as desired.)
3. Select **OK** on the *Edit* screen to return to the *Network Setup > WLAN Setup > Configuration* screen.
4. With the line for **Index 1** (WLAN1) still highlighted, select the **Enable** button. This action causes the "x" in the **Enabled** column to change to a green check mark, as shown below. Select **Save** to save the settings in non-volatile memory.
5. To validate that the WLAN has been assigned to the Radio Ports, select *Network Setup > Radio > WLAN Assignment*. This screen details the BSSID and SSID mappings for the radios in the network. By highlighting

a radio (single click), the WLAN Assignment is shown on the far right of the screen. By holding down the right button of the mouse, and scrolling down all of the radios, the WLAN Assignment for all radios is shown on the right side of the screen.

The screen will list all available WLANs (up to 16 WLANs in Normal Mode).



In this example, all of the radios are assigned to the WLAN with the Faculty1 SSID, and operate on BSSID1.

- The Module, wireless services-enabled zl Switch, and the radio ports are now operational in Normal Mode.

Using your wireless-enabled laptop PC, confirm that the wireless network with SSID (network name) "Faculty1" is available.

Configuration 2 - Normal Mode with five WLANs and two radio ports.

This examples uses the following WLAN settings:

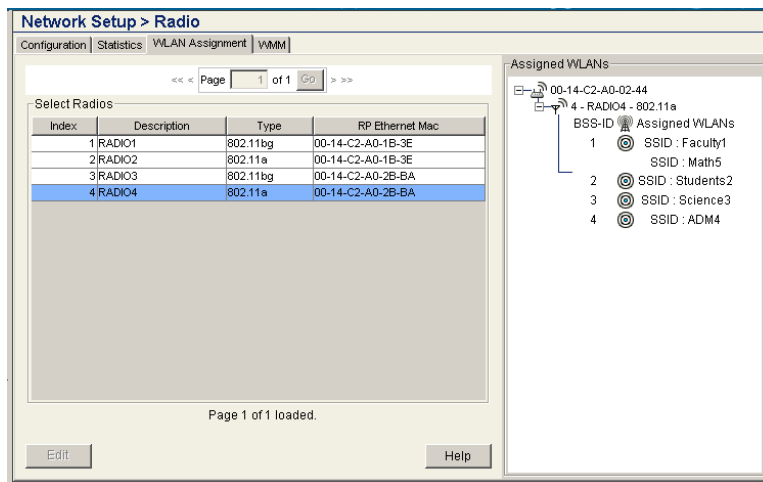
WLAN	SSID	Name	VLAN	Authentication	Encryption
1	Faculty1	Faculty	1	none	64WEP
2	Students2	Students	2	none	none
3	Science3	Science Dept	3	802.1X EAP	64WEP
4	ADM4	Administration	4	802.1X EAP	128WEP
5	Math5	Math Dept	3	802.1X EAP	128WEP

1. Select *Network Setup > WLAN Setup > Configuration*. Input the settings as specified above, using the procedures in the prior configuration example. The resulting screen is shown below:

The screenshot shows the 'Network Setup > WLAN Setup' configuration page. The 'Configuration' tab is active, displaying a table of WLAN settings. The table has columns for Index, Enabled, SSID, Description, VLAN, Authentication, and Encryption. The first five rows correspond to the configuration table above, with the 'Enabled' column showing green checkmarks. Rows 6 through 18 are disabled, indicated by red 'X' marks in the 'Enabled' column. The 'Authentication' and 'Encryption' columns for rows 6-18 are set to 'None'. A 'Filtering is disabled' message is visible at the bottom of the table. At the bottom of the screen, there are buttons for 'Edit', 'Enable', 'Disable', 'Global Settings', and 'Help'.

Index	Enabled	SSID	Description	VLAN	Authentication	Encryption
1	✓	Faculty1	Faculty	VLAN 1	None	WEP64
2	✓	Students2	Students	VLAN 2	None	None
3	✓	Science3	Science Dept	VLAN 3	802.1X EAP	WEP64
4	✓	ADM4	Administration	VLAN 4	802.1X EAP	WEP128
5	✓	Math5	Math Dept	VLAN 3	802.1X EAP	WEP128
6	✗	SSID 6		VLAN 1	None	None
7	✗	SSID 7		VLAN 1	None	None
8	✗	SSID 8		VLAN 1	None	None
9	✗	SSID 9		VLAN 1	None	None
10	✗	SSID 10		VLAN 1	None	None
11	✗	SSID 11		VLAN 1	None	None
12	✗	SSID 12		VLAN 1	None	None
13	✗	SSID 13		VLAN 1	None	None
14	✗	SSID 14		VLAN 1	None	None
15	✗	SSID 15		VLAN 1	None	None
16	✗	SSID 16		VLAN 1	None	None
17	✗	SSID 17		VLAN 1	None	None
18	✗	SSID 18		VLAN 1	None	None

- To review the BSSID and SSID assignments, select *Network Setup > Radio > WLAN Assignments*. On the right side of the screen, the 5 WLAN(SSIDs) are noted and their assignments to the 4 BSSIDs. Note that BSSID1 is assigned to Faculty1 and Math5, which correspond to SSID1 and SSID5. SSID Math5 is shared on BSSID 1, but is not beaconsed by the Radio Port. Only SSID Faculty1 is beaconsed on BSSID1.



Note

RP radios send beacon frames to announce the WLANs that they support. If you enable more than four WLANs, RPs support all of them, but only announce the first four.

- The Module, wireless services-enabled zl Switch, and the radio ports are now operational in Normal Mode.
- Using your wireless-enabled laptop PC, confirm that the wireless network with SSIDs Faculty1, Students2, Science3, ADM4, and Math5 are successfully operating. However, because RPs can only beacon the SSIDs of the four primary WLANs (with Normal Mode configuration, WLANs 1 through 4), Math5 does not display because its SSID is not beaconsed by the Radio Port.

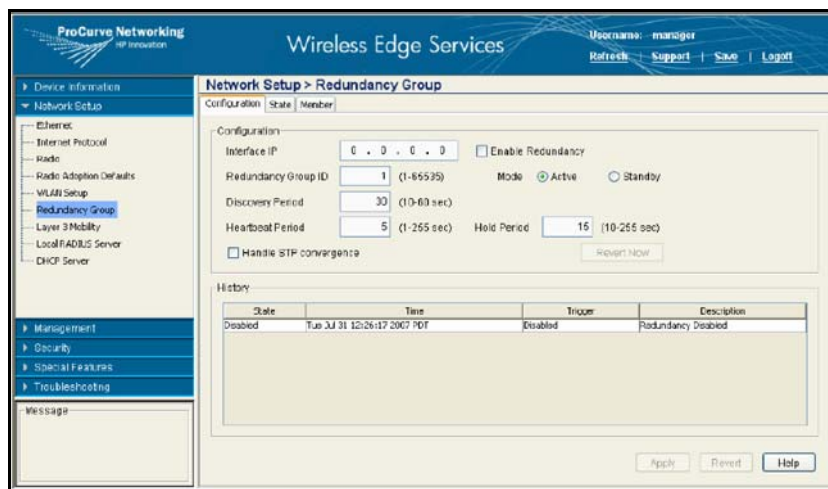
Configuration 3 - Adding redundancy.

In this example, the following modules will be set up in a Redundancy Group.

- ProCurve Wireless Edge Service zl Module (J9051A).
- ProCurve Redundant Wireless Services zl Module (J9052A).

Note: For the optimal redundancy and protection, the preferred setup is for the J9051A and J9052A to be installed in different chassis. However, these modules may be installed in the same chassis.

1. Verify that the IP addresses for the two modules are in the same VLAN.
2. Select *Network Setup > Redundancy Group > Configuration*. On this screen,
 - Enter the **Interface IP** for the J9051A module, and the **Redundancy Group ID** number.
 - Select the **Mode**, 'Active'. This is the default mode.
 - Nominal settings are shown in this screen for the other settings: **Discovery Period, Heartbeat Period, Hold Period**. For additional information, refer to the Help menu, or the *Management and Configuration Guide* for your ProCurve zl Module.
 - Select **Apply** to save the setting for this session.
 - This screen notes that the Redundancy state is currently 'Disabled'.
 - This screen is shown below:



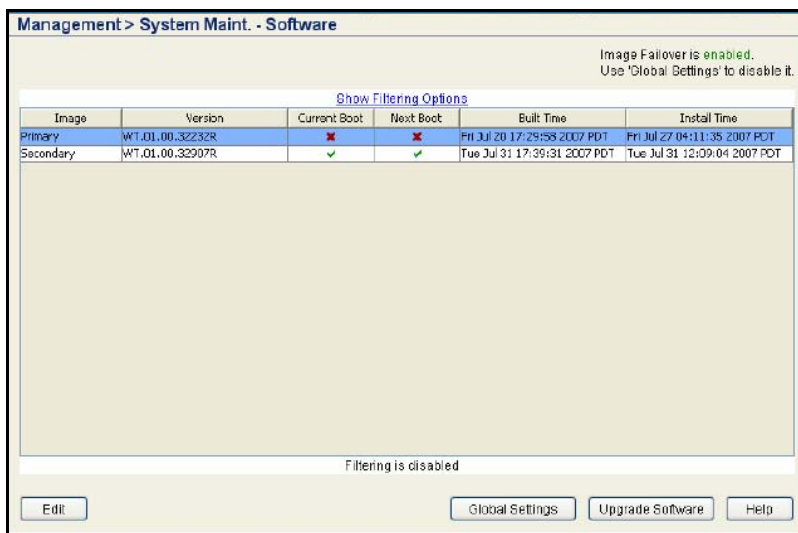
3. The next step is to add the IP address of the redundant member. Select the screen *Network Setup > Redundancy Group > Member*. Select **Add** and a pop-up screen appears. Enter the IP address of the new Group member (J9052A). Select **OK** to return to the main screen.
4. Next, repeat these steps with the J9052A module, using its IP address for the Interface IP, and the IP address of the J9051A module as the Member. Typically, the J9052A module is operated in the Standby mode (which is the default mode).
5. Select *Network Setup > Redundancy Group > Configuration*. Check the box for **Enable Redundancy**, and select the **Apply** button to save the setting for this session. Note that the Redundancy status is 'Online' and the Group Connectivity Status is 'All Members connected'. The screen may need to be refreshed to get the current status, as the Redundancy Group formation takes a few moments.
6. Select **Save** to save the settings in a non-volatile memory in the Module. Repeat this step for both modules.

The two modules, J9051A and J9052A are now operating as a Redundancy Group.

Loading New Module Software

To load new Module software, follow these steps:

1. Select *Management > System Maint. - Software*. This screen lists the Primary and Secondary Module software resident on the Module system. In the example below, the Primary software is WT.01.00.img. The screen indicates that this version of software was utilized for the current boot, and will be used on the next boot. Note that the terms "Primary" and "Secondary" represent flash memory locations, and different versions of software can be stored in either location.



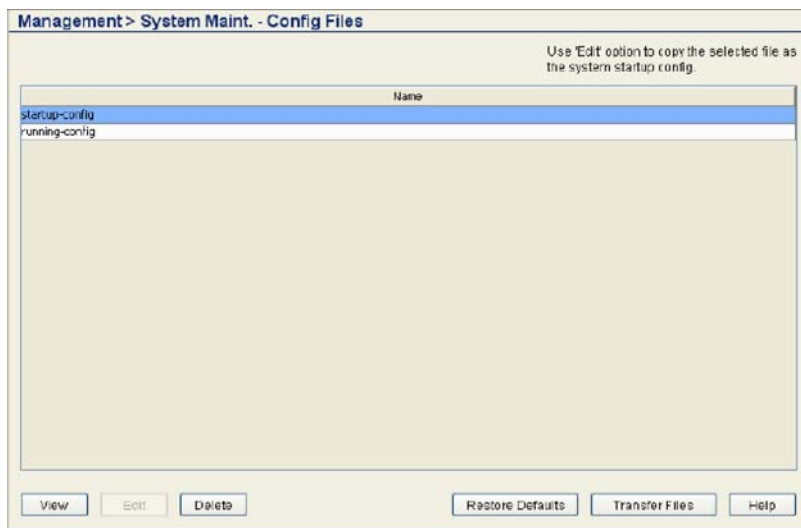
2. Locate the new software version in a TFTP or FTP server folder.
3. Select the **Upgrade Software** button, and the Upgrade Screen appears. Enter the appropriate information:
 - Enter the update filename (for example, "WT.01.03.img")
 - Select TFTP
 - Enter IP address of the TFTP server (for example, 192.168.2.3)
 - Enter the path to the file on that server, or "/" if it is located in the TFTP root
4. Select **Do Upgrade**.
5. After a few seconds, a Status message appears indicating that the upgrade is in progress. (An error message may appear if the Wireless Edge Service zl Module is unable to locate the software update file.)



6. After about 1 minute, the Status message, "Software has been successfully upgraded" appears.
7. The screen *Management>System Maint. - Software* displays the new software. On the next boot, the new software is selected.
8. To reload the new software, go to the *Management* screen, and click the **Reload** button.
9. A message appears to confirm the action to Reload and logoff the system, and allows you to select booting from **Primary** or **Secondary**. Select **Reload** to complete the process.
10. The system will logoff during the reboot. Wait until the reboot completes, then log into the Module as before.

Restore Factory Defaults Setting

To restore the factory default settings, select *Management > System Maint. - Config Files*, and select the button, **Restore Defaults**.



A confirmation screen requests, "Would you like to restore the factory default configuration?" Click **Yes** to proceed with resetting the Module to factory defaults.



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