

Bonus Chapter

Biting into Bluetooth

In This Chapter

- ▶ Comparing AirPort and Bluetooth
 - ▶ Adding Bluetooth to your Mac
 - ▶ Reading Bluetooth terms and concepts
 - ▶ At least half a dozen useful things you can do with Bluetooth
 - ▶ Unplugging and playing with Salling Clicker
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Soon after Apple introduced its AirPort base station and the first iBooks with AirPort cards, wireless networking took the computing world by storm. Soon after Apple introduced Bluetooth support with Mac OS X 10.2, that wireless technology took the computer world by drizzle.

Maybe it was the name? Wireless networking often goes by the familiar-sounding name *WiFi*, and even if the name doesn't really accurately describe the technology — I get the “Wi” part, but what does the “Fi” part mean? — it sounds as if it does. But *Bluetooth*? It sounds like a dental condition rather than something that can make your computing experience better.

If it wasn't the name, maybe it was simply that both appeared at the tail end of the Internet boom: WiFi provided a way for the growing hordes of laptop users to have their Internet and yet roam freely. And Bluetooth? Well, it let computer users copy their contact lists wirelessly to their Bluetooth-equipped cellphones and print documents wirelessly on that relatively rare phenomenon, a Bluetooth-equipped printer — if that printer wasn't already available through a WiFi connection. Not surprisingly, neither of these uses was compelling enough to drive massive numbers of computer users to adopt a new technology.

Although it was a slow starter in the computer market, Bluetooth has become more and more common in the exploding marketplace of smart phones, personal messaging devices, and other hand-held wonders of digital technology. And Apple's support for Bluetooth has not wavered: The company has become the first major computer vendor to adopt the newest version of the Bluetooth standard. Apple now provides Bluetooth as a standard feature on many of its computers, and it even sells Bluetooth wireless mice and keyboards as low-cost accessories.

Bluetooth may not be washing over the computer world by storm, but it has become a steadily rising tide. You owe it to yourself to understand what it is, what it can do, and how it can make using your Mac even more efficient and enjoyable.

Understanding Bluetooth

Bluetooth evolved from a specification developed by Swedish telecommunications manufacturer Ericsson for exchanging information between digital devices — such as the cellphones that Ericsson makes and sells. In the late 1990s, Ericsson and a number of other cellphone and digital-device manufacturers — including such luminaries as Intel, Sony, Nokia, Toshiba, and IBM — formed the Bluetooth Special Interest Group (*SIG*), and with that, Bluetooth moved out of the lab and into the pockets and backpacks and briefcases of tech-loving, cellphone-toting early adopters.

The design goals that Bluetooth’s designers wished to meet were, and are, simple:

- ✓ Allow a small number of nearby digital devices to exchange information wirelessly
- ✓ Allow the information exchange to be secure from interception (aka eavesdropping) and tampering
- ✓ Require very little electrical power
- ✓ Cost relatively little to include in a digital device

And Bluetooth has met all of these goals. Though it hasn’t become the predominant wireless technology in the high-tech arena, it has steadily managed to become more flexible, more powerful, and more popular.

Matching Up Bluetooth and AirPort

If you were to ask yourself, “Why do I need Bluetooth if I have AirPort?” you would be echoing a question many others have asked. Though they are similar technologies, they are not identical. Each has its own advantages, and your Mac is more powerful with both of them rather than with either alone.

First, here are the obvious similarities between AirPort and Bluetooth:

- ✓ **Similar technologies:** They are both digital wireless broadcast technologies — in fact, in the United States, they even share the same broadcast frequency range.

- ✔ **Similar uses:** They allow devices to exchange files and other data.
- ✔ **Similar ranges:** Their broadcast ranges each cover a relatively limited area.

In fact, in a head-to-head comparison of specifications, AirPort seems to have Bluetooth beat on several counts:

- ✔ **Range:** An AirPort signal can reach devices as much as 150 feet away, while Bluetooth’s signal usually doesn’t make it past 30 feet.
- ✔ **Number of users:** An AirPort base station can handle dozens of connected users, and it can bridge networks that literally span the globe; Bluetooth normally can’t connect more than eight devices together at any one time.
- ✔ **Data transfer speed:** Original AirPort can transfer as many as 11 million bits per second, and AirPort Extreme can transfer more than 50 million bits per second; Bluetooth can only handle just over 2 million bits per second.

So, if the two technologies actually competed directly — as some erroneously assume they do — the fight would already have ended, with AirPort declared the winner by a knockout. However, the competition exists more in the minds of technology journalists than in reality, for it turns out that the two technologies complement each other much more than they compete.



Although the following comparison oversimplifies the situation, you can think of Bluetooth and AirPort this way:

- ✔ AirPort replaces the cables that connect computers and devices in a local area network (*LAN*) and that connect them to a wide area network (*WAN*).
- ✔ Bluetooth replaces the cables that connect various kinds of small devices either to a computer or to each other — devices such as printers, modems, speakers, headsets, keyboards, PDAs, drawing tablets, and, of course, cellphones.

You don’t need to choose between the two. You can use both at the same time — in fact, I’m using both technologies even as I write this (AirPort Extreme for my Internet connection and Bluetooth for my keyboard and mouse).



In the early days of Bluetooth, some folk expressed concern that a Bluetooth signal would interfere with an AirPort signal, and vice versa, because both technologies use the same broadcast frequency range. To avoid such interference, Bluetooth uses a *frequency hopping* technique, described briefly in the following section, “Comparing Bluetooth 1 and Bluetooth 2.”

Comparing Bluetooth 1 and Bluetooth 2

Just as AirPort gave way to AirPort Extreme, Bluetooth is now giving way to Bluetooth 2. And, just like AirPort and AirPort Extreme — or, for that matter, the original USB and the higher-speed USB 2.0 — the new Bluetooth 2 specification mandates compatibility with the first Bluetooth version. You'll often see this standard referred to as Bluetooth 2.0+EDR — the EDR stands for *Enhanced Data Rate*.



The Bluetooth SIG has released three or four versions — depending on how you count — of the Bluetooth specification so far. For the most part, the earlier revisions to the original Bluetooth specification simply cleaned up a few rough edges and added a few small, but necessary, improvements. For example, Bluetooth 1.1 added support for unencrypted communications. Bluetooth 1.2 added a feature called *adaptive frequency hopping*, which further reduces interference from other devices that use the same set of broadcast frequencies as Bluetooth — including AirPort. Frequency hopping, a feature of the original Bluetooth specification, means that Bluetooth devices regularly shift the frequency at which they broadcast to avoid monopolizing the airwaves; adaptive frequency hopping lets a Bluetooth device broadcast less often over any frequency that it detects another device is currently using.

What makes Bluetooth 2.0+EDR a big improvement over earlier Bluetooth versions? It doubles data transfer speed, while reducing the amount of electricity consumed during the transfer. Bluetooth 2.0 achieves its energy savings *because* it transmits data more quickly: A Bluetooth device's transmitter uses power only when it transmits, so a Bluetooth 2.0 device's transmitter doesn't have to stay on as long to send the same amount of data as the transmitter of an older Bluetooth device does. In short, Bluetooth 2.0 is both faster and leaner than its predecessors.



Apple has moved quickly to support the latest Bluetooth version — becoming one of the first major computer makers to do so — and the company's current computers that include Bluetooth employ the 2.0 version. But you may hardly detect the difference, other than it working more smoothly. Remember, the Bluetooth 2.0 specification stipulates compatibility with earlier versions, so nearly all original Bluetooth equipment works quite well with the latest version.

Speaking the Bluetooth language

Jargon. Don't you hate it? Unfortunately, most technologies come with their own special lexical ornaments, and Bluetooth is no exception. However, the Bluetooth terms that you need to scribble on flash cards and memorize comprise a reasonably short list, and the terms themselves shouldn't cramp your brain.

The movie star and the medieval king

The medieval king in question is one Harald Blåtand (whose name translates into English as *Harold Bluetooth*), a Danish king who reigned from about 940 to 985. During his life he succeeded in uniting Denmark, Norway, and Sweden. Centuries later, King Harald's accomplishment inspired Ericsson, a Swedish company, to name their wireless data-transfer technology after him, because they hoped that their technology would unite the wireless landscape just as Harald had united his kingdom. A close look at the distinctive Bluetooth logo reveals that it comprises the two runic characters that make up King Harald's initials.

The movie star in question is Hedy Lamarr, who, during World War II, worked with a friend, the composer George Antheil, on a method for

controlling torpedoes by radio. As the ex-wife of a German munitions maker, Lamarr had more than a passing knowledge of weaponry and felt particularly inspired to aid the United States' war effort. The technique that she and Antheil devised involved quickly and reliably changing the frequency of the signal controlling the torpedo to protect the control signal from enemy interference, a technique that became known as *frequency hopping*. She and Antheil received a patent for this invention in 1942. Many years later, well after the patent had expired, Lamarr's frequency-hopping method was incorporated into Bluetooth, and further refined in Bluetooth 2.0. Lamarr died in 2000, a year after the Bluetooth Special Interest Group was formed.

Discover

Before a Bluetooth device can connect to another Bluetooth device, it first needs to *discover* that other device. It does this by transmitting a request for either a particular kind of a device (“Hey, are there any Bluetooth printers out there?”) or for a specific device that it knows about (“Hey, Michael's cellphone, are you out there?”) and then listening for a response.

This means, of course, that one Bluetooth device can discover another Bluetooth device only if that other device listens for requests and responds to them. This could pose a problem for battery-powered devices like cellphones because listening for transmissions continuously can drain a battery.

Bluetooth reduces the energy drain this way: A *discoverable* Bluetooth device listens for requests briefly once every 1.28 seconds and remains dormant the rest of the time. The device attempting to discover other devices uses more power, of course, because it transmits requests continuously until another device responds, or until the time it allots for receiving a response runs out. In some cases, such as when you use the Mac's Bluetooth Setup Assistant (described later in this chapter), it transmits the request until you tell it to stop.



You need not make a Bluetooth device discoverable in order to use it. For example, you can synchronize a cellphone's contact list with your Mac's Address Book without making your Mac discoverable, as long as you make the cellphone discoverable. Generally, the device initiating a request doesn't need to be discoverable, only the devices that respond to the request.

Pairing

After one Bluetooth device has discovered another for the first time, they usually *pair*, a process that allows the two devices to exchange information securely.

To establish the necessary level of trust, one device sends a code, often called a *PIN* or a *passkey*, to the other device, and the other device sends a similar or identical code back. Usually, the pairing process requires a user to enter the passkey. Figure BC1, for example, shows the Bluetooth Setup Assistant requesting the user to enter a passkey in order to pair a Bluetooth keyboard with a Mac.



Figure BC1:
You need to enter a passkey to pair two Bluetooth devices.

After two devices have paired, one or both of them record that the other device exists, and store certain identifying information about the paired device, so they do not need to be paired again. Thus, unlike your experiences with PINs for ATMs or with other passwords, you do not need to remember the passkey used for pairing: The devices need the passkey only when they first pair.



Bluetooth devices usually require pairing for one or both of these reasons:

- ✓ When the communication between the two devices requires a secure connection
- ✓ To keep other, unpaired Bluetooth devices from participating in the communication

A handheld Personal Data Assistant (PDA), for example, pairs with your Mac so it can exchange contact information, calendar information, and files with the Mac securely and thereby thwart digital eavesdroppers. A Bluetooth keyboard pairs with your Mac to keep other, unpaired Bluetooth keyboards from being used with that Mac at the same time, to reduce confusion — otherwise, a Mac with a wireless keyboard sitting beside another Mac with a wireless keyboard wouldn't know which keyboard to respond to and which to ignore. Pairing the keyboard also keeps nearby Bluetooth devices from watching — and possibly recording — what you type.

Not all Bluetooth devices require it regardless of the sender. For example, a Bluetooth printer simply prints whatever is sent to it regardless of the sender. Bluetooth printers also usually need to respond to more than one Bluetooth device because several users often share a single printer, and Bluetooth printers do not require a trusted relationship to do their work — not to mention that printers seldom have keyboards on which a user can enter a passkey to establish a paired relationship. That's not to say that devices without keyboards or keypads can't pair: Figure BC2 shows how the Mac's Bluetooth Setup Assistant pairs with a Bluetooth mouse, which doesn't have a keyboard. In other cases, when one device has a keyboard and the other doesn't, the device that has the keyboard must send a predetermined passkey — usually printed in the keyboardless device's manual or inscribed on the device's body — in order to pair. Wireless headsets often pair in this manner.

Figure BC2:
Sometimes
Bluetooth
devices can
pair without
requiring
you to enter
a passkey.



Piconet

When two or more Bluetooth devices have established communication with each other, they form a *piconet*. (The prefix *pico* specifically means one-trillionth and in this case is used as a synonym for “very small.”) Bluetooth users also call a piconet a *personal area network (PAN)*. A Bluetooth piconet can have no more than eight devices participating at any one time, which, by most definitions, constitutes a very small network. A Mac with a Bluetooth

mouse and Bluetooth keyboard, for example, forms a piconet that comprises the three devices.

Master unit/Slave unit

Other Bluetooth devices or non-Bluetooth devices sharing the same broadcast frequency range may cause radio interference. To avoid radio interference, Bluetooth devices employ a *frequency hopping* technique, periodically changing the specific broadcast frequency on which they transmit. Of course, two or more Bluetooth devices participating in a piconet need to change their shared broadcast frequency simultaneously or they lose contact with each other.

Therefore, a Bluetooth piconet makes one of the devices the *master unit*, which takes on the jobs of timing each frequency hop and of specifying the new frequency to which the network hops. The other devices in the piconet become *slave units*, and merely obey the master unit's timing- and frequency-change instructions.



You don't need to specify which device in a piconet becomes the master unit and which ones become the slaves. The Bluetooth software controlling the network itself automatically makes that decision.

Scatternet

Although you can have only eight devices participating in a piconet, a slave unit in one piconet can also participate as either a master unit or a slave unit in another piconet at the same time. When two or more piconets link together by way of a shared device, the resulting extended network is called a *scatternet*.

Consider, for example, one piconet comprising a Bluetooth cellphone and a Bluetooth headset, and another piconet comprising a Mac with a wireless keyboard and mouse. Say you need to synchronize the items in the Mac's Address Book with the cellphone's address book. If the Mac establishes a link with the cellphone, a scatternet links the two networks. The cellphone can still communicate with its headset in its piconet, and the Mac can still communicate with its mouse and keyboard in its piconet.



A Bluetooth device can act as a slave unit in several piconets simultaneously, but can act as a master unit in only one of them.

Information can also pass between the devices belonging to separate piconets in a scatternet. Consider the scatternet shown in Figure BC3. The Mac, its keyboard and mouse, and a cellphone form piconet A. The cellphone creates another piconet, piconet B, with its Bluetooth headset. A PDA also communicates with the cellphone in piconet C. By virtue of the scatternet formed by these three piconets, the Mac can send Address Book information to the cellphone, which the PDA can then obtain.

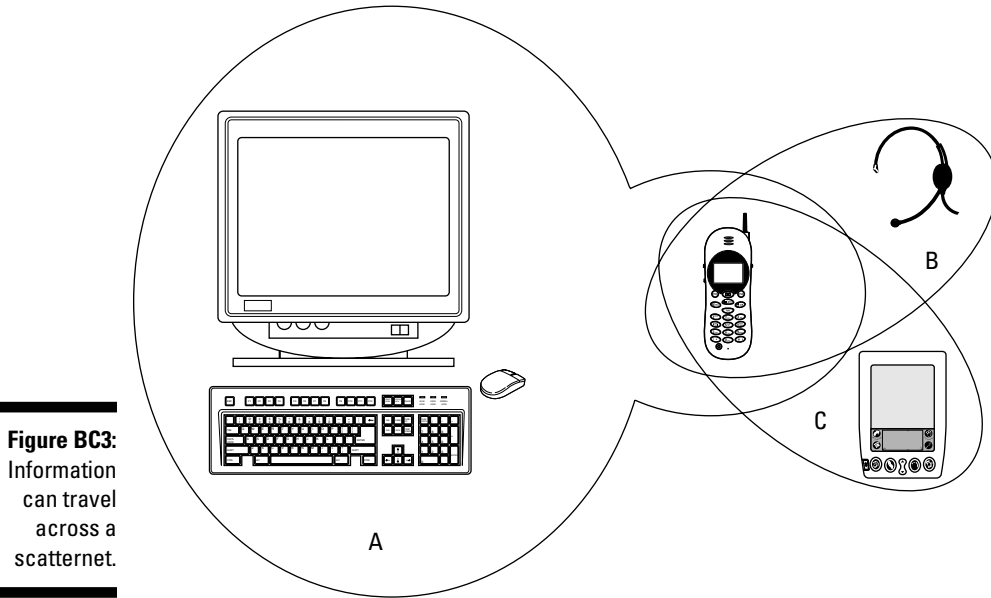


Figure BC3:
Information
can travel
across a
scatternet.

Device address

Every Bluetooth device has a unique *device address*. This address usually shows up in your Mac’s Bluetooth software as a sequence of six pairs of characters separated by hyphens, such as 1B-A4-66-FA-02. After your Mac pairs with a specific Bluetooth device, such as a keyboard, it associates a friendlier, human-readable name with the number to help you identify the device. Figure BC4 shows the Devices tab of the Mac’s Bluetooth preferences window, in which you can see both the device address and the name of a specific Bluetooth mouse paired with that Mac, along with other information about the mouse.



The device address actually consists of six *bytes* — a number that can range from 0 to 255 — represented in *hexadecimal notation* (used to represent base-16 numbers that, for reasons too technical to get into here, programmers love to use). A six-byte device address can represent more than 280 trillion separate devices. That’s more than 43,000 Bluetooth devices for every person on the Earth.

Profile

Different Bluetooth devices serve different purposes. For example, a headset sends and receives audio information but does not store or exchange files. A keyboard sends keypresses but doesn’t send or receive much of anything else. A Bluetooth *profile* describes what the Bluetooth device can do and what services it can provide to other Bluetooth devices. A Bluetooth device usually supports several different profiles at the same time.

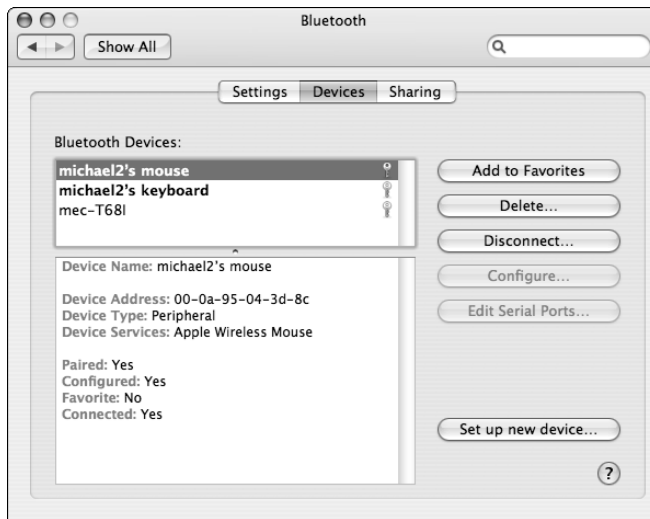


Figure BC4:
You've got
my name;
you've got
my number.

Currently, Bluetooth devices use one or more of 20-plus different Bluetooth profiles. Some of the more commonly used profiles follow:

- ✓ **Cordless telephony:** A Bluetooth cellphone makes good use of this profile.
- ✓ **File transfer:** Bluetooth devices that store and manipulate files, such as a desktop computer or a PDA, can use this profile to exchange files.
- ✓ **Hard copy replacement:** Bluetooth printers use this profile or the next one.
- ✓ **Basic printing profile:** Another profile that enables printing.
- ✓ **Object push:** A cellphone or business-card reader might use this profile to send a well-defined data object, like the contact information on a business card, to another Bluetooth device.
- ✓ **Dial-up networking:** Bluetooth cellphones and Bluetooth modems use this profile to allow a Bluetooth-equipped computer to make dial-up Internet connections wirelessly.
- ✓ **Serial port:** Many Bluetooth devices use this profile to emulate the serial ports on traditional computer systems. Often, Bluetooth devices that use the dial-up networking profile also use this profile.
- ✓ **Headset:** Bluetooth headsets use this profile, as do other devices that send and receive audio information.
- ✓ **LAN access:** This profile lets a Bluetooth device act as a link between a local area network and another Bluetooth device. PDAs tend to use this profile more than desktop or laptop computers, which tend to connect to LANs with AirPort or its non-Apple equivalents.



You can find a current list of which Bluetooth products support what profiles from the Bluetooth SIG itself at qualweb.bluetooth.org/Template2.cfm?LinkQualified=QualifiedProducts.

Equipping Your Mac with Bluetooth

If you've read the preceding portions of this chapter, you're probably thinking to yourself, "Wow! Where can I get me some of that fine Bluetooth tech?" The answer to that, as with most wireless Mac questions, depends on what kind of Mac you have.

If you have a relatively recent Mac model — that is, one that can run Apple's latest version of Mac OS X — you have three options:

- ✓ You can have Bluetooth built in.
- ✓ You can get a Bluetooth USB device.
- ✓ You can get a Bluetooth PCMCIA card.



Although you can use Bluetooth with both Mac OS X 10.2 (Jaguar) and with Mac OS X 10.3 (Panther), I recommend that you upgrade to Mac OS X 10.4 (Tiger) if you can. The latest version of Apple's Mac OS provides more complete, robust, and flexible Bluetooth support than previous versions. Apple may think so, too: Bluetooth became standard equipment on Apple's consumer iMacs at the same time that iMacs began shipping with Mac OS X 10.4 installed.

Building it in

What can I say? If you see a new Mac in your immediate future, get Bluetooth built in. You won't need to worry about incompatibilities with Apple's system software. In some cases you won't have a choice anyway: For example, all of Apple's iMac G5s shipping since May 2005 include Bluetooth as standard equipment.

Apple's built-in Bluetooth uses the latest Bluetooth 2.0+EDR standard, which has also begun appearing in new Bluetooth-equipped devices. See "Comparing Bluetooth 1 and Bluetooth 2" in this chapter for more information about Bluetooth 2.0+EDR.



For those Macs for which Bluetooth is still a build-to-order option, Apple charges a reasonable price. If you order AirPort Extreme and Bluetooth together, the combination is a wireless bargain: Apple uses a single component that combines both wireless technologies when you order them together, which accounts for significant price savings.

Dangling a USB dongle

Apple supported Bluetooth long before it began building Bluetooth into the box. The option that worked then still works for any Mac with a Universal Service Bus (USB) port: a Bluetooth dongle.



For those of you who have never heard the term before, a *dongle* is a small device that plugs directly into a physical port on a computer. The word seems to be related to the word *dangle*, though few lexicographers will say so unequivocally.

Bluetooth USB dongles have three differences from built-in Bluetooth:



- ✓ **They occupy a USB port.** Although many Bluetooth devices can replace the ones that you connect to USB ports, you may have maxed out your USB ports and not feel ready to replace one or more of your beloved USB devices just to add Bluetooth capability. In this case, you not only need to get a Bluetooth dongle, but also a USB hub to give you more USB ports, and the hub can cost just as much as the dongle.
- ✓ **They stick out.** A dongle consists of the device itself and a protruding USB connector that you plug into a USB port, which means that the dongle always sticks out an inch or two from wherever you plugged it in. Though aesthetically unpleasing, that arrangement is not so bad — unless you've plugged the dongle into a laptop. In that case a dongle becomes a real hazard, easy to knock against something accidentally, resulting in broken Bluetooth connections at the very least and broken dongles and USB ports in the worst case. Also, dongles tend to be a bit fatter than the USB port they plug into, and on a Mac with USB ports set closely together, such as a 12-inch iBook, some dongles may block access to a neighboring USB port.
- ✓ **They may not be completely compatible with your Mac.** Although manufacturers of Bluetooth dongles adhere to the Bluetooth standards, the standards, like most, allow for some leeway in interpretation and implementation. Because the majority of Bluetooth dongles target the Windows market, some manufacturers may have performed only cursory tests of their products on a Mac, and others may not have tested their devices on a Mac at all. If you plan to buy a USB dongle, check to see that its manufacturer approves of its use with a Mac — after all, any cost savings you achieve on a low-cost dongle means nothing if the dongle doesn't do what you bought it to do. Also, not all dongles support all the Bluetooth profiles, so you need to confirm that the dongle you buy supports the profiles you need.



Of course, if your Mac doesn't have Bluetooth or a PCMCIA slot, a Bluetooth USB dongle is your only practical option for adding Bluetooth. And the differences listed here sound more discouraging than they really are for most users. For what it's worth, I can say I've experienced no problems using a low-cost Bluetooth USB dongle with both an iBook and an iMac for several years.

Apple seemingly approves only one USB dongle for use with the Mac: the D-Link DBT-120 USB Bluetooth Adapter, which Apple sells through both its online and real-world Apple Stores, and which appears prominently featured on Apple's Bluetooth Web page. This does not mean that other dongles don't work with Macs, only that Apple may not answer technical support questions about other devices. Judging from comments on various online forums and from various reviews, however, this approved model elicits about the same amount of praise and complaints as other, non-Apple-approved dongles.



Apple released a Bluetooth Firmware Updater for both its internal Bluetooth modules and for the D-Link Bluetooth adapter in November 2004. This update improves “connectivity between the computer and the Apple Wireless Keyboard and Mouse” according to Apple, but, in the case of the D-Link, it also has a downside: Apple notes that applying the updater “to a D-Link USB to Bluetooth adapter will make it incompatible with non-Macintosh systems.”

Bluetoothing with a PCMCIA card

Although using the card slot in a laptop for a Bluetooth adapter might appear to be a natural fit, Bluetooth USB dongles seem much more prevalent than such cards in the marketplace, and those PCMCIA card Bluetooth adapters seem aimed almost exclusively at users of non-Apple laptops.



One can partially blame the rarity of Mac-compatible PCMCIA cards on Apple itself: The Bluetooth support that Apple-provided in Mac OS X 10.2 worked only with USB Bluetooth devices. Although later versions of Mac OS X reportedly have more complete Bluetooth support, even now few PCMCIA card manufacturers target their Bluetooth products at Macs. One manufacturer that does is Belkin (www.belkin.com), which makes a PCMCIA adapter that the company claims works with Macs. You can sometimes find a PCMCIA Bluetooth adapter for which someone has written a Mac-compatible driver. For example, at mac.softpedia.com/get/Drivers/Card-Blues-Suite.shtml you can find a freeware driver for the 3Com Bluetooth Wireless PC Card.



Keep in mind, however, that even though prowling through online user forums might yield a suitable PCMCIA Bluetooth card for your Mac, you definitely won't be swimming in the mainstream of Mac-compatible Bluetooth technology. If you don't like to live adventurously, I suggest you look into USB dongles for your laptop instead.

Using Bluetooth Devices

Ready to put Bluetooth to work — or to play? As it should on a Mac, doing so doesn't take a whole lot of work. The process breaks down to three simple steps:

1. Turn on your Mac's Bluetooth adapter.

- If you have a dongle, plug it into a USB port; it turns itself on.
- If Bluetooth is built in, choose **Turn Bluetooth On** from your Bluetooth status menu, as shown in Figure BC5.

2. Set up your Bluetooth device.

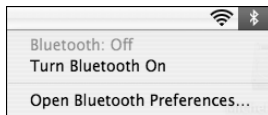
You usually need to do this only if you've never used the device with your Mac before.

3. Use the device.

Certainly, these steps look pretty general, and, as you know, the devil's in the details, but Apple has tried to make this particular devil a friendly and untroublesome one.

Figure BC5:

You can use the Bluetooth status menu to turn on built-in Bluetooth.



What's that? You don't see a Bluetooth status menu in your menu bar? If so, then there are *four* simple steps to using Bluetooth, and the first step is to set up Bluetooth on your Mac. And, coincidentally, you can find out how to do that right now.

Setting up Bluetooth on your Mac

Mac OS X provides several ways to control both Bluetooth and connected Bluetooth devices. The Mac provides various preference windows and menus you can use in conjunction with Bluetooth, some of which provide alternative ways to do the same thing, and most of which work together seamlessly.

Showing the Bluetooth status menu



You can perform several of the most common Bluetooth-related tasks from the Bluetooth status menu that appears in the right-hand side of the menu bar.

To make the Bluetooth status menu appear, follow these steps:

- 1. Open System Preferences.**
- 2. Click Bluetooth.**

You can find the Bluetooth icon in the Hardware collection of preference icons. You can also find the Bluetooth icon by typing **Bluetooth** in the System Preferences search pane in Mac OS X 10.4, as shown in Figure BC6. As you can see in the figure, several of the System Preferences allow you to turn the Bluetooth menu on.

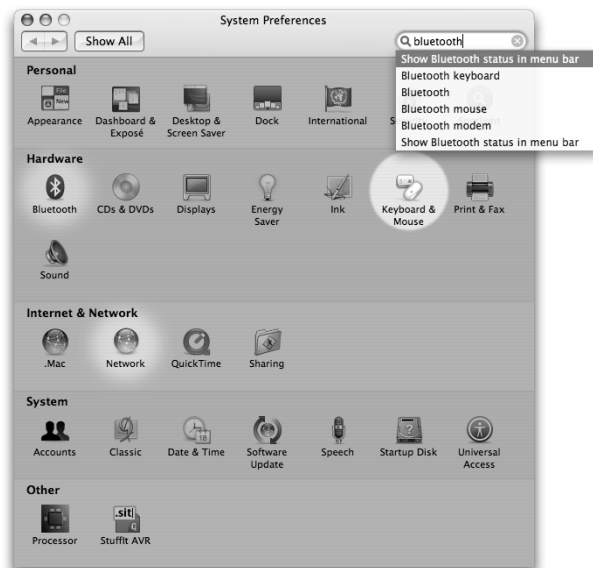


Figure BC6:
Shining a spotlight on Bluetooth.

- 3. Click the Settings tab.**
- 4. Click Show Bluetooth status in the menu bar.**

When you complete Step 4, the Bluetooth symbol appears on the menu bar's right, as shown in Figure BC7.

When you turn Bluetooth on, the Bluetooth icon on the menu bar changes from gray to black, and the Bluetooth status menu contains more choices. You may want to compare the Bluetooth menu shown in Figure BC8 to the one shown previously in Figure BC5.

Figure BC7:
The Bluetooth system preference lets you see the Bluetooth menu.

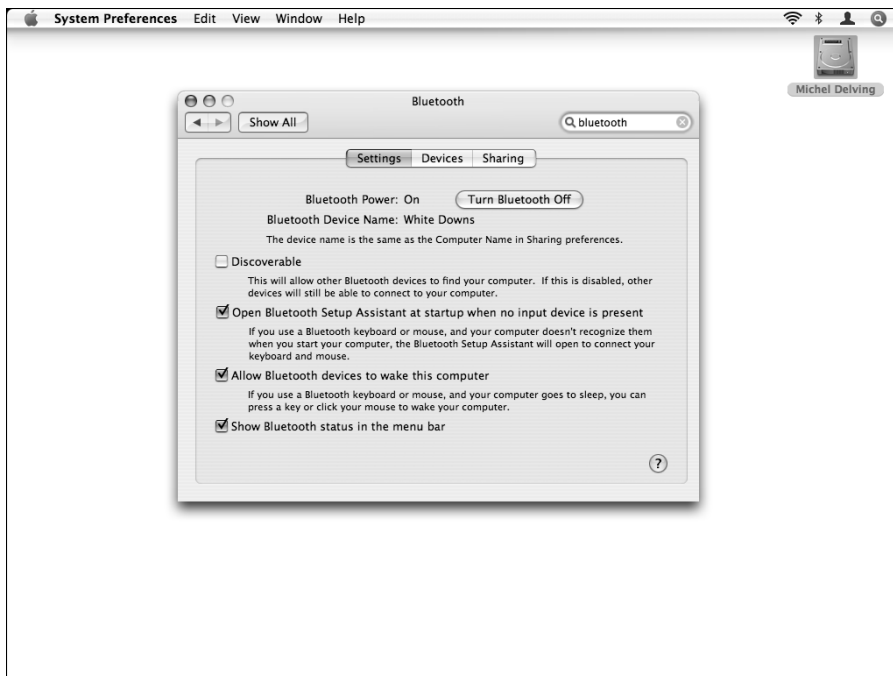


Figure BC8:
When Bluetooth is on, the Bluetooth menu offers more choices.



Looking under the Devices tab

Figure BC9 shows the Device tab of the Bluetooth Preferences window. This tab shows you the Bluetooth devices you've previously paired with your Mac, provides controls you can use to alter some settings related to each device, and can display detailed information about each device.



➤ **Add To Favorites.** Make a device a favorite to help you avoid repeated visits to the Bluetooth Setup Assistant. When you select a device from the Bluetooth Devices list and click Add to Favorites, it does more than just put a charming red heart beside a device's name in the list: It also tells the Mac to re-pair automatically with that device whenever it loses

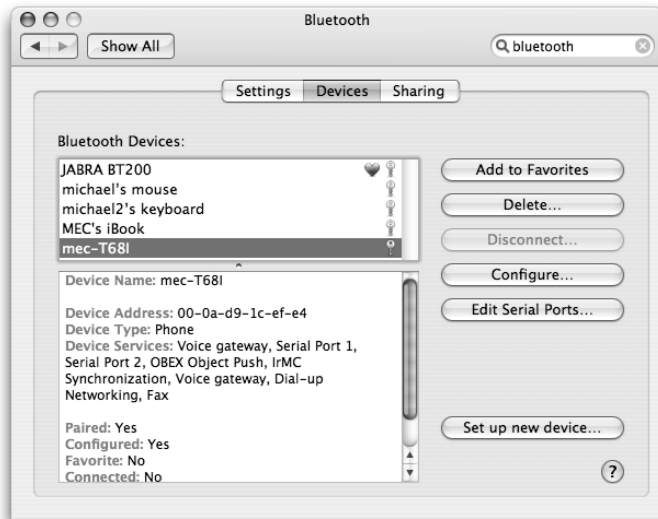
contact with the device for some reason — perhaps because it moved out of range or its battery died — and then later regains contact.

- ✓ **Delete.** If you want your Mac to forget that it ever paired with a particular device, click Delete to remove the device from the Bluetooth Devices list.
- ✓ **Disconnect.** Click this button to disconnect the device that's selected in the Bluetooth devices list. Of course, the button is dimmed if the selected device isn't connected.
- ✓ **Configure.** Clicking this button brings up the Bluetooth Setup Assistant program, which walks you through setting up the device.
- ✓ **Edit Serial Ports.** Some Bluetooth devices can emulate the serial ports on traditional computer systems. Use this button to change the settings and behavior of those emulated serial ports.
- ✓ **Set Up New Device.** If you need to set up a new Bluetooth device that doesn't appear in the Bluetooth devices list, you can invoke the Bluetooth Setup Assistant by clicking this button. You can also invoke the Assistant from the Set up Bluetooth Device command on the Bluetooth menu shown earlier in Figure BC8.

As you work with Bluetooth, you'll find that the Bluetooth Setup Assistant becomes available in a number of contexts when you may need it. This is a good thing, too, because Apple hides the actual Bluetooth Setup Assistant application inside the CoreServices folder located in the System folder, where you won't be likely to find it.



Figure BC9:
You can see and configure the Bluetooth devices you've paired with your Mac.



Previewing the Sharing tab

Some Bluetooth devices can create and store files. The final tab in the Bluetooth preferences window, shown in Figure BC10, controls a number of settings related to how your Mac can share files with another Bluetooth device.

Figure BC10:
You can control the specifics of Bluetooth file sharing from this preference tab.



I won't discuss the items available under the Settings tab here: "Sharing files with Bluetooth," a section that appears a little later in this chapter, discusses the items you need to know about in detail.

Mousing and typing without wires

For years, Mac users have struggled with keyboard and mouse cables that get tangled, that use up two of the Mac's USB ports, and that never seem to reach quite far enough. Now, however, Apple sells both a Bluetooth keyboard and a Bluetooth mouse that you can use with Bluetooth-equipped Macs, allowing you to mouse around and type from across the room if you like. And, if you don't like Apple's wireless mouse and keyboard offerings, you can pick up a third-party Bluetooth mouse and keyboard to suit your particular tastes and needs.

Setting up a mouse

If you have Bluetooth turned on and the Bluetooth status menu visible, setting up the Apple Bluetooth mouse requires these six steps:

1. Click the Bluetooth status menu and select Set up Bluetooth Device.

This starts up the Bluetooth Setup Assistant shown in Figure BC11.



Figure BC11:
The Bluetooth Setup Assistant awaits your bidding.

2. Click Continue.

The Assistant provides you with the various setup choices pictured in Figure BC12. You can choose from among five different general types of Bluetooth device, and if none of them quite matches what you want to set up, you can use the last choice: Any device. The Assistant also helpfully informs you that the device must be within 30 feet of your Mac, just in case you were thinking of setting up, say, a mouse that you've left in your car.

3. Turn on your mouse.

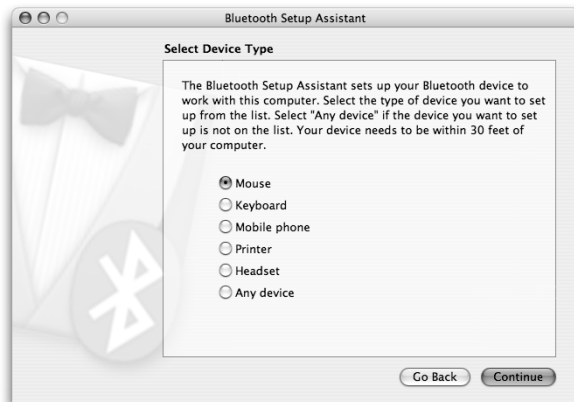


Figure BC12:
Choose the Bluetooth device you want to set up.

In the case of an Apple mouse, slide the switch on the bottom of the mouse to uncover the red *light-emitting diode (LED)*. And, of course, it helps to have a fresh set of batteries in your mouse.

4. In the Bluetooth Setup Assistant window, click Mouse and then click Continue.

The Mac begins scanning the airwaves in an attempt to discover a nearby Bluetooth mouse that it can pair with — you can find out more about the discovery and pairing process in “Speaking the Bluetooth language” earlier in this chapter. For this process to work, the mouse must be discoverable, which Apple’s mice automatically are. If you are attempting to set up a third-party mouse, however, you should consult the mouse’s documentation to see how to make your mouse discoverable.

It takes a few seconds for the Mac to discover the mouse. When it does, the Assistant first shows the mouse’s device address, as shown in the top figure of Figure BC13 — device addresses are also discussed in “Speaking the Bluetooth language.” The Assistant then displays any human-readable name that it can find stored in the mouse, as shown in the bottom figure of Figure BC13.

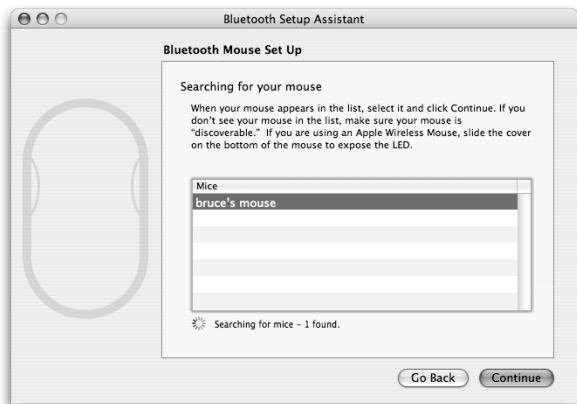
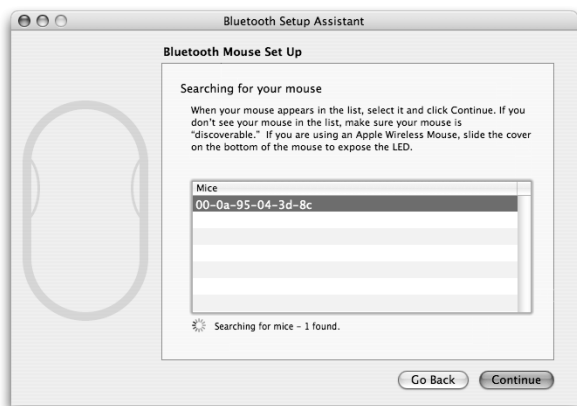
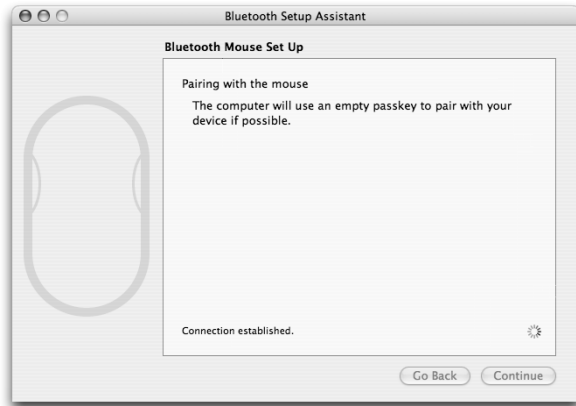


Figure BC13:
The Assistant finds the device's number and automatically assigns a name.

5. Click Continue.

As shown in Figure BC14, the Assistant attempts to pair with the mouse. Because the Apple mouse has no keyboard, the Assistant and mouse exchange an empty passkey. Some third-party mouse devices may require you to type a specific passkey at this point, which the devices' documentation should provide. Also at this point, the Assistant may silently change the mouse's name to match your current login name.

Figure BC14:
The Assistant attempts to pair with the mouse.



The pairing process takes a few moments as the Assistant and mouse exchange keys and record their knowledge of each other's existence. Be patient, because pairing can take as much as ten seconds or so depending on the mouse. When the pairing process finishes, the Assistant lets you know with a message like the one shown in Figure BC15.

6. Click Quit.

Figure BC15:
Mission accomplished — the wireless mouse is alive.



You can now start using your Bluetooth mouse with your Mac. But keep your wired mouse handy, just in case. After all, batteries don't last forever, and you don't want to be caught clickless.



If you don't like the name that the Assistant assigned to your mouse, you can easily change it. Follow these steps:

- 1. On the Bluetooth status menu, click your mouse's name.**

After a Bluetooth mouse has been paired with your Mac and is active, its name appears in the menu. Selecting the mouse's name on the menu opens the Keyboard & Mouse preference window.

- 2. Click the Bluetooth tab.**

You see a display similar to the one shown in Figure BC16. Note that you can also find out the battery charge left in your mouse (and keyboard) in this tab.

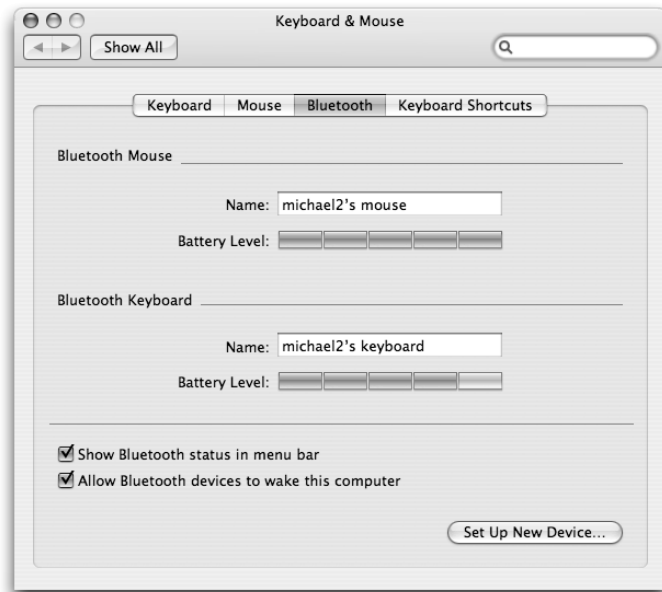


Figure BC16:
The
Bluetooth
tab of the
Keyboard &
Mouse
dialog.

- 3. In the Name field for the mouse, type a new name.**

Because of Bluetooth limits, you must choose a name no longer than 15 characters.

The new name now appears in the Bluetooth status menu and in the device list in the Bluetooth preferences.

Setting up a keyboard

You set up a Bluetooth keyboard in much the same way that you set up a mouse. Follow these steps to set up an Apple Bluetooth keyboard:

1. Turn on your keyboard.

For an Apple keyboard, turn the keyboard over and slide the switch on the bottom toward the small pinhole at one end of the switch. This pinhole is actually a small light, which glows green when you first turn the keyboard on.

The light stays lit only for a short time after you turn the keyboard on in order to conserve battery power.



2. On the Bluetooth status menu, click Set up Bluetooth Device.

The Bluetooth Setup Assistant window appears.

3. In the Assistant window, click Continue.

The Assistant displays the list of devices it can help you set up.

4. Click Keyboard and then click Continue.

The Assistant searches for available Bluetooth keyboards in the vicinity. Your keyboard appears in the Assistant’s list after a few seconds, first displaying the keyboard’s device address, as shown in Figure BC17, and then replacing that with a more memorable name, such as “Michael’s keyboard.”



Figure BC17:
The Assistant finds a keyboard and provides some advice.

5. Click Continue.

The Assistant prompts you to type a passkey, such as the one displayed in Figure BC18.



Figure BC18:
Type the passkey to pair your Mac with your keyboard.

6. On the keyboard you are setting up, type the passkey and press Return.

This pairs the keyboard with your Mac.

7. Click Quit.



After you finish setting up your keyboard, you can change the name that the Assistant gave it:

1. On the Bluetooth status menu, click the keyboard's name.

The Bluetooth tab of the Keyboard & Mouse preference window appears.

2. In the Name field for the keyboard, type a new name.

Just like with a Bluetooth mouse, you must choose a name for the keyboard that is no longer than 15 characters.



Although the procedures in this section describe using the Bluetooth Setup Assistant with Apple's wireless mouse and keyboard, you can use the Assistant with wireless keyboards and pointing devices from other manufacturers. In nearly all cases, you won't see much difference between the setup process for them and for Apple's devices. However, you should always read the documentation that comes with third-party devices and note any special steps they may require.

Sharing files with Bluetooth

Any Mac provides lots of ways for you to share files with other computers, and a Bluetooth-equipped Mac adds yet more ways to share files. And not just with other computers: Bluetooth devices that implement Bluetooth's file sharing protocol, such as some PDAs or advanced cellphones, can pass files back and forth with impunity.

On the Mac, the Bluetooth File Exchange utility handles Bluetooth file sharing with other Bluetooth devices. With it, you can send files to another device, receive files from another device, and browse among the files that another device has made available.

Setting your sharing preferences

Before you can use the Bluetooth File Exchange utility, you must set a few preferences, which you can find under the Sharing tab in System Preferences' Bluetooth preferences window. First and foremost, this is where you go to turn your Mac's Bluetooth file sharing capability on or off.

In addition, the setting controls under this tab let you specify:

- ✔ From which folder on your Mac other Bluetooth devices can get files and into which folder they can put files. Note that these can be different folders.
- ✔ Whether or not you specifically have to approve each file transfer when a file-sharing Bluetooth device starts putting files on your Mac.
- ✔ Whether your Mac and the other Bluetooth device need to be paired before engaging in file-sharing fun.



You don't *have* to require that your Mac pair with another Bluetooth device when sharing files, but you usually should. Otherwise, you might find your Mac becoming the unwitting repository for some joker's virus-laden files or offensive photographs the next time you are working on your laptop in some public place. When it comes to file sharing, the safer the better: Requiring that Bluetooth devices pair with your Mac keeps unknown malefactors from getting access to your Mac's hard disk.

The Sharing tab in the Bluetooth preferences window calls the various pieces of the Bluetooth information-sharing pie *services*. To adjust the settings for a service, click its name in the list of services shown. To turn on a service, click the check box in its On column.

The two services that handle Bluetooth file sharing are:

- ✔ **The Bluetooth File Transfer service:** Shown in Figure BC19, this service lets you turn Bluetooth file transfer capability on or off, specify the folder on your Mac that other Bluetooth devices can see when transferring files, and control whether the device looking at your Mac needs to be paired with it.
- ✔ **The Bluetooth File Exchange service:** As seen in Figure BC20, this service lets you specify where a file is stored when another Bluetooth device sends your Mac a file, and how your Mac should respond when it receives certain kinds of files. It also lets you require that the device sending the files to your Mac be paired with it first.

Figure BC19:
Here's
where you
can turn on
Bluetooth
file sharing.

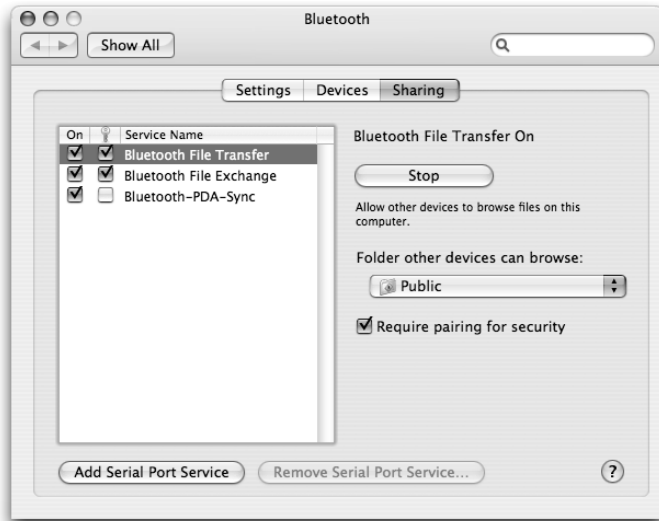
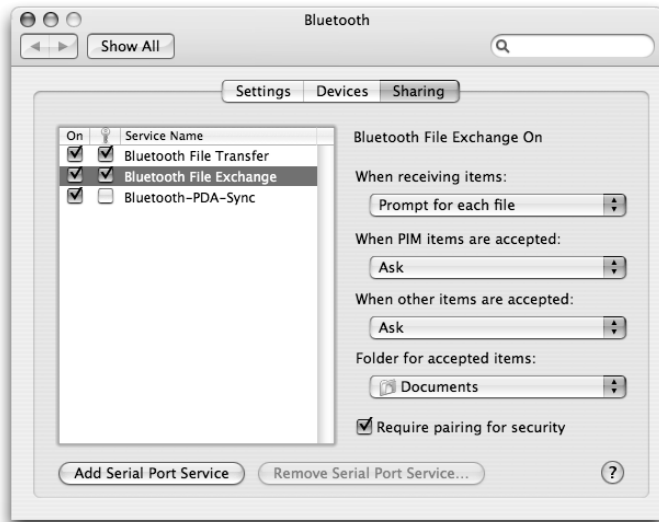


Figure BC20:
Here's
where you
can tell files
where to go.



Although you can open the Bluetooth preferences the old-fashioned way (by first opening System Preferences and then clicking the Bluetooth icon), if you have enabled the Bluetooth status menu on your menu bar, you can select Open Bluetooth Preferences from that menu and save yourself an unnecessary step.

Sending a file with Bluetooth

The Mac’s Bluetooth software makes the act of sending a file to another Bluetooth device a very simple matter, especially if you have the Bluetooth status menu in your menu bar and if you have previously paired your Mac with that device.



You use the Bluetooth Setup Assistant to pair your Mac with another Bluetooth device, and you use a check box under the Settings tab in the Bluetooth preferences window to display the Bluetooth status menu. See “Setting up Bluetooth on your Mac” earlier in this chapter to find out more about performing these tasks.

To send a file to a Bluetooth device that can receive files, follow these steps:

1. Choose Send File from the Bluetooth status menu.

This opens the Bluetooth File Exchange utility and presents the Select File to Send window shown in Figure BC21.



If, for some reason, you don’t have the Bluetooth status menu showing, you can find the Bluetooth File Exchange utility in your Mac’s Utilities folder. You can quickly open that folder by pressing Shift+⌘+U in the Finder. After you open the Bluetooth File Exchange utility, select File→Send File to see the Select File to Send window.

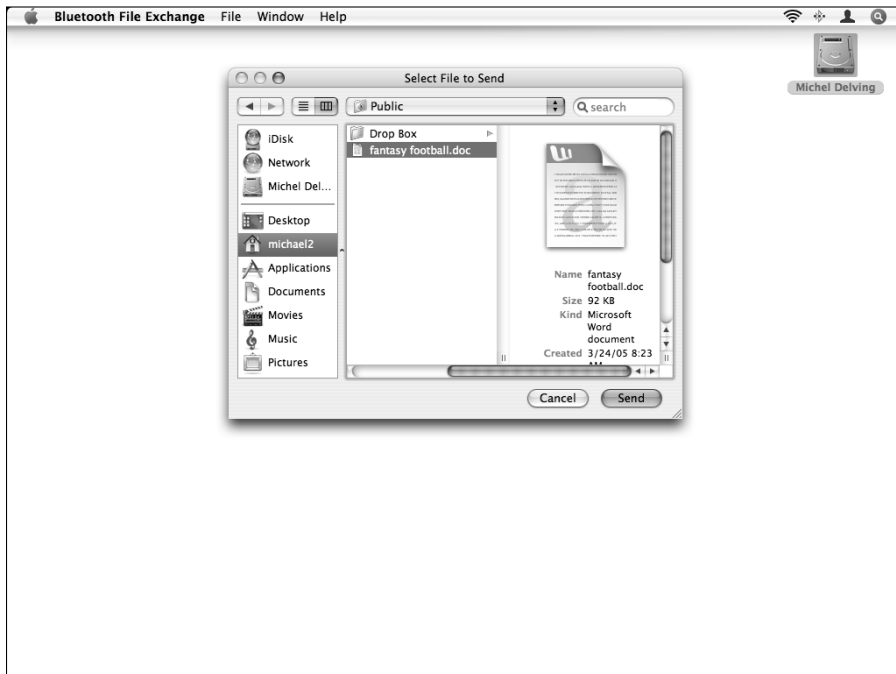


Figure BC21:
You use Bluetooth File Exchange utility to send files to other Bluetooth devices.

2. Select the file you wish to send and click Send.

The file can reside in any folder on your Mac you have access to. A Send File window, like the one shown in Figure BC22, opens to let you pick the Bluetooth device to which you want to send the file.

Figure BC22:
Pick a Bluetooth device to receive your digital offering.



The Send File window has a Device Type menu that lets you choose the types of devices that the window displays in its Device list. You can restrict the list to show only one type of device. The choices on the menu include computers, laptops, desktops, phones, PDAs, input devices, printers, or headsets. Similarly, the window's Device Category menu lets you restrict the Device list to show only recently used devices, discovered devices, or favorite devices. The window's Search button tells your Mac to search for nearby devices that are discoverable and to display any devices it finds in the Device list — if, of course, these devices also match the current settings of the Device Type and Device Category menus.

3. Click a device in the Device list, and then click Send.

A Bluetooth File Exchange progress dialog like the one shown in Figure BC23 appears, showing you the status of your file transfer. The dialog initially shows your Mac's attempt to contact the Bluetooth device, which can take several seconds; then, if the attempt succeeds, it shows a progress gauge that indicates how much of the file has been sent and how much remains to be sent. The dialog also includes an estimate of how long the transfer will take and the speed at which the transfer takes place. The dialog automatically closes when the transfer finishes.

4. Select Bluetooth File Exchange ⇨ Quit to quit the utility.

Or, if you want to send more files, select File ⇨ Send File and repeat Steps 2 and 3.

Figure BC23:
Check the status of your Bluetooth file transfer.



Browsing with Bluetooth to send and get files

Bluetooth File Exchange allows you to see files on another Bluetooth device easily and to choose which files you want to bring over to your Mac.



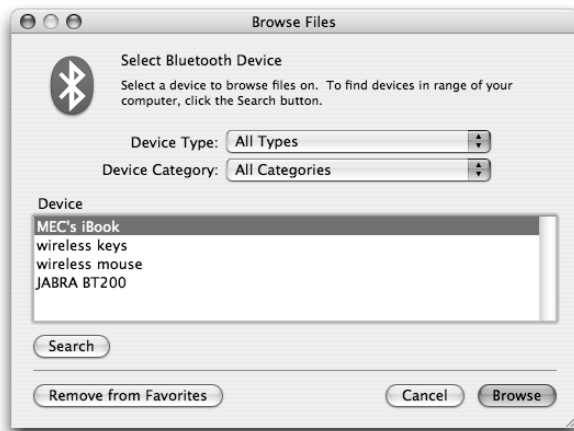
As with file transfers, the browsing and file exchange process becomes even easier if you have the Bluetooth status menu showing, and if you have paired your Mac with the Bluetooth device you wish to browse. See “Setting up Bluetooth on your Mac” earlier in this chapter.

You browse another Bluetooth device like this:

1. Select Browse Device from the Bluetooth status menu.

This launches the Bluetooth File Exchange utility and shows the Browse Files window shown in Figure BC24. You may notice that it looks remarkably like the Send File window shown in Figure BC22, except that a Browse button appears in place of the Send button. The Device Type and Device Category menus and the Search button all work the same way that they do in the Send File window.

Figure BC24:
Pick a Bluetooth device to browse.



2. Click a device in the Device list.
3. Click Browse.

If the device you've selected allows browsing and is within range, the Browsing window shown in Figure BC25 appears, displaying the folder on the browsed device that has been designated for file browsing. Although the figure happens to show a folder on another Bluetooth-enabled Mac, other types of devices (such as PDAs) present a similar appearance in the Browsing window.



Figure BC25:
A window
into another
Bluetooth
device.

From left to right, the icon buttons along the bottom of the Browsing window perform the following functions:

- ✓ Return to a previously viewed folder on the device.
- ✓ View the folder on the device that originally appeared in the Browsing window.
- ✓ Create a new folder on the device.
- ✓ Delete a selected file on the device.

Depending on how the owner has configured the device, some of these buttons may not let you perform their tasks. For example, you receive an error message when you attempt to delete a file on the browsed device if the device's owner has not given other users permission to delete files.

After you have another device visible in Bluetooth File Exchange's Browsing window, you can either get a file from that device or send a file to that device. When you send or get files using the Browsing window, the window remains open when the file transfer finishes so you can initiate additional file transfers.

As you might expect, you use the Get button to move a file from a Bluetooth device to your Mac:

1. Click Get.

A standard Save sheet, like the one shown in Figure BC26, descends from the Browsing window, allowing you to select a folder on your Mac in which to save the file.

Figure BC26:
Choose where you want to save the file you are getting.



2. Choose where you want to save the file and click Save.

The Browsing window produces a new sheet that shows you the progress of the file transfer. As you can see in Figure BC27, the sheet includes a Stop button if you wish to cancel the file transfer.

Figure BC27:
You can stop a transfer if you change your mind.



And here's how you send a file to a Bluetooth device you are browsing:

1. In Bluetooth File Exchange's Browsing window, click Send.

A file selection sheet like the one shown in Figure BC28 descends from the Browsing window so you can pick a file on your Mac to send to the Bluetooth device.

Figure BC28:
Use this sheet to pick a file to send to another Bluetooth device.



The type and size of file you can — or should — send depends on the capabilities of the device to which you are sending it. For example, you shouldn't send very large files to most PDAs, both because they usually have rather limited storage capacities compared to a typical Mac, and because Bluetooth is relatively slow: A 20MB file can easily take several minutes to transfer, during which time the PDA uses its battery at maximum power. And, of course, sending something like a large Photoshop file to a device that can't open a Photoshop file wastes both time and device battery power for no purpose.

2. Choose the file you want to send and click Send.

A progress sheet drops down from the Browsing window. As shown in Figure BC29, you can see the size of the file being sent, how much of it has been sent, how fast it is being sent, and how long it will take before the transfer is complete. You can also use the sheet's Stop button to stop the transfer.

Receiving files from a Bluetooth device

If your Mac has previously paired with another Bluetooth device that supports the Bluetooth file exchange protocol, and if you have enabled the Bluetooth File Exchange service on your Mac, that device can send your Mac a file. Your Mac doesn't even need to be discoverable: As long as your Mac is within range, it can receive a file.

Figure BC29:
View useful
statistics
while
sending a
file.

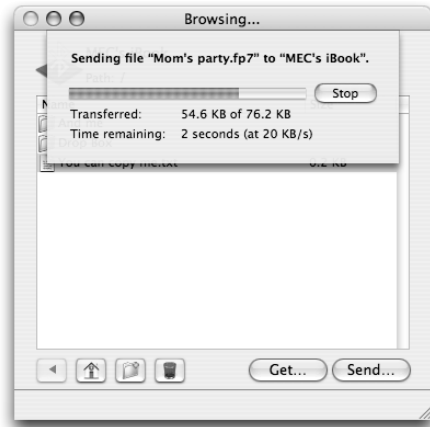


Figure BC30 shows, in sequence, the windows and messages you see when another device tries to send you a file and your Mac is in a receptive mood.



Figure BC30:
What you
see when
your Mac
receives a
file from
another
Bluetooth
device.



The Incoming File Transfer window, at the top left of Figure BC30, appears when your Mac receives the file transfer request. Click the Accept button in the window to receive the file. As the transfer takes place, this Incoming File Transfer window shows a progress indicator. If you chose the Accept files

without warning setting in your Bluetooth sharing preferences, you won't see the Accept button shown in the Incoming File Transfer window but, instead, the progress indicator immediately appears.

When the transfer completes, the window shows you the name, kind, and size of the file you just received, as in the window shown at the top right of Figure BC30. Click the magnifying glass in the window and the Finder displays the file you just received, as shown in the window at the bottom of Figure BC30. You can use the file or move it to another location, just as you can any other file.

iChatting with a Bluetooth headset

When you use a Bluetooth headset while engaged in an audio or video iChat session, you may find the experience more pleasant and even more intimate: You'll hear the other end of the conversation more clearly, you won't end up talking quite as loudly, you won't have a headphone cable snaking across your desk, and you won't have to remember where the microphone is.

As with many other Bluetooth devices, you need to pair a headset with your Mac before you can use the headset. And, as with other Bluetooth devices, the application that performs the discovery and pairing is the Bluetooth Setup Assistant. As discussed earlier in this chapter, you can launch the Assistant by selecting Set up Bluetooth Device from the Bluetooth status menu, or by clicking Set up new device under the Devices tab in the Bluetooth preferences. It turns out that you can also launch the Assistant directly from iChat's preferences.

Here's how you set up a Bluetooth headset to use it with iChat:

- 1. Turn on the headset and make sure it is discoverable and ready for pairing.**

You should consult the headset's documentation to find out how to do this, as the procedure varies among headset models and brands.

- 2. Open iChat.**

- 3. Select iChat ⇨ Preferences.**

You can also press ⌘+, (comma) to open iChat's preferences.

- 4. In the preferences window's toolbar, click Video.**

iChat's video preference window also handles the microphone settings, as seen in Figure BC31.



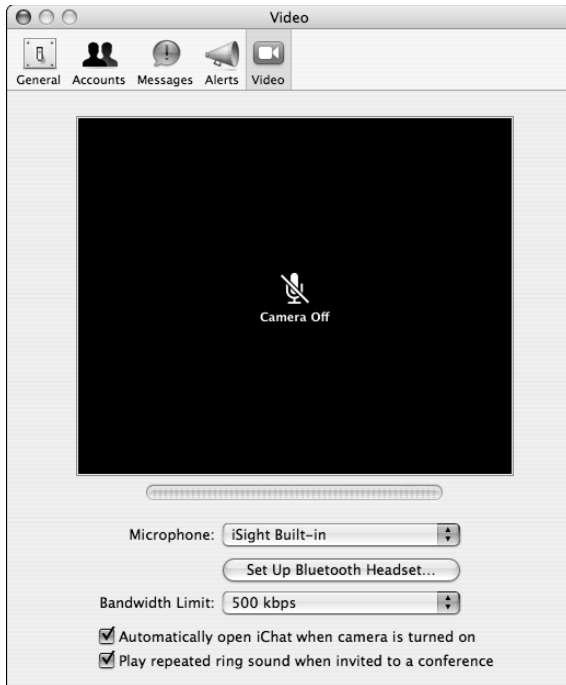


Figure BC31:
The window
may say
Video, but it
also handles
audio
settings.

5. Click Set Up Bluetooth Headset.

This opens the Bluetooth Setup Assistant.

6. In the Bluetooth Setup Assistant window, click Continue.

7. In the Assistant's Device Type panel, click Headset, then click Continue.

The Assistant searches for nearby, discoverable headsets. When it succeeds, your headset appears in the Assistant's Headset list, as shown in Figure BC32. This process may take 10 to 20 seconds, so be patient.

8. Click Continue.

The Assistant asks you to enter a passkey for the headset. The headset's documentation should tell you what passkey to use — as in Figure BC33, the passkey is often a very simple one.

9. Type the passkey and then press Continue.

Your Mac pairs with the headset. When it finishes, the Bluetooth Setup Assistant presents a congratulatory window, as it does whenever it succeeds in pairing with a Bluetooth device.

Figure BC32: The Assistant tells you when it finds your headset.

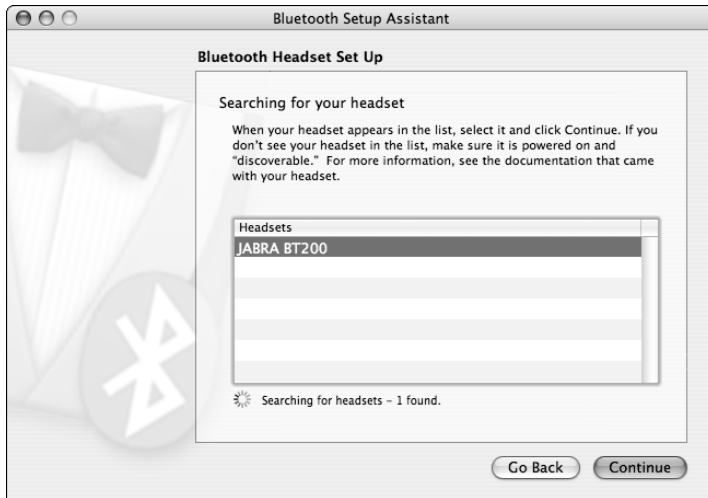
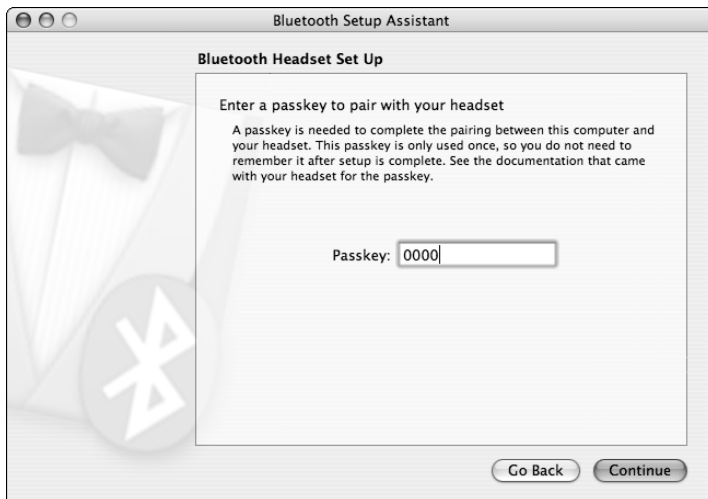


Figure BC33: Headsets often use simple, easy-to-remember passkeys for pairing.



10. Click Quit.

The Bluetooth Setup Assistant closes and the iChat Video preferences window comes to the front. As shown in Figure BC34, a new pop-up menu appears on it, labeled Sound Output. Your headset appears as a menu item on both the Microphone and the Sound Output pop-up menus. If you already have a secondary sound output device, such as a set of speakers, attached to your Mac, the Sound Output menu may already have been visible back in Step 4.



iChat’s Microphone and Sound Output settings affect only iChat — other programs, such as iTunes or iMovie, continue to use whatever system sound settings are in effect.

11. Select your headset from both the Microphone and the Sound Output pop-up menus.

The Video preferences should look something like Figure BC34, except that the name of your headset appearing in both menus.

12. Close the Video window.

You can now use the headset when you participate in an audio or video chat.



iChat remembers its audio settings between sessions, which means that, after you set up your headset with iChat, it tries to connect to your headset every time you start an audio or video chat. If iChat can’t find the headset, it gives you an error message. Therefore, unless you always have your headset available and turned on when you use iChat, you may wish to set the Microphone and Sound Output settings back to their previous values after you conclude any audio or video chats. You won’t have to pair your headset again if you wish to use it: Simply select it in iChat’s Video preferences to start using it once more.

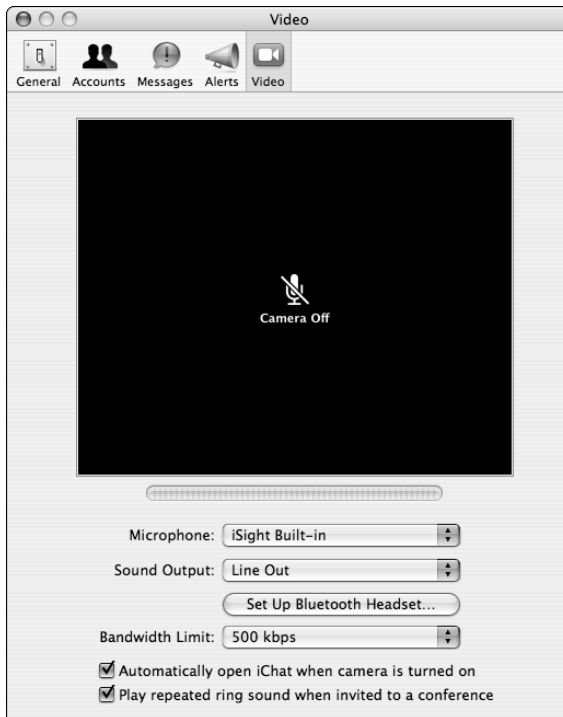


Figure BC34:
A Sound Output menu joins the Microphone menu.

Syncing to Bluetooth phones

Aside from simply letting you call your new Best Friend Forever from the fast lane of the 405 Northbound, cellphones have evolved to become almost irreplaceable repositories of the addresses, calendar events, notes, and messages that used to bulge the cover of your day planner. Because Bluetooth was made for mobile phones — literally — it seems only natural to put a Bluetooth-enabled phone and a Bluetooth-enabled Mac on the same frequency, so to speak. When you do, you can bring the addresses and events that you've been collecting in the Address Book and iCal on your Mac into perfect harmony with your phone's collection. Apple's iSync program orchestrates this process.

If you've glanced at other parts of this chapter, it should not surprise you that using a Bluetooth mobile phone with your Mac means that you first have to pair the two, and that you use the Bluetooth Setup Assistant to do that. When setting up a mobile phone, the Assistant also can take you directly to iSync, saving you a separate trip to your Applications folder.

Here's how you set up a Bluetooth mobile phone and sync its addresses and calendar events with iSync:

1. Turn on the phone and make sure it is discoverable and ready for pairing.

You should consult the phone's documentation to find out how to do this, as the procedure varies among phone models and brands.

2. Click the Bluetooth status menu and select Set up Bluetooth Device.

3. Click Continue.

4. Click Mobile Phone and then click Continue.

The Assistant searches for your phone and, after ten seconds or so if all goes well, the phone appears in the Assistant's Mobile Phone list.

5. Click your phone in the Assistant's phone list, and then click Continue.

The Assistant displays a passkey, as illustrated in Figure BC35, and tells you that you need to enter the passkey into your mobile phone. In most cases, your mobile phone display also presents a message asking if you want to pair with the device — your Mac — that just contacted it.

6. Respond to the prompts on your mobile phone display and enter the passkey into your mobile phone when directed.

When the pairing completes, the Assistant presents the list of mobile phone services shown in Figure BC36. By default, the Assistant puts check marks by all the available services.

Figure BC35:
The Assistant provides a pairing passkey to enter into your phone.

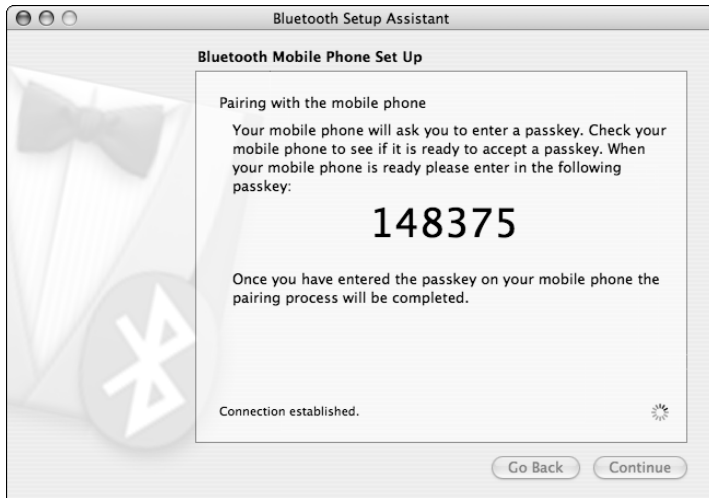
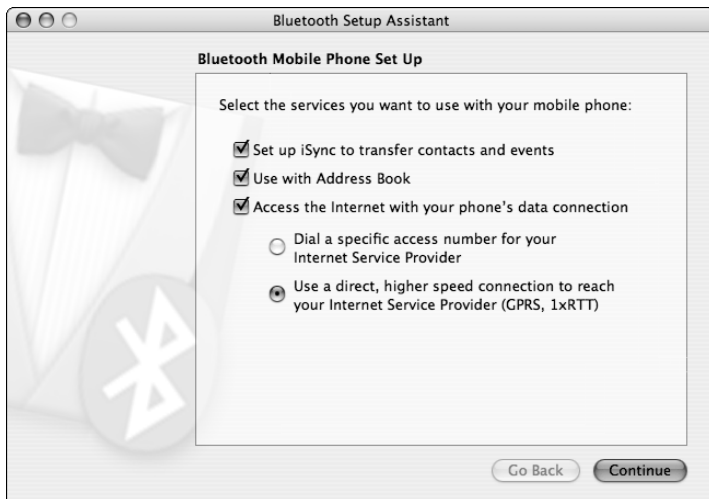


Figure BC36:
Check the Bluetooth mobile phone services you wish to use with your Mac.



7. Click Access the Internet with your phone's data connection to deselect it.

The first two options, which you should leave checked, tell the Assistant that you intend to sync the mobile phone's contacts lists and calendar events with your Mac. The Assistant notes this and prepares to help you sync the device in addition to just setting it up. As for the Internet access service: Although you could leave this option checked, doing so causes the Assistant to ask for your mobile phone provider's Internet access information, which you may not have immediately handy.



You can use the Bluetooth Setup Assistant again when you want to set up your phone to act as a modem for your computer when accessing the Internet. It's OK to run the Assistant for a device that you've already paired, because the Assistant is smart enough to modify the device's settings without adding a duplicate entry into your Mac's list of paired devices.

8. Click Continue.

The Assistant finishes setting up the mobile phone and displays its customary congratulatory message that tells you what Bluetooth services you can use with the phone. But, because you told the Assistant in Step 7 that you intend to sync the mobile phone with your Mac, the Assistant launches iSync before most people can even finish reading the congratulatory screen. Figure BC37 shows how iSync opens in front of the Assistant window, adds the phone to its device list, and presents the phone's synchronization options.

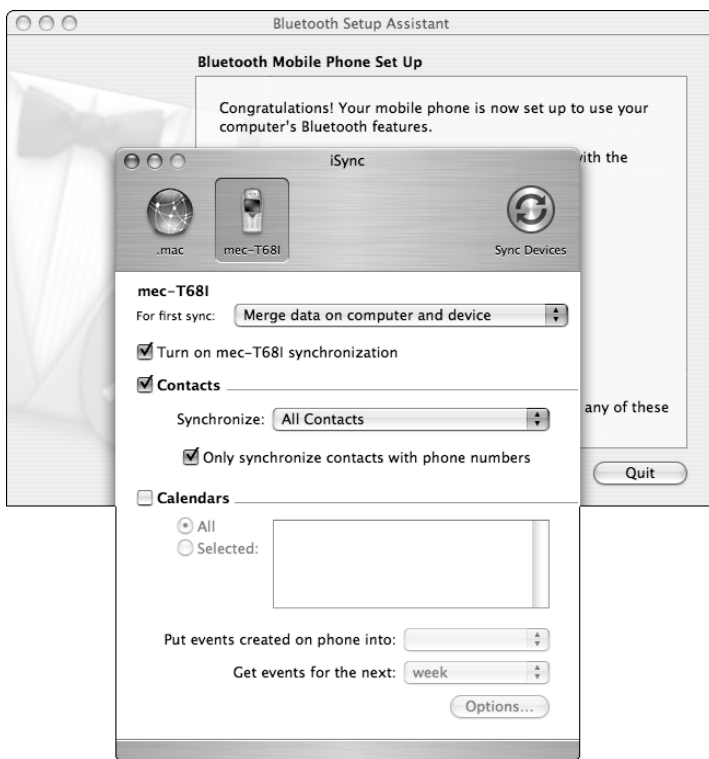


Figure BC37:
An eager iSync shows up before you can even say goodbye to the Assistant.

9. Click the Assistant window to bring it forward, read what it says, and then click Quit.

If you can't wait, Figure BC38 shows what the window says when you follow the preceding steps.

Figure BC38:
The
obscured
Bluetooth
Setup
Assistant
window,
revealed.



10. In the iSync window, set the synchronization options for your mobile phone.

Sorry I can't be more specific here. The settings you make depend on your preferences, not mine. I can provide some guidance, however, to help you make an informed decision:

- **For First Sync pop-up menu:** This menu provides two choices. The choice depicted in Figure BC37 compares your Mac's Address Book and iCal entries with your phone's contact list and the calendar events and merges them. In many cases, though not always, iSync is clever enough to merge duplicate entries. The other choice on the menu is Erase device then sync, which erases your phone's contacts and appointments lists and replaces them with your Mac's Address Book and iCal information. The For first sync pop-up menu does not appear the next time you use iSync with the same phone — unless you unpair the mobile phone and then set it up again.
- **Contacts check box:** Use this to synchronize, or to skip synchronizing, your phone's contacts list with the Address Book.
- **Synchronize pop-up menu:** Use this to select whether you synchronize your entire Address Book or just one of the address groups you have created in the Address Book with your mobile phone. You can also skip adding any Address Book entries to your phone that don't have a phone number associated with them.
- **Calendar check box:** Use this to synchronize, or skip synchronizing, your iCal calendars with your mobile phone's calendar.

- **All and Selected radio buttons:** Use these buttons to choose whether you want iSync to synchronize the iCal calendars you have selected in the list to the right of these buttons, or to synchronize all of your iCal calendars.
- **Put events created on the phone pop-up menu:** Use this menu to pick the iCal calendar into which iSync copies the appointments and events you created on your mobile phone.
- **Get events for the next pop-up menu:** Use this menu to select whether to copy iCal events to your phone that cover just the next week, the next two weeks, the next four weeks, or the next eight weeks.
- **Options button:** In iSync 2.0, the version described here, this button displays only one option: Whether iSync should copy day-long iCal calendar entries to the mobile phone, where they become what iSync calls “read-only” events, meaning that you won’t be able to edit them on your phone.

11. Click the Sync Devices button.

iSync starts synchronizing your Mac’s iCal and Address Book entries with your mobile phone. The process can take several minutes, depending on the amount of information iSync needs to synchronize. While it works, iSync displays both a progress gauge and informative status messages, as you can see in Figure BC39.

Figure BC39: iSync keeps you informed as it synchronizes your personal information.

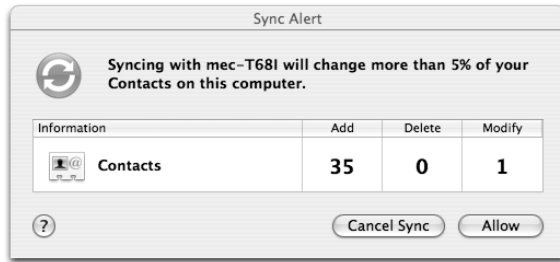


If iSync detects a large discrepancy between the mobile phone’s and the Mac’s information, which usually is the case the first time you sync your Mac and your phone, it displays a Sync Alert window like the one shown in Figure BC40. If you see the alert, and you feel comfortable proceeding, click Allow.

12. When iSync finishes, choose iSync⇨Quit.

Figure BC40:

You can back out if big changes to your contacts and calendar bother you.



You now have your mobile phone paired and synchronized with your Mac. The next time you want to synchronize the two, here's what you do:

1. **Turn on your mobile phone and make it discoverable.**
2. **If your Mac's Bluetooth is off, turn it on.**
3. **Open the iSync application, which is in your Applications folder.**
4. **Click Sync Devices.**

Usually, the first synchronization takes much more time than later ones.



If you decide you want to change your mobile phone's synchronization settings, click the phone icon on the iSync window to display the settings panel.

Printing without wires

Sure, Bluetooth-enabled printers come in particularly handy for smart-phone-toting, PDA-packing, 21st century techno-buckaroos looking to ride up, shoot off a quick wireless print command, and then high-tail it out of town, but these printers also have their place in the workaday world of iBook-carrying students and commute-weary PowerBook warriors. Getting a printout from any nearby wireless printer can save you time and aggravation, especially when the deadline is tight and you've misplaced your Ethernet cable. The Mac's standard print command lets you quickly add a wireless Bluetooth printer to its printer list when you need to.



You won't find many exclusively Bluetooth printers out in the world. In most cases, printers that can handle Bluetooth also can connect with USB, or Ethernet, or both. And many USB or parallel printers can become Bluetooth printers by simply connecting a Bluetooth printer adapter to the printer's USB or parallel port: The printer's Bluetooth adapter uses the *Hard Copy Replacement Protocol (HCRP)* to translate between what the printer expects to receive and what the Bluetooth device, such as your Mac, sends.

Often your Mac uses the same printer driver software that it would use if the printer were connected to the Mac by cables. And almost as often you don't need to install a printer driver because recent versions of Mac OS X come with a wide range of them.

To add a Bluetooth printer when you are ready to print something, follow these steps:

1. Make sure that your Mac's Bluetooth is on.

Refer to "Setting up Bluetooth on your Mac" in this chapter to find out how to do that.

2. Choose File→Print.

A print dialog or sheet appears, depending on the program you are using. Figure BC41 shows the print sheet in Apple's TextEdit program, with its Printer pop-up menu displayed.

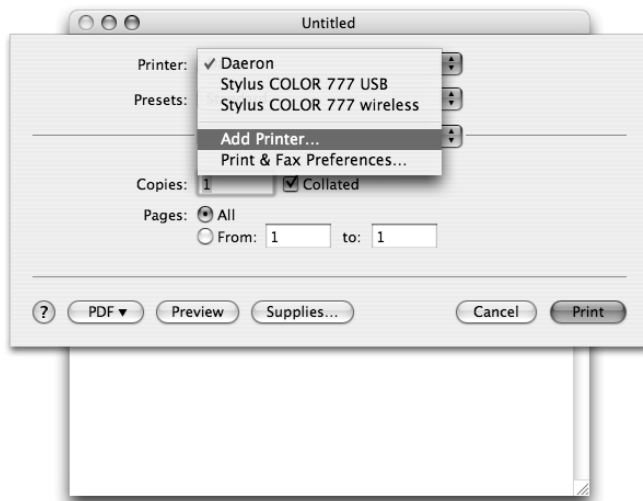


Figure BC41:

This menu lets you add a printer when you are about to print something.

3. Choose Add Printer from the Printer pop-up menu.

This menu choice launches the Printer Setup Utility, which presents the Printer Browser window shown in Figure BC42. The Printer Browser displays the printers that it can immediately detect that don't already appear on the Printer menu in an application's print dialog. Normally, the Default Browser doesn't look for nearby Bluetooth printers until you ask it to.



If your Printer Browser window looks very different than Figure BC42, it may be because you have selected the window's IP Printer option, in which case you should click Default Browser in the window's toolbar.

Figure BC42:
The Printer Setup Utility's Printer Browser lets you search for available printers.



The Printer Browser window has two panels: The Default Browser and IP Printer. The latter lets you add printers that may reside just about anywhere on the Internet, as long as those printers use standard *Internet Protocol (IP)* communications.

4. Click More Printers.

A sheet descends from the top of the Printer Browser window. Depending on the last printer you added to your Mac, the sheet may have either one or two pop-up menus above its printer list.

5. Choose Bluetooth from the sheet's top pop-up menu.

You should see a display like the one shown in Figure BC43. Your Mac broadcasts a request for any available Bluetooth printers to identify themselves. As they respond to your Mac's request, their names appear in the printer list on the sheet.

6. Click the name of the Bluetooth printer you wish to add to the Printer menu.

More often than not, your Mac can detect the type of printer you selected, and shows the printer model in the sheet's Printer Model pop-up menu. This menu lets you select an appropriate printer driver for the printer.

7. If necessary, select a driver from the Printer Model pop-up menu.

8. Click Add.

The sheet retracts and the printer you selected appears in the Printer Browser's printer list.

Figure BC43:
Choose
Bluetooth
from the
pop-up
menu to find
nearby
Bluetooth
printers.



9. Click the printer's name in the printer list, and then click Add.

This adds the printer to the Printer menu and makes it the currently selected printer.

10. Choose Printer Setup Utility⇨Quit.

You can now print using that Bluetooth printer. In addition, the Printer menu in the Print dialog now has a Bluetooth submenu that lists the Bluetooth printer you've added. If you add other Bluetooth printers at some other time, those printers appear in this menu as well.

After you've added a printer, you can select it from the Printer menu's Bluetooth submenu and print with it without having to go through all the previous steps whenever you find yourself in Bluetooth range. Well, except for the first step: You can't use a Bluetooth printer if Bluetooth is turned off on your Mac!

Using other Bluetooth devices

I won't say very much here about using other Bluetooth devices because I can't anticipate what devices you may be considering using. All sorts of Bluetooth devices exist, and whether they work with your Mac or not depends on the devices' manufacturers and whether they require Mac-compatible software.



In most cases, if a Bluetooth device does work with your Mac, you set it up using the Bluetooth Setup Assistant. The Assistant provides specific setup assistance for a number of device categories, as shown in Figure BC12 earlier in this chapter. If none of the other choices that the Assistant provides seem suitable for your particular device, you may have some success using the last choice the Assistant provides: Any device.

Some of the many kinds of Bluetooth devices available that may work with your Mac include

- ✓ **Drawing tablets**
- ✓ **Music players**
- ✓ **Media viewers**
- ✓ **GPS devices**
- ✓ **Barcode scanners**
- ✓ **Home appliances**

Yes, that last item *did* say home appliances: Even microwave ovens, refrigerators, and washer/dryers are beginning to be Bluetooth-enabled. You can find an extensive, categorized list of Bluetooth devices and manufacturers at www.bluetooth.com/products/.

Controlling Your Mac from Your Phone

Twenty dollars can buy you a pretty nice meal, or it can buy you a couple of albums from the iTunes Music Store, or it can buy you a Bluetooth-some treat — Salling Clicker, the brainchild of Swedish software designer, Jonas Salling. Formerly known as Sony Ericsson Clicker, after the first Bluetooth-enabled mobile phone model with which it worked, Salling Clicker turns your Bluetooth mobile phone or PDA into a nifty handheld remote control for your Mac. If all the practical Bluetooth applications described in this chapter are the main course, this is the dessert.

Setting up the Clicker

The first thing you need to do is find out whether Salling Clicker works with your phone, and a quick trip to www.salling.com can help you answer that question. The program works with most Ericsson and Nokia phones as well as a number of other devices.

If your phone is on the list, you may as well download the software and install it while you're at the site: You can use the software for 30 clicks on your handheld Bluetooth device before you buy it, so you can quickly decide whether it suits your needs or not without making any investment other than a few minutes of your time.

After you install the software, you configure and launch it from Apple's System Preferences. You can find the Salling Clicker preference at the bottom of the window shown in Figure BC44, hanging out with the preference icons grouped in the Other category.

Click the Salling Clicker icon and System Preferences shows you the Salling Clicker window as seen in Figure BC45.

In addition, opening the Salling Clicker preferences starts up the Salling Clicker application, which announces its presence by placing an icon in the menu bar: the round icon fifth from the right on the menu bar in Figure BC45 is the Salling Clicker status menu. After you quit System Preferences, you control the Salling Clicker application from this menu.



Figure BC44:
System Preferences places Salling Clicker in the Other preferences category.



Figure BC45:
The Salling Clicker preferences — note the round Clicker icon on the menu bar.

The buttons arranged around the window’s central pane provide access to the program’s main settings:

- ✔ **Connect to Phone:** This connects Salling Clicker to the phone you’ve previously selected to work with the program.
- ✔ **Settings:** You use this button to adjust some of the program’s other settings, described in the Salling Clicker User Manual, which is available from the Salling Clicker status menu.
- ✔ **Select Phone:** This button produces the standard Select Bluetooth Device dialog shown in Figure BC46, which you use to select the phone you want to use with the program. It also automatically connects to the phone.
- ✔ **Activate:** Press this button when you want to enter the program’s serial number after you’ve paid for Salling Clicker.

To use Salling Clicker with your phone, follow these steps:

1. Turn on your mobile phone and make it discoverable.

Consult your mobile phone’s manual to find out how to do this for the make and model of your phone.



Figure BC46:
Choosing a
phone to
control your
Mac.

2. In the Salling Clicker window, click Select Phone.

You see the standard Select Bluetooth Device dialog shown previously in Figure BC46, and your phone appears in the dialog's Device list after a few seconds.

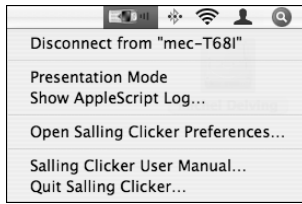
3. Click Select.

The name of your phone appears beside the Connect to Phone button, and the button's label changes to Disconnect. The Salling Clicker status menu icon also changes to indicate that a phone is connected to the program. When you finish using the program and disconnect your phone, Salling Clicker remembers the phone you've selected. The next time you use the program, you can click the Connect to Phone button to connect to that phone.

4. Select System Preferences⇧Quit.

From this point on, you can control the program's operation using the program's status menu, shown in Figure BC47.

Figure BC47:
The Salling Clicker status menu provides some basic commands.



From the Salling Clicker status menu you can:

- ✔ **Disconnect from, and reconnect to, your phone.**
- ✔ **Enable or disable Presentation Mode.** Ordinarily, Salling Clicker briefly displays various translucent on-screen indicators when you activate one of the program’s functions from your phone. Presentation Mode hides most of these visual indicators when you use the program to do things like control a PowerPoint presentation in front of an audience.
- ✔ **See an AppleScript log.** This log is useful if you plan to write extra AppleScripts to work with Salling Clicker. And, if you do, the User Guide, also available from this menu, can help you with that.
- ✔ **Open the Salling Clicker preferences.** Aside from starting up the program and selecting a phone, you can use these preferences to add or remove the AppleScripts that Salling Clicker uses to perform its magic. You can also use the preferences to specify how the program handles phone events, such as how it deals with an incoming call while you’re using the program. See the sections “Handling Phone Events” and “Scripting the Clicker” later in this chapter for more about AppleScript and about phone events.
- ✔ **Open the program’s User Manual.** The manual is a PDF file that opens in Apple’s Preview program so you can print it out for reference.
- ✔ **Quit the Salling Clicker program.** You can leave the program running as long as you like. If you decide to quit the program by choosing the status menu’s Quit Salling Clicker command, you can start it up again by opening System Preferences and clicking the Salling Clicker icon. When you use the Quit command, Salling Clicker even reminds you how to restart it.

Sampling the Clicker's abilities

After you've started Salling Clicker and connected with your mobile phone, you can just step away from the keyboard and begin controlling your Mac with your phone. Exactly how you do this depends on your phone, and, when in doubt, you can consult the Salling Clicker User Guide, which discusses the program's operation on several models of mobile phone.

In the case of one of the original Salling Clicker-compatible phones, a Sony Ericsson T68i, you do this:

- 1. Select the phone's Connect menu.**
- 2. Select Accessories from the Connect menu.**
- 3. Select your computer by name from the Accessories menu.**
- 4. Select the Salling Clicker item you want to use.**

The Salling Clicker items that appear on your phone are the ones listed in the Clicker Items column in the Salling Clicker preferences window (shown earlier in Figure BC45).

For example, if you choose iTunes, which happens to be the first item on the list, and iTunes isn't running, your phone's display asks if it should start iTunes. When you click the phone's Yes button, iTunes starts up. You can then choose an album, artist, song, or playlist right from the phone's display and iTunes responds to your requests. You can also adjust the volume in iTunes using the phone's joystick, and when you do, your Mac shows you the new volume setting, as depicted in Figure BC48.

Similarly, you can control Apple's DVD Player application by selecting the DVD Player item in Salling Clicker's Media Remotes collection on your phone. The DVD Player commands available in Salling Clicker's standard Media Remotes item collection include play, pause, previous chapter, next chapter, fast-forward, rewind, volume, and display size settings.

The standard set of Clicker Items that come with the program are extensive. You can control a variety of media programs, such as QuickTime Player and VLC, or presentation programs like PowerPoint or Keynote. You can use it to read e-mail, play iPhoto slideshows, adjust the System volume, or put your computer to sleep. You can even use it to move the mouse around and click items on-screen.



Figure BC48:
The Mac
responds to
a phone
command.

Handling Phone Events

Because Salling Clicker works with cellphones, it can integrate the phone's use with your Mac. You can control how Salling Clicker handles phone events with the check boxes under the Phone Events tab in the Salling Clicker preferences window, shown in Figure BC49.



For example, you can choose to have Salling Clicker pause iTunes whenever a phone call comes in on your cellphone. You can have it display a caller's address book entry on your Mac's screen when you receive a call. You can take advantage of the fact that Bluetooth operates over a limited distance to have Salling Clicker pause iTunes, or to start a screen saver, or to set your iChat status whenever you carry the phone out of receiving range of your Mac.

If the available phone event handlers are not sufficient, you can add AppleScripts to handle phone events by clicking the + menu below the phone events list. And, speaking of AppleScripts, that's what the next section covers.

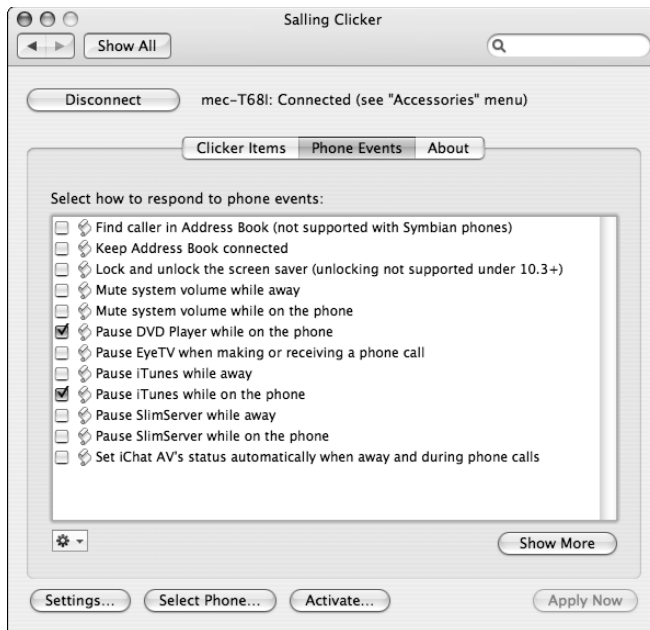


Figure BC49:
Phone event
handling is
just a click
away.

Scripting the Clicker

Salling Clicker takes advantage both of your Mac's Bluetooth capabilities and of Mac OS X's AppleScript scripting ability. If you've never heard of AppleScript before, here's the one-sentence definition: AppleScript is a user-friendly programming language that works with most applications that run on the Mac so that you can control them in a variety of useful ways.

Salling Clicker is a very popular program, and people have written custom scripts for lots of different applications. The Salling Clicker User Manual goes into great detail about how to find scripts to add to the program, but here's the short version:

- 1. In Salling Clicker's preferences, click the Clicker Items tab.**
- 2. Click the Action pop-up menu and select More Scripts.**
The Action pop-up menu is the one with the gear on it, beneath the Scripts list. Refer to Figure BC45, earlier in this chapter.
- 3. On the sheet that appears, click More Scripts on the Web.**

Your Web browser opens and takes you to a Web page on Salling's site that lists both free and commercial scripts that work with the program.



You can also find scripts at Apple's Bluetooth Scripting page at www.apple.com/applescript/bluetooth/, including links to HomeRun, a program from Findley Studios (www.findleystudios.com/homerun/) that lets your Mac control various household appliances: Yes, you can turn on your dishwasher from your phone while you're lounging in a hammock in your back yard if you have Salling Clicker, a Bluetooth phone, a Mac, HomeRun, and the necessary appliance control devices. Techno-paradise is just a click away.

Of course, if you're the do-it-yourself type who wants to mess around with writing your own AppleScripts, the Salling Clicker User Manual provides copious documentation to help you along the way. If you come up with a good Clicker script, let me know.

