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

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Hewlett-Packard Company, L.P.
ProCurve Wireless Edge Services xl Module
GNU GPL Source Code
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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 Services xl Module (J9003A).

The ProCurve Wireless Edge Services xl Module enables a ProCurve Switch 5300xl to operate with ProCurve Radio Ports as a centrally-administered Wireless LAN 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 Wireless Edge Services xl Module within a wireless LAN system.

A wireless LAN system built using a Wireless Services-Enabled ProCurve Switch 5300xl and ProCurve Radio Ports is shown below:
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 5300xl is a 5300xl switch with a Wireless Edge Services xl 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 Wireless Edge Services xl Module. With the addition of a Wireless Edge Services xl Module, every wired port in a 5300 xl switch is able to support wireless radio port or wired user traffic.

VLANs

VLANs on the 5300xl switch create paths between the Wireless Edge Services xl Module, radio ports, and the network. The Wireless Edge Services xl 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 Wireless Edge Services xl Module. When software version E.10.30 (or later) is loaded, the ProCurve Switch 5300xl 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 a 5300xl switch. Auto-provisioning also creates a default Radio Port VLAN when a Wireless Edge Services xl Module is detected in a 5300xl 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 Switch 5300xl:

- the Radio Port VLAN must be configured on any switch between the radio port and the Wireless Services-Enabled Switch 5300xl.
- the radio port must be an untagged member of the Radio Port VLAN on the switch where it is connected.

See the illustration below for VLAN requirements when using a radio port attached to an infrastructure, PoE-capable switch.
The <slot-id> refers to the slot in the 5300xl Switch where the Wireless Edge Services xl Module is located.

Setting the VLANs in the Wireless Edge Services xl 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 Wireless Edge Services xl Module to correspond with the switch VLAN settings.
Introduction

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.

<table>
<thead>
<tr>
<th>RADIO PORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A radio port has 1 or 2 radios. ProCurve radio ports are:</td>
</tr>
<tr>
<td>• ProCurve Radio Port 210 (J9004A) - Single-radio (802.11b/g) radio port; embedded 2.4 GHz diversity antennae</td>
</tr>
<tr>
<td>• ProCurve Radio Port 220 (J9005A) - Dual-radio (a+b/g) radio port; external antenna</td>
</tr>
<tr>
<td>• ProCurve Radio Port 230 (J9006A) - Dual-radio (a+b/g) radio port; embedded 2.4 and 5 GHz diversity antennae</td>
</tr>
<tr>
<td>ProCurve offers a range of indoor and outdoor external antennas.</td>
</tr>
<tr>
<td>4 BSSIDs per radio; a total of 8 BSSIDs per dual-radio ports.</td>
</tr>
<tr>
<td>PoE (802.3af) power required.</td>
</tr>
<tr>
<td>Up to 72 radios can be configured per fully-licensed Wireless Edge Services xl Module.</td>
</tr>
<tr>
<td>A maximum of 36 radio ports can be adopted by a Wireless Edge Services xl 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).</td>
</tr>
<tr>
<td>When a radio is adopted, a configuration, as specified by the administrator or a default configuration, is applied to the radio.</td>
</tr>
</tbody>
</table>

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 following table.

<table>
<thead>
<tr>
<th>WLANs</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADIUS Authentication</td>
</tr>
<tr>
<td>• 802.1X EAP</td>
</tr>
<tr>
<td>• Web Auth (open) for hotspots</td>
</tr>
<tr>
<td>• RADIUS-based ACLs using ProCurve Identity Driven Management</td>
</tr>
</tbody>
</table>
Introduction

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

**WLAN Configuration Modes.** The Wireless Edge Services xl 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 Wireless Edge Services xl Module features are available in the *ProCurve Wireless Edge Services xl Module Management and Configuration Guide.*

**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.
Introduction

- 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 Wireless Edge Services xl Module (J9001A) has licenses.
- When a Wireless Edge Services xl 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 Wireless Edge Services xl Module by 12. The total number of radio port licenses can be either 12, 24, or 36.
- Licenses can be uninstalled and reinstalled in another Wireless Edge Services xl 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 Wireless Edge Services xl 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 Wireless Edge Services xl 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 is normally formed with one Wireless Edge Services xl Module (J9001A) and one Redundant Wireless Services xl Module (J9003A). Two Wireless Edge Services xl Modules may be members of a
Redundancy Group, but the highest authorization level of a single member becomes the authorization level for the group. Authorization levels of the members are not added to form the group's authorization level.

- Two Redundant Wireless Services xl Modules may not be used together to form a Redundancy Group.
- A Redundancy Group member can be '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 Wireless Edge Services xl Module in the network. The recommended configuration for a Redundancy Group is one Active member and one Standby member.

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 *ProCurve Wireless Edge Services xl Module Management and Configuration Guide*. 
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 5300xl Switch software.
2. Boot up the system.
3. Determine Wireless Edge Services xl Module IP address.
5. Set up Country Code and other wireless network administrative data.
6. Verify Radio Port adoption.
7. Configure the Wireless Edge Services xl Module. Three example configuration are illustrated.
   • Configuration 1 - Normal Mode with one WLAN and three radio ports.
   • Configuration 2 - Normal Mode with five WLANs and three radio ports.
   • Configuration 3 - Adding redundancy.

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 Wireless Edge Services xl 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.
Getting Started

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 the module slot of the Switch 5304xl
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.

```
ProCurve# show version
Image stamp: /sw/code/build/alpmo(lor)
            Jan 23 2006 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 Wireless Edge Services xl 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 Wireless Edge Services xl Module and its applications initialize.
     - When the 'Module Ready' LED is solidly lit, the Wireless Services-Enabled Switch 5300xl and Wireless Edge Services xl Module are ready to use.
   - 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 Wireless Edge Services xl Module, the amber light continues to blink, with the green light out. This radio port is in the unadopted mode.
Getting Started

– 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 Wireless Edge Services xl Module IP address.

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

1. By default, the Wireless Edge Services xl 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 Wireless Edge Services xl 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) 1991-2005 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#
```
Getting Started

The CLI command, 'ProCurve#', is at the Switch 5300xl Manager context level. Type the following CLI commands to determine the Wireless Edge Services xl Module IP address for a Wireless Edge Services xl Module in the 'C' slot of the 5300 xl Switch. Hence, for this setup the Wireless Edge Services xl Module IP address is 10.168.2.5.

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

2. If no DHCP service is available or if the administrator wishes to manually set the Wireless Edge Services xl 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-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                up
ProCurve(wireless-services-B)(config-if)#
```

Step 4 - Launch Wireless Edge Services xl Module Web browser interface.

1. Open a browser on the network connected PC, and type in the URL for the Wireless Edge Services xl Module. In this example, it is http://10.168.2.5.

2. A Java applet is required to open the Wireless Edge Services xl Module web browser. If the PC does not have this software, JVM will be automatically downloaded to the PC via an internet connection.

3. The first page that may appear is the "Security-Warning", including the question, "The application's signature is invalid. Do you want to run the applications?" Select the Run button to proceed.
4. The next page is the Wireless Services Login page, as shown below:

Enter the default **User ID** (manager) and **Password** (procurve), and select **Login**. The **Device Information** Web browser screen for the Wireless Edge Services xl Module appears, as shown below. It is recommended the administrator change the **Password** (see below).
Note the message in the upper right corner of the screen, **Country Code not set. Use Network setup page to set Country Code.** This setup information is provided in Step 5.

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 Wireless Edge Services xl Module.

- This publication will uses 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 > SNMP Access > V3*

- A main screen provides information and appropriate fields to add information, and buttons for specific action.

- All screens have three buttons in the lower left corner: **Save**, **Logout**, and **Refresh**.
  - **Save** - Non-volatile savings of the Wireless Edge Services xl Module settings
  - **Logout** - Logs out from current session
Getting Started

- **Refresh** - Screen refresh.

  All screens have a **Help** button in the lower right corner. Select the **Help** button to access additional information.

- Select tab **Content** to access information on the subjects in the Navigation Pane. Select the appropriate subject, and double click to view the **Help** information.

- Select tab **Search** to location 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.

**Note**

This device requires the administrator to select the appropriate Country Code during the initial setup of the Wireless Edge Services xl Module. Once the country code has been entered, the Wireless Edge Services xl 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 page for the ProCurve Radio Ports at [www.procurve.com](http://www.procurve.com)
Getting Started

Change Password

It is recommended the administrator change the default Password.

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The following screen appears after **Edit** is selected.

![Password Change Screen]

2. Enter the Old Password (default), and the New Password in the appropriate boxes. Select **OK**. The system will logoff, as noted below:

![Login Screen]

3. To 'reload', the administrator reboots the Web browser interface, and the Login screen appears.
Note: The User Name is a read-only SNMP v3 username of operator or manager. Operator typically has an Access Control of read-only and Manager typically has an Access Control of read/write. The password is subject to the same rules of SNMP v.3, which requires a password length of 8 characters or more.

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

In this step, the following the Wireless Edge Services xl 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.
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 Wireless Edge Services xl Module. The screen below shows these entries.

Note: The APPLY changes are made to the current configuration only, and if the module is reloaded these changes are lost. To keep the changes for re-use they must be saved using the SAVE button.
Getting Started

This Network screen also provides the administrator with additional information, as noted below. These definitions are also available on the Help menu.

**System:**
- **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.
- **Radio Port Licenses** - The license identifies the maximum number of radio ports the Wireless Service Module can adopt.
- **Management IP** - The IP address of the Switch 5300 xl
- **Wireless Services Modules** - Slot location of the Wireless Services-Enabled Switch 5300xl

**Chassis Information:**
- **Name** - The Name is the chassis name for the Wireless Services Module. 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) should be unique.
- **Management IP** - The Management IP is the IP Address defined for the Management IP unique to this chassis. The Management IP cannot be a DNS name and must be an alpha-numeric value.
- **Wireless Services Module** - The Wireless Services Module field identifies the slot the Wireless Services Module resides in within the 5300xl Chassis. The sample screen indicates the module is in slot "F".

**Reset Module:**
- **Reload** - Click the Reload button to reboot (stop and start) the Wireless Services Module.
- **Shutdown** - Click the Shutdown button to halt (stop) the Wireless Services Module.

**Apply:**
- Click Apply to save the changes made within this screen. Navigating away from this screen without clicking the Apply button loses the changes made within the screen.

**Revert**
Getting Started

- Click the Revert button to undo any changes and revert back to the last saved configuration.

This completes the basic setup.

The Country Code and administrative data is now shown below on the Device Information screen:
Step 6 - Verify Radio Port adoption.

To verify that the radio ports have been adopted by the Wireless Edge Services xl Module, select **Network Setup > Radio > Configuration.**

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 Getting Started Guide for further troubleshooting information.
Step 7 - Configure the Wireless Edge Services xl Module.

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

1. Select Network Setup > WLAN Setup. This screen lists the 32 WLANs. However, only 16 are available in the Normal Mode.

2. Click and highlight Index 1, or WLAN1. 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 case, the following settings are specified:

   - **Configurations**:
     - **SSID** = Faculty1
     - **Description** = Faculty
     - **VLAN ID** = 1
     - **Encryption** = WEP 64-bits
The completed *Edit* screen is shown below. Definitions of the items on this screen are available from the HELP screen.
Getting Started

3. Encryption
   - On the Edit screen, select WEP 64 and select the Config button. The WEP 64 screen appears. Enter the 10 digit hexadecimal characters, or the 5 ASCII characters.

   ![WEP 64 Screen]

   - Select OK on the Edit screen, and return to the Network Setup>WLAN Setup screen.
5. 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** for a non-volatile saving of the settings.

6. The Wireless Edge Services xl Module, Wireless Services-Enabled Switch 5300xl, and the radio ports are now operational in the Normal Mode to the specified requirements.
Operation is confirmed via the Wireless Network screen of a wireless enabled laptop PC, as show below:

Operation of each radio port is confirmed by observing the LEDs. In normal operation both the LEDs blink about once every 5 seconds without any traffic. With traffic, the LEDs blink more rapidly than the 5 second interval.

Note: the SSID 2WIRE296 is provided by another wireless LAN network.

7. To confirm the radio and network operation, the following Web browser interface screens are useful:
- **Device Information > Wireless Stations.** This screen details the wireless stations attached to the network.

<table>
<thead>
<tr>
<th>Station Index</th>
<th>MAC Address</th>
<th>IP Address</th>
<th>Power Save</th>
<th>WLAN</th>
<th>VLAN</th>
<th>Radio Index</th>
<th>Radio Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-16-26-62-16-65</td>
<td>192.168.2.3</td>
<td>✗</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>802.11bg</td>
</tr>
<tr>
<td>2</td>
<td>00-16-26-77-17-08</td>
<td>192.168.0.2</td>
<td>✓</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>802.11bg</td>
</tr>
</tbody>
</table>

- **Device Information > Radio Port > Lan Statistics > Adopted RP.** This screen lists the 3 radio ports by model number. The **Radio Indices** indicates that there are 2 radios in each radio port (802.11a and 802.11bg).

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00-16-c2-ad-10-13</td>
<td>ProCurve Radio Port 220</td>
<td>TW3464a.02E</td>
<td>37.0</td>
<td>0.4</td>
<td>2.0</td>
<td>0.02-23</td>
<td>1,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00-16-c2-ad-26-30</td>
<td>ProCurve Radio Port 220</td>
<td>TW3466m.17R</td>
<td>37.0</td>
<td>0.4</td>
<td>2.0</td>
<td>0.02-23</td>
<td>5,4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00-16-c2-ad-27-44</td>
<td>ProCurve Radio Port 220</td>
<td>TW3577m.01W</td>
<td>37.0</td>
<td>0.4</td>
<td>2.0</td>
<td>0.02-23</td>
<td>9,6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of adopted RPs: 3
Getting Started

- **Network Setup > Radio > Configuration.** This screen lists the radios in the network, and their MAC address and radio type. Properties of each radio are available by highlighting the radio with a single click on a particular radio, as shown below. Note that unconfigured radios are automatically adopted in the default configuration, as indicated by the message in the right corner of the screen. Use the **Global Settings** button on this screen to change this option.
More detailed properties of the radio are available by selecting **Edit** or by double clicking on the highlighted line for a particular radio. Select **OK** to exit this screen.

**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.
For this CASE 1 example, since this is an Normal Mode configuration, all of the radios are assigned the Faculty1 SSID, and operate on BSSID1. This screen shows the assignments for the 802.11bg radios, but the 802.11a radios would show equivalent settings.

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

The requirements for this case are as follows:

<table>
<thead>
<tr>
<th>WLAN</th>
<th>SSID</th>
<th>Name</th>
<th>VLAN</th>
<th>Authentication</th>
<th>Encryption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Faculty1</td>
<td>Faculty</td>
<td>1</td>
<td>none</td>
<td>64WEP</td>
</tr>
<tr>
<td>2</td>
<td>Students2</td>
<td>Students</td>
<td>2</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>3</td>
<td>Science3</td>
<td>Science Dept</td>
<td>3</td>
<td>802.1X EAP</td>
<td>64WEP</td>
</tr>
<tr>
<td>4</td>
<td>ADM4</td>
<td>Administration</td>
<td>4</td>
<td>802.1X EAP</td>
<td>128WEP</td>
</tr>
<tr>
<td>5</td>
<td>Math5</td>
<td>Math Dept</td>
<td>3</td>
<td>802.1X EAP</td>
<td>128WEP</td>
</tr>
</tbody>
</table>
1. Select *Network Setup>*WLAN Setup>*Configuration*. Input the requirements per the table above, and the procedures described in Case 1. The resulting screen is shown below:
2. With this network, operation is confirmed via the Wireless Network screen of a wireless enabled laptop PC, as show below:

![Wireless Network Screen](image)

The SSIDs Faculty1, Students2, Science3, ADM4, and Math5 are successfully operating, although Math5 does not display since its SSID is not beaconed. (see below).

(Note: the SSID 2WIRE296 is provided by another wireless LAN network.)

3. To review the BSSID and SSID assignments, select Network Setup > Radio > WLAN Assignments. On this screen, the 802.11bg radios have been highlighted. 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. The "x" next to SSID Math5 indicates that the Math5 is piggy-backed on BSSID 1, but is not beaconed. Only SSID Faculty1 is beaconed on BSSID1.
Configuration 3 - Adding redundancy.

In this case the following modules will be set up in a Redundancy Group

- ProCurve Wireless Edge Services 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**. 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 setting are shown in this screen for the other settings: **Discovery Period, Heartbeat Period, Hold Period**. Refer to the Help menu, or the *ProCurve Wireless Edge Services xl Module Management and Configuration Guide* for additional information on these selections.
Getting Started

- 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, 9003A. 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 (9003A). 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 (This 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.
Loading New Wireless Edge Services xl Module Software

6. Select **Save** to save the settings in a non-volatile memory in the Wireless Edge Services xl Module. Repeat this step for both modules.

The two modules, J9001A and J9003A are now operating as a Redundancy Group.

Loading New Wireless Edge Services xl Module Software

To load new Wireless Edge Services xl Module software, follow these steps:

1. Select **Management>System Maint.>Software.** This screen lists the Primary and Secondary Wireless Edge Services xl Module software resident on the Wireless Edge Services xl Module system. In the example below, the Primary software is WS.01.01.img. The screen documents 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" are arbitrary such that the current version of software can be stored in either image.
2. Locate the new Wireless Edge Services xl Module software in a local TFTP or FTP folder.

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

   Enter the appropriate information:
   - Enter File: "WS.01.02.img"
   - Select TFTP
   - Enter IP address of PC where TFTP is located, e.g. 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. Alternatively, an error message appears if the Wireless Edge Service xl Module is unable to locate the software file.
Loading New Wireless Edge Services xl Module Software

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 "WS.01.02.img" is selected.
8. To reload the new software, go to the Network Setup>Configuration screen, and click the **Reload** button.

![Network Setup Screen](image)

9. A message appears to confirm the action to Reload and logoff the system. Select **Reload** to complete the process.

![Message Confirmation](image)

10. The system will logoff. To logon the system and reboot the new software by 'rebooting' the Web browser interface.
Restore Factory Defaults Setting

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

The following warning screen appears:

Click on Reload to proceed with resetting to factory defaults.
Related Publications

Use the ProCurve 5300xl switch publications to install the 5300xl switch and to physically install the ProCurve Wireless Edge Services xl 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 Wireless Edge Services xl Module.

See the *Installation and Getting Started Guide* that ships with a radio port for installation instructions.

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