

# How Do I Connect and Configure Devices?



You love your Mac because it doesn't require you to be a genius to accomplish basic, everyday tasks. Got a new mouse? Just plug it into any free USB port and it's ready to use within seconds. Nice! Unfortunately, there are some devices that are more ornery and require a bit of extra effort on your part to get them connected and configured. In this chapter, I take you through a few such devices, including an external display, printer, fax, digital camera, scanner, camcorder, and even another Mac!

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## Using an External Display

If you have an extra external display — a monitor, television set, or projector — kicking around, you can connect it to your Mac in various scenarios:

- **As a new desktop monitor.** You can use the external display as a replacement for the monitor that came with your desktop Mac.
- **As a notebook alternative.** You can use the external display instead of the built-in monitor on your Mac notebook.
- **As a desktop extension.** You can use the external display to extend the desktop of your Mac. To do this with a Mac Pro or a Power Mac G5, you need to either add a second graphics card, or you need to replace the existing graphics card with one that supports two monitors. See Chapter 9 to learn how to replace or add a graphics card.

Fortunately, all of these connection types are plug-and-play (meaning that after you plug in and turn on the external display, your Mac recognizes the new device right away). That's the good news. The bad news is that although using an external monitor is plug-and-play, the *plug* part isn't as straightforward as you might like because there are many different ways to connect a Mac and a display. The next few sections provide you with the details you need to make things happen.

## Understanding external display connections

To connect your Mac and an external display, you need to know the various ways these connections can occur. For starters, you need to get familiar with the four main connector types: DVI, Mini-DVI, VGA, and video.

### DVI connections

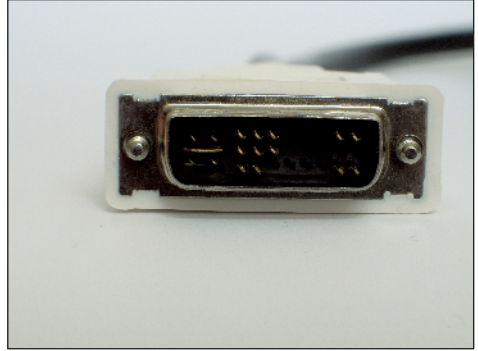
The standard video connection type on modern-day Macs is called DVI (digital video interface), which is now common on most LCD monitors and on some televisions and projectors. That sounds simple enough, and it is — on the Mac side. Unfortunately, external displays such as LCD monitors and televisions can use different DVI connectors. There are actually three types:



#### Note

What's the difference between single-link and dual-link? DVI uses a transmitter to send information along the cable. A single-link cable uses one transmitter, while a dual-link cable uses two transmitters. This means that dual-link connections are faster and offer a better signal quality than single-click connections.

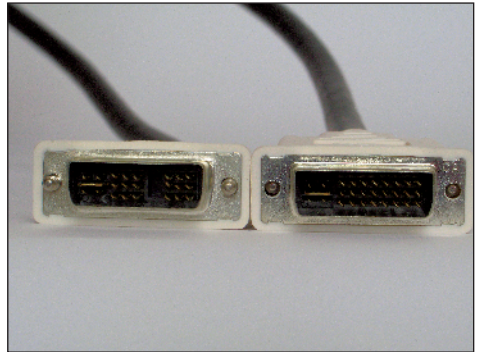
- **DVI-A.** This connector works with only analog signals (see figure 1.1).
- **DVI-D.** This connector works with only digital signals and it comes in single-link and dual-link versions (see figure 1.2).
- **DVI-I.** This connector works with both analog and digital signals and comes in single-link and dual-link versions (see figure 1.3). Mac Pros, MacBook Pros, Mac Minis, and Power Mac G5s all use the DVI-I dual-link connector, as do some versions of the PowerBook G4.



1.1 A DVI-A connector



1.2 DVI-D single-link (left) and dual-link (right) connectors



1.3 DVI-I single-link (left) and dual-link (right) connectors

As you can see, each type of DVI connector uses a slightly different pin arrangement, so when you're matching your external display, DVI cable, and Mac, you need to make sure that they all use the same type of DVI connector.



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A dual-link DVI connector plugs in to (and works with) a single-link DVI port. Unfortunately, the reverse isn't true: that is, you can't plug a single-link DVI connector into a dual-link DVI port. Note, too, that a DVI-D connector can plug into a DVI-I port, but a DVI-I connector won't fit into a DVI-D port.



## Mini-DVI connections

The Intel-based iMac, the MacBook, and most 12-inch PowerBook G4s don't use regular DVI connectors. Instead, they use a different connector called a Mini-DVI, shown in figure 1.4.

To connect your Mac's Mini-DVI port to a DVI port on an external display, you need to purchase at least the Apple Mini-DVI to DVI Adapter. I say at least because the Mini-DVI to DVI Adapter uses a DVI-D connector. This is either good news or bad news depending on your external display port:

- **DVI-D port.** This is good, because it probably means you have a DVI-D cable, which connects to both the adapter and the display. In this case, the adapter is all you need.
- **DVI-I port.** This isn't so good, because it probably means you have a DVI-I cable, and that cable won't fit the adapter's DVI-D connector. In this case, the adapter on its own won't cut it. To solve the problem, you either need to buy a DVI-D cable, or you need to hunt down a DVI-D to DVI-I adapter so you can use your DVI-I cable.

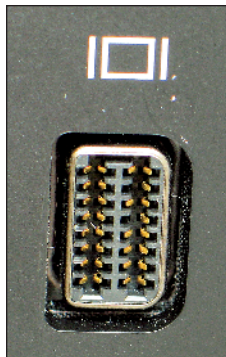


### Note

In high-tech cable and port connections jargon, a connector with pins is described as *male* and a connector with holes is described as *female*. The Apple Mini-DVI to DVI Adapter has a female DVI connector, which means you can't plug it directly into an external display's DVI port, given it is also female. In other words, you need to run a DVI cable — which is male on both ends — between the adapter and your external display.

## VGA connections

All CRT monitors and many LCD monitors and projectors come with a VGA connector, shown in figure 1.5.



**1.4** A Mini-DVI connector



**1.5** VGA connectors are standard on CRTs and common on LCDs.



### Note

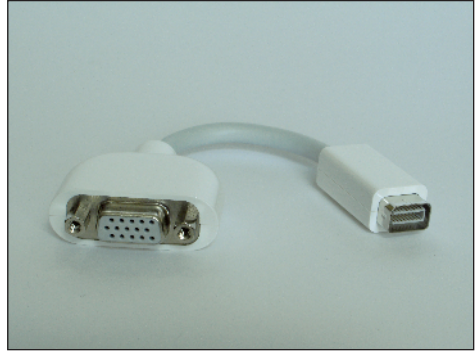
Older Mac models such as the iMac G5, iBook, eMac, and some 12-inch PowerBook G4s come with a Mini-VGA port. To connect a VGA external display to any of these Macs, you need to purchase the Apply VGA Display Adapter, which offers a Mini-VGA connector on one end and a VGA connector on the other.

To connect your Mac to an external display that only offers a VGA connector, you have two choices depending on your connector:

- **DVI connector.** You need to get the Apple DVI to VGA Display Adapter, shown in figure 1.6.
- **Mini-DVI connector.** You need to get the Apple Mini-DVI to VGA Adapter, shown in figure 1.7.



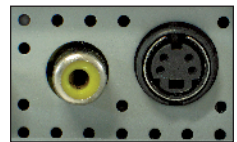
**1.6** Use the Apple DVI to VGA Display Adapter to connect your DVI Mac to an external display's VGA port.



**1.7** Use the Apple Mini-DVI to VGA Adapter to connect your Mini-DVI Mac to an external display's VGA port.

## Video connections

If your external display is a television or projector (or even a VCR), it likely has either a Composite (yellow RCA) connector or an S-Video connector; both are shown in figure 1.8.



**1.8** Composite (left) and S-Video (right) connectors are common on televisions, projectors, and VCRs.



**Note**

For older Mac models such as the iMac G5, iBook, eMac, and some 12-inch PowerBook G4s that use a Mini-VGA port, you can use the Apple Video Adapter to connect a Composite or S-Video external display.

To connect your Mac to an external display that only offers either Composite or S-Video connectors, you have two choices depending on your connector:

- **DVI connector.** You need to get the Apple DVI to Video Adapter, shown in figure 1.9.
- **Mini-DVI connector.** You need to get the Apple Mini-DVI to Video Adapter, shown in figure 1.10.

## Setting the external display mode

The hard part about using an external display is getting the correct cables and adapters and ensuring they fit into the appropriate connectors on both your Mac and on the display. After you've got that set, however, the rest is a breeze because as soon as you connect the external display and turn it on, your Mac recognizes it and starts using it. That's more like it!

How you use the external display depends on what you want to do with it. Your Mac gives you two choices:

- **Video mirroring.** This external display mode means that the same image that appears on the Mac's main or built-in display also appears on the external display. This is useful if you want to use a larger monitor to work with your Mac notebook, or if you want to show the desktop on a projector so that other people can see it.



**1.9** Use the Apple DVI to Video Adapter to connect your DVI Mac to an external display's Composite or S-Video port.

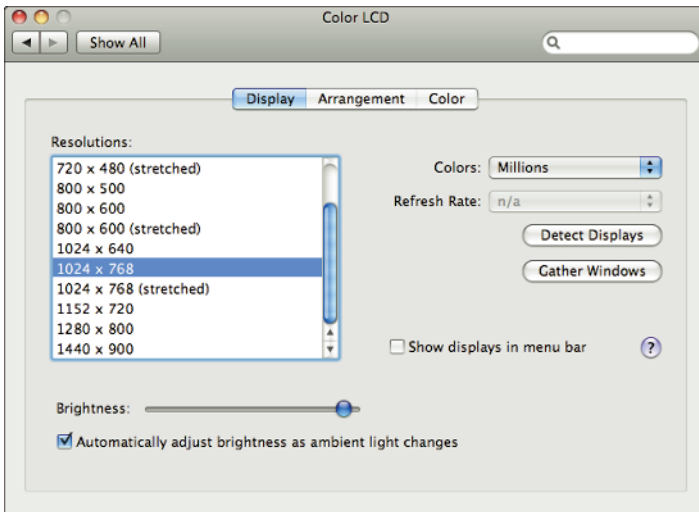


**1.10** Use the Apple Mini-DVI to Video Adapter to connect your Mini-DVI Mac to an external display's Composite or S-Video port.

- **Extended desktop mode.** This mode means that your Mac's desktop is extended onto the external display. This is useful if you need more screen real estate to display your programs. For example, you can have your main application open on one display and an application that you're monitoring — such as Mail, iChat, or Safari — on the other display.

To switch between these external display modes, follow these steps:

1. **Click System Preferences in the Dock.** The System Preferences window appears.
2. **Click the Displays icon.** The display preferences appear, and you see one set of preferences for each screen. Figure 1.11 shows the preferences for the main display, and a similar window appears for the secondary display.



**1.11** The preferences for the main display. A similar window appears with preferences for the secondary display.

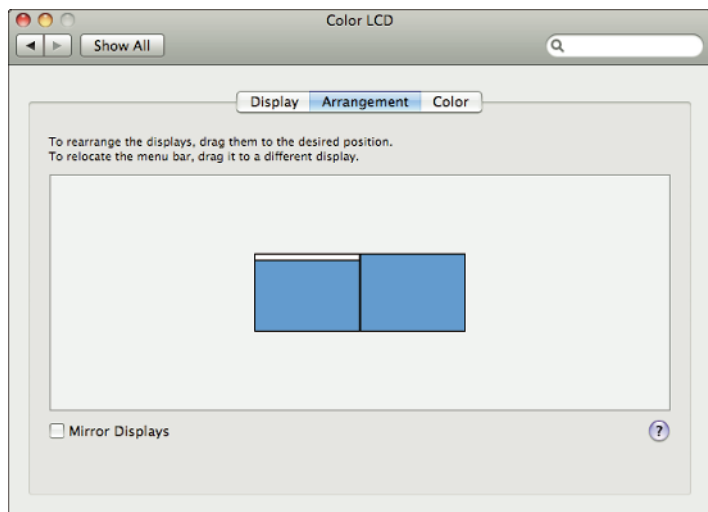
3. **Click the Arrangement tab to select the external display mode.**
  - To turn on video mirroring, select the Mirror Displays check box.
  - To turn on extended desktop mode, deselect the Mirror Displays check box.



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After you connect your external display, you should calibrate the display so that the colors of images appear correctly. To calibrate a display, open its display preferences, select the Color tab, and then click Calibrate. This launches the Apple Display Calibrator Assistant, which takes you step by step through the calibration process.

4. If you turned on extended desktop mode, use the objects in the Arrangement tab to **configure the screen layout (see figure 1.12)**. To set the relative screen positions, click and drag the screen icon to the positions you prefer. To set the location of the menu bar, click and drag the white strip to the screen you prefer.



**1.12** Use the objects in the Arrangement tab to configure the screen layout in extended desktop mode.

## Connecting Two Macs Directly

If you've got a couple of Macs kicking around, it's natural to want to share things between them: documents, Safari bookmarks, iTunes libraries, downloads, and more. The standard way of sharing data between computers is to create a network. However, that requires having a central connection point for the computers, usually a switch, router, or wireless access point. If you don't have such networking hardware handy (for example, you're in a hotel room or on a plane), you might think that sharing is off the table, but that's not true. There are actually several ways that you can connect two Macs directly: with a network (or crossover) cable, with a FireWire cable, or by creating an ad-hoc wireless network. The next three sections provide the details.

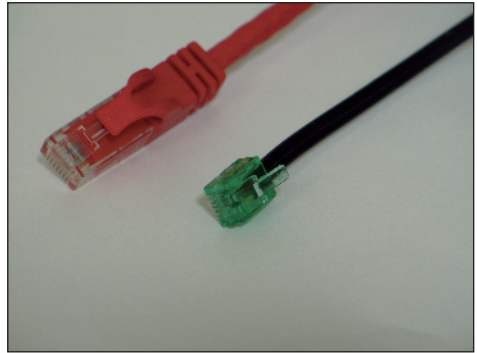
### Connecting two Macs with a network cable

The easiest way to connect two Macs directly is to string a network cable between them. A network cable is also called a *twisted-pair* cable (because it consists of four pairs of twisted copper wires that together form a circuit that can transmit data) and it comes with an RJ-45 jack on each end. As you can see in figure 1.13, a network cable's RJ-45 jack is similar to — but much larger than — the RJ-11 jack used by a telephone cable.

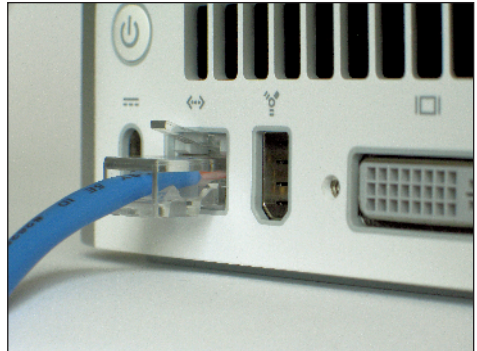
The RJ-45 jack on a network cable plugs into the corresponding ethernet port on your Mac, as shown in figure 1.14.

So far so good, and at this point you might be tempted just to plug any old network cable into the network ports of your Macs. Unfortunately, there's a good chance that this won't work. On some Macs the network ports get confused if you use a regular (also called *straight-through*) network cable because they only can connect using a special *crossover cable*. The Macs that require a crossover cable include:

- eMac
- iBook
- iBook (FireWire)
- iMac
- iMac (17-inch Flat Panel)
- iMac (Early 2001)
- iMac (Flat Panel)
- iMac (Slot Loading)
- iMac (Summer 2000)
- iMac (Summer 2001)
- Power Mac G4 (AGP Graphics)
- Power Mac G4 (PCI Graphics)
- Power Mac G4 Cube
- Power Macintosh G3 (Blue and White)
- PowerBook (FireWire)
- PowerBook G3 Series (Bronze Keyboard)



**1.13** Network cables have RJ-45 connectors (top), which are similar to, but considerably larger than, the RJ-11 connectors used with telephone cables.



**1.14** You plug a network cable's RJ-45 jack into the corresponding ethernet port on your Mac.

All of these Macs require a crossover cable only if they're connecting to another Mac from the list. For example, if you're connecting an iBook to an iMac, you must use a crossover cable. If you're connecting to any Mac not on the list, you can use a regular network cable. This is the case, for example, if you're connecting an iBook to a MacBook Pro.



From a distance (or, heck, sometimes even up close), crossover cables look identical to regular network cables. To help you identify them, many crossover cables come with a label such as CROSS taped to them. If you don't see such a label, add your own. However, if you didn't do that and now you're not sure which of your cables is a crossover, there's a way you can tell. Take the connectors on each end of the cable and place them side by side so you have a good view of the colored wires inside. (A clear plastic covering helps here.) Make sure you hold the connectors with the same orientation. (It's usually best to have the plastic tabs facing down.) If the layout of the wires is identical on both connectors, then you've got a regular network cable.



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If you need to buy a straight-through cable or a crossover cable, check the cable category. Because most Macs support 100 Mbps transmission speeds, you need a category 5 or higher cable to transmit data at that speed.

If you see, instead, that two of the wires — specifically, the red and the green — have switched positions (see figure 1.15), then you've got a crossover cable.

Besides getting the right kind of network cable, you also have to make sure that your Macs are configured to share files. Follow these steps:

**1. Click System Preferences in the Dock.**

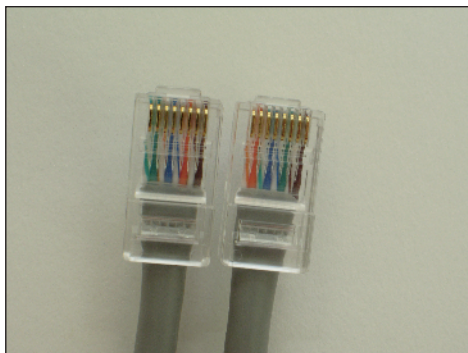
**2. Click the Sharing icon.** The Sharing preferences appear.

**3. Turn on file sharing.**

- **OS X Leopard.** Select the File Sharing check box, as shown in figure 1.16.

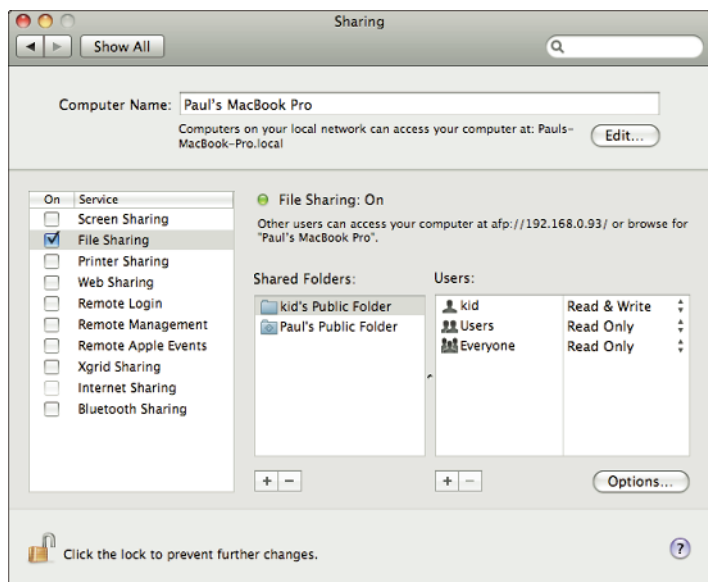
- **Earlier version of OS X.** Select the Personal File Sharing check box.

**4. If you feel like it, you can also use the Computer Name text box to edit the name of your Mac, which is the name that will appear in the Network window of the other Mac.**

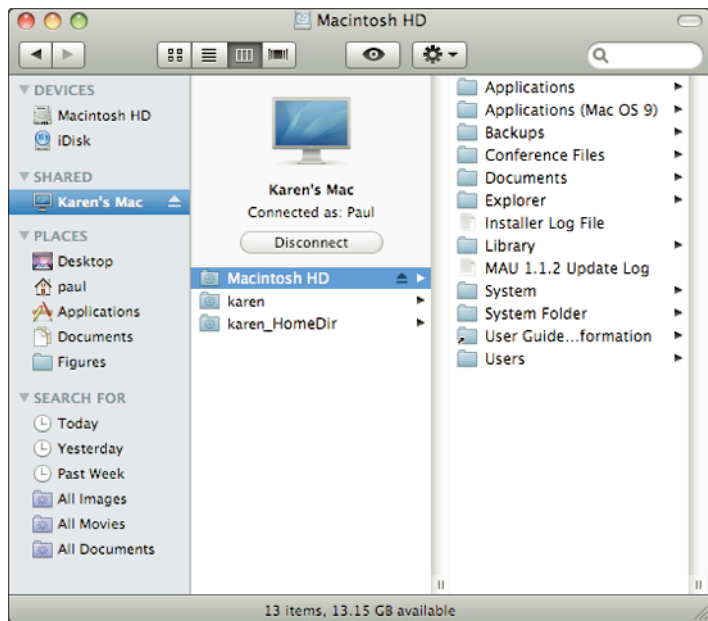


**1.15** In a crossover network cable, the position of the red and green wires is swapped in the two connectors.

To see the other Mac, open Finder and then choose Go ⇨ Network (or press Shift+⌘+K). Double-click the Mac's icon, click Connect As (in Leopard) or Connect (in earlier versions), and then enter a name and password to connect to the other computer. Figure 1.17 shows a connection to another Mac named Karen's Widow.



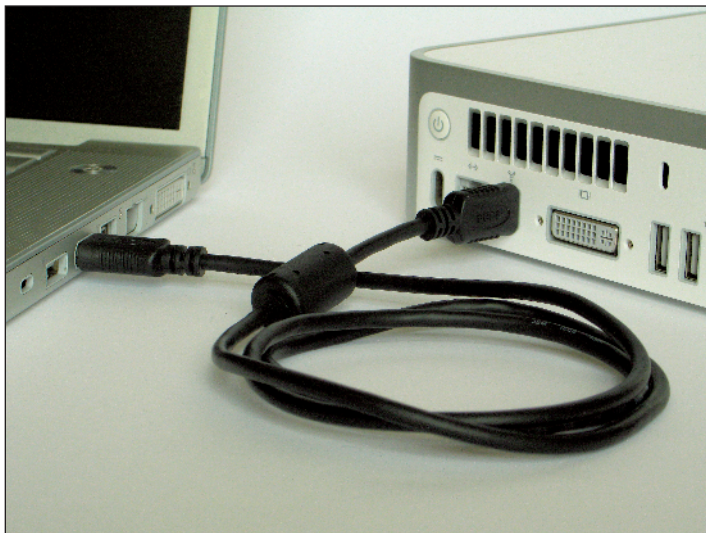
**1.16** To exchange files over the network cable, you must turn on file sharing on both Macs.



**1.17** A successful computer-to-computer connection over a network cable.

## Connecting two Macs with FireWire

If you don't have a network cable lying around, but you just happen to have a FireWire cable on hand, that's great because you can use it to connect two Macs via their FireWire ports and share files between them (see figure 1.18). I'm assuming here, of course, that both Macs have FireWire ports.



**1.18** You can use a FireWire cable to connect two Macs via their FireWire ports.

The connection is basically the same as with a network cable, so I'll just give you the barebones steps here (see the previous section to flesh out the details):

- 1. Connect the FireWire cable to both Macs.**
- 2. Turn on file sharing on both Macs.**
- 3. Use Finder's Network window (choose Go ⇨ Network) to connect to the other Mac.**

## Connecting two Macs wirelessly

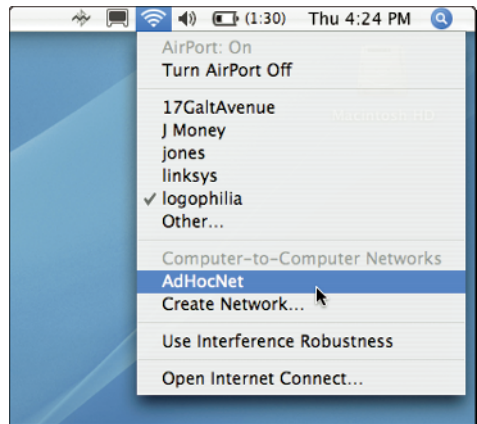
If you don't have a network cable or a FireWire cable, or if you're sick to death of cables, you can still connect two Macs directly using a wireless network. I'm not talking about a standard wireless network that uses an access point (also called an *infrastructure wireless network*). I'm talking about a *computer-to-computer wireless network* (also called an *ad hoc wireless network*) that doesn't use an access point. As long as you have two (or more) Macs with wireless networking capabilities, it's very easy to set this up:

1. Click the **AirPort status icon** in the menu bar and then click **Create Network**. The Create a Computer-to-Computer Network dialog box appears.
2. Type a name for the new network in the **Name text box**.
3. Leave **Automatic** selected in the **Channel list**.
4. If you want people to enter a password to join your network (a good idea), select the **Require Password check box**. The dialog box expands, as shown in figure 1.19.
5. In the **Security list**, select either **40-bit WEP** (to use a 5-character password) or **128-bit WEP** (which requires a 13-character password).
6. Type the password in the **Password and Verify text boxes** and click **OK**. Your Mac sets up the computer-to-computer network.

To connect to your new network from another Mac, click the AirPort status icon in the menu bar and then click the name of your network (in this case, the network is called AdHocNet), as shown in figure 1.20. If you set up a password for the network, you're prompted to enter the password.



**1.19** Use this dialog box to create your computer-to-computer network.

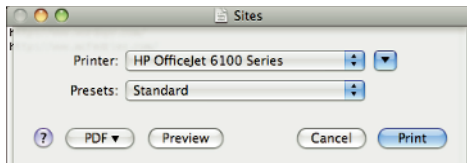


**1.20** Your new computer-to-computer network appears in the list of available wireless networks.

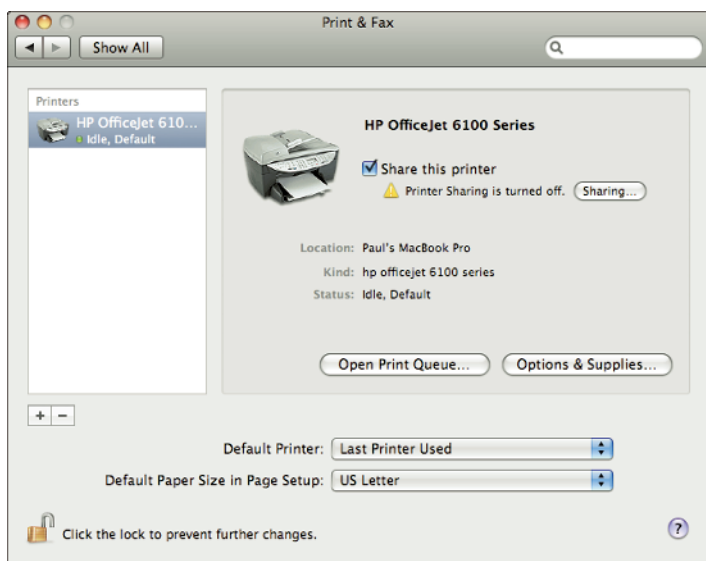
## Connecting and Sharing a Printer

Nine times out of ten — it's probably more like 99 times out of a hundred — connecting a printer to your Mac is a no-brainer: You plug it in to the USB port, turn it on, and presto! — your Mac and your printer have already become fast friends and you can start printing right away. How can you be sure? There are a couple of ways to tell:

- **In any application that supports printing, choose File ⇨ Print.** In the dialog box that appears, you should see your printer's name in the Printer list, as shown in figure 1.21.
- **Click System Preferences in the Dock, and then click Print & Fax.** In the Print & Fax preferences that appear, you should see your printer's name in the Printers list, as shown in figure 1.22.



**1.21** If your Mac and your printer are getting along famously, the printer appears in the Printer list.



**1.22** If your Mac recognized your printer, it appears in the Printers list in the Print & Fax preferences.



**Genius**

Surprisingly, Windows doesn't have a monopoly on annoying behavior. One of the senseless things that OS X does is set the default printer to whatever printer you used or added most recently. To fix this, choose System Preferences ⇨ Print & Fax, then use the Default Printer list to choose the printer you want to use as the default.

## Connecting a printer manually

What happens on those rare occasions when your Mac doesn't recognize your printer? In that case, you need to do a bit more legwork and install the printer manually. Here's how it's done:

- 1. Connect and turn on the printer if you haven't done so already.**

2. **Click System Preferences in the Dock, click Print & Fax, and then click the + icon.** Your Mac displays the list of connected printers.



**Note**

You can also display the list of connected printers from any application that supports printing. Choose File ⇨ Printer, open the Printer list, and then select Add Printer.

3. **In the Printer Browser's list of available printers, choose your printer.**
4. **In the Print Using list, choose Select a driver to use and then choose your printer in the list that appears.** If you don't see your printer in the list, you need to install the printer driver by hand as follows:
  - Insert the disc that came with your printer.
  - Choose Other in the Print Using list.
  - Open the printer disc (or the folder where you downloaded the printer driver), choose the printer driver, and then click Open.
5. **Click Add.** Your printer is now connected.



**Note**

If you don't have a printer disc, or if the disc doesn't contain Mac drivers, visit the printer manufacturer's Web site and download the drivers you need.

## Adding a shared network printer

If your Mac is part of a network, one of the big advantages you have is that you can connect a printer to one computer, and the other computers on the network can then use that computer for printing. That saves you big bucks because you don't have to supply each computer with its own printer.

To use a shared network printer, you must first add it to your Mac's list of printers. Follow these steps if the printer is shared on another Mac (see the next section for Windows printers):

1. **Click System Preferences in the Dock, click Print & Fax, and then click the + icon.** Your Mac displays the list of connected printers.





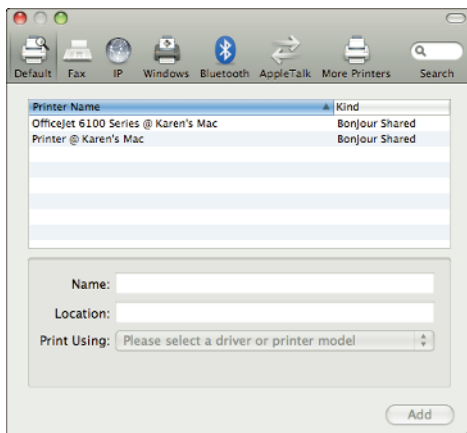
Genius

If you can't get drivers for the printer (annoyingly, many printer manufacturers don't bother writing Mac drivers), you may still be able to use the printer by choosing Generic PostScript Printer in the Print Using list.

2. **In the Printer Browser's list of printers, select the shared printer you want to use.** There are two ways to recognize a shared printer:

- **OS X Leopard.** The Kind column displays Bonjour Shared, as shown in figure 1.23.
- **Earlier versions of OS X.** The Connection column displays Shared Printer.

3. **Click Add.** You can now use a shared network printer.



**1.23** In OS X Leopard, look for Bonjour Shared in the Kind column.

## Adding a shared Windows network printer

If the shared printer you want to use is part of a Windows network, follow these steps to add it to your Mac's list of printers:

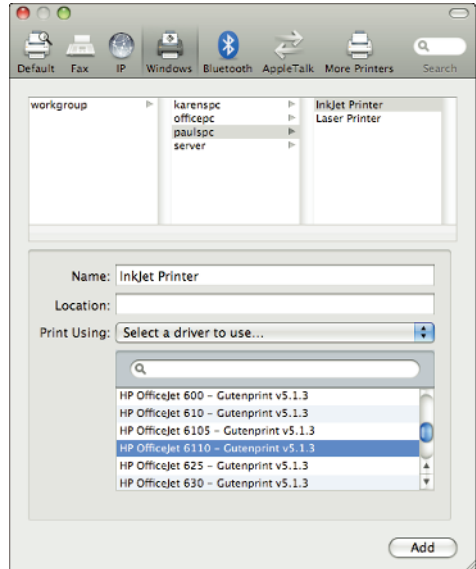
1. **Click System Preferences in the Dock, click Print & Fax, and then click the + icon.** Your Mac displays the Printer Browser.
2. **Display the list of Windows workgroups on your network.**
  - **OS X Leopard.** Click the Windows tab.
  - **Earlier versions of OS X.** Click More Printers and then use the top list to select Windows Printing.
3. **Choose the workgroup that contains the computer you want to work with.**
4. **Click the computer with the shared printer you want to add.**
5. **Log on to the Windows computer.**
6. **Click the shared printer you want to use.**

7. In the **Print Using** list, choose **Select a driver to use** and then choose the printer in the list that appears. Figure 1.24 shows an example.
8. **Click Add.** You can now use a shared printer on a Windows network.

## Sharing your printer with the network

If you have a printer connected to your Mac and you'd generously like other folks on your network to use it, you can share it by following these steps:

1. **Click System Preferences in the Dock.**
2. **Click the Sharing icon.** The Sharing preferences appear.
3. **Select the Printer Sharing check box.**
4. **Click Show All.**
5. **Click the Print & Fax icon.** The Print & Fax preferences appear.
6. **Share the printer.**
  - **OS X Leopard.** Click the printer you want to share and then select the **Share this printer** check box.
  - **Earlier versions of OS X.** Click the **Sharing** tab, select the **Share these printers with other computers** check box, and then select the check box beside each printer you want to share.



**1.24** You can add a shared printer from a Windows computer.

## Connecting and Sharing a Fax

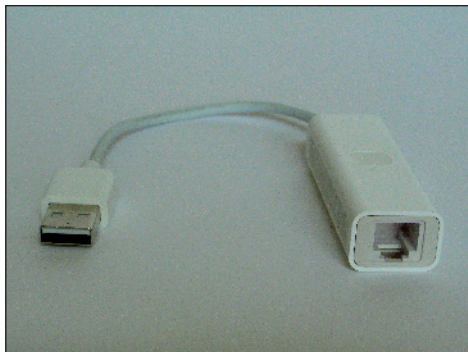
Even in this age of e-mail, instant messaging, and chat, the need to fax things comes up surprisingly often for some of you. Dedicated fax machines bit the electronic dust many years ago, and no wonder given fax modems enable you to send and receive faxes from the comfort of your Mac. For this to work, you need to connect a fax modem to your Mac. In the following sections, I show you how to do this three different ways.

## Connecting a fax modem

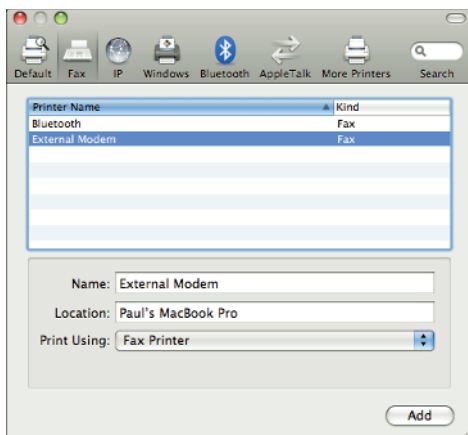
If your Mac doesn't come with a built-in fax modem, you need to connect an external fax modem — such as the almost too-cute Apple USB Modem shown in figure 1.25 — to your computer.

After you've connected the modem, follow these steps to add it to your Mac's list of printers and faxes:

1. **Click System Preferences in the Dock, click Print & Fax, and then click the + icon.** Your Mac displays the Printer Browser.
2. **Display the list of faxing devices.**
  - **OS X Leopard.** Click the Fax tab. A list of attached faxing devices appears, as shown in figure 1.26.
  - **Earlier versions of OS X.** Click the Default Browser tab.
3. **Click the device you want to use for faxing.**
4. **Click Add.** Your fax is now connected to your Mac.



**1.25** You can connect the Apple USB Modem to your Mac to add faxing capabilities.



**1.26** Click the Fax tab to see your attached faxing devices.

## Adding a shared network fax

To use a shared network fax, you must first add it to your Mac's list of printers and faxes. Follow these steps:

1. **Click System Preferences in the Dock, click Print & Fax, and then click the + icon.** Your Mac displays the Printer Browser.

**2. Display the list of faxing devices.**

- **OS X Leopard.** Click the Fax tab. A list of attached faxing devices appears, as shown in figure 1.26.
- **Earlier versions of OS X.** Click the Default Browser tab.

**3. Select the shared fax you want to use.** There are two ways to recognize a shared fax:

- **OS X Leopard.** The Kind column displays Bonjour Shared.
- **Earlier versions of OS X.** The Connection column displays Shared Fax.

**4. Click Add.** You are now ready to use a shared network fax.

## Sharing your fax with the network

If you have a fax modem connected to your Mac and you'd like other folks on your network to use that fax, you can share it by following these steps:

**1. Click System Preferences in the Dock.****2. Click the Sharing icon.** The Sharing preferences appear.**3. Select the Printer Sharing check box.****4. Click Show All.****5. Click the Print & Fax icon.** The Print & Fax preferences appear.**6. Share the fax.**

- **OS X Leopard.** Click the fax you want to share and then select the Share this fax check box.
- **Earlier versions of OS X.** Click the Sharing tab and then select the Let others send faxes through this computer check box.

## Working with Imaging Devices

Your Mac is a graphics powerhouse, so you should take advantage of that power by connecting various imaging devices, including digital cameras, digital camcorders, and document scanners. Most of these devices connect without a hassle, but there are a few things you need to watch out for, and a few extra steps you need to follow to make sure each works as it should. In the next few sections, I take you through all this, as well as show you how to set up a camcorder or digital camera as a Webcam.

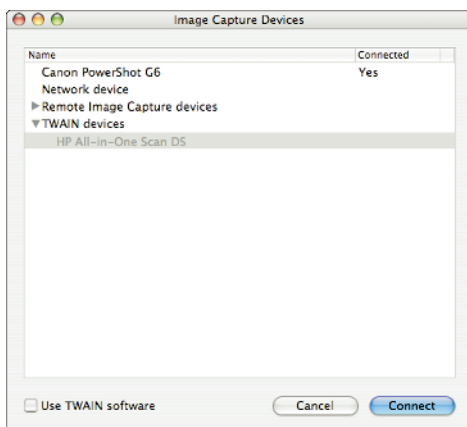
## Connecting an imaging device

Connecting an imaging device to your Mac is mostly a straightforward bit of business that begins at the beginning by attaching the device:

- **Digital camera.** Attach a USB cable to the camera and to a free USB port on your Mac.
- **Digital camcorder.** Attach a FireWire cable to the video camera and to a FireWire port on your Mac.
- **Scanner.** Attach a USB cable to the scanner and to a free USB port on your Mac. Note, too, that you must also install the software that came with the scanner. This installs the scanner device driver as well as the scanning application — sometimes called the TWAIN software — that operates the scanner.

For most digital camera and camcorders, your Mac will immediately connect to the device and perhaps even offer to download images (via iPhoto) or video (via iMovie). However, with some cameras and most scanners, you need to perform some extra steps to complete the connection:

1. **In Finder, choose Applications ⇨ Image Capture.** The Image Capture program appears.
2. **Choose Devices ⇨ Browse Devices (or press ⌘+B).** Image Capture displays a list of available devices.
3. **If necessary, double-click the branch containing the device you want to connect.** For example, to connect a scanner, open the TWAIN devices branch.
4. **Choose the device you want to work with.**
5. **If you're working with a scanner, select the Use TWAIN software check box to use the device's application to scan images rather than Image Capture.**
6. **Connect the device.**
  - **OS X Leopard.** Select the check box in the device's Connected column.
  - **Earlier versions of OS X.** Click the Connect button (see figure 1.27).



**1.27** Some imaging devices — particularly scanners — require a few extra steps to complete the connection.

**Caution**

Most FireWire-compatible digital camcorders are compatible with Macs, but not all. For example, most Sony digital camcorders don't work with Macs. If you're looking to buy a camcorder, be sure to do some research on the Web to make sure the camera you want is Mac-friendly.

## Connecting to a network imaging device

When you set up a network for your Macs, you might expect to share devices such as a printer and a DVD drive, but did you know that you can also share imaging devices? This is a great feature because it enables you to view and download a camera's pictures, import a camcorder's video, or operate a scanner, all without having any of these devices connected directly to your Mac. Follow these steps to connect to a share imaging device:

1. **In Finder, choose Applications ⇨ Image Capture.** The Image Capture program appears.
2. **Choose Devices ⇨ Browse Devices (or press ⌘+B).** Image Capture displays a list of available devices.
3. **Double-click the Remote Image Capture devices branch.**
4. **Double-click the branch that contains the imaging device you need.**
5. **Choose the device you want to work with.**
6. **Connect the device.**
  - **OS X Leopard.** Select the check box in the device's Connected column.
  - **Earlier versions of OS X.** Click the Connect button.

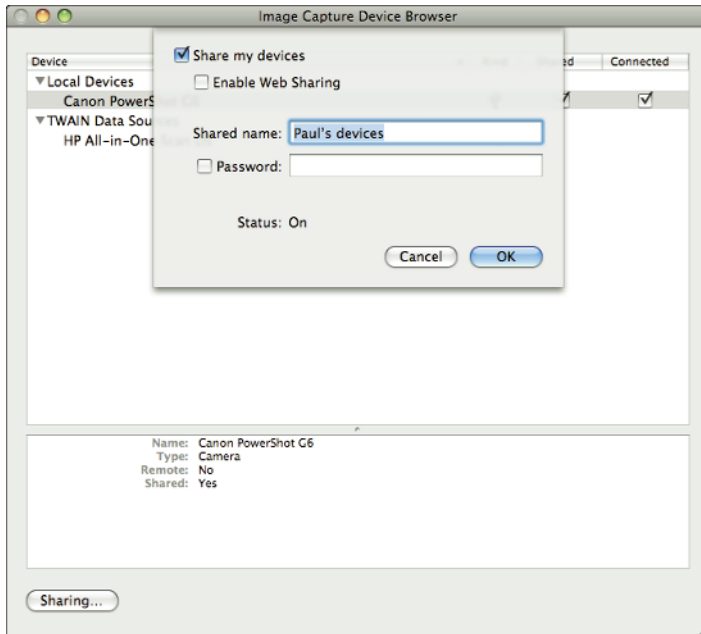
## Sharing an imaging device

If you have a digital camera, digital camcorder, or scanner connected to your Mac, you can share that device with your network pals.

How you go about this is quite a bit different in OS X Leopard than in earlier versions of OS X, so I'll treat them separately. First, here's how to do it in Leopard:

1. **In Finder, choose Applications ⇨ Image Capture.** The Image Capture program appears.
2. **Choose Devices ⇨ Browse Devices (or press ⌘+B).** Image Capture displays a list of available devices.
3. **Click Sharing.**
4. **Select the Share my devices check box, as shown in figure 1.28.**





**1.28** Select the Share my devices check box to share one or more of your Mac's imaging devices with your network.

- 5. Edit the Shared name if you feel like it.**
- 6. If you want folks to enter a password to use the devices, select the Password check box and then type your password.**
- 7. Click OK.** The Image Capture Device Browser window now appears with a Shared column.
- 8. For each device you want to share, select the check box in the device's Shared column.**

Now here are the steps for sharing an imaging device in earlier version of OS X:

- 1. In Finder, choose Applications ⇨ Image Capture.** The Image Capture program appears.
- 2. Choose Image Capture ⇨ Preferences.** The Image Capture Preferences dialog box appears.
- 3. Click the Sharing tab.**
- 4. Select the Share my devices check box.**
- 5. Select the check box for each device you want to share.**
- 6. Edit the Shared name, if so desired.**

7. If you want to protect your devices with a password, select the Password check box and then type your password.
8. Click OK.

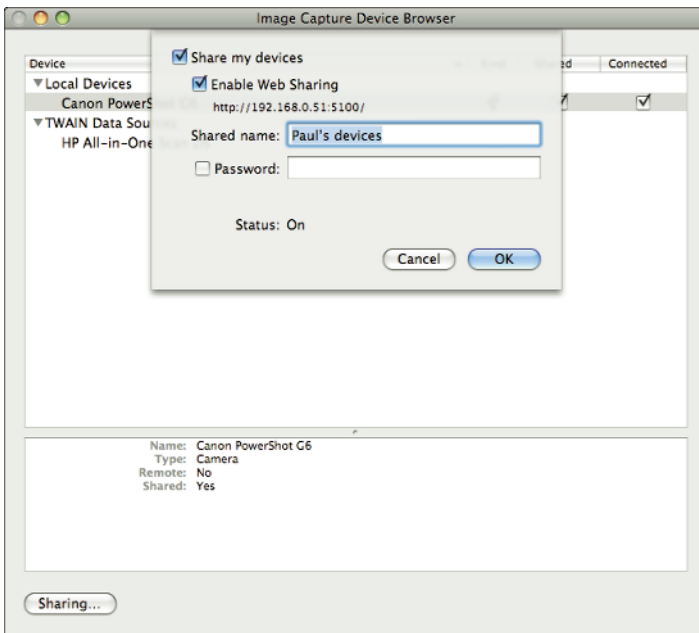
## Configuring a camera as a Webcam

A *Webcam* is a camera that's accessible over a network or the Internet that takes a snapshot every so often (for example, once a minute). This enables you to remotely monitor whatever scene the camera is pointed at, which can be handy for security or just to watch something interesting from afar. Webcams normally require special software, but you can configure your Mac's Image Capture program to handle all the hard work, as I show you in the next few sections.

### Enabling Web Sharing for the camera

In the previous section, I covered sharing imaging devices over the network. To set up your Webcam, you need to go a step further and enable Web Sharing for your imaging devices. You do this by following essentially the same steps as in the previous section, with the following differences:

- **OS X Leopard.** In Image Capture, click Sharing, select the Share my devices check box (if you haven't done so already), and also select the Enable Web Sharing check box. Image Capture displays an address below the check box, as shown in figure 1.29. Make note of this address, because you'll need it later to connect to the Webcam over your network.

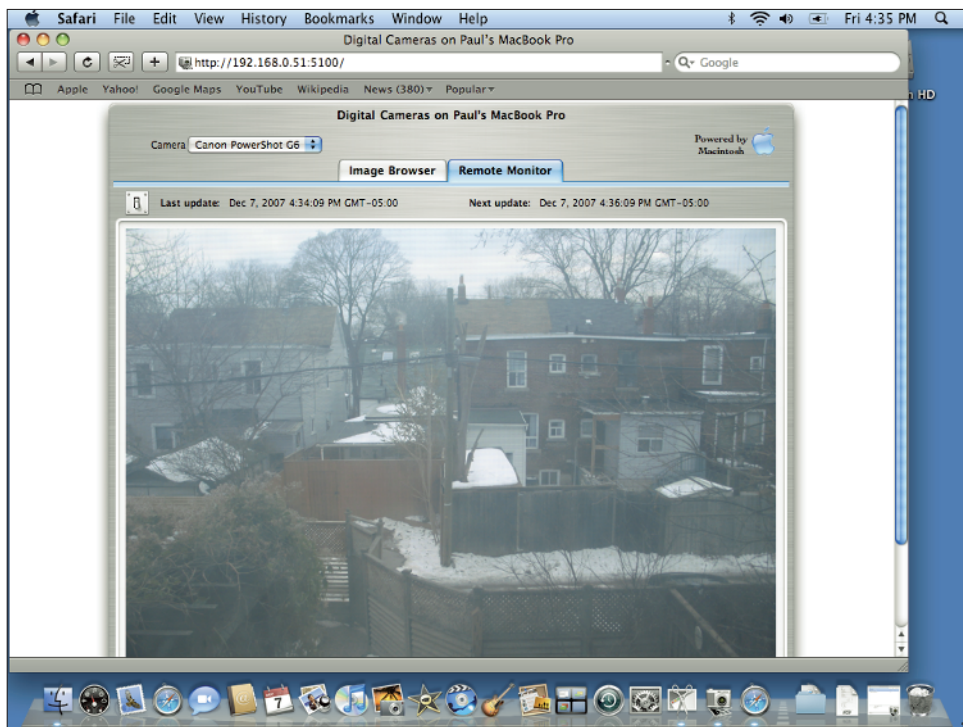


**1.29** Select the Enable Web Sharing check box to turn on your Webcam.

- **Earlier versions of OS X.** In Image Capture, click the Sharing tab, select the Share my devices check box (if you haven't done so already), and also select the Enable Web Sharing check box. Again, Image Capture displays an address below the check box, which you need to make note of.

## Viewing the Webcam over your network

With Web Sharing enabled, you're ready to check out your Webcam. First, be sure to point your camcorder or digital camera at whatever site you want to view. Now, on the remote network computer, launch Safari and enter the address that Image Capture displayed when you selected the Enable Web Sharing check box in the previous section. Safari opens a page named Digital Cameras on *Computer*, where *Computer* is the name of the Mac that's got Web Sharing turned on. Click the Remote Monitor tab, and the camera takes a snapshot that's then displayed in the tab, as shown in figure 1.30.



**1.30** Use the Remote Monitor tab to view the scene with pictures that update periodically.

**Note**

By default, the Remote Monitor takes a new picture every minute. To change the frequency, click the light switch icon that appears to the left of the Last update text. Type the number of times per hour you want a new picture taken, and then click Set.

## Viewing the Webcam over the Internet

If you want to view your newfangled Webcam over the Internet, things get a tad trickier because you need to configure your network's router to allow this. Unfortunately, every router manufacturer has a different way of configuring their devices, so I can't give you the specific steps to follow. Just so you know what to do, here are the general steps:

1. **Open your router's setup pages.** You do this by entering the router's IP address into a Web browser. See your router's manual to learn the IP address to use.
2. **Set up port forwarding (sometimes called a virtual server) to the Mac that's running the Webcam.** Again, see your router manual for the specific steps required here. You usually have to specify some or all of the following:
  - **Name.** This can be anything you want, such as "Webcam."
  - **IP address.** This is the address of the Mac running the Webcam and is the address you used in the previous section, minus the :5100 at the end. For example, if you used `http://192.168.0.51:5100` to access the Webcam over the network, the IP address is `http://192.168.0.51`.
  - **Protocol.** Select TCP here.
  - **Port.** Use 5100 for this.
3. **Determine your router's public IP address.** This is the IP address of the router's Internet connection. In your router setup pages, look for a Status page, which will tell you the current IP address of the router.

With all that done, you access the Webcam over the Internet by entering the address `http://RouterIP:5100` into the Web browser, where *RouterIP* is the router's public IP address.