

Getting Started Guide

ProCurve Wireless EDGE Services xl Modules

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Applicable Products

ProCurve Wireless Edge Services xl Module (J9001A)
ProCurve Redundant Wireless Services xl Module (J9003A)

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Introduction

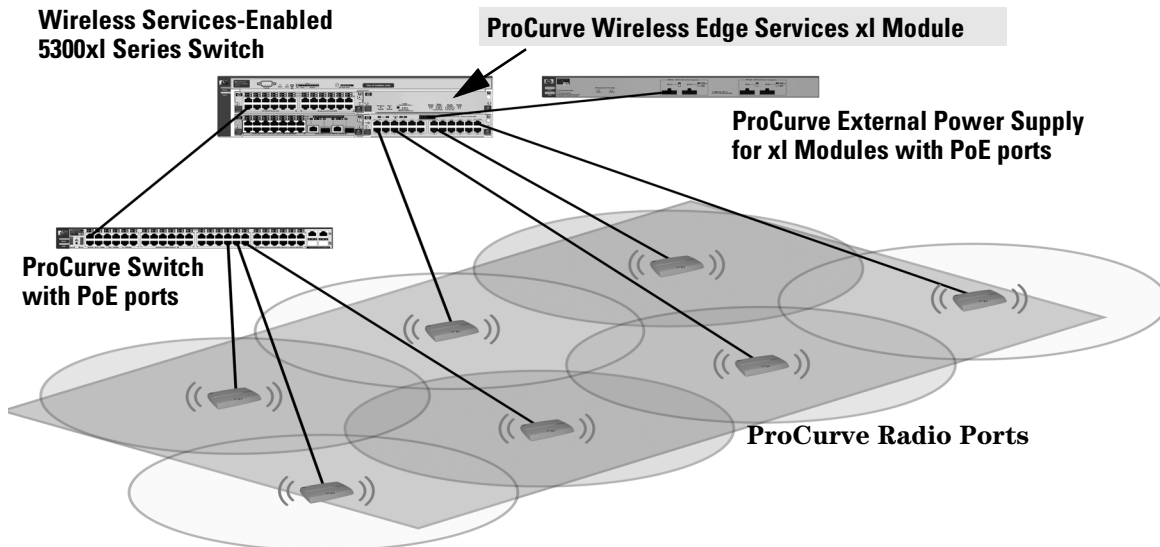
This *Getting Started Guide* supports the following ProCurve xl Modules:

- ProCurve Wireless Edge Services xl Module (J9001A).
- ProCurve Redundant Wireless Edge Services xl Module (J9003A).

The ProCurve Wireless Edge Services xl Module (Module) enables a ProCurve Switch 5300xl Series to operate with ProCurve Radio Ports as a centrally-administered wireless LAN (WLAN) system. Installing this Module in a ProCurve Switch 5300xl 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 Services xl Module provides failover or high availability options for a ProCurve Module within a wireless LAN system.

The illustration below shows a typical wireless LAN system built using a wireless services-enabled ProCurve 5300xl series switch and ProCurve Radio Ports.



Minimum Software Version

This document is included with ProCurve Wireless Edge Services xl Modules (J90001A), and Redundant Wireless Services xl Modules (J9003A), with Module software version WS.02.07 (or later).

ProCurve 5300xl series switches operating with software version E.10.30 may be used. However, version E.10.60 or later is recommended for access to new features.

General Operation

In a wireless services-enabled 5300xl switch, the Wireless Edge Services xl Module uses ports on the switch to pass wired and wireless traffic to and from the network. When a Module adopts a connected ProCurve Radio Port, it downloads configuration and operating instructions to it. A custom protocol encapsulates all wireless traffic, as well as management, status, and control communications with the radio port. WLANs, each of which is identified by a service set identifier (SSID), are configured and managed by the Module. WLANs define various network and security policies, including authentication and encryption, for the wireless services provided. A Web browser interface provides easy-to-use management for the Module and the wireless LAN.

Radio Port Adoption

A Wireless Edge Services xl Module must adopt ProCurve radio ports for communications.

The Wireless Edge Services xl Module supports Layer 2 radio port adoption, where a radio port is adopted by a Module in the same Layer 2 domain (that is, the same subnet).

With software version WS.02.07 (or later), Layer 3 radio port adoption is also supported. Layer 3 adoption is used when the Module and a radio port are placed in different Layer 2 domains (subnets), and the domains are separated by a router or routing switch.

For more information on both Layer 2 and Layer 3 adoption, see the latest *Management and Configuration Guide* for the xl Module, and the *Supplement to the Management and Configuration Guide* for the xl switch, both available at www.procurve.com.

Building a Wireless LAN System

A Wireless LAN system contains a wireless services-enabled switch with VLANs, radio ports, and WLANs.

Wireless Services-Enabled Switch

A wireless services-enabled switch is a 5300xl series switch with a Wireless Edge Services xl Module installed. By connecting a number of distributed ProCurve radio ports (RPs), the desired wireless LAN coverage can be provided. The connected radio ports are centrally managed through the Module.

VLANs

The Wireless Edge Services xl Module has no visible external ports. It communicates with the wired (uplink) and wireless (downlink) sides of the network through the VLAN connectivity of its internal ports:

- **Uplink Port:** The internal Module port that carries traffic to and from the wired side of the network. The port name is `<slot_ID>UP`, where `<slot_ID>` is the 5300xl switch slot in which the Module is installed. For example, `CUP` identifies the Module's Uplink Port in slot C of the switch.
- **Downlink Port:** The internal Module port that carries traffic to and from the wireless side of the network. The port name is `<slot_ID>DP`, where `<slot_ID>` is the 5300xl switch slot in which the Module is installed. For example, `CDP` identifies the Module's Downlink Port in slot C of the switch.

By properly assigning VLAN memberships to the Module's internal ports and to 5300xl switch ports, communication paths between the Module, the radio ports, and the network are created.

The Module requires two VLAN types: Radio Port VLANs and Uplink VLANs. Radio Port VLANs send and receive radio port traffic. Uplink VLANs send and receive network traffic on the wired side of the network.

- **Uplink VLAN:** A VLAN that contains the Module's Uplink port as a *tagged* member. By default, this is the **DEFAULT_VLAN** (VLAN 1) on the 5300xl switch. There may be more than one uplink VLAN.

- **Radio Port VLAN** (For Layer 2 Adoption only): A VLAN that carries wireless traffic as well as management, control and status information between the Module and radio ports when they are both on the same Layer 2 domain (subnet). The VLAN ID is 2100 by default.
 - The Module's Downlink port is a *tagged* member of this VLAN.
 - Each switch port that directly connects a radio port must be an *untagged* member of this VLAN.

Auto-VLAN: With software version E.10.30 or later, a 5300xl switch supports an Auto-VLAN. An Auto-VLAN is a special radio port VLAN that is automatically created and configured when either a Module is installed into the 5300xl switch chassis, or when a radio port is connected to a PoE switch port. The Module's Downlink port, and the switch ports with a radio port connected, are assigned membership as appropriate.

Auto-VLAN uses the first available VLAN ID (VID) starting from a **vlan-base** value, which is 2100 by default (VID 2100). If VLAN 2100 is unavailable, the next available VID is used. ,

Auto-VLAN requires that LLDP (Link Layer Discovery Protocol) and auto-provisioning are enabled on the wireless services-enabled 5300xl switch (by default, they are enabled).

Infrastructure Switch Connections: When a radio port is connected to a downlink "infrastructure" switch port (that is, it is *not directly connected* to a wireless services-enabled Switch 5300xl port), manual configuration may be required:

- Switch-to-switch ports between the radio port and the wireless services-enabled Switch 5300xl must be members of the Radio Port VLAN (tagged or untagged members, as appropriate for your network).
- Switch ports connecting radio ports must be an *untagged* member of the Radio Port VLAN on the switch where it is connected.
- Infrastructure switches inserted between a radio port and the wireless services-enabled 5300xl switch should be a member of the same *management* VLAN to allow management through the wireless services-enabled switch.

Note

Setting the VLANs in the Module does not set the VLANs in the 5300xl switch. Normally, the administrator will set the VLANs in the 5300xl Switch first, then set the VLANs in the Module to correspond with the switch VLAN settings.

For Layer 2 radio port adoption, routing may not be used in the communications path between the wireless services-enabled 5300xl switch and the radio port.

- **Radio Port VLAN** (For Layer 3 Adoption): A VLAN that carries wireless traffic as well as management, control and status information between the Module and radio ports when they are on different Layer 2 domains, separated by a router or routing switch.
 - The VLAN must be assigned the Module's IP address.
 - Either the Module's Uplink port, or the Downlink port (but not both) must be a *tagged* member.
 - A DHCP server is required to provide an IP address and default gateway to the radio port.

This VLAN may span multiple switches and domains. Infrastructure routing switches between the Module and radio port must be configured with the necessary IP helper addresses to ensure that the radio port can access the correct DHCP server. For more information, see the latest *Management and Configuration Guide* for the Wireless Edge Services xl Module, available at www.procurve.com.

For illustrations of VLAN support for Layer 2 and Layer 3 radio port adoption, see Figure 1 and Figure 2.

Figure 1. VLAN Support for Layer 2 Radio Port Adoption

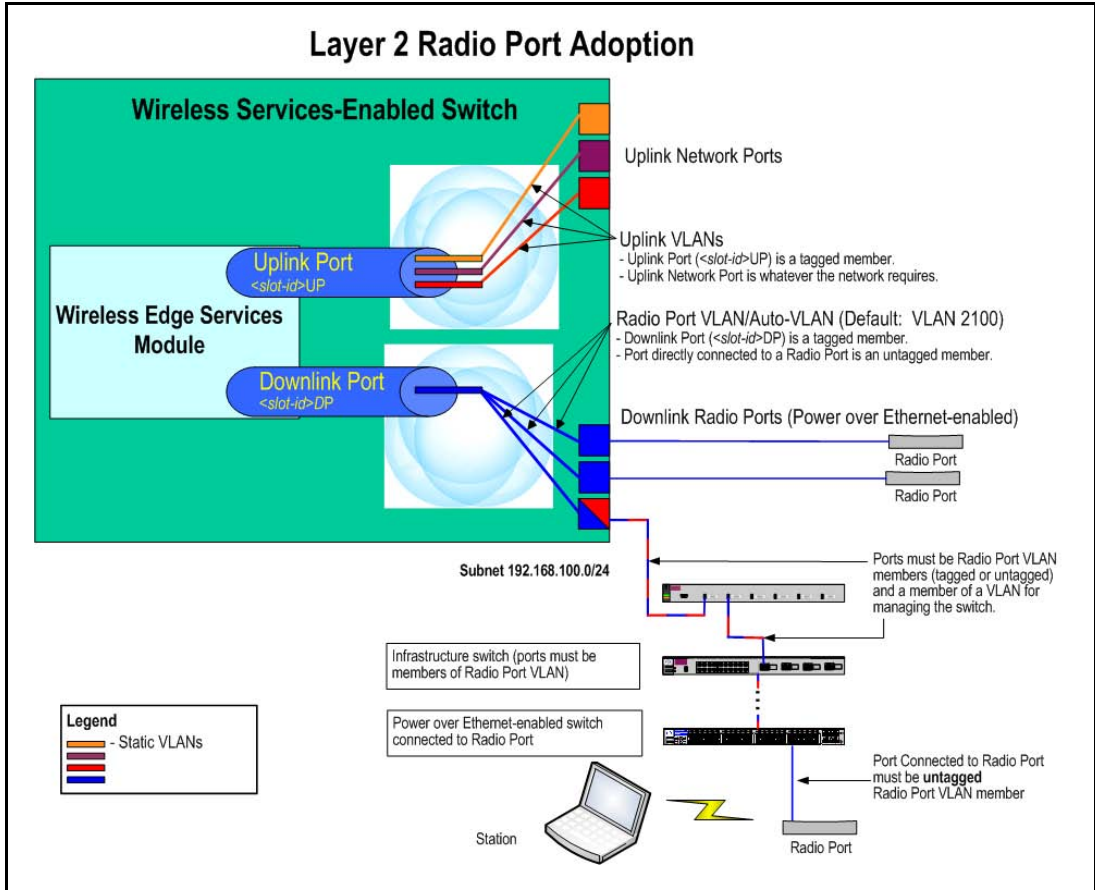
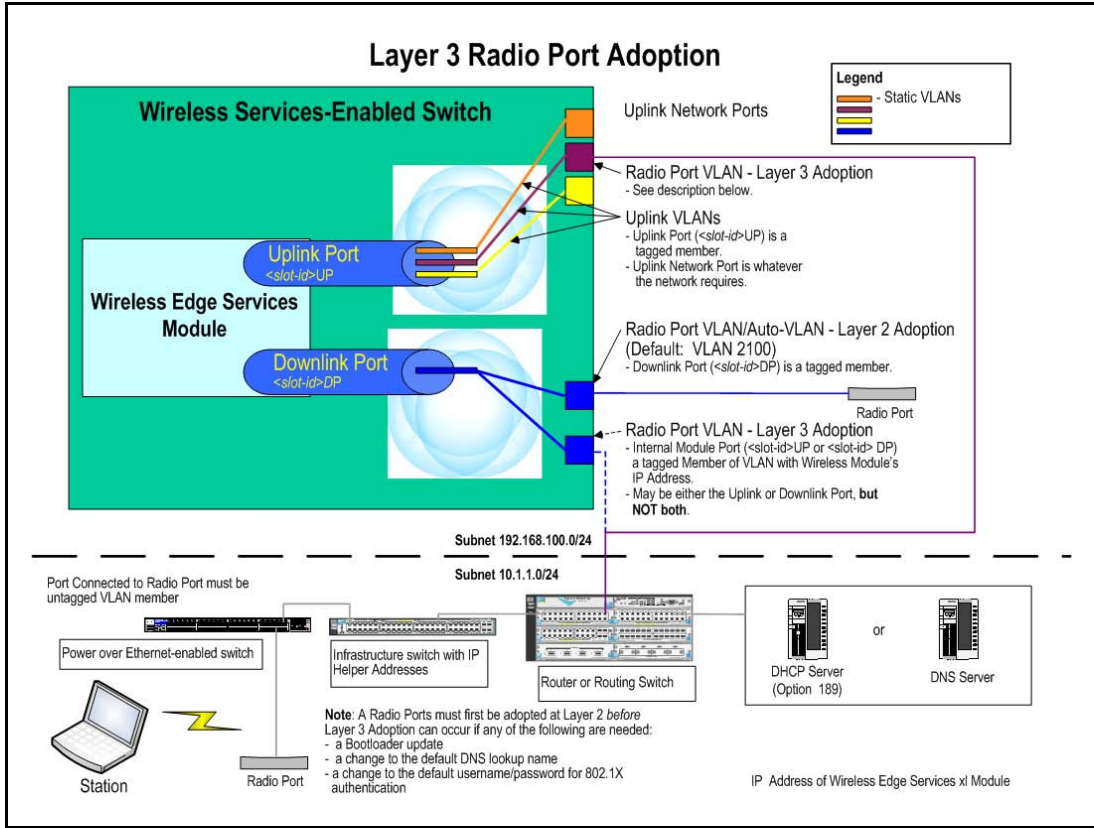


Figure 2. VLAN Support for Layer 3 Radio Port Adoption



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. |
| Up to 96 radios can be configured per fully-licensed Module. |
| A maximum of 48 radio ports can be adopted by a Module. A module supports 12 radio ports by default. Support for additional radio ports requires the purchase of a ProCurve Wireless Services Module 12 RP License (J9002A). |
| 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 a network name or SSID (service set identifier), security, authentication, 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 Module in the Normal Mode (the default). • Up to 32 WLANs can be configured per Module in the Advanced Configuration Mode. |
| 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 then 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 latest *Management and Configuration Guide* for your xl Module, available at www.procurve.com.

Managing a Wireless LAN System

An administrator uses a wireless services-enabled Switch 5300xl 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 (J9001A) has licenses.
- When a Module moves from one slot to another, or from one 5300xl 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 ProCurve Wireless Services Module 12 RP License (J9002A) increases the number of radio port licenses in a Module by 12. The total number of radio port licenses can be up to 48.
- Licenses can be uninstalled and reinstalled in another Module in groups of 12 radio ports.
- A Redundant Wireless Services xl 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 wireless services-enabled switch or an intervening network failure. Typically, a Module and a Redundant Wireless Services xl Module are 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 Wireless Edge Services xl Modules to become a Redundancy Group, the administrator must configure each of them to know about the other. 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.
- Two Redundant Wireless Services xl Modules may not be used together to form a Redundancy 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.

An example of setting up a Redundancy Group is provided in this document.

For detailed information on Redundancy Group configuration and operation, please refer to the latest *Management and Configuration Guide* for your Wireless Edge Services xl Module, available at www.procurve.com.

Getting Started

Use the following steps to install the equipment and build three configuration examples.

1. Review the equipment list, connect the equipment, verify the ProCurve 5300xl Switch software.
2. Boot up the system.
3. Determine Module IP address.
4. Launch Module's Web browser interface.
5. Set up Country Code and other wireless network administrative data.
6. Verify Radio Port adoption.
7. Configure the Module. Three configuration examples are illustrated.
 - "Configuration 1 - Normal Mode with one WLAN and two radio ports." on page 23.
 - "Configuration 2 - Normal Mode with five WLANs and two radio ports." on page 25.
 - "Configuration 3 - Adding redundancy." on page 27.

Step 1 - Review the equipment list, connect the equipment, verify the ProCurve 5300xl Switch software.

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

- ProCurve Switch 5308xl (J4819A) or ProCurve Switch 5304xl (J4848 B).
- ProCurve PoE xl Module (J8161A) or equivalent PoE (802.3af-compliant) power source.
- ProCurve Module (J9001A).
- ProCurve Radio Port 230 (J9006A) or 210 (J9004A).
- ProCurve xl modules for wired connectivity, for example, ProCurve 10/100-TX xl module (J4820).
- PC (for connecting to the console port and an Ethernet port on the wireless services-enabled Switch 5300xl).
- Serial port and Ethernet cables.

The system may also have the following equipment:

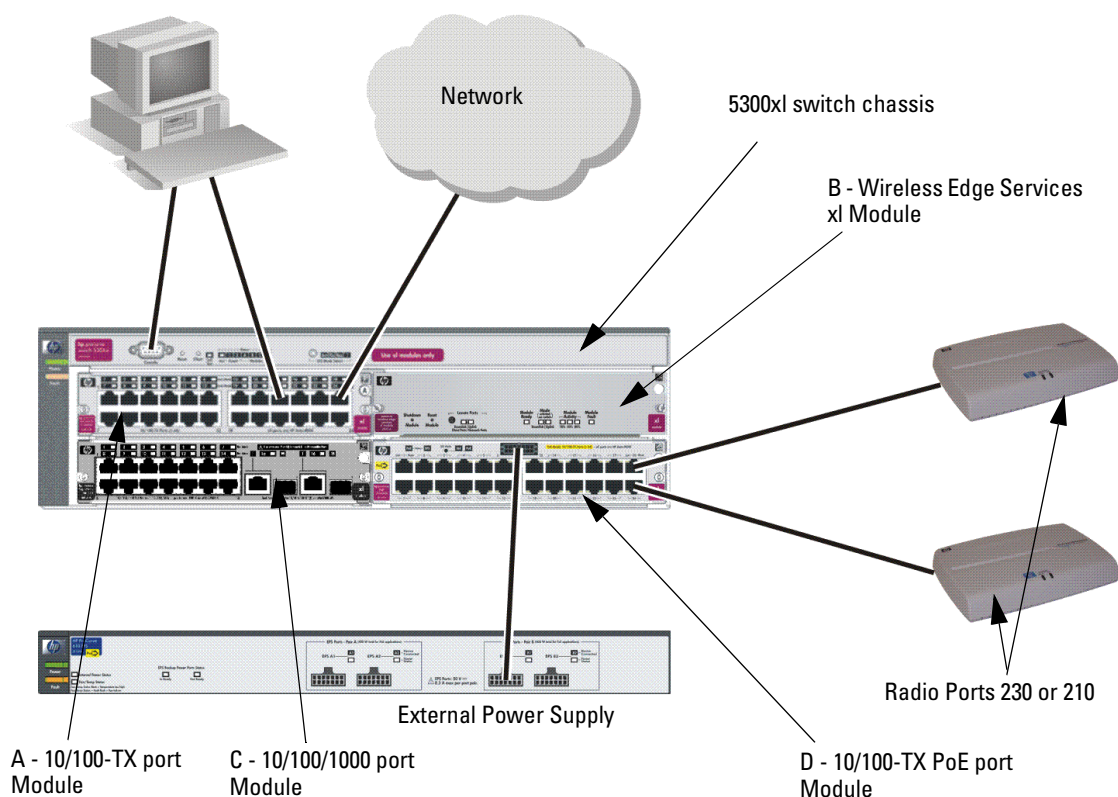
- ProCurve Redundant Wireless Services xl Module (J9003A).

- ProCurve Radio Port 220 (J9005A) with external antennas.
- ProCurve 2600-PWR or other switch providing PoE (802.3af-compliant) power.

A wireless services-enabled Switch 5300xl has the following recommended minimum requirements:

- ProCurve Switch 5300xl must be connected to a network with DHCP services enabled, or have a local DHCP service to provide IP addresses.
- ProCurve Switch 5300xl must have at least one module for connecting to the wired network.
- ProCurve Switch 5300xl must have at least one ProCurve Switch xl 10/100-TX PoE Module (J8161A), if the radio ports are connected directly to the switch.

For the example equipment listed above, a sample setup is shown below.



Note: A, B, C, D refer to module slots of the 5300xl switch

Verify 5300xl Switch Software

Start a console session. The following CLI commands show the switch software version. The ProCurve 5300xl Switch software must be version E.10.30 or later (E.10.60 or later is recommended).

```
ProCurve# show version
Image stamp:   /sw/code/build/alpmo(1or)
               Jan 23 2007 15:41:58
               E. 10. 30
               255
Boot Image:    Primary
ProCurve#
```

Step 2 - Boot up the system.

1. After powering on the wireless services-enabled Switch 5300xl, LEDs blink as follows:
 - LEDs on the top of the 5300xl light immediately. After the system is initialized, only the LEDs associated with the modules that are installed remain lit.
 - After several seconds, the multiple LEDs on the PoE xl Module and on the 10/100-TX xl module light and blink frequently.
 - On the Module, the 'Module Activity' LEDs light, indicating the percent of the start-up process completed. The 'Module Fault' LED also lights at this time. When self-test has passed,
 - the 'Module Fault' LED goes out, the 80% LED light goes out, and
 - the 'Module Ready' LED blinks for a few seconds, as the Module and its applications initialize.
 - When the 'Module Ready' LED is solidly lit, the wireless services-enabled Switch 5300xl and Module are ready to use.
2. Simultaneously, the connected radio ports power-up, and their LEDs blink as follows during start-up operation:
 - The amber and green LEDs immediate light for several seconds.
 - Then, the green light goes out and the amber lights blinks approximately once per second.
 - If the Country Code is not set in the Module, the amber light continues to blink, with the green light out. This radio port is in the *unadopted* mode.
 - If the Country Code is set, then the start up process will continue as described in the next two bullets.

- After the amber light blinks for approximately 5 seconds, both LEDs solidly light for about 5 seconds.
 - Then, both the LEDs blink about once every 5 seconds, indicating that the Radio Port is *adopted* and ready for use.
3. For more details on the LEDs activity of the radio ports, please refer to the Radio Port Install Guides 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 (default) 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 front of the ProCurve Switch 5300xl and open a console session. The following is a sample start up screen.

```
Connected at 9600 baud
HP J4819A ProCurve Switch 5308xl
Firmware revision E.10.30
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 Switch 5300xl Manager context level. Type the following CLI commands to determine the Module IP address for a Module in the 'B' slot of the 5300 xl Switch. Hence, for this setup the Module IP address is 10.168.2.5.

```
ProCurve# configure
ProCurve(config)# wireless-services b
ProCurve(wireless-services-B)#show ip interface
Interface          IP-Address          Status          Protocol
vlan1              10.168.2.5 (DHCP)  up              up
ProCurve(wireless-services-B)#
```

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 this example, the IP address is set to 10.245.22.14 using the appropriate CLI commands.

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

Step 4 - Launch Module's Web browser interface.

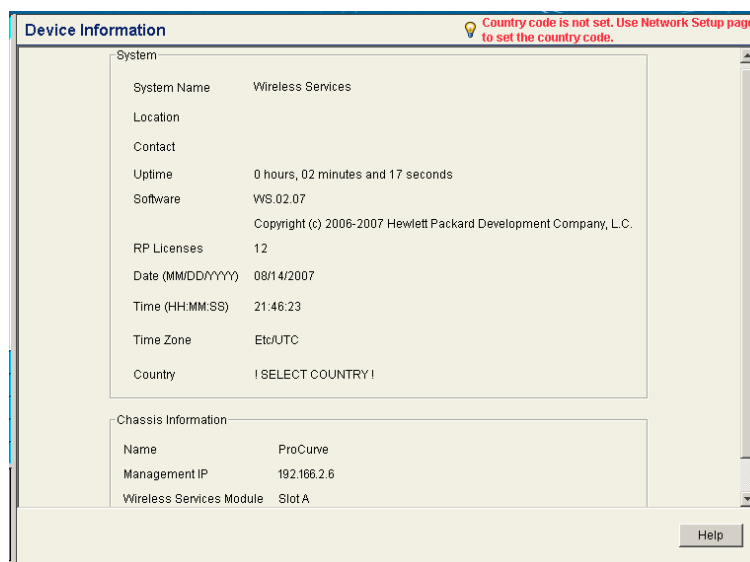
1. Open a browser on the network connected PC, and type in the URL for the Module. In this example, it is <http://192.166.2.6>.
2. A Java applet is required to open the Module web browser. If the PC does not have this software, JVM will be automatically downloaded to the PC via an internet connection.
3. If prompted with a security warning, click **Yes** to proceed.

- On the Wireless Edge Services Module login page, enter the default **User ID** (manager) and **Password** (procurve), and click **Login**.



The *Device Information* Web browser screen for the Module appears, as shown below. It is recommended the administrator immediately change the **Password** (see “Change Password” below).

Device Information screen:



Note the message in the upper right corner of the screen, **Country Code not set. Use Network setup page to set Country Code.** To set the country code, see “Step 5 - Set up Country Code and other wireless network administrative data.” on page 21.

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 manuals for the ProCurve Radio Ports available 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 A**.

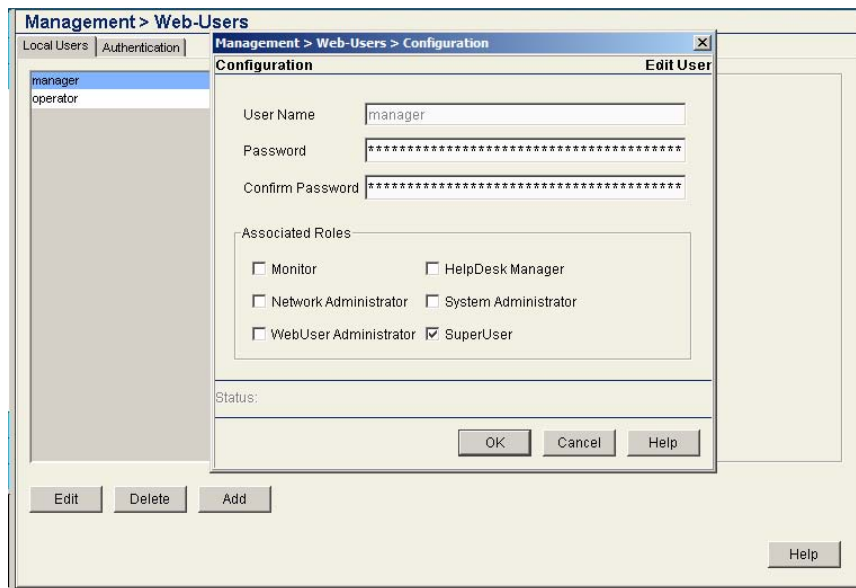
The WEB browser interface screens have the following features:

- A navigation panel on the left, which allows the administrator to setup and manage the wireless services-enabled Switch 5300xl and 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.
- All screens have the following links in the upper right corner: **Refresh**, **Support**, **Save**, and **Logoff**.
 - **Refresh** - Screen refresh.
 - **Support** - A link to www.procurve.com.
 - **Save** - Non-volatile savings of the Module settings
 - **Logoff** - Logs out from current session
- Most screens have a **Help** button in the lower right corner. Select the **Help** button to access additional information. In the **Help** screens:
 - Select the **Contents** tab to access information on the subjects in the Navigation Pane. Select the appropriate subject, and double click to view the **Help** information.
 - Select the **Search** tab to locate information based upon a specific topic. Enter the search term, select the search criteria to obtain the search results. Highlight the **Topic Title**, and select **Open** to view the Help information.

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 new 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 Module is set up with the Country Code and other administrative data.

1. From the Navigation Pane, select *Network Setup*
2. Using the **Country** list box, select the appropriate Country Code.
3. Enter data for the **System Name**, **Location**, and **Contact** if desired.
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, to apply after a reboot.

The Country Code and administrative data will be displayed on the *Device Information* screen:



The screenshot shows a window titled "Device Information" with a scrollable area containing two sections: "System" and "Chassis Information".

| System | |
|-------------------|---|
| System Name | Wireless Services |
| Location | |
| Contact | |
| Uptime | 1 hours, 22 minutes and 58 seconds |
| Software | WS.02.07 |
| | Copyright (c) 2006-2007 Hewlett Packard Development Company, L.C. |
| RP Licenses | 12 |
| Date (MM/DD/YYYY) | 08/14/2007 |
| Time (HH:MM:SS) | 23:07:04 |
| Time Zone | Etc/UTC |
| Country | United States-us |

| Chassis Information | |
|--------------------------|-------------|
| Name | ProCurve |
| Management IP | 192.166.2.6 |
| Wireless Services Module | Slot A |

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

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 your Wireless Edge Services 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 | <input checked="" type="checkbox"/> | Faculty1 | Faculty | VLAN 1 | None | WEP64 |
| 2 | <input checked="" type="checkbox"/> | SSID 2 | | VLAN 1 | None | None |
| 3 | <input checked="" type="checkbox"/> | SSID 3 | | VLAN 1 | None | None |
| 4 | <input checked="" type="checkbox"/> | SSID 4 | | VLAN 1 | None | None |
| 5 | <input checked="" type="checkbox"/> | SSID 5 | | VLAN 1 | None | None |
| 6 | <input checked="" type="checkbox"/> | SSID 6 | | VLAN 1 | None | None |
| 7 | <input checked="" type="checkbox"/> | SSID 7 | | VLAN 1 | None | None |
| 8 | <input checked="" type="checkbox"/> | SSID 8 | | VLAN 1 | None | None |
| 9 | <input checked="" type="checkbox"/> | SSID 9 | | VLAN 1 | None | None |
| 10 | <input checked="" type="checkbox"/> | SSID 10 | | VLAN 1 | None | None |
| 11 | <input checked="" type="checkbox"/> | SSID 11 | | VLAN 1 | None | None |
| 12 | <input checked="" type="checkbox"/> | SSID 12 | | VLAN 1 | None | None |
| 13 | <input checked="" type="checkbox"/> | SSID 13 | | VLAN 1 | None | None |
| 14 | <input checked="" type="checkbox"/> | SSID 14 | | VLAN 1 | None | None |
| 15 | <input checked="" type="checkbox"/> | SSID 15 | | VLAN 1 | None | None |
| 16 | <input checked="" type="checkbox"/> | SSID 16 | | VLAN 1 | None | None |

Filtering is disabled

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. 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 mouse button 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).

The screenshot displays the 'Network Setup > Radio' interface with the 'WLAN Assignment' tab selected. It features a 'Select Radios' table and an 'Assigned WLANs' tree view.

| Index | Description | Type | RP Ethernet Mac |
|-------|-------------|----------|-------------------|
| 1 | RADIO1 | 802.11bg | 00-14-C2-A0-1B-3E |
| 2 | RADIO2 | 802.11a | 00-14-C2-A0-1B-3E |
| 3 | RADIO3 | 802.11bg | 00-14-C2-A0-2B-BA |
| 4 | RADIO4 | 802.11a | 00-14-C2-A0-2B-BA |

The 'Assigned WLANs' tree view shows the following structure:

- 00-14-C2-A0-40-0C
 - 3 - RADIO3 - 802.11bg
 - BSS-ID Assigned WLANs
 - 1 SSID : Faculty1
 - 2 No WLANs Assigned
 - 3 No WLANs Assigned
 - 4 No WLANs Assigned

In this example, all of the radios are assigned to the WLAN with the Faculty1 SSID, and operate on BSS-ID 1.

- The Module, wireless services-enabled 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:

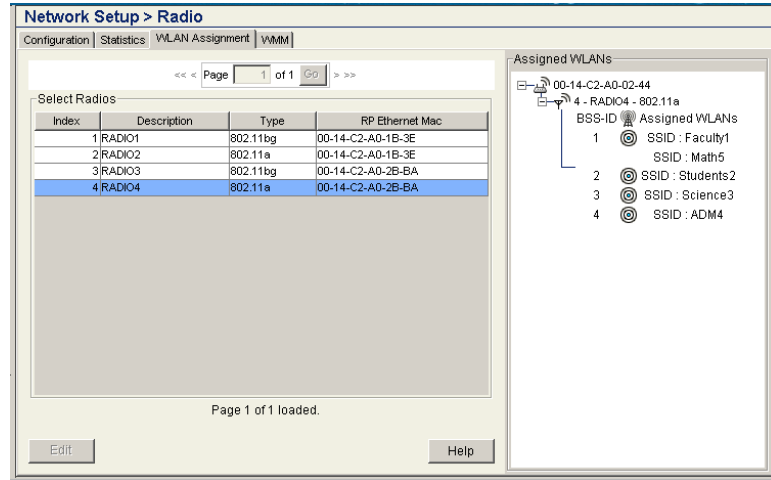
| WLAN | SSID | Name | VLAN | Authentication | Encryption |
|------|-----------|----------------|------|----------------|------------|
| 1 | Faculty1 | Faculty | 1 | none | 64WEP |
| 2 | Students2 | Students | 2 | none | none |
| 3 | Science3 | Science Dept | 3 | 802.1X EAP | 64WEP |
| 4 | ADM4 | Administration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

- 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. It includes a navigation bar with 'Configuration', 'Statistics', 'VLAN Assignment', and 'WMM'. Below the navigation bar is a 'Show Filtering Options' link. The main content is a table with columns: Index, Enabled, SSID, Description, VLAN, Authentication, and Encryption. The table lists 18 WLAN configurations. The first five are enabled and match the configuration table above. The remaining 13 are disabled (marked with a red 'X'). At the bottom of the table, it says 'Filtering is disabled'. Below the table 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 BSS-ID 1.



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 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 xl Module (J9001A).
- ProCurve Redundant Wireless Services xl Module (J9003A).

Note: For the optimal redundancy and protection, the preferred setup is for the J9001A and J9003A 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*.

Network Setup > Redundancy Group

Configuration | State | Member

Configuration

Interface IP: 0 . 0 . 0 . 0 Enable Redundancy

Redundancy Group ID: 1 (1-65535) Mode: Active Standby

Discovery Period: 30 (10-60 sec)

Heartbeat Period: 5 (1-255 sec) Hold Period: 15 (1-255 sec)

Handle STP convergence

History

| State | Time | Trigger | Description |
|----------|------------------------------|----------|---------------------|
| Disabled | Wed Aug 15 21:48:47 2007 UTC | Disabled | Redundancy Disabled |

On this screen,

- Enter the **Interface IP** for the J9001A 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 Module.
- Select **Apply** to save the setting for this session.
- This screen notes that the Redundancy state is currently 'Disabled'.

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 (J9003A). Select **OK** to return to the main screen.
4. Next, repeat these steps with the J9003A module, using its IP address for the Interface IP, and the IP address of the J9001A module as the Member. Typically, the J9003A 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, J9001A and J9003A are now operating as a Redundancy Group.

Loading New Module Software

Note

When updating software, read the release notes provided with the software update files for special instructions. For example, updating software between WS.01.11 and WS.02.07 (or later) may require you to clear your browser and Java cache before you can log in after a reboot.

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 WS.01.11, while the Secondary software is WS.02.07. The screen indicates that the Primary version of software was utilized for the current boot, and the Secondary version will be used on the next boot.

Image Failover is **enabled**.
Use 'Global Settings' to disable it.

| Image | Version | Current Boot | Next Boot | Built Time | Install Time |
|-----------|----------|--------------|-----------|------------------------------|------------------------------|
| Primary | WS.01.11 | ✓ | ✗ | Fri May 25 11:49:17 2007 UTC | Wed Aug 15 21:06:01 2007 ... |
| Secondary | WS.02.07 | ✗ | ✓ | Sun Jul 01 19:26:17 2007 UTC | Wed Aug 15 21:19:46 2007 ... |

Buttons: Edit, Global Settings, Upgrade Software, Help

2. Locate the path and filename of the new software version to be loaded. It must be in a TFTP or FTP server. The IP address of the TFTP or FTP server is also necessary.

3. Select the **Upgrade Software** button, and the Upgrade Screen appears.

The screenshot shows a dialog box titled "Update" within a window "Management > System Maint. - Software > Update". The dialog contains the following fields and controls:

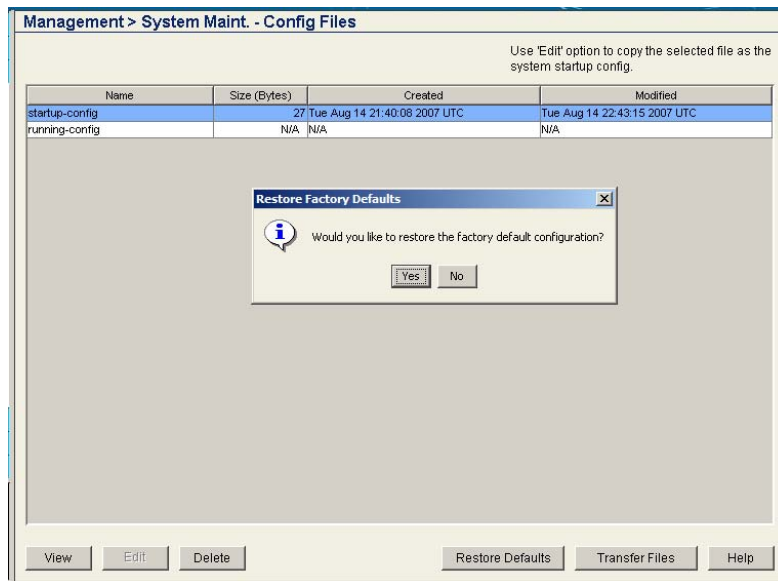
- From:** A dropdown menu with "Server" selected.
- File:** A text input field.
- Using:** A dropdown menu with "FTP" selected.
- Port:** A text input field with "21" entered.
- IP Address:** A text input field with three dots.
- User ID:** A text input field.
- Password:** A text input field.
- Path:** A text input field.
- Status:** A label with a corresponding text input field.
- Buttons:** "Do Upgrade", "Close", and "Help".

Enter the appropriate information:

- Enter the update filename (for example, "WS.02.07.img"). The filename is case-sensitive.
 - Select **TFTP** or **FTP** as appropriate
 - Enter the IP address of the TFTP or FTP server (for example, 192.168.2.3).
 - For an FTP server, enter the **User ID** and **Password** for server access.
 - Enter the path to the file on that server, or "/" if it is located in the TFTP or FTP server root.
4. Select **Do Upgrade**.
 5. After a few seconds, a Status message appears indicating that the upgrade is in progress. Alternatively, an error message appears if the Wireless Edge Service Module is unable to locate the software file.
 6. When the update completes, 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 reboot the new software, see "Reboot or Shutdown" on page 32. The system will logoff during the reboot. Wait until the reboot completes, then log into the Module as before.

Restore Config Files to Factory Defaults

To restore the configuration files to factory default settings, select *Management > System Maint. - Config Files*. Highlight the desired configuration file, then select **Restore Defaults**. When prompted, select **Yes**.

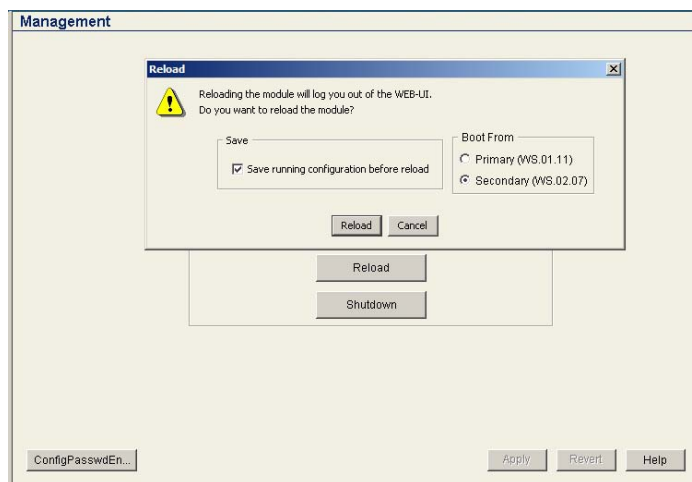


Reboot or Shutdown

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

- **Reload** - Click **Reload** to reboot the Wireless Services Module.

The following warning screen appears:



Select either **Primary** or **Secondary** to select the software version to boot from, then click **Reload** to proceed with rebooting the module.

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

Uplink/Downlink Port MAC Addresses

MAC (Media Access Control) addresses for the Module's internal uplink and downlink ports are predefined and assigned by the switch. The assigned addresses depend on the particular switch chassis model and the slot in which the Module is installed.

To determine the MAC addresses assigned, select *Device Information > Uplink/Downlink > Configuration*.

Related Publications

Use the ProCurve 5300xl switch publications to install the 5300xl switch and to physically install the ProCurve Module and the ProCurve Redundant Wireless Services xl Module. These publications provide the command references for the 5300xl Switch that are necessary to access the Module.

For radio port installation instructions, see the *Installation and Getting Started Guide* supplied with the radio ports.

The latest *Management and Configuration Guide* for your Wireless Edge Services Module describes how to use the command line interface (CLI) and Web browser interface to configure, manage, and monitor the Module and the Redundant Module. A troubleshooting chapter is also included.

Product documentation can be downloaded from the ProCurve Networking Web site at www.procurve.com.

Related Publications



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