



## Lab 6.3.6.1 Configure Site-to-Site Wireless Link

Estimated Time: 60 minutes

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

### Objective

Configure a site-to-site bridged network.

### Scenario

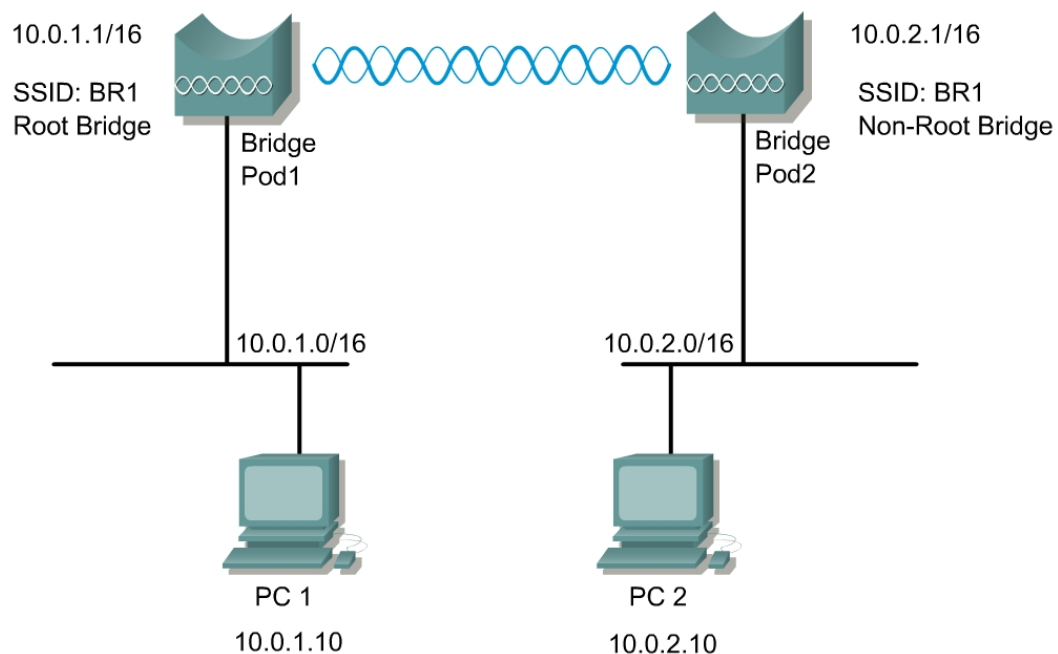
A remote location several miles away requires connectivity to the existing wired network. The two LAN segments will use a wireless bridge for their physical layer connection using two Cisco Aironet Bridges (BR350s).

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**Note** This lab uses a different subnet mask to identify the two segments of the same network. These two segments, although separated by distance, remain part of the same LAN through the use of a Wireless physical layer link.

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### Topology



## Preparation

In this lab, the following will be configured.

Device Name	Label	SSID	Address
BPod1	BR1	BR1	10.0.1.1/16
BPod2	BR2	BR1	10.0.2.1/16

## Tools and Resources

Each team will require the following:

- Two wired LAN segments that will be bridged together
- Two Cisco BR350
- PC with FTP server loaded and a file to transfer in the root directory of the FTP server

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**Note** This lab uses a FTP client/server functionality. Download an evaluation version or freeware/shareware version to accomplish this lab. Use a search engine using the keywords 'ftp server downloads' as a start.

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## Step 1 Cable and power the bridge



- a. First, attach two rubber duck antennas to the RP-TNC connectors.
- b. Plug the RJ-45 Ethernet cable into the Ethernet port on the back of the bridge. Plug the other end of the Ethernet cable into the Cisco Aironet power injector TO AP/BRIDGE end.
- c. Connect the power cable into the inline power injector and to the receptacle.

## Step 2 Connect to the bridge



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. If this is the case, 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**.

```
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...
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- e. Type **yes**, and press **Enter** to confirm the command.
- f. Power cycle the bridge by removing the power.

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**Note** :resetall can only be issued within the first 2 minutes after power on.

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### Step 3 Connect to the BR350 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, type the default bridge address <http://10.0.0.1>, and press Enter.
- d. Either of the following pages will appear:
  1. The **Summary Status** Page, also known as the **Home** Page
  2. The **Express Setup** Page

BR350-5aa7d6 **Summary Status**

Cisco 350 Series Bridge 12.03T

Home Map Network Associations Setup Logs Help

Uptime: 00:13:00

Current Associations

Clients: 0 of 0 Repeater: 0 of 0 Bridges: 0 of 1 APs: 0

Recent Events

Time	Severity	Description
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Network Ports

Diagnostics

Device	Status	Mb/s	IP Addr.	MAC Addr.
Ethernet	Up	100.0	10.0.0.1	0040965aa7d6
Root Radio	Up	11.0	10.0.0.1	0040965aa7d6

BR350-5aa7d6 **Express Setup**

Cisco 350 Series Bridge 12.03T

Home Map Help

Uptime: 00:14:22

System Name: BR350-5aa7d6

MAC Address: 00:40:96:5a:a7:d6

Configuration Server Protocol: DHCP

Default IP Address: 10.0.0.1

Default IP Subnet Mask: 255.255.255.0

Default Gateway: 255.255.255.255

Root Radio:

Service Set ID (SSID): tsunami more...

Role in Radio Network: Root Bridge

Optimize Radio Network For: ☒ Throughput ☐ Range ☐ Custom

Ensure Compatibility With: ☐ 2Mb/sec Clients

Security Setup

SNMP Admin. Community:

Apply OK Cancel Restore Defaults

- 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.

**BR350-5aa7d6 Setup**

Cisco 350 Series Bridge 12.03T

Home Map Network Associations **Setup** Logs Help

Uptime: 00:17:25

**Express Setup**

**Associations**

<a href="#">Display Defaults</a>	<a href="#">Spanning Tree</a>	<a href="#">Port Assignments</a>	<a href="#">Advanced</a>
<a href="#">Address Filters</a>	<a href="#">Protocol Filters</a>	<a href="#">VLAN</a>	<a href="#">Service Sets</a>

**Event Log**

<a href="#">Display Defaults</a>	<a href="#">Event Handling</a>	<a href="#">Notifications</a>
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**Services**

<a href="#">Console/Telnet</a>	<a href="#">Boot Server</a>	<a href="#">Routing</a>	<a href="#">Name Server</a>
<a href="#">Time Server</a>	<a href="#">FTP</a>	<a href="#">Web Server</a>	<a href="#">SNMP</a>
<a href="#">Cisco Services</a>	<a href="#">Security</a>	<a href="#">Accounting</a>	<a href="#">Proxy Mobile IP</a>

**Network Ports** [Diagnostics](#)

<a href="#">Ethernet</a>	<a href="#">Identification</a>	<a href="#">Hardware</a>	<a href="#">Filters</a>	<a href="#">Advanced</a>
<a href="#">Root Radio</a>	<a href="#">Identification</a>	<a href="#">Hardware</a>	<a href="#">Filters</a>	<a href="#">Advanced</a>

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

#### Step 4 Configure the bridge settings

**BR350-5aa7d6 Express Setup**

Cisco 350 Series Bridge 12.03T

Home Map Help

Uptime: 00:23:24

System Name: BPod1

MAC Address: 00:40:96:5aa7:d6

Configuration Server Protocol: None

Default IP Address: 10.0.1.1

Default IP Subnet Mask: 255.255.0.0

Default Gateway: 10.0.1.254

Root Radio:

Service Set ID (SSID): BR1 [more...](#)

Role in Radio Network: Root Bridge

Optimize Radio Network For: ☒ Throughput ☐ Range ☐ Custom

Ensure Compatibility With: ☐ 2Mb/sec Clients

[Security Setup](#)

SNMP Admin. Community:

Apply OK Cancel Restore Defaults

Configure the following settings:

- | Parameter  | BPod1              | BPod2                              |
|--|--------------------|------------------------------------|
| a. System Name:  | <b>BPod1</b>       | <b>BPod2</b>                       |
| b. Configuration Server Protocol:  | <b>None</b>        | <b>None</b>                        |
| c. Default IP address:   | <b>10.0.1.1</b>    | <b>10.0.2.1</b>                    |
| d. Default Gateway:  | <b>10.0.1.254</b>  | <b>10.0.1.254</b>                  |
| e. Service Set ID:   | <b>BR1</b>         | <b>BR1</b>                         |
| f. Role in Radio Network:  | <b>Root Bridge</b> | <b>Non-Root Bridge w/o Clients</b> |
| g. Click Apply. The connection will drop.  |                    |                                    |
| h. Configure the PCs   |                    |                                    |
| <ul style="list-style-type: none"> <li>• PC1 with an IP address of 10.0.1.10/16</li> <li>• PC2 with an IP address of 10.0.2.10/16</li> </ul> |                    |                                    |
| i. Reconnect to the using the browser. Enter 10.0.P.1 and connect.   |                    |                                    |
| j. Verify the settings.  |                    |                                    |
| 1. What roles can the bridge serve in the network?   |                    |                                    |

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## Step 5 Advanced radio settings for the non-root bridge

### BPod1 Setup

Cisco 350 Series Bridge 12.03T



Uptime: 00:39:27

[Home](#)
[Map](#)
[Network](#)
[Associations](#)
[Setup](#)
[Logs](#)
[Help](#)

[Express Setup](#)

Associations				
<a href="#">Display Defaults</a>	<a href="#">Spanning Tree</a>	<a href="#">Port Assignments</a>	<a href="#">Advanced</a>	
<a href="#">Address Filters</a>	<a href="#">Protocol Filters</a>	<a href="#">VLAN</a>	<a href="#">Service Sets</a>	

Event Log		
<a href="#">Display Defaults</a>	<a href="#">Event Handling</a>	<a href="#">Notifications</a>

Services			
<a href="#">Console/Telnet</a>	<a href="#">Boot Server</a>	<a href="#">Routing</a>	<a href="#">Name Server</a>
<a href="#">Time Server</a>	<a href="#">FTP</a>	<a href="#">Web Server</a>	<a href="#">SNMP</a>
<a href="#">Cisco Services</a>	<a href="#">Security</a>	<a href="#">Accounting</a>	<a href="#">Proxy Mobile IP</a>

Network Ports				<a href="#">Diagnostics</a>
<a href="#">Ethernet</a>	<a href="#">Identification</a>	<a href="#">Hardware</a>	<a href="#">Filters</a>	<a href="#">Advanced</a>
<a href="#">Root Radio</a>	<a href="#">Identification</a>	<a href="#">Hardware</a>	<a href="#">Filters</a>	<a href="#">Advanced</a>

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

## BPod1 Bridge Radio Advanced

Cisco 350 Series Bridge 12.03T



Uptime: 00:44:08

[Map](#) [Help](#)

Requested Status:	Up
Current Status:	Up
Packet Forwarding:	Enabled
Forwarding State:	Blocking
Default Multicast Address Filter:	Allowed
Maximum Multicast Packets/Second:	0
Radio Cell Role:	Client/Non-Root
SSID for use by Infrastructure Stations (such as Repeaters):	0
Disallow Infrastructure Stations on any other SSID:	<input type="radio"/> yes <input checked="" type="radio"/> no
Use Aironet Extensions:	<input checked="" type="radio"/> yes <input type="radio"/> no
Classify Workgroup Bridges as Network Infrastructure:	<input checked="" type="radio"/> yes <input type="radio"/> no
Require use of Internal Radio Firmware: 5.20U	<input checked="" type="radio"/> yes <input type="radio"/> no
Ethernet Encapsulation Transform:	RFC1042
Bridge Spacing (km):	0

### Quality of Service Setup

If VLANs are *not* enabled, set the following three parameters on this page. If VLANs *are* enabled, the following three parameters are set independently for each enabled VLAN through [VLAN Setup](#).

Enhanced MIC verification for WEP:	None
Temporal Key Integrity Protocol:	None
Broadcast WEP Key rotation interval (sec):	0 (0=off)

To configure 802.11 Authentication, EAP, Unicast Address Filters, and the Maximum Number of Associations for this radio's Primary SSID (the default SSID), please use the link below.

### [Advanced Primary SSID Setup](#) [more...](#)

Preferred Access Point 1:	00:00:00:00:00:00
Preferred Access Point 2:	00:00:00:00:00:00
Preferred Access Point 3:	00:00:00:00:00:00
Preferred Access Point 4:	00:00:00:00:00:00
Radio Modulation:	Standard
Radio Preamble:	Short
Non-Root Mobility:	Stationary

[Apply](#) [OK](#) [Cancel](#) [Restore Defaults](#)

- 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.

**BPod1 Summary Status** CISCO SYSTEMS

Cisco 350 Series Bridge 12.03T

Home Map Network Associations Setup Logs Help Uptime: 00:46:31

Current Associations			
Clients: 0 of 0	Repeaters: 0 of 0	Bridges: 0 of 1	APs: 0

Recent Events		
Time	Severity	Description

Network Ports			Diagnostics	
Device	Status	Mb/s	IP Addr.	MAC Addr.
Ethernet	Up	100.0	10.0.1.1	0040965aa7d6
Root Radio	Up	11.0	10.0.1.1	0040965aa7d6

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

**BPod1 Association Table** CISCO SYSTEMS

Network Diagnostics VLAN Service Sets

Home Map Network Associations Setup Logs Help Uptime: 00:47:47

☒ Client ☒ Repeater ☒ Bridge ☒ AP ☐ Infra. Host ☐ Multicast ☐ Entire Network

Press to Change Settings: Apply Save as Default Restore Current Defaults

Association Table							additional display filters
Device	Name	IP Addr./Name	MAC Addr.	VLAN	State	Parent	
350 Series Bridge	BPod1	10.0.1.1	0040965aa7d6				

- d. Go to the **Associations** page of the Root Bridge. Is the Non-Root Bridge in the Association table?

## 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 BPod2. Then ping from PC1 to PC2.

1. Were these successful?

- b. Test layer 7 connectivity by browsing to BPod2 from PC1.

- c. 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.

1. What was the download speed in Mbps?



2. How was this calculated?

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3. What is the speed limitation?

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