

Connecting Stuff

If your life's technical experience includes only plugging something into the wall, boy, are you in for a surprise!

Yes, computers do plug into the wall — several times and in several ways. More than that, computer gadgets and gizmos plug into each other. Unlike your stereo system, where most of the cables look alike, on the computer just about every cable is different: different shape, different color, different way to plug it in. This chapter covers the basics of plugging stuff in.

In this part . . .

About Computer Cables	2
Audio	2
Digital Camera	3
IEEE	3
Joystick	4
Keyboard	4
Microphone	5
Modem	5
Monitor	5
Mouse	6
Network	6
Optical Audio	6
Power	7
Printer	7
S-Video	7
Scanner	8
Serial	8
Speakers	8
USB Port	9
Wireless Gizmos	9

About Computer Cables

A computer cable is described by which port it plugs into and its length.

For example, to connect a printer to the console, you use a printer cable. A USB device (including printers) connects by using a USB cable. A monitor uses a monitor cable.

One exception is networking, which is done by using Cat-5 cable, though you can say “networking cable” and the guy in the computer store won’t mock you. The connector on the console is called an RJ-45, but networking cable isn’t “RJ-45 cable.” It’s Cat-5.

Some cables are permanently attached to their devices: The mouse and keyboard have such cables, for example. Other cables are separate. That just means that you must remember to plug in both ends.

Cable length is measured in feet or meters. USB, IEEE, networking, printer, and serial cables all come in varying lengths.

Good news: Nearly all computer cables are what they call *idiot-proof*. That means you can plug them in only one way. You cannot plug in a computer cable backward or incorrectly or in any manner that may damage your computer or the device being plugged in.

But, unless the hardware documentation says so otherwise, it’s okay to plug in most computer gizmos while the computer is on. There are some exceptions to this rule, so carefully read through the other sections in this part of the book!

Some computer devices plug right into the wall. Some don’t plug into the wall at all. And some devices use what’s called a *power brick*, or *transformer*, which is either part of the plug itself or living on the cable between the device and the wall socket.

Audio

PCs have built-in sound, and the console has a teensy, crappy speaker. What you really need are external speakers. Plus, you can use a microphone or headphones or attach an audio cable to any sound-producing device and record that sound on your PC. This is all done thanks to the PC’s audio connectors.

All PC audio connectors are of the *mini-DIN* design. That’s a common connector-hole combination used on many audio devices. If your audio device doesn’t use mini-DIN (for example, standard headphones, which use a much larger connector), you can buy an adapter at any electronics or music store.

- ✓ PC speakers connect to the Line Out, speaker, or headphone jack on the console.
- ✓ Microphones connect to the microphone connector.
- ✓ The Line In connector is used to connect any nonamplified sound source, such as your stereo, VCR, phonograph, Victrola, or other sound-generating device.

Yes, the difference between the Line In and microphone jack is that Line In devices aren't amplified.

Your console may have multiple sets of audio connectors: three on the front, three on the back, three on the DVD adapter card. If so, use the sound connectors on the DVD card first because they're the best. Otherwise, when audio connectors are on the front and back of the PC, the front set is simply a copy or spare (designed for easy hookup of the mic or headphones).

To record sound, you need software that lets you convert audio input into digital storage inside the computer.

Digital Camera

Your digital camera may connect to the console in one of three ways:

- ✓ Through the USB port
- ✓ Through the mini-IEEE port
- ✓ Through its own, special cable

The connection used by your camera depends on the camera's manufacturer, not on the PC.

Note that it's also possible to use a media card reader on your PC to directly read the camera's digital "film." For example, you can get a CompactFlash memory reader, which you connect to your PC by using the USB port (see also "USB Port").

See also "Optical Audio," for information on using that specialized connector.

IEEE

The IEEE port allows you to use high-speed external devices with your PC. This port isn't as common as the USB port, though the IEEE port behaves in much the same way, and for some devices (external disk drives, digital video, high-end scanners), it's better than USB.

4 Part I: Connecting Stuff

IEEE devices require an IEEE cable, which may or may not come with the device.

The cable's ends are identical. It matters not which end of the cable goes into the device or which end plugs into the console.

As with USB, it's possible to *daisy-chain* IEEE devices, by plugging one into another, into another, and finally into the console. Note that certain IEEE gadgets prefer to be connected to the console directly.

Also like USB is the IEEE hub, which allows you to expand the number of IEEE ports.

Some devices, particularly digital videocameras, use the mini-IEEE connector. This connector requires a unique cable. (It uses only four wires, whereas the standard IEEE cable has six.)



IEEE is also known as 1394. The two names are often used together, as in IEEE 1394. On Apple computers, the IEEE interface is referred to as *FireWire*. No matter what the name, the standard symbol is shown in the margin.

Most PCs don't come with IEEE ports, though they can be added easily by installing inexpensive expansion cards.

Joystick

An older PC may sport a unique joystick port. It's a 25-pin, D-shell connector, found on the rumps of older-model computers. The joystick port can also be used to connect the MIDI adapter for playing musical instruments with your PC.

Today's joysticks plug into the USB port (see also "USB Port").

The joystick port may also be referred to as the A/D port, where A/D stands for *analog-to-digital*.

Keyboard

The PC keyboard plugs into the keyboard port on the back of the console.

Note that the keyboard port looks amazingly similar to the mouse port. Despite their visual similarity, they're two different ports. Your keyboard (or mouse) doesn't work when it's plugged into the wrong port.

A USB keyboard can plug into any USB port.

Some USB keyboards come with lime green adapters, designed to convert the USB ports into keyboard port connectors. Using this type of adapter is optional.



Don't plug the keyboard into the keyboard port while the computer is on. It's okay to plug in a USB keyboard, but don't plug anything into the keyboard port when the computer is on. It may damage the keyboard, the computer, or both.

Microphone

To use a microphone with your PC, plug it into the microphone port. See also "Audio."

Modem

Most PCs are sold with internal modems. In that case, all you see on the back of the console is a standard phone jack. Take a phone cord, plug it into the modem's phone jack, and then plug the other end of the phone cord into the telephone company's jack on the wall. The modem is connected.

If the modem has a second phone jack, one designed for a telephone, you can plug a telephone's cord into that jack as well. You can use the phone any time the computer isn't using the modem to make a call.

External modems also have phone jacks and need to be plugged in the same way as internal modems. Additionally, the external modem needs to plug into the console. This is done by either using a serial cable and plugging the modem into the console's COM port or using a USB cable. External modems must also be plugged into the wall for power.

Don't plug the modem into the network's RJ-45 jack. Although that hole looks the same, it's slightly larger and the phone jack doesn't stay put.

Monitor

The monitor plugs into the VGA, or graphics adapter, jack on the back of the console. It goes in only one way.

If the console has two VGA connectors, you probably want to use the one on an expansion card rather than the one on the console's I/O panel. (See also the "Big Picture.")

Mouse

Your computer's mouse plugs into the mouse port on the back of the console. This port looks exactly like the keyboard port, but be sure that you plug the mouse into the right port. The mouse doesn't work otherwise.

USB mice need to connect to the USB port, though many mouse manufacturers also include an adapter that lets you convert the USB connector to a PC mouse port connector. Either way works.



Turn your computer off before you connect or disconnect the mouse to the mouse port.

Network

To connect your PC to a network, or to a networklike device, such as a cable or DSL modem, plug the cable's plastic connector into the console's RJ-45 jack.

The RJ-45 jack looks exactly like a telephone connector, though it's more squat (wider and shorter).

When the network cable is fully inserted, you feel or hear it snap into place.

To remove the network cable, press the tab on the narrow end, and then slide the cable out of the hole — just like you disconnect a phone cord.

Optical Audio

If you're a high-end audio snob, you can use optical audio to connect the PC to your high-end optical audio sound equipment. Both devices, input and output, must have optical audio. And, you must obtain special (and not cheap) fiber-optic cable to connect the toys.

Optical audio isn't a must.

Be careful not to bang, touch, or taunt the clear glass ends of the optical cable. Better cables come with little protective caps that you can keep on the ends when the cable isn't connected.

Optical Audio Out ports connect to optical Audio In, and vice versa.

Power

Cinchy: The plug goes into the wall socket.

Some power cables are affixed to the device they power. Others must be plugged in at both ends. Oftentimes, it's that second end disconnecting that's the source of endless computer angst and woe.

You may want to use a power strip or UPS. See also Part III for information on turning on your PC.

Printer

The printer plugs into the console's printer port. Nothing could be more "duh."

The standard PC printer cable has two different ends. One is designed to plug into the printer; the other, into the console. It's impossible to confuse the two.

USB printers plug in by using a USB cable. For printers with both printer and USB options, use the USB option.

Printers don't come with cables! You must buy the cable — USB or standard printer cable — separately.

Another name for the printer port is LPT1. Another name for the printer cable is *Centronics*. Another name for the port is *parallel port*, with the corresponding *parallel cable*.

Avoid inexpensive printer cables because they aren't bidirectional. You should ensure that you get a printer cable that talks both ways. That way, you can use all your printer's features.

It's trivial, but printer cables should be no more than about 10 feet long. The signal may degrade over longer distances. Well, and you get tired of walking over to a printer set far away.

Printers can also be connected to computers over the network, in which case the printer is connected by using a networking cable only.

S-Video

S-Video connectors allow you to send your computer's video output to a standard television set, or to any video gizmo that has S-Video input.

8 Part I: Connecting Stuff

S-Video output provides higher-quality images than other types of video output. You typically find this type of connector only on the rumps of PCs with high-end video adapters.

S-Video is typically output only. To read video input on your PC, you need a special video adapter that accepts input.

The final thing to remember about S-Video is that it's video only; it doesn't transmit any audio. To get the sound over to your television, you have to string some wires from the Line Out, speaker, or headphone jacks or use the optical audio connections (if your television supports that).

Scanner

Most scanners connect to the console by using the USB port. In fact, they don't even require a power cable; the scanner draws its power from the USB port itself. Amazing.

High-end scanners use the IEEE port rather than, or in addition to, USB.

Serial

Today, the most common device to plug into the console's serial, or COM, port is an external dial-up modem. There are also serial mice as well as a few serial printers.

At one time, a serial port was the most versatile type of connector on your PC. Today, however, it's kept around mostly for compatibility with older devices.

On consoles with more than one serial port, they're named COM1, COM2, and so on.

COM is short for *communications*.

Another term for the serial port is RS-232.

Speakers

Speakers plug into the speaker or headphone jack (see also "Audio").

Note that speakers can also be a part of the monitor. Even so, a separate cable is required in order to plug the speakers into the speaker or headphone jack on the console.

USB Port

USB devices plug into the USB port — any USB port, though some devices specifically want to be connected to the console or to a powered USB port.

Newer USB devices are generally faster and better than the original USB standard. These newer devices are referred to as high-speed or USB 2.0 devices, and they require a USB 2.0 port. Most PCs come with this port, though older PCs can add the port by adding an internal expansion card.

USB cables have two different ends, dubbed A and B. The A end is flat and exists on the console or the back of any USB hub. The B end is trapezoidal in shape and plugs into the USB device.

USB extension cables are available, but be sure that the extension cable's ends match what you're plugging into: A to A or B to B.

USB hubs allow you to further expand the number of USB devices your computer can use. The hub connects to the console (or to another hub) by using a standard A-B USB cable. The hub itself contains more USB ports, from two to four, on up to a dozen or more.

Some hubs must be plugged in to help supply external USB devices with power. These are known as *powered hubs*.

Many USB devices act as hubs and provide even more USB connectors for even more gizmos.

USB cables come in a variety of lengths, but the cables are never longer than 3 or 4 feet. Any longer and the signal may be compromised.

USB devices can be connected or disconnected whether the power is on or off. If the power is on, the computer instantly recognizes the device and makes it available. But note that some USB devices, particularly external disk drives and other storage devices, cannot be removed unless you first use the PC's operating system to disconnect, or *unmount*, the device.

Wireless Gizmos

Yes, even wireless devices require some type of wired connection.

For example, a wireless keyboard and mouse require you to connect the transmitter to the keyboard and mouse ports or to a USB connector on the console. Beyond that point, however, the keyboard and mouse aren't tethered to the console by wires.

10 Part I: Connecting Stuff

Wireless networking is generally wire-free. The network card's antenna sticks out of the console's rump. (On a laptop, the antenna may be internal.) Despite the term *wireless*, at some point the system uses wires. For example, a wireless hub needs to connect to the Internet, and that's done by using a wire.