# IP Services—IP Settings, DHCP, and DNS

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## **IP** Settings

To function as a Layer 3 device, the Wireless Edge Services xl Module requires only one IP address, usually assigned to the default management interface. (The default management interface is virtual LAN [VLAN] 1.) For some network environments, however, you may want to assign IP addresses to other VLAN. To do so, you must create VLAN interfaces.

Reasons to create a VLAN interface and assign it an IP address include:

- You want the Wireless Edge Services xl Module to act as the Dynamic Host Configuration Protocol (DHCP) server for stations in that VLAN.
- You want the Wireless Edge Services xl Module to use Network Address Translation (NAT) to translate IP addresses on another VLAN to an address on this VLAN.
- The Wireless Edge Services xl Module assigns stations in a Web authentication (Web-Auth) WLAN to this VLAN.

When you configure a WLAN to use Web-Auth, the module must have an IP address on the static VLAN. (For more information about configuring Web-Auth for a WLAN, see *Chapter 5: Web Authentication for Mobile Users.*)

• You want to enable routing between VLANs.

You can assign an IP address to a maximum of eight VLAN interfaces on the Wireless Edge Services xl Module.

# Viewing VLAN Interfaces and Enabling Secure Management

To view the VLANs that have been assigned IP addresses, select **Network Setup** > **Ethernet** > **Configuration**.

Network S	Network Setup > Ethernet																	
Configuration	Statistics																	
																Mana throug	gement tr h any vlar	affic is allowed 1 on the module
Name	VLAN ID	DHCP Enabled		IF	° Ado	lress				9	Subne	et Ma	sk		Admin Status	Oper Status	Mar In	nagement Iterface
vlan1	1	×	10		4.	1	. 3	30	255	•	255	· 256	5.	0	Up	Up		<i>~</i>
vlan8	8	×	10		4.	8		1	255	•	255	· 255	5.	0	Up	Up		×
Edit	Delete	Add												En	able Secure	Management \	(LAN	Help

Figure 6-1. Network Setup > Ethernet > Configuration Screen

The following information is listed for each VLAN:

- Name
- VLAN ID
- DHCP Enabled

This column has a green check mark if the DHCP client is enabled on this VLAN (so that the VLAN receives a dynamic address).

- IP Address
- Subnet Mask
- Admin Status

This column lists the status (either up or down) of the internal uplink port.

Status

This column reports whether or not the VLAN was created successfully.

Management Interface

Only one VLAN can be selected as the management interface, and that VLAN is identified with a green check mark. All other VLANs show a red x in the **Management Interface** field.

When secure management is enabled, you can access the Wireless Edge Services xl Module's Web browser interface only through the IP address assigned to this VLAN. To enable secure management, click the **Enable Secure Management VLAN** button at the bottom of the screen.

## Assigning an IP Address to a VLAN

To assign an IP address to a VLAN, complete these steps:

- 1. Select Network Setup > Ethernet > Configuration.
- 2. Click the **Add** button at the bottom of the screen. The **Add New** screen is displayed.

Network Setup > Ethernet > Configu 🗙
Configuration Add New
VLAN ID IP Settings Use DHCP to obtain IP Address automatically IP Address Subnet Mask
Set as Management Interface
Status:
OK Cancel Help

Figure 6-2. Add New Screen

- 3. In the **VLAN ID** field, enter the number of the VLAN.
- 4. Configure the IP address:
  - a. Check the **Use DHCP to obtain IP Address automatically** box if you want the VLAN to receive an IP address through a DHCP server.

Do not check this box if you want the Wireless Edge Service xl Module to act as the DHCP server when stations successfully associate to this VLAN. As a DHCP server, the module would, of course, require a static address on the VLAN.

b. To configure a static address, in the **IP Address** and **Subnet Mask** fields, enter the IP address and subnet mask.

5.	If you want this VLAN to be the management interface for the Wireless
	Edge Services xl Module, check the <b>Set as Management Interface</b> box.

- 6. Click the **OK** button to apply the changes to the running-config.
- 7. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

After you assign an IP address to a VLAN, the route for the directly connected interface is listed on the module's route table. (See "Route Table" on page 6-12.)

## Deleting the IP Address Assigned to a VLAN

If you assign an IP address to a VLAN and later decide to delete it, complete these steps:

- 1. Select Network Setup > Ethernet > Configuration.
- 2. Select the VLAN and click the **Delete** button. A prompt is displayed, asking you to verify that you want to delete the item.
- **Note** You are not deleting the VLAN. If you have mapped a WLAN to the VLAN, the Wireless Edge Services xl Module will continue forwarding traffic in the VLAN. You are deleting the IP address that you previously assigned to the VLAN and removing the VLAN from this Ethernet table (which lists the VLANs that have been assigned IP addresses).
  - 3. Click the **Yes** button to delete the IP address and remove the VLAN from the table.
  - 4. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## Editing the IP Address Assigned to a VLAN

If you need to change the IP address that is assigned to a VLAN, complete these steps:

- 1. Select Network Setup > Ethernet > Configuration.
- 2. Select the VLAN and click the **Edit** button. The **Configuration** screen for the VLAN interface is displayed.

Network Setup > Ethernet > Configu 🗙									
Configuration vlan1									
VLAN ID 1									
⊢IP Settings									
Use DHCP to obtain IP Address automatically									
IP Address 192.168.1.50									
Subnet Mask 255 . 255 . 255 . 0									
Set as Management Interface									
Status:									
OK Cancel OK Help									

Figure 6-3. Configuration Screen for the vlan1 Interface

- 3. Change the settings as needed and then click the **OK** button.
- 4. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

# Viewing Statistics for VLANs That Are Assigned IP Addresses

The Wireless Edge Services xl Module tracks statistics for VLANs that are assigned IP addresses. To view these statistics, select **Network Setup** > **Ethernet** and click the **Statistics** tab.

#### IP Services—IP Settings, DHCP, and DNS IP Settings

Network Set	up > Ethern	let						
Configuration	Statistics							
Name	Bytes In	Packets In	Packets In Dropped	Packets In Error	Bytes Out	Packets Out	Packets Out Dropped	Packets Out Error
vlan1	192231	1136	0	0	551781	1007	0	0
vlan8	17463	194	0	0	3802	17	0	0
tunnel1	0	0	0	0	0	0	0	0
Details	Graph							🕜 Help

Figure 6-4. Network Setup > Ethernet > Statistics Screen

You can view the following information:

- **Name**—VLAN ID (also referred to as the interface).
- **Bytes In**—total number of bytes received on the interface.
- **Packets In**—total number of packets received on the interface, including packets dropped and error packets.
- **Packets In Dropped**—number of incoming packets that are dropped. Packets might be dropped if the input queue is saturated or if an overrun occurs (the interface receives packets faster than it can transfer them to a buffer).
- Packets In Error—number of incoming packets with errors such as:
  - Runt frames—Runt frames are smaller than the minimum Ethernet frame of 64 bytes.
  - Cyclic redundancy check (CRC) errors—CRC errors are reported if the receiving station computes a CRC value that does not match the four-byte CRC field at the end of the Ethernet frame.
  - Late collisions—A late collision occurs after the sending station sends the first 64 octets of data.
- **Bytes Out**—total number of bytes sent on the interface.
- **Packets Out**—total number of packets sent on the interface.

- **Packets Out Dropped**—number of outgoing packets dropped. Conditions that result in dropped packets include:
  - The output queue assigned to the interface is saturated.
  - Collisions have occurred.
- Packets Out Error—number of outgoing packets with errors such as malformed packets.

To view more detailed information about a VLAN, select that VLAN and click the **Details** button at the bottom of the screen. The **Interface Statistics** screen is displayed.

Network Setup > Ethernet > Interface Statistics								
Interface Statistics			vlan1					
Name	vlan1							
Mac Address	00-04-EA-	61-AE-C9						
Input Bytes	1881276	Output Bytes	3089970					
Input Unicast packets	15321	Output Unicast packets	52925					
Input NonUnicast packets	0	Output NonUnicast packets	0					
Input Total packets	15321	Output Total packets	52925					
Input Packets Dropped	0	Output Packets Dropped	0					
Input Packets Error	0	Output Packets Error	0					
Status:								
		Refresh Close	e 💽 Help					

Figure 6-5. Interface Statistics Screen

As Figure 6-5 shows, the **Interface Statistics** screen lists additional information about the VLAN. In particular, you can use this screen to monitor the broadcast and multicast traffic being transmitted on the VLAN. The **Input NonUnicast packets** field reports the incoming broadcast and multicast traffic, and the **Output NonUnicast packets** field lists the outgoing broadcast and multicast traffic.

You can click the  $\ensuremath{\textit{Refresh}}$  button to update the information displayed on the screen.

# Viewing Graphs for VLANs That Are Assigned IP Addresses

The Wireless Edge Services xl Module can create graphs of statistics for a VLAN that has been assigned an IP address. These graphs display how the statistics change over time.

To view a graph, follow these steps:

1. Select Network Setup > Ethernet > Statistics.

Network Setu	up > Ethernet							
Configuration Stati	istics							
Name	Bytes In	Packets In	Packets In Dropped	Packets In Error	Bytes Out	Packets Out	Packets Out Dropped	Packets Out Error
vlan1	1117332	13738	0	0	10672897	16702	0	0
vlan2	1350	27	0	0	0	0	0	0
Details	Əraph							Help

Figure 6-6. Network Setup > Ethernet > Statistics

- 2. Select a VLAN from the list.
- 3. Click the **Graph** button.

3		x
Interface Statistics		vlan1 (00-13-21-BA-45-C9)
1,137,000 -		
1,136,000		
₽ 1,135,000		
1,134,000		
1,133,000		
1,132,000		
16:33:40	16:33:4	45
	— Input Bytes	
🔽 Input Bytes	🔲 Input Pkts Total	🔲 Input Pkts NUCast
Input Pkts Dropped	🔲 Input Pkts Error	🗖 Output Bytes
🗖 Output Pkts Total	🗖 Output Pkts NUCast	Output Pkts Dropped
Output Pkts Error		
Status:		
		Close Help

Figure 6-7. Interface Statistics Graph

To generate a graph, you must select the statistic that you want to track. Initially, the graph shows input bytes. You can choose any of the statistics displayed in the **Details** screen (refer to "Viewing Statistics for VLANs That Are Assigned IP Addresses" on page 6-7 for more information about a statistic).

Select the appropriate box for the statistic you want to view.

## **IP** Routing

As discussed in *Chapter 1: Introduction*, the Wireless Edge Services xl Module and its internal uplink port operate at Layer 3 of the Open Systems Interconnection (OSI) model. As part of this Layer 3 functionality, the Wireless Edge Services xl Module maintains a route table. You can view the route table, which automatically lists directly connected interfaces, and you can add static routes to the route table. You can also assign IP addresses to as many as eight VLANs, which then become directly connected interfaces, and you can enable routing between these VLANs.

The Wireless Edge Services xl Module's route table is completely separate from the route table maintained by the wireless services-enabled switch. The IP addresses that you assign to VLANs on the module are stored and maintained in the module's running-config. If you want to assign IP addresses to VLANs on the wireless services-enabled switch, you must access the command line interface (CLI), the menu system, or the Web browser interface for the switch itself.

By default, IP routing is disabled. Turning routing on enables these functions:

- DHCP relay
- the internal firewall, including IP ACLs applied to logical (VLAN or tunnel) interfaces
- Network Address Translation (NAT)

## **Route Table**

When the Wireless Edge Services xl Module receives an IP address from a DHCP server, the address is assigned to the default management interface, which is typically VLAN 1. The module automatically recognizes the subnetwork directly connected to the default management interface and lists this information in its route table. In the example shown in Figure 6-8, the default management interface (which, in this case, is VLAN 1) is directly connected to network 10.4.1.0/24.

Network Setur	Network Setup > Internet Protocol								
Domain Name System	IP Forwarding Ad	dress Resolution							
					Routing betweer use "Disable" to (	n VLANs <b>enabled,</b> change this option.			
		<u>St</u>	now Filtering Option	<u>15</u>					
Destination Subnet	Subnet Mask	Gateway Address	Interface	Protocol	Route Metric	Active			
0.0.0	0.0.0.0	10.1.10.1	vlan1	Static	0	×			
10.1.10.0	255.255.255.0	0.0.0.0	vlan1	Connected	0	×			
10.1.80.0	255.255.255.0	0.0.0.0	vlan8	Connected	0	V			
10.100.1.0	255.255.255.0	0.0.0.0	tunnel1	Connected	0	V			
			Filtering is disabled	1					
Delete A	Add				Disa	ole Help			

Figure 6-8. Network Setup > Internet Protocol > IP Forwarding Screen

If you assign an IP address to any other VLAN (as described in "IP Settings" on page 6-3), the Wireless Edge Services xl Module recognizes the subnetwork attached to that VLAN and lists it as a directly connected route.

To view the module's route table, select **Network Setup** > **Internet Protocol** and click the **IP Forwarding** tab. (See Figure 6-8.) The following fields are provided for each route:

- **Destination Subnet**—lists the IP address of the destination subnetwork.
- **Subnet Mask**—lists the subnet mask for the destination subnetwork.
- **Gateway Address**—lists the gateway for reaching the destination subnetwork.
- **Interface**—lists the VLAN through which traffic is forwarded.

- **Protocol**—lists the name of the protocol through which the route was obtained. Routes can be obtained in the following ways:
  - DHCP—Routes can be included with the IP address that the module receives from a DHCP server.
  - Static—Routes can be entered manually.
  - Connected—Routes can be directly connected to an interface.
  - Kernel/ICMP—Routes can be added to the route table if the module receives an Internet Control Message Protocol (ICMP) redirect from an intermediate router.
- **Route Metric**—used for selecting the best available path to the destination subnetwork. Routes with lower metric values are given preference.
- **Active**—indicates whether or not IP forwarding is enabled for the route.

## Adding Static Routes to the Route Table

To add a static route to the Wireless Edge Services xl Module's route table, complete these steps:

- 1. Select Network Setup > Internet Protocol and click the IP Forwarding tab.
- 2. Click the **Add** button at the bottom of the screen. The **Add static route** screen is displayed.

Network Setup >	> Int	ernet	Protoc	ol > Co	onfi 🗙
Configuration			- 1	Add sta	tic route
Destination Subnet		•	•	•	
Subnet Mask		•	•	•	
Gateway Address		•	•	•	
Status:					
ОК		Ca	ncel	_ +	lelp

Figure 6-9. Add Static Route Screen

- 3. In the **Destination Subnet** field, enter the IP address for the route.
- 4. In the **Subnet Mask** field, enter the subnet mask.
- 5. In the **Gateway Address** field, enter the IP address of the next hop.

- 6. Click the **OK** button to apply the change to the running-config.
- 7. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

#### Specifying a Default Route and Gateway

A default route is a special static route that applies to all traffic for which the Wireless Edge Services xl Module does not know another route.

When you use the CLI to configure the Wireless Edge Services xl Module's default gateway, the module automatically creates a default route to that gateway. This route is listed in the **Network Setup** > **Internet Protocol** > **IP Forwarding** screen. (See Figure 6-10.)

Network Setu	p > Internet	Protocol				
Domain Name System	IP Forwarding	Address Resolution				
					Routing between V use "Disable" to cha	LANs <b>enabled</b> , ange this option.
		<u>s</u>	how Filtering Option	<u>IS</u>		
Destination Subnet	Subnet Mask	Gateway Address	Interface	Protocol	Route Metric	Active
0.0.0.0 🔪	0.0.0.0	10.1.10.1	vlan1	Static	0	V
10.1.10.0	255.255.255.0	0.0.0.0	vlan1	Connected	0	¥
10.1.80.0	255.255.255.0	0.0.0.0	vlan8	Connected	0	~
10.100.1.0	255.255.255.0	0.0.0.0	tunnel1	Connected	0	~
Default rout	10	Default gate	way			
			Filtering is disabled			
Delete A	Add				Disable	Help

Figure 6-10. Viewing the Default Route

Although you can add another default route manually (or, from the CLI, specify another default gateway), only one default route is active—the first route configured. To avoid confusion, ProCurve Networking recommends that you delete all but one default route.

Network Se	tup > Internet I	Protocol				
Domain Name Syst	tem IP Forwarding 4	Address Resolution				
		0	ouu Filtoring Ontion	-	Routing betweer use "Disable" to d	n VLANs <b>enabled,</b> change this option.
Destination Subnet	Subnet Mask	Gateway Address	Interface	Protocol	Route Metric	Active
0.0.0.0	0.0.0.0	10.1.10.1	vlan1	Static	0	¥
0.0.0.0	0.0.0.0	10.1.80.1	vlan8	Static	0	× ×
10.1.10.0	255.255.255.0	0.0.0.0	vlan1	Connected	0	
10.1.80.0	255.255.255.0	0.0.0.0	vlan8	Connected	0	×
10.100.1.0	255.255.255.0	0.0.0.0	tunnel1	Connected	0	×
Two	default routes				This rout no effect you delet first route	e has unless e the
		F	iltering is disabled			
Delete	Add				Disa	ole Help

Figure 6-11. Multiple Default Routes

Follow these steps to configure or to change the Wireless Edge Services xl Module's default route:

- 1. Select Network Setup > Internet Protocol and click the IP Forwarding tab.
- 2. If the route table already lists a default route, select that route and click the **Delete** button.
- 3. Click the **Add** button at the bottom of the screen. The **Add static route** screen is displayed.
- 4. In the **Destination Subnet** field, enter 0.0.0.0.
- 5. In the **Subnet Mask** field, enter 0.0.0.0.
- 6. In the **Gateway Address** field, enter the IP address of the new default gateway.

Network Setup >	> Inte	rne	et P	rot	oco	>	Conf	<u>×</u>
Configuration					Ad	ld s	static	route
Destination Subnet	0	•	0	•	0	•	0	
Subnet Mask	0	•	0	•	0	•	0	
Gateway Address	10	•	1	•	80	•	1	
Status:								
ОК		(	Can	cel			Help	

Figure 6-12. Add Static Route Screen

- 7. Click the **OK** button to apply the change to the running-config.
- 8. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## Address Resolution Table

The Wireless Edge Services xl Module maintains an address resolution table, which displays the media access control (MAC) addresses associated with particular IP addresses. The module uses this table to prepare IP packets for forwarding to the correct MAC address.

In addition, by default, the Wireless Edge Services xl Module provides proxy ARP for its wireless stations. That is, the module responds to ARP requests for the IP addresses listed in this table.

To view this table, select Network Setup > Internet Protocol and click the Address Resolution tab.

#### IP Services—IP Settings, DHCP, and DNS

IP Routing

Network Setup > Internet Pro	toco	I							
Domain Name System IP Forwardin	g Ada	dress	Res	olution					
Interface			IP 4	Address			MAC Address	Туре	
vlan1	10	•	4	• 1	•	100	00-0F-1F-21-E2-D4	Dynamic	
Clear									🕑 Help

Figure 6-13. Network Setup > Internet Protocol > Address Resolution Screen

The **Interface** column lists the VLAN on which the IP address can be reached, and the **Type** column indicates how the module learned to map that IP address to that MAC address. For example, in Figure 6-13, **Dynamic** indicates that the module learned the mapping by listening to frames received from the device at 10.4.1.100.

If you want to remove an entry, select it and click the **Clear** button.

You can add manual entries to the ARP table to force the Wireless Edge Services xl Module to respond to requests for an address that is not its own. However, you must do so through the CLI.

# **DNS** Client

DNS is the Internet protocol for translating domain names or hostnames into IP addresses. The hostname is the familiar, alphanumeric name for a host on the Internet (for example, www.procurve.com), and the IP address is the 32-bit address that devices on a TCP/IP network use to reach each other. DNS allows users to enter more readily memorable and intuitive hostnames rather than IP addresses. In addition, DNS allows a host to keep the same hostname even if a company changes the host's IP address.

The Wireless Edge Services xl Module can act as a DNS client. To enable the module to query a DNS server to resolve hostnames, you must define that DNS server. In addition, you can specify a default domain name—which is typically your organization's domain name.

## Adding DNS Servers

To define the DNS servers that the Wireless Edge Services xl Module should contact when it needs to resolve hostnames, complete these steps:

1. Select Network Setup > Internet Protocol and click the Domain Name System tab.

#### IP Services—IP Settings, DHCP, and DNS

DNS Client

Network Setup > Internet Protocol	
Domain Name System IP Forwarding Address Resolution	
Domain look up enabled Domain name is procurve.com	
Show Filter	ing Options
Server IP Address	Server Type
Filtering is	s disabled
Delete	Global Settings 🛛 🖉 Help

Figure 6-14. Network Setup > Internet Protocol > Domain Name System Screen

2. Click the **Add** button at the bottom of the screen. The **Add DNS Server** screen is displayed.

Network Setup >	Int	eri	net	: P	ro	to	s		X
Configuration				1	١dd	D	NS	Se	rver
Server IP Address	0	•	0	•	0	•	0		
Status:									
ОК			an	cel			2	Hel	p

Figure 6-15. Add DNS Server Screen

- 3. In the Server IP Address field, enter the IP address of the DNS server.
- 4. Click the **OK** button. The DNS server is now listed on the **Network Setup** > Internet Protocol > Domain Name System screen.
- 5. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## Deleting a DNS Server

If you want to remove a DNS server that is listed on the Network Setup > Internet Protocol > Domain Name System screen, complete these steps:

- 1. Select Network Setup > Internet Protocol and click the Domain Name System tab.
- 2. Select the DNS server that you want to delete and click the **Delete** button at the bottom of the screen. A prompt is displayed, asking if you want to delete the item.
- 3. Click the **Yes** button to remove the DNS server.
- 4. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## Specifying a Default Domain Name

To specify a default domain name, complete these steps:

- 1. Select Network Setup > Internet Protocol and click the Domain Name System tab.
- 2. Click the **Global Settings** button. The **Edit DNS Settings** screen is displayed.

Network Setup > I	nternet Protocol > Configurat 🗙
Configuration	Edit DNS Settings
💌 Domain Look Up	
Domain Name	
Status:	
	OK Cancel 🙆 Help

Figure 6-16. Edit DNS Settings Screen

- 3. In the Domain Name field, enter your company's domain name.
- 4. Click the **OK** button.
- 5. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## **DHCP Server**

The Wireless Edge Services xl Module can function as a DHCP server. Although the module can provide DHCP services for your entire network, it is more appropriately used as the DHCP server for your wireless network.

### Overview

A DHCP server issues dynamic configurations to stations. The DHCP server on the Wireless Edge Services xl Module can assign stations a variety of settings, or options, in the configuration. Standard options include:

- an IP address, which the module selects from a configured range of IP addresses
- a default router address
- a domain name
- primary and secondary Domain Name System (DNS) addresses
- a lease time (the time that the station can keep this configuration before requesting it again)

Other options that you can specify for the configuration include:

- broadcast addresses
- NetBIOS node type
- NetBIOS name server address
- boot file
- Bootstrap Protocol (BOOTP) server address

You can also define your own extended options.

The configuration for clients is stored in a DHCP pool, which you create and associate with a particular VLAN on your Wireless Edge Services xl Module. When the module receives a DHCP request from a station in that VLAN, it issues the configuration stored in the pool to the station, including:

- all configured options that the client requested
- an IP address selected from the range for the pool

You can also create pools that assign fixed IP addresses to particular hosts.

A list of excluded IP addresses, which the module never assigns to DHCP clients, prevents conflicts with static IP address assigned on your network.

As a DHCP server, the Wireless Edge Services xl Module can also implement dynamic DNS (DDNS), which updates a DNS server whenever a host's IP address changes.

Finally, the Wireless Edge Services xl Module supports DHCP relay.

## Configuring the DHCP Server

If you want the Wireless Edge Services xl Module to assign IP addresses to devices on your network, you must configure it as a DHCP server by following the steps outlined in the following sections. You can access all of the options necessary to configure the DHCP server from the **Network Setup** > **DHCP Server** screen in the Web browser interface.

To run the DHCP server on a VLAN, the VLAN must meet these requirements:

- It must have a static IP address. (See "Assigning an IP Address to a VLAN" on page 6-5.)
- It must not implement DHCP relay.

DHCP relay configurations take precedence over the DHCP server. In other words, if you associate a VLAN interface with a network pool and you also implement DHCP relay on that interface, the module does *not* respond to DHCP requests on that VLAN. Instead it relays requests to an external server.

After configuring the DHCP server, you must enable it. If the server is already enabled, any configurations you make to it take effect only after the server restarts. The DHCP server automatically restarts 30 seconds after you apply a change. You can also manually restart the server.

#### **Creating DHCP Pools**

As a DHCP server, the Wireless Edge Services xl Module requires one or more pools from which to issue configurations to devices. You can configure either a network pool or a host pool.

A *network pool* includes a range of IP addresses from which the DHCP server can choose as it responds to DHCP requests. The Wireless Edge Services xl Module associates each network pool with a particular VLAN. When a station in that VLAN sends a DHCP request, the module responds with one of the addresses from the associated pool.

When you use network pools, you can also specify a range of excluded addresses, which are addresses in a pool that the Wireless Edge Services xl Module is not allowed to assign. Use the excluded addresses to protect IP addresses on your network that you want to remain fixed, such as the IP addresses of routers and DNS servers.

A *host pool* contains a single fixed IP address and is designated to a specific device. When that device sends a DHCP request, the Wireless Edge Services xl Module recognizes its MAC address (or client identifier) and assigns the device the fixed IP address.

Use host pools for devices that require a dynamic address but also a stable address that never changes. For example, certain devices should almost always be given static addresses so that routes remain accurate, the network design remains logical and consistent, and the traffic flow remains uninterrupted. Network servers, such as Remote Access Dial In User Service (RADIUS) servers, need stable addresses so that other network devices, which are configured to query those servers, always know where to reach them.

However, sometimes a device that needs a stable IP address is also required to take a dynamic address from a DHCP server. You can configure the router to assign a fixed DHCP address to this device.

Also, when you want to assign a permanent address to a particular host, sometimes it is better to configure this address through a DHCP server, rather than through whatever application is on the host. DHCP automatically tracks addresses so that two devices are not inadvertently given the same address.

**Creating a Network Pool.** To create a network pool of IP addresses, complete these steps:

1. Select Network Setup > DHCP Server > Configuration.

Network Setup > DHCF S	erver			
Configuration Host Pool Excluded R	elay Status			
Enable DHCP Server				
🗖 Ignore Bootp				
Ping timeout	1 (1 - 10 seconds)			
			Revert	Apply
Network Pool				
Pool Name	Network	Lease Time(dd:hh:mm)	Domain	
Pool Name	Network	Lease Time(dd:hh:mm)	Domain	

Figure 6-17. Network Setup > DHCP Server > Configuration Screen

2. Click the Add button. The Add Pool screen is displayed.

twork Setup > DHCP Server > Coni	liguration
onfiguration	Add P
Pool Name guestpool	Domain procurve.edu
NetBios Node Undefined	Boot File
Network	Lease Time(dd:hh:mm)-
Associated Interface	vlan1 C Infinite
IP Address	Subnet Mask © 01:00:00
Default Routers DNS Servers NetBios(WINS) Servers Bootp Next Server	I TO 4
rincluded Ranges	
Start IP	End IP
	10 . 4 . 1 . 1501 Insert Remove
tatus:	
	OK Cancel Help

Figure 6-18. Add Pool Screen for Network Pools

3. In the **Pool Name** field, enter a name for the pool. You can enter up to 255 alphanumeric characters (no special characters).

The name is typically a descriptive text string that helps identify the purpose of the pool or the set of clients that it is intended to serve.

- 4. In the **Domain** field, enter the domain name for the network on which the Wireless Edge Services xl Module is running.
- 5. In the **Associated Interface** field, use the drop-down menu to select the VLAN interface that you want to associate with this network pool.

This drop-down menu includes all of the module's configured interfaces (such as VLAN 1). The IP address and subnet mask assigned to the associated interface are automatically inserted into the appropriate fields.

6. In the **Lease Time** section, specify the lease length for IP addresses assigned by the DHCP server. Either select **Infinite** or specify a lease time (in dd:hh:mm format).

The maximum number of days is 365, the maximum number of hours is 23, and the maximum number of minutes is 59. Therefore, the maximum lease time is roughly one year.

- 7. In the **Servers** section, specify the IP addresses of the servers that stations might need to reach to function properly.
  - a. In the left column, select the server type.
  - b. Click the top of the right column and specify the IP addresses for the corresponding server type. Use the **Insert** and **Remove** buttons as needed to add and delete additional servers for the server type.

At a minimum, you should enter the IP address of the default router (default gateway) for this VLAN and at least one DNS server. You can add up to eight default routers, eight DNS servers, eight NetBIOS servers, and one BOOTP server. (NetBIOS servers are called Windows Internet Naming Service [WINS] servers. These WINS servers map devices' names to their IP addresses.)

8. In the **Included Ranges** section, click the **Insert** button and specify the starting and ending IP addresses to be included in the address pool.

The DHCP server will assign IP addresses only from this range. All of the IP addresses in the range must be within the subnetwork of the VLAN selected as the **Associated Interface**.

Use the **Insert** and **Remove** buttons as needed to add and delete additional address ranges.

- 9. If necessary, set options for a network that uses NetBIOS:
  - a. In the **NetBios Node** field, use the drop-down menu to select the NetBIOS node type.

The NetBIOS node type determines how stations resolve NetBIOS names to IP addresses, whether by broadcasting messages, by using a WINS server (peer-to-peer), or by a combination of the two. You can select one of four options:

- b (Broadcast)
- h (Hybrid)
- m (Mixed)
- p (Peer-to-Peer)

- b. If you select a hybrid, mixed, or peer-to-peer node type, you must specify the WINS server that maps devices' names to their IP addresses:
  - i. In the Servers section, select NetBios (WINS) from the left column.
  - ii. Click the top of the right column and enter the WINS server's IP address.
  - iii. Optionally, click the **Insert** button and add up to eight WINS servers.
- 10. Optionally, in the **Boot File** field, specify the name of a file (including its directory structure).

An older device might not have its operating system (OS) loaded onto it; such a device can boot remotely from the file that you specify in this field.

- 11. If your network might include BOOTP clients, specify the IP address of the next server in the clients' boot process:
  - i. In the Servers section, select Bootp Next from the left column.
  - ii. Click the top of the right column and enter the server's IP address.
- 12. Click the **OK** button to apply your changes to the running-config. The new network pool is shown on the **Network Setup** > **DHCP Server** > **Configuration** screen.
- 13. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

**Creating a Host Pool.** To create a host pool, which stores a fixed IP address for a particular device, complete these steps:

1. Select Network Setup > DHCP Server and click the Host Pool tab.

Network Setup > D	HCP Server			
Configuration Host Pool Ex	cluded Relay Status			
Pool Name	IP Address	Hardware Address	Client Name	Client ID
,				
Edit Delete	Add Options			Help

#### Figure 6-19. Network Setup > DHCP Server > Host Pool Screen

2. Click the Add button. The Add Pool screen is displayed.

Network Setup > DHCP Server > Config	guration X
Configuration	Add Pool
Pool Name abdevice	IP Address 10 . 4 . 1 . 24
Domain procurve.edu	Client Name
Boot File	Client ID
	(hexadecimal separated by ':')
Lease Time(dd:hh:mm)	Hardware Address
C Infinite	Address Type
International	e4 - 22 - 68 - a7 - 00 - 12 ethernet 💌
Servers	
	Default Routers
Default Routers	
DNS Servers	Insert
NetBios(WINS) Servers	Pamava
Booth Mext Server	
Status:	
	OK Cancel Help

Figure 6-20. Add Pool Screen for Host Pools

3. In the **Pool Name** field, enter the name of the pool to which this IP address will belong. For example, you might enter the name of the device.

The name can include up to 255 alphanumeric characters.

4. In the **IP Address** field, enter the fixed address for this device.

You can specify an IP address that is also within a network pool: the Wireless Edge Services xl Module automatically adds the fixed address to its list of exclusions. You can view this exclusion in the **Network Setup** > **DHCP Server** > **Excluded** screen.

5. In the **Client Name** field, enter a descriptive name for the client that will receive this IP address.

6. Enter either a hexadecimal client identifier (ID) in the **Client ID** field or a MAC address in the **Hardware Address** field, but not both.

When a device sends a DHCP request, the request includes a client ID, either a customized ID or the device's MAC address. The Wireless Edge Services xl Module uses this value to match the device to the correct host pool and fixed IP address.

A customized client ID, entered in the **Client ID** field, can use ASCII or hexadecimal characters. Typically, a customized client ID uses hexadecimal characters. Use colons to separate the hexadecimal characters.

- 7. Set up other options much as you would for a network pool:
  - a. In the **Servers** section, specify the IP addresses of the servers that stations might need to reach to function properly.
    - i. In the left column, select the server type.
    - ii. In the right column, specify the IP addresses for the corresponding server type. Use the **Insert** and **Remove** buttons as needed to add and delete additional servers for the server type.

At a minimum, you should enter the IP address of the default router (default gateway) for the subnetwork on which you have placed this device. You should also enter the IP address of one or more DNS servers.

If this network uses NetBIOS or BOOTP, you should specify servers for those protocols.

- b. In the **Lease Time** section, specify the lease length for IP addresses assigned by the DHCP server. Either select **Infinite** or specify a lease time (in dd:hh:mm format).
- c. If this client will use NetBIOS, in the **NetBios Node** field, use the dropdown menu to select the NetBIOS node type.
- d. If this device is a BOOTP client, in the **Boot File** field, enter the name of the file from which the device should boot.
- 8. Click the **OK** button to apply your changes to the running-config. The new host pool entry is shown on the **Network Setup** > **DHCP Server** > **Host Pool** screen.
- 9. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

You can create multiple host pools.

### Excluding Addresses from a Network Pool

You may sometimes want to prevent the DHCP server from assigning specific IP addresses within the network pool or pools that you have configured. For example, you would not want the DHCP server to assign an IP address that is already configured statically on another network device. In such cases, simply add exclusions to the DHCP server configuration.

To exclude IP addresses from dynamic assignment, complete these steps:

- 1. Select Network Setup > DHCP Server and click the Excluded tab.
- 2. Click the **Add** button. The **Add Range** screen is displayed.

Network Setup >	DHCP	Se	rve	r >	с	X
Configuration					Add R	lange
Start IP Address	10 .	4		1.	10	
End IP Address	10 .	4	•	1.	12	
Status:						
ОК		anc	el		Help	

Figure 6-21. Add Range Screen for Excluded IP Addresses

3. In the **Start IP Address** and **End IP Address** fields, enter the starting and ending IP addresses, respectively, for the range of excluded addresses.

If you want to specify only one IP address, simply leave the  $\ensuremath{\mathsf{End}}\xspace{\,\mathsf{IP}}\xspace{\,\mathsf{Address}}\xspace{\,\mathsf{Address}}\xspace{\,\mathsf{Fields}}\xspace{\,\mathsf{Baddress}}\xspace{\,\mathsf{Address}}\xspace{\,\mathsf{End}}\xspace{\,\mathsf{IP}}\xspace{\,\mathsf{Address}}\xspace{\,\mathsf{Address}}\xspace{\,\mathsf{End}}\xspace{\,\mathsf{IP}}\xspace{\,\mathsf{Address}}\xspace$ 

4. Click the **OK** button to apply your changes.

The excluded range is displayed on the  $\ensuremath{\textit{Network}}\xspace$  Setup  $>\ensuremath{\textit{DHCP}}\xspace$  Setup  $>\ensuremath{\textit{Setup}}\xspace$  Setup  $>\ensuremath{\{S$ 

N	etwork \$	Setup >	> DHC	P Ser	ver								
Cor	nfiguration	Host Pool	Exclud	ed Relay	/   Statu	IS							
			Sta	rt ID Addr			[	Fo	d ID Addre				
	10		4	IC IF AUU	1		10	10	4		1		12
	10	· ·	4	· ·	1		24	10	4		1	· ·	12
	10						24	1					
		_	_										
	Edit	Delet	e	Add									Help

#### Figure 6-22. Network Setup > DHCP Server > Excluded Screen

5. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

You can specify multiple ranges.

#### Enabling the DHCP Server

To enable the DHCP server, complete these steps:

- 1. Select Network Setup > DHCP Server > Configuration.
- 2. Check the **Enable DHCP Server** box.

Network Setup > DHCP Server									
Configuration Host Pool Excluded Relay Status									
Enable DHCP Server									
🔲 Ignore Bootp									
Ping timeout	1 (1 - 10 seconds)								
			Revert	Apply					
Network Pool									
Pool Name	Network	Lease Time(dd:hh:mm)	Domain						
Pool Name guestpool	Network 10.4.1.0/24	Lease Time(dd:hh:mm) 1: 0: 0	Domain procurve.edu						

#### Figure 6-23. Enabling the DHCP Server

- 3. Click the **Apply** button.
- 4. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

To disable the DHCP server, uncheck the **Enable DHCP Server** box and click the **Apply** button.

# Configuring Global DHCP Settings: Ignoring BOOTP and Setting the Ping Interval

Two global settings apply to the Wireless Edge Services xl Module's internal DHCP server:

■ **Ignoring BOOTP requests**—BOOTP is an earlier protocol that uses the same ports as DHCP. Like DHCP, BOOTP enables stations to receive dynamic configurations, typically including the name and location of a boot file. If your network includes devices that use BOOTP, it may also

include a server already configured to serve these devices. In this case, you should configure the Wireless Edge Services xl Module to ignore BOOTP requests so that they can reach the proper server.

■ **Ping interval**—Before assigning an IP address to a station, the Wireless Edge Services xl Module pings the address twice to verify that the address is available. You can configure the number of seconds that the module waits in between the two pings.

To configure the global DHCP settings, follow these steps:

 $1. \quad Select \ \textbf{Network} \ \textbf{Setup} > \textbf{DHCP} \ \textbf{Server} > \textbf{Configuration}.$ 

Network Setup > DHCP Server									
Configuration Host Pool Excluded Relay Status									
I Enable DHCP Server									
🗖 Ignore Bootp									
Ping timeout	1 (1 - 10 seconds)								
			Revert	Apply					
Network Pool									
Pool Name	Network	Lease Time(dd:hh:mm)	Domain						
Pool Name guestpool	Network 10.4.1.0/24	Lease Time(dd:hh:mm) 1: 0: 0	Domain procurve.edu						
Pool Name guestpool	Network 10.4.1.0/24	Lease Time(dd:hh:mm) 1: 0: 0	Domain procurve.edu						

#### Figure 6-24. Configuring Global DHCP Settings

2. Check the **Ignore Bootp** box to configure the module to ignore BOOTP requests.

Checking the box allows the BOOTP requests to continue on to a BOOTP server.

 Enter a value from 1 through 10 seconds in the Ping time interval field. The default setting is 1 second. 4. Click the **Apply** button.

## **Configuring Extended DHCP Options**

The Wireless Edge Services xl Module allows you to configure extended DHCP options for both network and host pools. For example, in addition to assigning clients a DNS server address, you might want to assign them a Network Time Protocol (NTP) server address. An NTP server address is defined through option 42.

To configure extended DHCP options, you first define globally which extended option or options you will use. Next, you configure values for these options in particular network or host pools.

### Setting Up Global Options

To define the extended options to be used by your DHCP server, complete these steps:

- 1. Select Network Setup > DHCP Server > Configuration.
- 2. Click the **Options Setup** button. The **Global Options** screen is displayed.

Ν	Network Setup > DHCP Server > Con 🗙								
Configuration Global Op									
	Name	Code	Туре	Insert Remove					
81	tatus:	ОК	Cancel	) Help					

Figure 6-25. Global Options Screen

- 3. Click the **Insert** button.
- 4. Enter an alphanumeric string in the **Name** field to identify the option.

The string cannot include special characters or spaces. If you include such characters, you will receive this message when you click the **OK** button: **Failed to save - Wrong value**.

Some option names are reserved for DHCP options automatically enabled on the Wireless Edge Services xl Module. You cannot use the names listed in Table 6-1.

Reserved Names	
subnet-mask	
routers	
domain-name-servers	
domain-name	
broadcast-address	
netbios-name-servers	
netbios-node-type	
bootfile-name	
user-class	
next-server	
dynamic-bootp	

#### Table 6-1. Names Not Allowed for Global DHCP Options

5. In the **Code** field, enter a value between 0 and 254. You should enter the standard code for the option that you are defining.

Again, some DHCP codes are reserved for the DHCP options configured when you set up the pool. You cannot alter the codes listed in Table 6-2.

Table 6-2. Codes Not Allowed for Global DHCP Options

Reserved Code	Associated Option
1	subnet mask
3	router
5	name server
6	domain name server
15	domain name
28	broadcast address
44	Netbios name server
46	Netbios node type
67	bootfile
77	userclass
119	dns list

6. The **Type** drop-down menu includes two options: **ip** and **ascii**.

The setting that you select determines the type of value that you enter when you actually configure the option in a pool. (See "Specifying the Value for an Extended Option in a DHCP Pool" on page 6-38.)

In this example, you are setting up an option to specify an IP address for an NTP server, so you select **ip**. Selecting **ascii** allows you to enter alphanumeric characters for the option.

Network Setup > DHCP Server > Con 🗙								
Configuration Global Option								
Name	Code	Туре						
NTP	42	ip	Insert					
			Remove					
Status:								
	ОК	Cancel	Help					

Figure 6-26. Defining a Global Option for DHCP

- 7. Click the **Insert** button again if you need to add more options.
- 8. When you are finished setting up the options, click the **OK** button.
- 9. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

#### Specifying the Value for an Extended Option in a DHCP Pool

After you set up an extended option, you must configure the value that the DHCP server assigns for that option. Like typical DHCP settings, you configure these values for particular pools.

Complete these steps:

- 1. Select Network Setup > DHCP Server > Configuration.
- 2. To configure an option for a network pool, complete these steps and then proceed to step 4:
  - a. Select one of the pools in the **Network Pool** section. (See "Creating a Network Pool" on page 6-24 for instructions on creating the pool.)
  - b. Click the **Options** button. The **Pool Options** screen is displayed.

- 3. To configure an option for a host pool, complete these steps and then proceed to step 4:
  - a. Click the **Host Pool** tab.
  - b. Select one of the pools. (See "Creating a Host Pool" on page 6-28 for instructions on creating the pool.)
  - c. Click the **Options** button. The **Pool Options** screen is displayed.
- 4. In the **Pool Options** screen, click the **Insert** button.

Network Setup	> DHCP Serve	r > Configu 🗴
Configuration		Pool Options
Name NTP	Value	Insert Remove
Status:	-	
OK	Cancel	Help

Figure 6-27. Specifying the Value for an Extended Option

- 5. Click the **Name** field. It turns into a drop-down menu that includes the names of all of the options defined globally. (See "Setting Up Global Options" on page 6-36.)
- In the Value field, enter either an IP address or an alphanumeric string, depending on whether the type specified for the global option is ip or ascii. The Wireless Edge Services xl Module sends this value for the option to DHCP clients.
- 7. Click the **Insert** button again to configure another option. You can configure as many options as have been defined globally.
- 8. Click the **OK** button.
- 9. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

## Configuring Dynamic DNS (DDNS)

A DNS server resolves hostnames to IP addresses. For the DNS server to function correctly, clearly its table must include the correct IP address for each hostname. However, a device that acts as a DHCP client might unexpectedly receive a new IP address, invalidating the DNS server's hostname table. DDNS addresses this problem by updating a DNS server whenever a client's IP address changes.

The Wireless Edge Services xl Module supports DDNS as part of its function as a DHCP server. The module can either update the DNS server itself or allow clients to do so. The DNS server itself, of course, must also support DDNS (as specified in Request for Comments [RFC] 2136). Such a server is called a DDNS server. In addition, if the clients will send the updates, they must also support DDNS.

You enable and configure DDNS separately for each DHCP pool, which can be either a network pool or a host pool. Complete these steps:

- 1. Select Network Setup > DHCP Server > Configuration.
- 2. To configure DDNS for a network pool, complete these steps and then proceed to step 4:
  - a. Select one of the pools in the **Network Pool** section. (See "Creating a Network Pool" on page 6-24 for instructions on creating the pool.)
  - b. Click the **DDNS** button. The **Global Options** screen for DDNS is displayed.
- 3. To configure DDNS for a host pool, complete these steps and then proceed to step 4:
  - a. Click the **Host Pool** tab.
  - b. Select one of the pools. (See "Creating a Host Pool" on page 6-28 for instructions on creating the pool.)
  - c. Click the **DDNS** button. The **Global Options** screen for DDNS is displayed.

Network Setup > DHCP Server > Co
Configuration Global Options
Domain Name
TTL 0
Automatic Update Off
Enable Multiple User Class 📃
DDNS Servers
· · · · ·
Manual Updates
Send All
Status:
OK Cancel Help

Figure 6-28. Configuring DDNS

4. In the **Domain Name** field, enter an alphanumeric string.

In DDNS updates, a client's name follows this format:

- user class, if the client has sent such a class
- client's MAC address
- the domain name that you specify in this step

For example, an update might identify a client as follows: 00:C0:49:F7:82:13.procurve.com.

5. Specify the time-to-live for updates in the **TTL** field. This setting determines the time in seconds that the Wireless Edge Services xl Module waits for a reply from the DDNS server.

The valid range is from 1 through 65,535 seconds.

- 6. From the **Automatic Update** drop-down menu, select which device sends the dynamic updates:
  - Select **Server Update** to have the Wireless Edge Services xl Module send an update whenever one of its DHCP clients accepts an IP address from it.
  - Select **Client Update** to have each DHCP client send an update when it receives an IP address from the DHCP server. In this case, the client must support DDNS.
  - Select **Off** to disable automatic updates. You can still send manual updates to the DDNS server by clicking the **Send All** button.
- 7. Optionally, check the **Enable Multiple User Class** box.

This setting allows users to send multiple user classes. The name in the DDNS updates includes the first class.

- 8. Specify the IP addresses of up two DDNS servers in the **DDNS Servers** field.
- 9. Click the **OK** button.

Make sure that the DHCP server is enabled, and then save your configuration.

### Viewing DHCP Leases

The Wireless Edge Services xl Module stores a table of the IP addresses that it has assigned to DHCP clients. You can view this table and verify that the DHCP server is issuing the correct addresses.

Select Network Setup > DHCP Server and click the Status tab.

Ne	Vetwork Setup > DHCP Server										
Co	Configuration Host Pool Excluded Relay Status										
Г			IP	Addr	ess			MAC Address/Client ID	Туре	Expiration	
Lh	10		4		1		60	00:c0:49:f7:34:12	Manual	Not Applicable	
LΓ	10		4		8		150	00:c0:49:f7:8d:21	Automatic	Sat Dec 9 00:52:34 2006	
	Dele	te		Expo	ort						🕜 Help

Figure 6-29. Viewing DHCP Leases

The screen displays a list of leases, with information in these columns:

- IP Address—the IP address assigned to the station
- MAC Address/Client ID—the station's MAC address or, if it sent a customized ID, its ID
- **Type**—the method that the Wireless Edge Services xl Module used to select the IP address

**Automatic** indicates that the module chose the IP address from a network pool. **Manual** indicates that the module matched the DHCP client to a host pool and assigned it a fixed IP address.

**Expiration**—the date and time when the DHCP lease ends

The fixed IP address shown in Figure 6-29 never expires: its lease was configured as infinite.

## Configuring DHCP Relay

Your network might already include a DHCP server. The Wireless Edge Services xl Module can provide DHCP relay services to this server. A DHCP server serves only clients on the same subnetwork or VLAN. DHCP relay passes DHCP requests from clients on one subnetwork to a DHCP server on a different subnetwork, eliminating the need for a DHCP server on each local network segment.

To provide DHCP relay services, a VLAN interface must have a static IP address. (The DHCP client is disabled on the VLAN interface.)

**Note** Enabling DHCP relay on an interface overrides the DHCP server. That is, the server will not respond to requests on that interface even if you have configured a pool for it.

**Note** The gateway interface is the interface through which the Wireless Edge Services xl Module reaches the external DHCP server. Like the interface that relays the DHCP requests, the gateway interface cannot run either the DHCP server or the DHCP client. (That is, the interface requires a static address.)

To configure DHCP relay on the Wireless Edge Services xl Module, complete these steps:

- 1. Select Network Setup > DHCP Server and click the Relay tab.
- 2. Click the Add button. The Add Relay Information screen is displayed.

Network	Setup >	DHCP	Server > C	onf 🗙					
Configuration Add Relay Information									
Interfa	ce vlan1		~						
Server			Gateway	vlan1 💌					
Server		•	Gateway	vlan1 💌					
Server		•	Gateway	vlan1 💌					
Server		•	Gateway	vlan1 🗸					
Status:		ок	Cancel	Pelp					

Figure 6-30. Add Relay Information Screen

- 3. In the **Interface** field, use the drop-down menu to select the VLAN interface that receives the DHCP requests.
- 4. In the **Server** fields, enter the IP addresses for up to four DHCP servers. In each applicable **Gateway** field, use the drop-down menu to specify the corresponding interfaces by which the DHCP servers may be reached. For example, if the module's default gateway knows how to route traffic to the DHCP server, you would select the default VLAN.
- 5. Click the **OK** button.
- 6. Click the **Save** link at the top of the Web browser interface to save the changes to the startup-config.

The configuration is displayed on the Network Setup > DHCP Server > Relay screen. (See Figure 6-31.) The Interfaces section shows the interface from which DHCP packets will be forwarded to the DHCP server. The Gateway Information section shows the server IP address and the interface by which the DHCP server can be reached.

Network Setup > DHCP Server										
Configuration Host Pool Excluded Relay Status										
Interfaces Gateway Information										
vlan4	DHCP Server	Gateway Interfac	e							
	10.4.1.20	vlan1								
Edit Delete Add										
			Holp							

Figure 6-31. Viewing DHCP Relay Configurations

You can select the DHCP relay configuration for an interface and edit or delete it by clicking the corresponding buttons.

IP Services—IP Settings, DHCP, and DNS DHCP Server