



## Special Configurations

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This chapter describes how to set up the access point in network roles other than as a root unit on a wired LAN. You can set up an access point as a repeater to extend the range of a wireless network, and you can use Hot Standby mode to use an access point as a backup unit in areas where you need extra reliability. Both configurations require two access points that support and rely upon each other.

This chapter contains the following sections:

- [Setting Up a Repeater Access Point, page 12-2](#)
- [Using Hot Standby Mode, page 12-5](#)

# Setting Up a Repeater Access Point

A repeater access point is not connected to the wired LAN; it is placed within radio range of an access point connected to the wired LAN to extend the range of your infrastructure or to overcome an obstacle that blocks radio communication.

**Note**

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Non-Cisco client devices might have difficulty communicating with repeater access points.

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The repeater forwards traffic between wireless users and the wired LAN by sending packets to either another repeater or to an access point connected to the wired LAN. The data is sent through the route that provides the greatest performance for the client.

You can only set up one of the radios in your access point as a repeater, the other performs as a normal root access point radio. When one of the radios is a repeater, the access point's Ethernet port is blocked. However, you can still configure the access point through the Ethernet port using a crossover cable when the repeater link is deactivated. [Figure 12-1](#) shows an access point acting as a repeater.

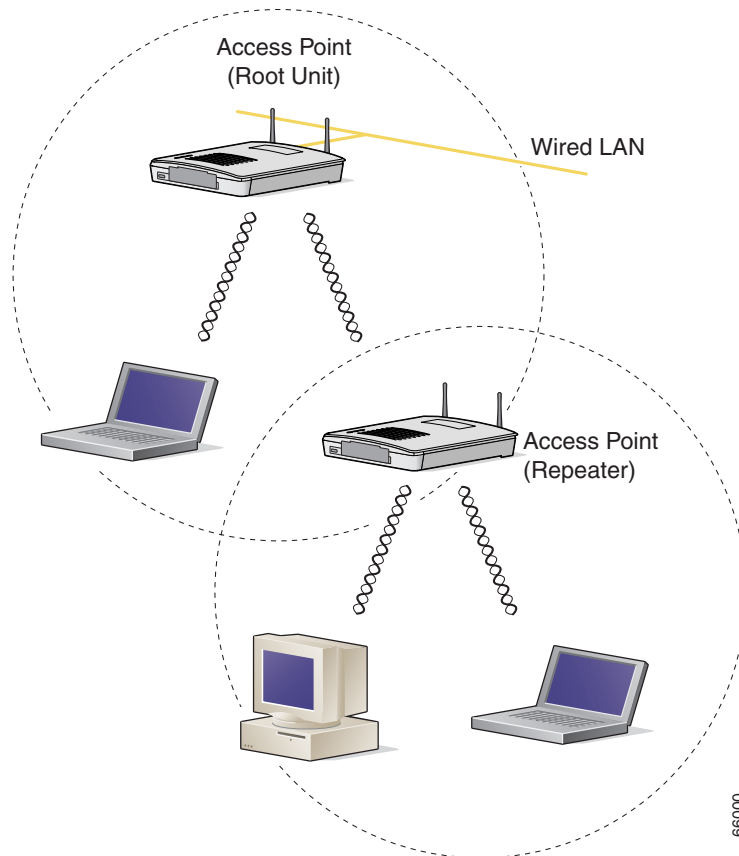
**Caution**

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To keep your network secure, make sure you set security levels on all access point radios. Security levels in a dual-radio access point, regardless of whether they are repeater or root access points, must be set separately. If you do not set security levels for both radios, unauthorized clients may be able to gain access to your network.

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Figure 12-1 Access Point as Repeater



You can set up a chain of several repeater access points, but throughput for client devices at the end of the repeater chain will be quite low. Because each repeater must receive and then re-transmit each packet on the same channel, throughput is cut in half for each repeater you add to the chain.

Omni-directional antennas, like the ones that ship with your access point, are best suited for repeater access points.

If you use EAP authentication on your wireless network, you can set up the repeater access point to authenticate using LEAP. See the [“Setting Up a Repeater Access Point As a LEAP Client”](#) section on page 8-19 for instructions on enabling LEAP on a repeater.

Follow these steps to set up a repeater access point:

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- Step 1** Use the *Quick Start Guide: Cisco 1200 Series Aironet Access Points* and the information in this manual to set up an access point as a root unit on the wired LAN.
- Step 2** Write down the root-unit access point’s MAC address. The MAC address appears on the label on the bottom of the access point.
- Step 3** The repeater access point will need to duplicate some of the root access point’s settings. If the root access point has been completely configured, browse to the root access point and write down the following settings so you can refer to them when you set up the repeater access point:
- SSID for the root radio (found on the Express Setup page)
  - Default IP Subnet Mask (also on the Express Setup page)




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**Note** You can also rely on the DHCP server to assign a default IP subnet mask.

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- Default Gateway (also on the Express Setup page)




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**Note** You can also rely on the DHCP server to assign a default gateway.

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- Data rates (found on the AP Radio Hardware page)
- WEP settings (found on the AP Radio Data Encryption page)
- Authentication Types (found on the AP Radio Data Encryption page)

If the root access point settings have not been changed from the factory defaults, you don't need to write them down. If you reconfigure the root access point, however, you must enter the same settings on the repeater access point.

**Step 4** Place the repeater access point within radio range of the root access point.

**Step 5** Connect power to the repeater access point. Consult the the *Quick Start Guide: Cisco 1200 Series Aironet Access Points* for power options.




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**Note** If both radios are set up as repeaters, the access point will not be connected to the wired LAN. Therefore, if you use a power injector, do not run Ethernet cable from the power injector to a switch.

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**Step 6** Connect a DB-9 to RJ-45 serial cable to the COM port on a computer and to the RJ-45 serial port on the access point.

**Step 7** Use a terminal emulator to open the access point's management system. Assign these port settings to the terminal emulator: 9600 baud, 8 data bits, No parity, 1 stop bit, and No flow control.

**Step 8** When the terminal emulator connects with the access point, press = to display the access point's Summary Status page. If the repeater access point has never been configured before, the Express Setup page will appear instead of the Summary Status page.

**Step 9** On the Express Setup page, enter the same SSID that is set on the root access point.




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**Note** [Step 10](#) and [Step 11](#) describe assigning a static IP address, subnet mask, and gateway to the repeater. However, you can rely on your DHCP server to assign these settings if you do not need them to remain fixed. If the repeater will use the DHCP server, skip to [Step 12](#).

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**Step 10** On the Express Setup page, enter a fixed IP address for the repeater access point in the Default IP address field.

**Step 11** Also on the Express Setup page, enter the same settings in the Default IP Subnet Mask and Default Gateway fields that are on the root access point.

**Step 12** On the Boot Server Setup page, select **none** for the Configuration Server Protocol. This setting will maintain a fixed IP address for the repeater access point.

If the root access point configuration has not been changed from the factory defaults, skip to [Step 16](#).

**Step 13** On the AP Radio Hardware page, enter the same settings for Data Rates that are on the root access point.

**Step 14** On the AP Radio Data Encryption page, enter the same WEP key settings that are on the root access point.

- Step 15** Also on the AP Radio Data Encryption page, select the same Authentication Types that are on the root access point.
- Step 16** On the AP Radio Advanced page, enter the root access point's MAC address in the Specified access point 1 entry field.
- Step 17** On the Express Setup page, select **Repeater Access Point** as the Role in Radio Network. The access point reboots when you apply this setting.
- Step 18** The status LED on the root access point should be steady green, indicating that at least one client device is associated to it. The status LED on the repeater access point is steady green when it is associated to the root access point and has client devices associated to it. The repeater's status LED is steady for 7/8 of a second and off for 1/8 of a second when it is associated to the root access point but has no client devices associated to it. The repeater access point should also appear as associated to the root access point in the root access point's Association Table.

## Using Hot Standby Mode

Hot Standby mode designates an access point as a backup for a root access point. The standby access point is placed near the access point it monitors and, with the exception of its IP address, it is configured exactly the same as the monitored access point. The standby access point associates to the monitored access point as a client and queries the monitored access point regularly through both the Ethernet and the radio. If the monitored access point fails to respond, the standby access point takes the monitored access point's place in the network.

Except for the settings specified below, the standby access point's settings should be identical to the settings on the monitored access point. The standby access point must also be able to associate to the root access point as a client. You use the Hot Standby page to set up the standby access point. [Figure 12-2](#) shows the Hot Standby page.

**Figure 12-2** Hot Standby Page

Map Help Uptime: 00:36:15

Service Set ID (SSID)	Test AP 2
MAC Address For the Monitored AP:	00:00:00:00:00:00
Polling Frequency:	1 (Seconds)
Polling Tolerance Duration:	5 (Seconds)
Current State:	Hot Standby is not running.
Current Status:	Hot Standby unit is OK.

Start Hot Standby Mode STOP Hot Standby Mode

Apply OK Cancel Restore Defaults

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**Note**

The Current State field varies depending on the hot standby status. It can display *Hot Standby is not running*, *Hot Standby is initializing*, or *Hot Standby is monitoring and protecting*. The change appears after you refresh the screen.

Follow this link path to reach the Hot Standby page:

- On the Summary Status page, click **Setup**.
- On the Setup page, click **Cisco Services** under Services.
- On the Cisco Services Setup page, click **Hot Standby Management**.

**Note**

Wireless client devices associated to the standby access point lose their connections to the hot standby access point when hot standby is started.

**Note**

An access point with dual radios may display a large number of spurious MIC errors in networks that have MIC enabled. These errors are caused by the hot standby unit and the root access points forming a redundant network connection. The errors do not affect normal or hot standby operation.

**Note**

If you set up two standby systems on the same subnet or if the default IP address is 10.0.0.2, you must manually set the default radio IP addresses to avoid an IP address conflict. When a hot standby unit takes over, it uses its default IP address (10.0.0.2), which is the default for all access points. Therefore, if two hot standby access points come on line at the same time (for example, as the result of a power failure), a duplicate IP address exists and a conflict occurs.

**Note**

For 2.4-GHz radios, the IP address is set on the Radio Internal Identification page. For the 5-GHz radio, the IP address is set on the Radio Module Identification page. You must configure each radio separately.

Follow these steps to enable hot standby mode:

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- Step 1** On the standby access point, duplicate the settings on the monitored access point. Critical settings include:
- SSID (on the Express Setup page)
  - Default IP Subnet Mask (also on the Express Setup page)
  - Default Gateway (also on the Express Setup page)
  - Data rates (on the AP Radio Hardware page)
  - WEP settings (on the AP Radio Data Encryption page)
  - Authentication Types (on the AP Radio Data Encryption page)
- Step 2** On the standby access point, browse to the AP Radio Identification page:
- a. On the Summary Status page, click **Setup**.
  - b. On the Setup page, click **Identification** in the AP Radio row under Network Ports.
- Step 3** Select **no** for the Adopt Primary Port Identity option and click **Apply**. The access point reboots. After the access point reboots, the radio has its own identity: the radio IP and MAC addresses are different from the Ethernet addresses. The default IP address for the radio is 10.0.0.2. In three situations, you might need to change the radio IP address from its default setting:
- You must change the radio IP address if you need to use 10.0.0.2 for the Ethernet IP address. The Ethernet and radio ports on the standby access point must have different IP addresses.
  - You must change the radio IP address if you need to browse to the standby access point through its radio port. If you need to browse to the access point through the radio port, passing the port an IP address on the same subnet as the Ethernet IP address.
  - You must change the radio IP addresses on each standby access point if you are setting up more than one standby access point on the same subnet.
- Step 4** After the access point reboots, browse to the Hot Standby page.
- Step 5** Enter the monitored access point's SSID in the Service Set ID entry field.
- Step 6** Enter the monitored access point's MAC address in the MAC Address For the Monitored AP entry field.
- Step 7** Enter the number of seconds between each query the standby access point sends to the monitored access point.
- Step 8** Enter the number of seconds the standby access point should wait for a response from the monitored access point before it assumes that the monitored access point has malfunctioned.
- Step 9** Click **Start Hot Standby Mode**. The standby access point becomes a client device associated to the monitored access point.
- Step 10** Click the browser's refresh button to verify that the Current State line on the Hot Standby Setup page states that hot standby is initialized.



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**Note** After the monitored access point malfunctions and the standby access point takes the root access point's place, the hot standby access point's hot standby mode must be manually set when the monitored access point is repaired or replaced. The standby access point does not revert to standby mode automatically.

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**Note**

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If you need to browse to the standby access point from a workstation that is on a different subnet than the standby access point, set the IP address on the standby radio interface to a subnet that is compatible with the workstation's IP address. Use the Internal or Module Radio ID page to enter a new IP address for the standby radio.

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