Lab 6.5.5.1 Configure Layer 3 Site-to-Site Wireless Link—OPTIONAL Challenge Lab

Estimated Time: 45 minutes

Number of Team Members: Students will work in teams of two.

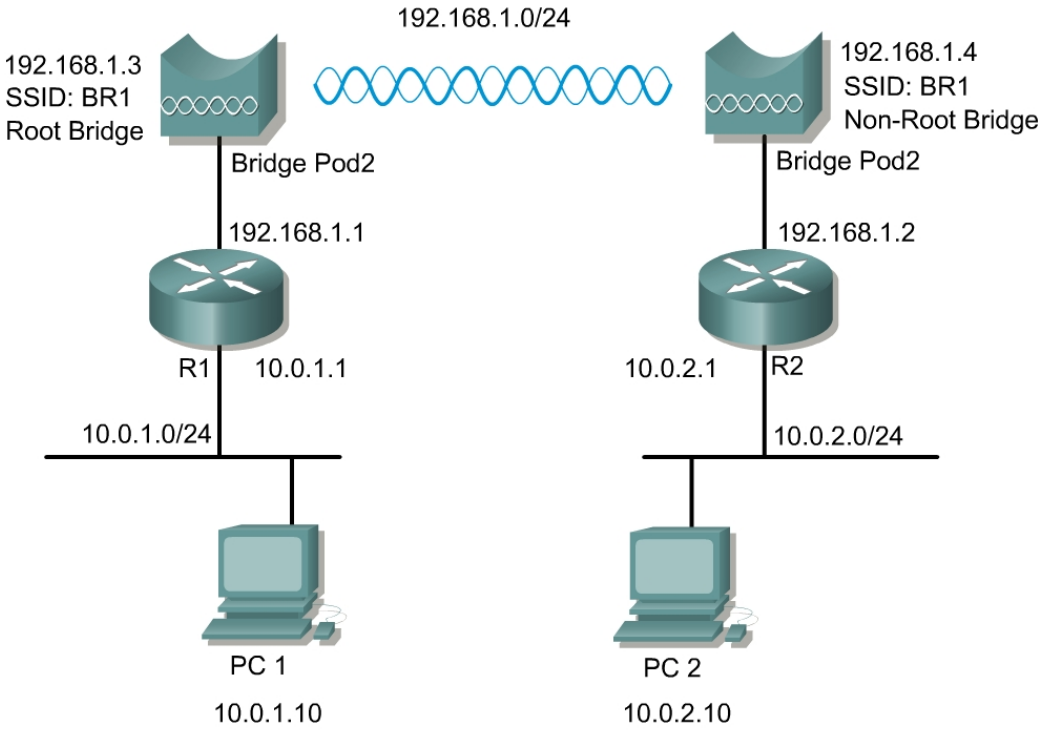
Objective

Configure a site-to-site bridge network separated by a Layer 3 device. Test the speed of the wireless bridge link.

Scenario

A remote location which is several miles away requires connectivity to the existing wired network. The connection can be bridged wirelessly with two BR350s. In large networks, it is necessary to provide Layer 2 broadcast control using routers.

Topology



Preparation

The instructor or students must cable and configure the perimeter routers in addition to the wired LAN. The routers Ethernet interfaces must be configured and enabled. Static routing should be configured on the routers. Ensure that the devices are configured according to the topology. The bridge devices should be configured as follows:

Device Name	Label	SSID	Address
BPod1	BR1	BR1	192.168.1.3/24
BPod2	BR2	BR1	192.168.1.4/24

Tools and Resources

Each team will require the following:

- Two wired LAN segments that will be bridged together
- Two Cisco BR350s with 2.4dBi dipole antenna(s)
- Two dual Ethernet routers
- Two switches or hubs(optional)

Step 1 Connect and reset both bridges

Connect a nine-pin, male-to-female, straight-through serial cable to the COM port on a computer and to the RS-232 serial port on the bridge. (This cable ships with the bridge)

a. Open a terminal emulator.

b. Enter these settings for the connection:

- Bits per second (baud rate): 9600
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: Xon/Xoff

c. Press = to display the home page of the bridge. If the bridge has not been configured before, the Express Setup page appears as the home page. (GO TO STEP 3)

d. If the bridge is already configured, the Summary Status page appears as the home page. When Summary Status screen appears, type :**resetall**, and press **Enter**.

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Enter "YES" to confirm Resetting All parameters to factory defaults:
YES
00:02:12 (FATAL): Rebooting System due to Resetting Factory Defaults
*** Restarting System in 5 seconds...
```

e. Type **yes**, and press **Enter** to confirm the command.

f. Power cycle the bridge by removing the power.

Step 2 Connect to the BR350s using express setup

a. Plug a second RJ-45 Ethernet cable into the power injector end labeled TO NETWORK. Plug the other end of the Ethernet cable into the Ethernet port on a switch or hub. Then connect PC1 to the switch. A crossover cable can be used to connect directly from the inline power injector to PC1/PC2.

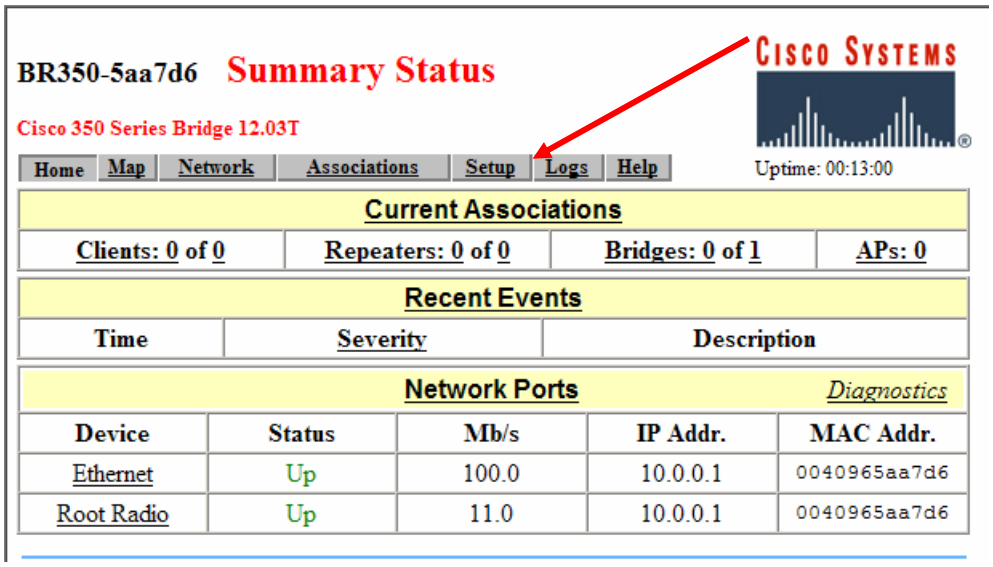
b. Configure PC1 to 10.0.0.2/24

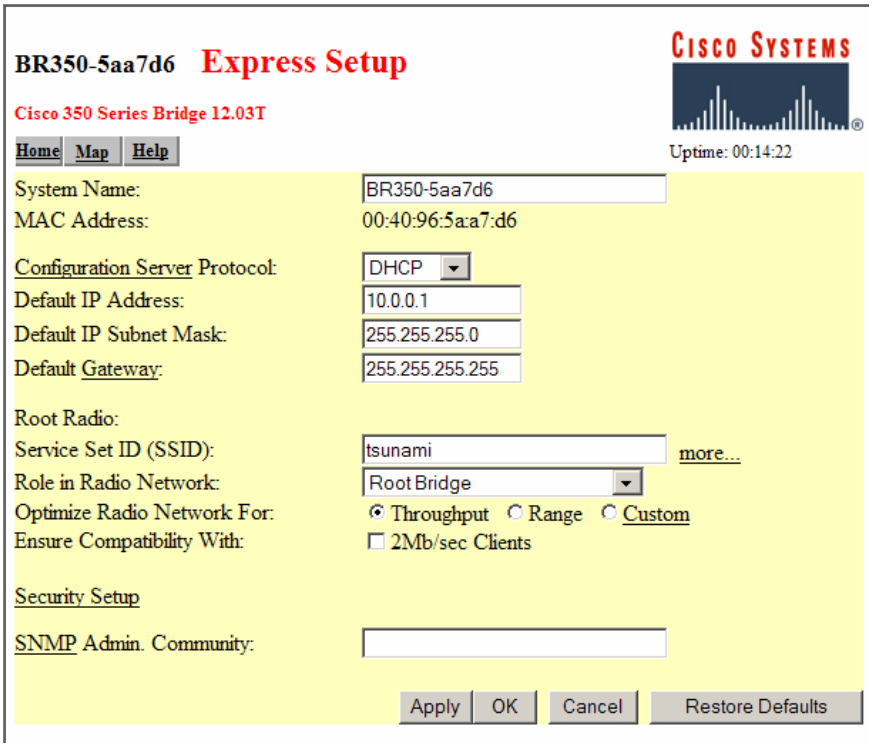
c. Open a web browser and enter the default bridge address. http://10.0.0.1 and press Enter.

d. Either of the following pages will appear:

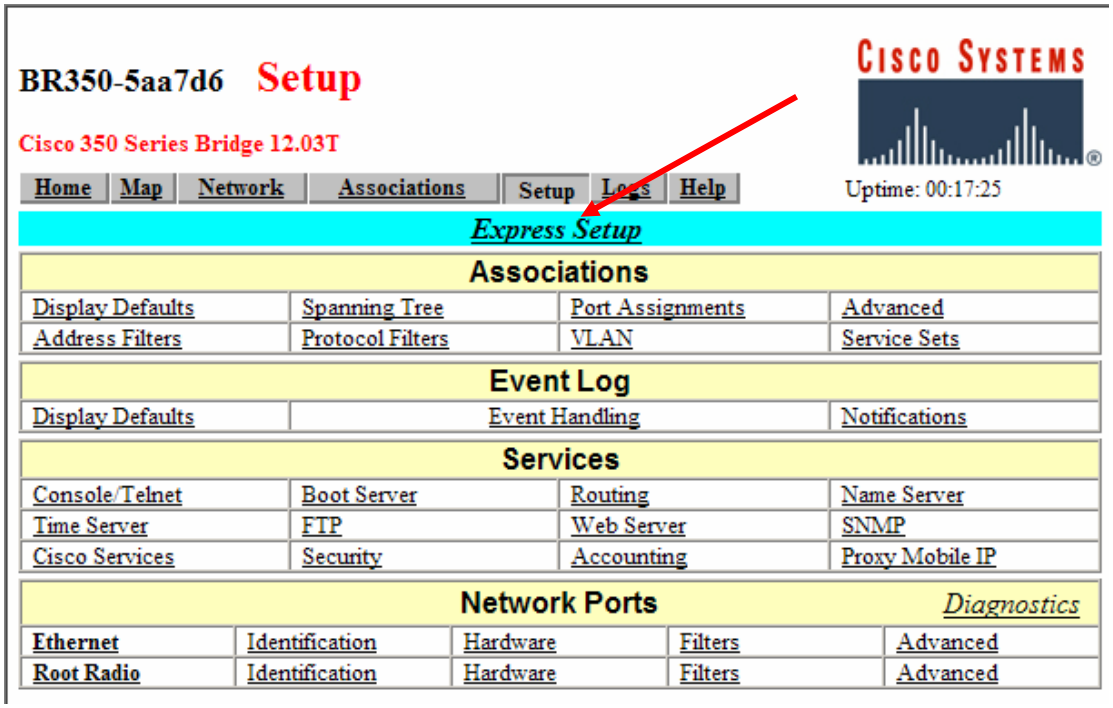
   i. The **Summary Status** Page, also known as the **Home** Page

   ii. The **Express Setup** Page



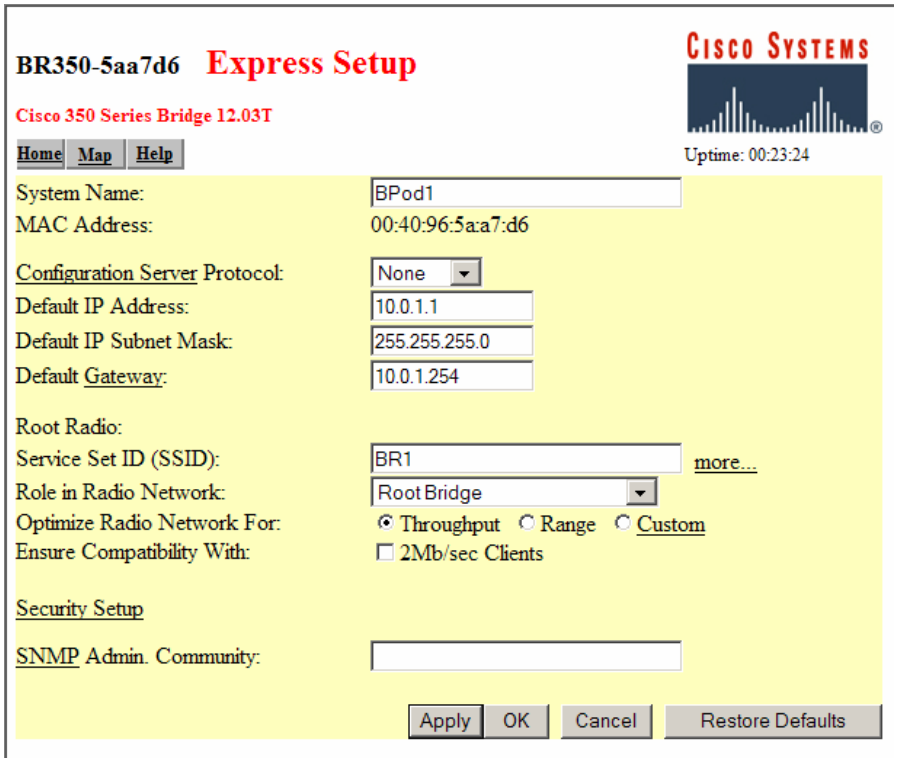


e. If the Express Setup Page does not appear, from the Summary Status Page click on the **Setup** hyperlink. This will bring up the Setup Page.



f. Now click on the ***Express Setup*** link. This will now bring up the Express Setup Page.

Step 3 Configure the bridge settings



Configure the following settings:

Parameter	BPod1	BPod2
• System Name:	***BPod1***	***BPod2***
• Configuration Server Protocol:	***None***	***None***
• Default IP address:	***192.168.1.3***	***192.168.1.4***
• Default Gateway:	***192.168.1.1***	***192.168.1.2***
• Service Set ID:	***BR1***	***BR1***
• Role in Radio Network:	***Root Bridge***	***Non-Root Bridge w/o Clients***

a. Click Apply. The connection will drop.

b. What roles can the bridge serve in the network?

_____

_____

_____

Step 4 Cable and configure the routers and PCs

Using dual Ethernet routers, such as an 806, 2514, or equivalent.

Configure both routers:

hostname Router1 int fa0/0 ip address 192.168.1.1 255.255.255.0 description outside no shut ! int fa0/1 ip address 10.0.1.1 255.255.255.0 description inside no shut ! router eigrp 1 network 10.0.0.0 network 192.168.1.0 no auto-summary ! line vty 0 4 password cisco login	hostname Router2 int fa0/0 ip address 192.168.1.2 255.255.255.0 description outside no shut ! int fa0/1 ip address 10.0.2.1 255.255.255.0 description inside no shut ! router eigrp 1 network 10.0.0.0 network 192.168.1.0 no auto-summary ! line vty 0 4 password cisco login

Configure the PCs:

- PC1 with an IP address of 10.0.1.10/24.
- PC2 with an IP address of 10.0.2.10/24

a. Reconnect to the using the browser. Enter 10.0.P.1 and connect.

b. Verify the settings.

1. What other routing method can be used instead of EIGRP?

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2. Can static routes be used? If so, what is the advantage/disadvantage?

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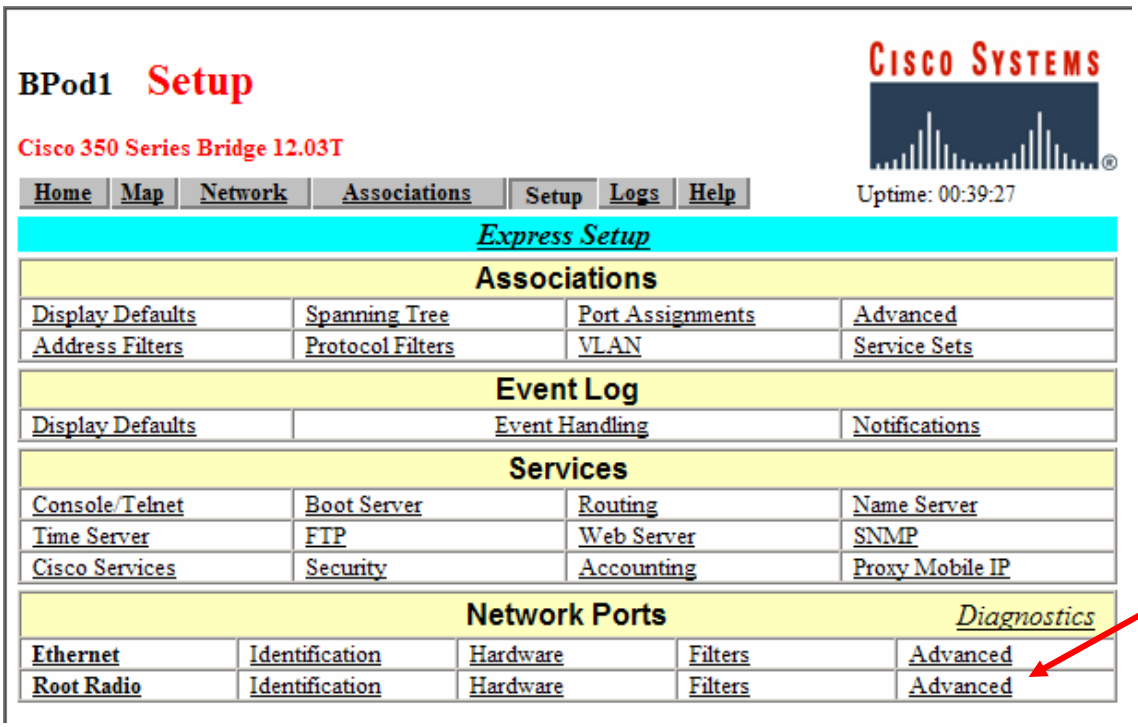
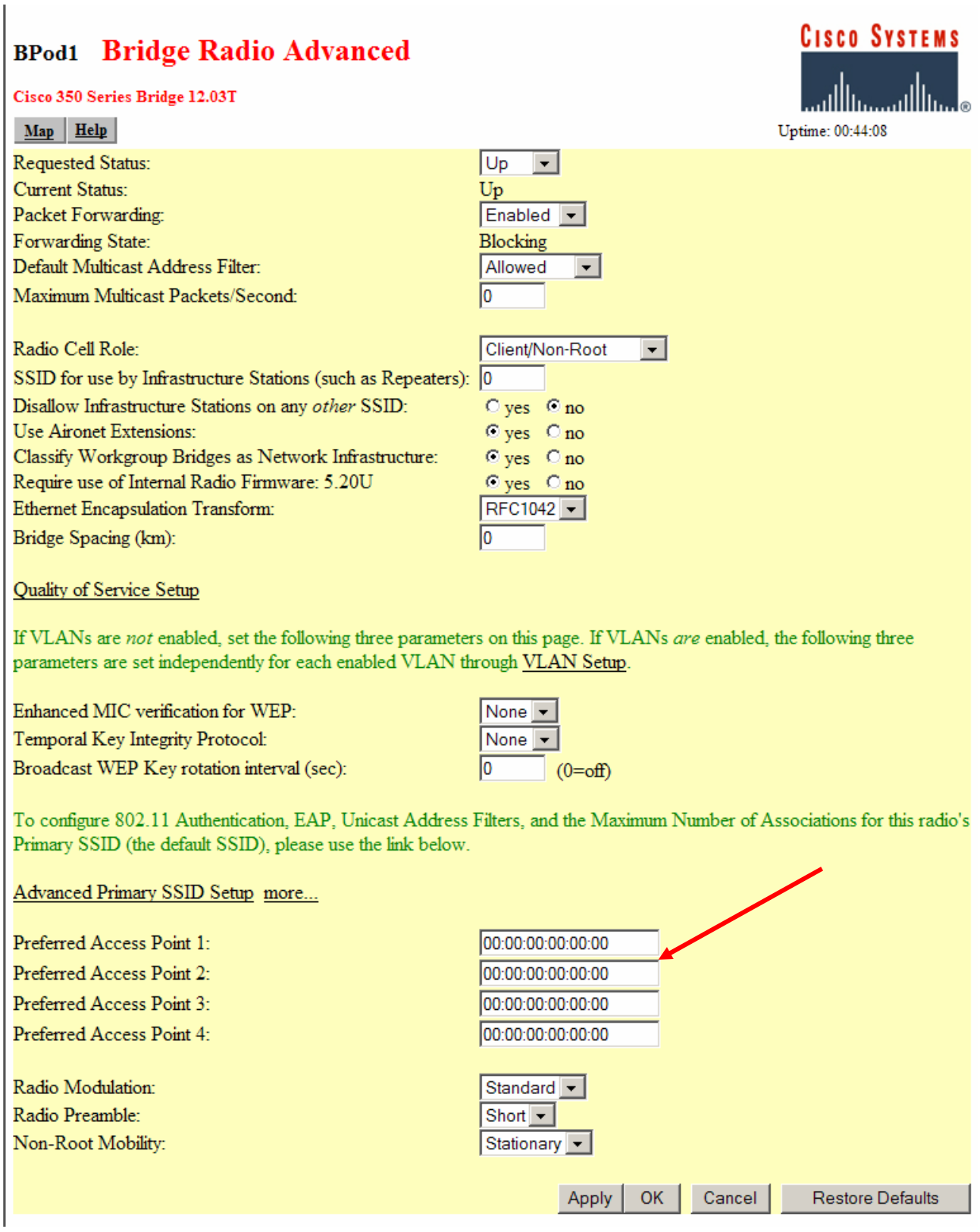
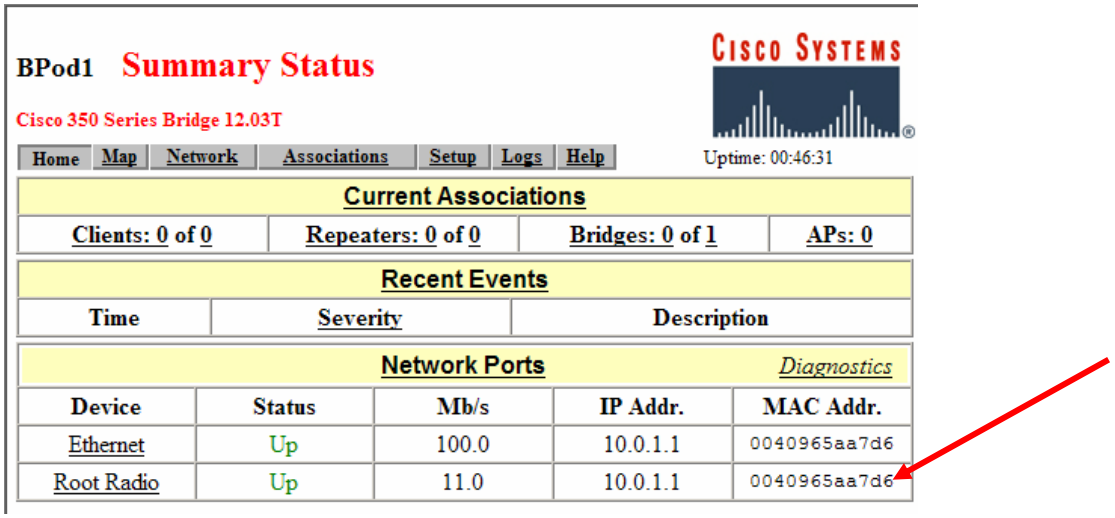
Step 5 Advanced Radio settings for the non-root bridge



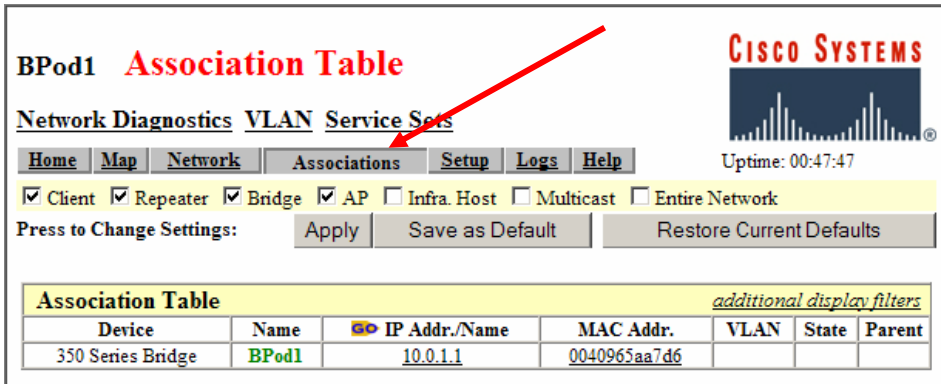
a. From the **Setup** Page, Click on the Root Radio>Advanced link to go to the **Radio Advanced** page of the Non-Root Bridge.



b. Enter the MAC address of the Root Bridge into the **Preferred AP 1:** field. This can be found on the bottom of the Root Bridge or from the Root Bridge **Home** Page.



c. Click the **Apply** button to apply the settings.



d. Go to the **Associations** page of the Root Bridge.

1. Is the Non-Root Bridge in the Association table?

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Step 7 Test the connection

Verify client PCs are configured with the appropriate IP address. The only wireless devices on this topology will be the two wireless multi-function bridges used for the point-to-point connection.

a. Once the wireless bridge link is configured properly, ping from PC1 to Router 1 inside Ethernet port. Then ping to Router1 outside port. If successful, ping from PC1 to BPod2. Ping from PC1 to Router2 outside port, followed by a ping to Router2 inside port. Finally, Ping from PC1 to PC2.

b. Were these successful? _____

c. Test layer 7 connectivity by browsing to BPod2 from PC1.

d. Configure FTP or Web services on PC1 and PC2. Transfer a files from PC1 to PC2 and vice versa. Calculate the download performance across the wireless link.

e. What was the download speed in Mbps? _____

f. How was this calculated?

_____

g. What is the speed limitation?

_____

