



## Configuring the Bridge

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This chapter describes initial configuration of the bridge using the Internet browser-based management system and the console-based management system, which you access through Telnet. To perform more extensive configuration, refer to the *Cisco Aironet Workgroup Bridge Software Configuration Guide*. This chapter describes all initial configurations that must be established before performing those configurations addressed in the software guide. This chapter includes the following sections:

- Preparing for Configuration, page 3-2
- Information You Need Before Configuration, page 3-2
- Installing the IP Setup Utility, page 3-3
- Summary of Configuration Steps, page 3-3
- Options for Initial Configuration, page 3-4
- Configuring the Bridge, page 3-11

# Preparing for Configuration

## Information You Need Before Configuration

Before configuring your bridge, ask your network administrator for the following information:

- The service set identifier (SSID) for the bridge. The SSID should match the SSID of the access point the bridge will communicate with.
- A client name for the bridge. The name should describe the location or principal users of the bridge.
- The correct WEP key settings for the bridge.
- If your network does not use DHCP to assign IP addresses, you will need an IP address for the bridge.

## Default Settings

Table 3-1 lists the bridge's default settings.

**Table 3-1** *Default Settings on the Bridge*

Setting Name	Default Value
IP address	192.168.200.1
SSID	tsunami
Authentication type	open
WEP level	off
Node name	AIR-WGB34X_XXXXXX (the last six characters of the unit's MAC address) AIR-WGB35X_XXXXXX

## Installing the IP Setup Utility

You can use the IP Setup Utility (IPSU) to find the bridge's IP address when it has been assigned by a DHCP server. You may also use IPSU to set the bridge's IP address and SSID, depending on which configuration method you choose.

The IPSU cannot query the bridge's IP address when the computer running IPSU is on a different subnet than the bridge. If your bridge receives an IP address from a DHCP server, you must install and run IPSU on a computer on the same subnet as the bridge. However, because IPSU uses IP multicast, it can set the bridge's IP address and SSID when the computer running IPSU is on a different subnet than the bridge.

**Note**

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IPSU may not function correctly if the computer on which you install IPSU uses Windows 95 or Windows 95A, and the Microsoft Office Suite has not been installed on the computer. Install IPSU on another computer if one is available.

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- Step 1** Put the Cisco Aironet Series Workgroup Bridge CD in the CD-ROM drive of the computer you are using to configure the bridge.
  - Step 2** Use Windows Explorer to view the contents of the CD. Double-click the IPSU folder, and then double-click the file called *setup.exe*. Follow the steps provided by the installation wizard.
  - Step 3** Double-click the IPSU icon on your computer desktop to start the utility.
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## Summary of Configuration Steps

Follow these steps when configuring the bridge. The steps are described in detail in this chapter.

1. Read the “Options for Initial Configuration” section to choose the configuration method best suited for your network configuration.
2. Perform the initial setup of the bridge according to the steps for the configuration method you select.
3. Use an Internet browser or Telnet to configure the bridge.

4. Unplug the power adapter and disconnect the bridge from the PC or hub. The configuration remains in the bridge's memory after you remove power.
5. Place the bridge near the device or hub it will serve. If you need to mount the bridge on a wall, follow the instructions in *Mounting Instructions for the Cisco Aironet Workgroup Bridge*, a short document printed on plain paper which is included in the bridge package.
6. Use an Ethernet cable to connect the bridge to the hub it will serve, and plug in the bridge's power adapter.

## Options for Initial Configuration

You can use one of three methods to configure the bridge:

- Use a computer connected to your wired LAN or wireless network to communicate with the bridge through a Cisco Aironet access point. The computer you use for configuration must be on the same subnet as the bridge.
- Use a computer on your wired LAN to communicate with the bridge through a hub on your wired LAN. The computer you use for configuration must be on the same subnet as the bridge.
- Use a non-networked computer to communicate directly with the bridge through a crossover cable.

Each method is described in the following subsections.

# Remote Configuration Using a Computer Communicating through an Access Point



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**Note** The workgroup bridge communicates only with Cisco Aironet Access Points.

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**Step 1** Adjust the following settings on the access point to allow it to communicate with the bridge:

- On the access point's Express Setup management page, set the Access Point's SSID to **tsunami**, which matches the bridge's default SSID.
- On the access point's AP Radio Data Encryption management page, set the encryption mode to **off**.

To configure the bridge using a computer connected to your network with an access point and DHCP server, continue with Step 2 through Step 5.

If you do not have a DHCP server, set your PC to an address of 192.168.200.5. Then browse or Telnet to 192.168.200.1. Skip to the "Configuring the Bridge" section on page 3-11.

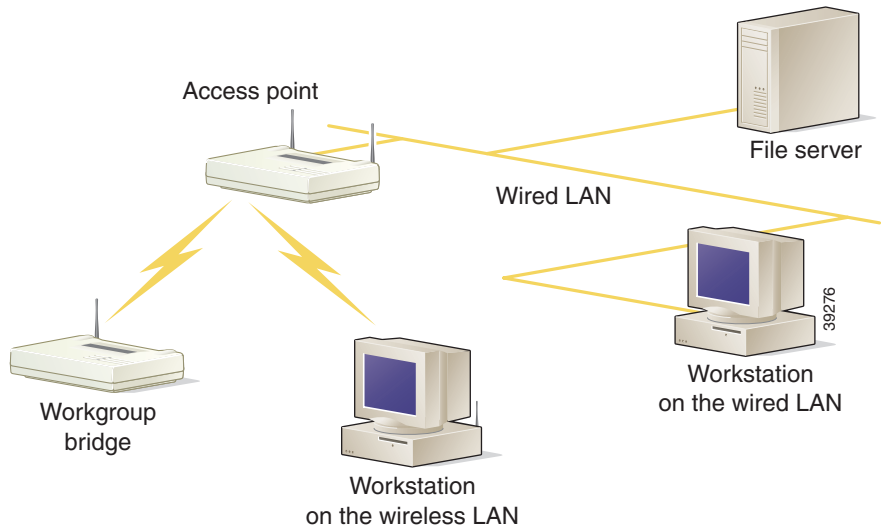
**Step 2** Place the bridge in the vicinity of an access point and plug in the power adapter. Figure 3-1 illustrates this configuration method.



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**Note** The bridge communicates with the access point when you apply power to the bridge. If your network uses a DHCP server, and if the bridge's Ethernet port is connected to a device, the bridge receives an IP address on your network. When the bridge's IP address is changed from the default setting, it can no longer be set using the IPSU.

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**Figure 3-1 Remote Configuration through an Access Point**

- Step 3** When the status LED on the bridge is green (to show association of the bridge to the access point), go to the association table on the access point. Find the entry `WGB3XX_xxxxxx` (xxxxxx is the last six digits of the MAC address of the access point).
- Step 4** Record the IP address of that entry.
- Step 5** Browse to the bridge's management home page and complete the configuration by following the steps in the "Configuring the Bridge" section on page 3-11.
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## Configuration through a Wired LAN

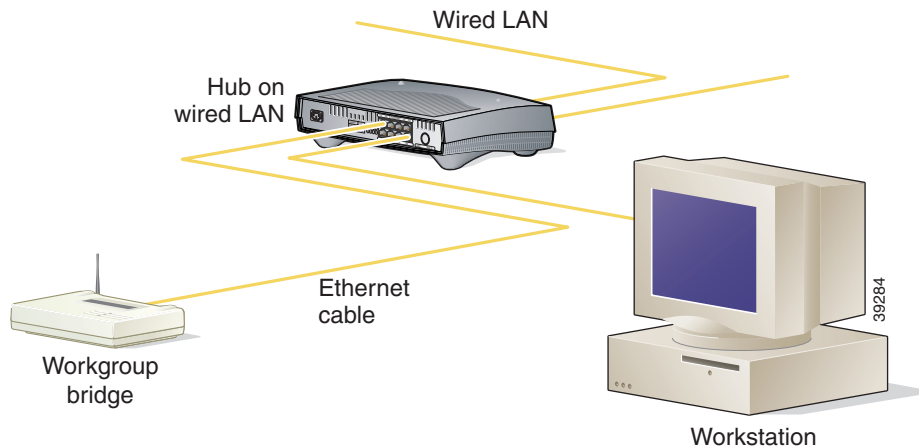
Use a straight-through Ethernet cable to connect the bridge to a standard port on a hub on your wired network, as shown in Figure 3-2.



### Caution

If the bridge is connected to the wired LAN and is communicating with an access point on the same LAN, a network problem known as a bridge loop can occur. Avoid a bridge loop by disconnecting the bridge from the wired LAN immediately after you configure it. For more information on bridge loops, refer to the “Bridge Loops with Incorrect Network Topology” section on page 3-17.

**Figure 3-2** Bridge Plugged into a Hub on the Wired LAN



- Step 1** Plug in the bridge’s power adapter. The bridge receives a DHCP-assigned IP address.
- Step 2** Double-click the **IPSU** icon on your desktop to start the utility. (If IPSU is not installed on your computer, follow the steps in the “Installing the IP Setup Utility” section on page 3-3 to install it.)
- Step 3** When the utility window opens, make sure **Get IP addr** is selected in the Function box.

- Step 4** Enter the bridge's MAC address in the Device MAC ID field. The bridge's MAC address is printed on the label on the bottom of the unit. It should contain six pairs of hexadecimal digits. Your bridge's MAC address might look like the following example:

11223a4D5566




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**Note** The MAC address field is not case-sensitive.

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- Step 5** Click **Get IP Address**.

- Step 6** When the bridge's IP address appears in the IP Address field, write it down.

If IPSU reports that the IP address is 192.168.200.1 (the default IP address), then the bridge did not receive a DHCP-assigned IP address. To assign an IP address, go to Step 7. If you do not need to assign an address, skip to Step 12.




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**Note** The computer you use to assign an IP address to the bridge must have an IP address of its own.

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- Step 7** Make sure **Set Parameters** is selected in the Function box of the IPSU window.

- Step 8** Enter the bridge's MAC address in the Device MAC ID field.

- Step 9** In the IP Address field, enter the IP address the network administrator gave you to assign to the bridge. The IP address of the PC should be on the same subnet as the IP address you are assigning to the bridge.

- Step 10** Enter the SSID you want to assign to the bridge in the SSID field.




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**Note** You cannot set the SSID without also setting the IP address. However, you can set the IP address without setting the SSID.

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- Step 11** Click the **Set Parameters** button. You will see a message that the SSID was successfully set.

- Step 12** To check the IP address, browse to the bridge's browser-based management pages.

- Step 13** Enter the bridge's IP address in the browser's location or address field. (If you are using Netscape, the field is labeled *Netsite* or *Location*; if you are using Microsoft Internet Explorer, the field is labeled *Address*.)

- Step 14** Press **Enter**. The bridge's main menu page appears.
- Step 15** Disconnect the unit from your wired LAN and connect it to the hub it will serve.
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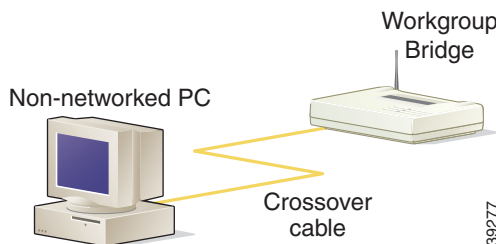
## Local Configuration Using a Non-Networked Computer

If you use a non-networked computer to configure the bridge, you must use a crossover cable to connect the computer to the bridge, and the computer must have the following:

- TCP/IP network protocol installed.
- IP Setup Utility (IPSU) installed. To install this utility, see the “Installing the IP Setup Utility” section on page 3-3.

Connect the bridge and a non-networked PC with a crossover cable as shown in Figure 3-3. Appendix C contains a pinout diagram if a standard crossover cable is not available.

**Figure 3-3** Local Configuration Using a Non-Networked PC



To use a non-networked computer to configure the bridge, follow these steps:

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- Step 1** Power on both devices.
- Step 2** Double-click the **IP Setup** icon on your computer desktop.
- Step 3** When the utility window opens, make sure **Set Parameters** is selected in the Function box.

- Step 4** Enter the bridge's MAC address in the Device MAC ID field. The bridge's MAC address is printed on the label on the bottom of the unit. It should contain six pairs of hexadecimal digits. Your bridge's MAC address might look like the following example:

11223a4D5566

**Note**

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The MAC address field is not case-sensitive.

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- Step 5** In the IP Address field, type the IP address the network administrator gave you to assign to the bridge. The IP address of the PC should be on the same subnet as the IP address you are assigning to the bridge.

- Step 6** Enter the SSID you want to assign to the bridge in the SSID field.

**Note**

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You cannot set the SSID without also setting the IP address. However, you can set the IP address without setting the SSID.

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- Step 7** Click **Set Parameters**.

- Step 8** To test the IP address, open an Internet browser.

- Step 9** Enter the bridge's IP address in the browser's location or address field. (If you are using Netscape, the field is labeled *Netsite* or *Location*; if you are using Microsoft Internet Explorer, the field is labeled *Address*.)

- Step 10** Press **Enter**. The bridge's main menu page appears.
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# Configuring the Bridge

After you choose an initial configuration for the bridge, you can choose to access the bridge's management system through your Internet browser or through a Telnet session. Each method is described below.

## Using an Internet Browser

Follow these steps to configure the bridge with an Internet browser:

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- Step 1** Open an Internet browser.
  - Step 2** Enter the bridge's IP address in the browser's location field. (If you are using Netscape, the field is labeled *Netsite* or *Location*; if you are using Microsoft Internet Explorer, the field is labeled *Address*.) Press **Enter**.
  - Step 3** When the bridge's management home page appears, click **Allow Config Changes** in the upper-left corner.
  - Step 4** In the Configuration menu, click **Radio**.

**Caution**

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If you are configuring the bridge through a wireless connection, changing the SSID in the next step could interrupt connectivity to the device. Take care to enter an SSID that matches the SSID of an access point near the bridge.

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- Step 5** On the Radio page, look at the SSID in the Service set identifier field. If it is *tsunami*, the default setting, delete it and type the SSID provided by your network administrator. Click **Save**.

If you already set the SSID using IPSU and the SSID in the Service set identifier field is correct, you do not need to set it again.




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**Note** Step 6 through Step 14 help you set the bridge's WEP key. Wired Equivalent Privacy (WEP) is an optional IEEE 802.11 feature that provides data confidentiality equivalent to a wired LAN without crypto techniques to enhance privacy. Use WEP to encrypt data signals sent from the bridge to wireless client devices and to decrypt data signals sent from client devices to the bridge. If your wireless network does not use WEP, skip to Step 16.

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- Step 6** In the Item column on the Radio page, click **Privacy configuration**.
- Step 7** In the Privacy configuration menu, click **Set the keys**.
- Step 8** Click inside the box labeled *Enter a key number from 1 to 4*.
- Step 9** Enter the number of the WEP key your network administrator asked you to set and click **Save**.
- Step 10** Enter the key provided by your network administrator in the Enter a key of hex digits field. If you are setting a 40-bit key, enter 10 hexadecimal characters (any combination of 0 through 9, a through f, or A through F). If you are setting a 128-bit key, enter 26 hexadecimal characters. Click **Save**.
- Step 11** You are prompted to re-enter the key for verification. Enter the key and click **Save**.
- Step 12** In the Privacy configuration menu, in the row labeled *Key number for transmit*, click inside the box labeled *a key number from 1 to 4*.




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**Note** The WEP key you use to transmit data must be set up exactly the same on your access point and your bridge. For example, if you set WEP Key 3 on your bridge to 0987654321 and select it as the transmit key, you must also set WEP Key 3 on the access point to exactly the same value.

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- Step 13** Type the number of the key the bridge will use and click **Save**. Only one WEP key can be used at a time.
- Step 14** In the row in the Privacy menu labeled *Authentication mode*, click **open** or **shared key** to set the authentications the bridge will recognize.
- The Open setting, which is the default, allows any device regardless of its WEP settings to authenticate and then attempt to communicate with the bridge. Shared Key tells the bridge to send a plain-text, shared-key query to any device

attempting to communicate with the bridge. However, this query can leave the device open to a known-text attack from intruders and is therefore not as secure as the Open setting.

**Caution**

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If you are configuring the bridge through a wireless connection, you may lose your connection to the bridge if the WEP key is set incorrectly. If you select **On** as the WEP category in the next step, the WEP key you set must **exactly** match the WEP key used on your wireless LAN, and the access point with which the bridge is communicating must have WEP set to **On**.

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**Step 15** In the row in the Privacy menu labeled *Encrypt radio packets*, click **on**, **mixed on**, or **mixed off** to select the WEP category for the bridge.

- **Off** is the default setting, which means that the bridge will not communicate with an access point using WEP.
- **On** means that the bridge will only communicate with access points that use WEP.
- **Mixed on** means that the bridge will always use WEP when communicating with the access point, but that the access point will communicate with all devices whether they use WEP or not.
- **Mixed off** means that the bridge will not use WEP when communicating with the access point, but the access point will communicate with all devices whether they use WEP or not.

**Note**

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The remaining steps lead you through labeling the bridge to make it easy to identify on the network. These steps are optional, but they provide important information for your network administrator.

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**Step 16** In the Configuration menu, click **Identity**.

**Step 17** In the System name entry field, enter a network label for the bridge and click **Save**. This name will identify the bridge in the association table on any Cisco Aironet access point.

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## Using a Telnet Session

Follow these steps to configure the bridge using a Telnet session:

**Step 1** On your computer's Start menu, select **Programs > Accessories > Telnet**.  
If Telnet is not listed in your Accessories menu, select **Start > Run**, type **Telnet** in the entry field, and press **Enter**.

**Step 2** When the Telnet window appears, click **Connect** and select **Remote System**.



**Note**

In Windows 2000, the Telnet window does not contain pull-down menus. To start the Telnet session in Windows 2000, type **open** followed by the bridge's IP address, and skip to Step 4.

**Step 3** In the Host Name field, type the bridge's IP address provided by the IP Finder utility. Click **Connect**.

**Step 4** Type **1** to select Configuration. When the configuration menu appears, type **1** again to select Radio. When the radio menu appears, type **1** again to select SSID.



**Caution**

If you are configuring the bridge through a wireless connection, changing the SSID in the next step could interrupt connectivity to the device. Be sure to enter an SSID that matches the SSID of an access point near the bridge.

**Step 5** Look at the current SSID. If it is *tsunami*, the default setting, enter the SSID provided by your network administrator on the data entry line and press **Enter**.  
If you already set the SSID using IPSU and the current SSID is correct, you do not need to set it again.



**Note**

Step 6 through Step 13 help you set the bridge's WEP key. If your wireless network does not use WEP, skip to Step 15.

**Step 6** Enter **5** to select I80211. When the I80211 menu appears, type **2** to select Privacy.

**Step 7** In the Privacy menu, type **3** to select Key.

- Step 8** Type the number of the WEP key your network administrator asked you to set and press **Enter**.
- Step 9** Enter the key provided by your network administrator and press **Enter**. If you are setting a 40-bit key, enter 10 hexadecimal characters (any combination of 0 through 9, a through f, or A through F). If you are setting a 128-bit key, enter 26 hexadecimal characters. You are prompted to re-enter the key for verification. Enter the key and press **Enter**.
- Step 10** Type **4** to select Transmit.
- Step 11** Enter the number of the key the bridge will use and press **Enter**. Only one WEP key can be used at a time.



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**Note** The WEP key you use to transmit data must be set up exactly the same on your access point and your bridge. For example, if you set WEP Key 3 on your bridge to 0987654321 and select it as the transmit key, you must also set WEP Key 3 on the access point to exactly the same value.

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- Step 12** Type **2** to select Auth. Type **open** or **shared\_key** to set the authentications the bridge will recognize.

The Open setting, which is the default, allows any access point regardless of its WEP settings to authenticate and then attempt to communicate with the bridge. Shared Key tells the bridge to send a plain-text, shared-key query to any access point attempting to communicate with the bridge. However, this query can leave the bridge open to a known-text attack from intruders and is therefore not as secure as the Open setting.

**Caution**

---

If you are configuring the bridge through a wireless connection, you may lose your connection to the bridge if the WEP key is set incorrectly. If you select **On** as the WEP category in the next step, the WEP key you set must **exactly** match the WEP key used on your wireless LAN, and the access point with which the bridge is communicating must have WEP set to **On**.

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**Step 13** Type **1** to select Encryption. Type **off**, **on**, **mixed on**, or **mixed off** to select the WEP category for the bridge.

- **Off** is the default setting, which means that the bridge will not communicate with an access point using WEP.
- **On** means that the bridge will communicate only with access points that use WEP.
- **Mixed on** means that the bridge will always use WEP when communicating with the access point but the access point will communicate with all devices whether they use WEP or not.
- **Mixed off** means that the bridge will not use WEP when communicating with the access point but the access point will communicate with all devices whether they use WEP or not.

**Note**

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The remaining steps lead you through labeling the bridge to make it easy to identify on the network. These steps are optional, but they provide important information for your network administrator.

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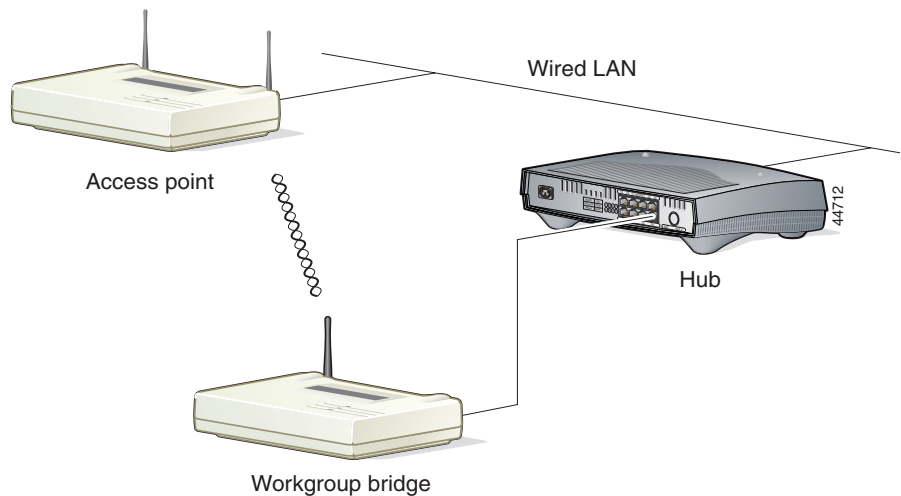
**Step 14** Press **Esc** four times to return to the configuration menu.

**Step 15** When the configuration menu appears, type **3** to select Identity. Type **2** to select Name. Type a network label for the bridge and press **Enter**. This name will identify the bridge in the association table on any Cisco Aironet access point.

# Bridge Loops with Incorrect Network Topology

If the bridge is connected to the wired LAN and is communicating with an access point on the same LAN, a network problem known as a *bridge loop* can occur. Avoid a bridge loop by disconnecting the bridge from the wired LAN immediately after you configure it. Figure 1 shows the network configuration in which the loop occurs.

**Figure 3-4 Bridge Loop**



A bridge loop can also occur if two or more bridges are connected to the same remote hub. To prevent this bridge loop, always connect only one bridge to a remote hub.

