

SYBEX Bonus Chapter

Windows[®] XP Power Tools

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Bonus Chapter: Using Desktop Conferencing and Chat to Collaborate and Converse

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Using Desktop Conferencing and Chat to Collaborate and Converse

Chat, phone calls, video calls, file sharing, collaboration, and program sharing—all for the price of your regular Internet connection. Does that sound good? Then read on.

Windows XP comes with powerful built-in programs for performing all these actions. You can also add third-party software for chat and conferencing if the Microsoft programs don't meet your needs or if you plain don't like them.

In this chapter, I discuss two of XP's built-in tools, NetMeeting and Windows Messenger, in depth. At the end of the chapter, I touch on several other chat and conferencing programs you may want to try if Messenger and NetMeeting don't suit you.

NetMeeting is a powerful tool for conferencing, collaboration, and file sharing, letting you do everything from making cheap—or free—phone calls (to a single person at a time), to videoconferencing with one other person, to working together with a group of people online drawing up an idea or creating or editing a document. NetMeeting also offers Remote Desktop Sharing, a feature for controlling your computer remotely, but if the computer in question is running Windows XP Professional, you're better off using Remote Desktop and Remote Desktop Connection instead.

Windows Messenger is the new name for MSN Messenger, Microsoft's instant-messaging program. Like NetMeeting, Messenger provides features for chat, voice and video calls (again, with one other person at a time), file transfer, and collaboration. Messenger is also integrated with XP's Remote Assistance feature and provides the quickest way to request Remote Assistance.

Before we get into NetMeeting and Messenger and which of them you should choose over the other, let's consider briefly the hardware and connectivity you need for audio- and videoconferencing.

Choosing Conferencing Hardware and Connections

Choosing conferencing hardware involves more common sense than surprises. To conference with someone at another computer, you need a connection to that computer. To receive audio, you need a sound card; to transmit audio, you need a microphone as well. To transmit video, you need a video camera. The following sections discuss these requirements.

Connection

For any type of chat, conversation, collaboration, or conferencing, you need a connection to the other computer or computers. This connection can be any conventional type of connection—a network connection (whether LAN, WAN, MAN, or VPN), an Internet connection, or a direct connection (for example, dialed directly over telephone wires).

Generally speaking, the faster your connection, the better your conferencing experience will be, though it also depends on what type of conferencing you're doing. Text-based chat needs minimal bandwidth: A connection as puny as 14.4 Kbps can handle group chat quite comfortably. Audio conferencing becomes viable around 28.8 Kbps but sounds much better at V.92 or ISDN speeds or higher. Video conferencing is more demanding: You can get postage-stamp video with intelligible audio at ISDN speeds, but you probably won't enjoy videoconferencing unless both you and the other protagonist have wider broadband connections.

As with just about any Internet technology, the connection is limited to the speeds provided by the slower end. For example, if you have a sizzling DSL but the person you're conferencing with has a V.90 56K connection, you'll be limited to V.90 56K speeds. The other person won't be able to send video fast enough for you to receive it at a good size or speed, nor will they be able to receive video at the rate you could send it. So NetMeeting, Windows Messenger, and other programs throttle back the data streams to rates that work at both ends.

Sound Card and Microphone

For audioconferencing, you need a microphone, speakers or headphones, and a sound card—preferably one that can handle full-duplex audio. (*Full-duplex* audio means that the sound card can send and receive a signal at the same time. *Half-duplex* audio means that the card can either send or receive at any given point, but cannot do both at once.)

Video Camera

For videoconferencing, you'll need a camera as well. Relatively inexpensive webcams are good enough to produce reasonable results over all but the fastest connections. If you end up using high-end videoconferencing software, get dedicated hardware specially designed for the job.

If you're using NetMeeting, you're limited in the video resolutions you can send: NetMeeting's highest resolution is the Common Intermediate Format (CIF), which gives 352×288 pixel resolution. And if you use Windows Messenger, you're even more limited—it supports only Quarter Common Intermediate Format (QCIF), which gives 176×144 pixel resolution.

Setting Up Your Conferencing Hardware

Before you set up your videoconferencing software, spend a few minutes connecting and positioning the hardware. First, mount the camera in a stable and level position somewhere close to your screen, so that you can look at the camera and watch the incoming video easily. If you don't look at the camera when you're talking, it'll appear that your attention is elsewhere. (You've probably seen this effect in amateur videos and documentaries where the camera isn't positioned close enough to the interviewer for the interviewee to appear to be looking at the camera.) If the camera zooms, adjust the zoom as necessary. Likewise, if it has a focus control, adjust the focus.

Second, make sure that your face (or whatever portion of you is in the frame) is adequately lit. Video gets plenty murky enough when transmitted at low frame rates over limited-bandwidth connections, so make sure you start with as appealing an image as possible.

Third, take care of the audio. Place the microphone where you can speak into it easily and clearly without moving your head out of camera shot. Don't place the microphone right in your breath stream, or you'll get rasping from the fricatives and plosives, and blurring on the sibilants; instead, place it to the side of your breath stream or by your throat. Position the speakers so that you'll hear the incoming audio easily but so that your microphone won't pick it up and feed it back to the person you're talking to. A clip-on microphone or a head microphone is usually better than a stand-alone microphone, because it allows you to move your head without varying the recording volume. If you have problems with speakers feeding back, try headphones—the smaller, the better if you're sending video.

Choosing between NetMeeting and Windows Messenger

NetMeeting and Windows Messenger have much in common: text chat, voice calls, video calls, application sharing, and whiteboarding. Microsoft is positioning Messenger as a replacement for NetMeeting. To this end, Microsoft has placed Windows Messenger obtrusively in the XP interface while providing no shortcut anywhere for NetMeeting. Microsoft has also taken down the Internet Locator Server (ILS) servers that NetMeeting used and replaced them with .NET Messenger Service servers. This means that you need to establish NetMeeting connections directly—you can't use the Microsoft servers anymore—or use third-party servers.

Windows Messenger offers most of NetMeeting's features, but NetMeeting still offers several compelling features over Messenger.

- NetMeeting has strong security features, including encryption with a certificate of your choice. Messenger doesn't.
- NetMeeting supports hosted meetings where the host can control which collaboration features other participants can start. The host can also control whether the meeting is limited to participants who join by contacting the host, or whether the other participants can add people to the meeting by placing calls to them or accepting calls from them.
- NetMeeting lets you queue multiple file transfers to the same recipient or recipients, while Messenger lets you send only one file to any given recipient at a time.
- You can use NetMeeting over local networks without being connected to the Internet. Messenger requires an Internet connection (in order to access the .NET Messenger Service servers)—even if the person you're contacting is on the same local network as you.
- NetMeeting's Remote Desktop Sharing feature lets you control your computer remotely. Messenger offers no analogous feature.

For many users, though, NetMeeting's killer advantage is that you can use it to establish direct connections from PC to PC—via phone lines, a local network, or your Internet connection—and encrypt them. Such connections are relatively secure: They can be monitored by your ISP (if you're using your Internet connection), by your telephone provider, or by perennial suspects such as the NSA or other Echelon members, but such monitoring typically requires official authorization (at least, in theory). By contrast, Windows Messenger's server-based, instant-messaging model requires the service to monitor all the actions each user takes: Every word you type, every file you send, every move you make, Messenger is watching you. It's in your best interests, of course, and it helps Messenger deliver compelling instant-messaging features. But few people relish this degree of constant attention when they're aware of it.

That seems like several strikes against Messenger. But if you're comfortable with .NET Messenger Service monitoring of all the actions you take, Messenger offers great ease of use and several advantages over NetMeeting:

- Messenger's .NET Passport integration provides quick sign-in and some degree of authentication of users' identity. (Because you can create a .NET Passport using any name not yet taken, .NET Passport is no proof of real-world identity. But it does identify the holder of the .NET Passport, assuming the .NET Passport hasn't been compromised.)
- Messenger offers good chat features and straightforward file transfer.
- You can use Messenger to get Remote Assistance quickly from any contact who's online.

So there are good reasons for preferring both NetMeeting and Messenger, depending on what you need to do and the degree of security you want. We'll start with NetMeeting.

Conferencing, Collaboration, and Chat with NetMeeting

Windows XP offers no shortcut for NetMeeting. To run NetMeeting, either use the Run dialog box (Start > Run) to run **conf** or create a shortcut to it in a convenient place.

Configuring and Optimizing NetMeeting

The first time you run NetMeeting, Windows XP launches the NetMeeting setup wizard, which leads you through the steps of configuring NetMeeting. The process is straightforward, but these points are worth understanding:

- You must supply a first name, last name, and e-mail address, or text approximately corresponding to these. Optionally, you can supply information about your location and comments (for example, about who you are). The names and e-mail address don't have to correspond to any .NET Passport you have or to reality. They're just there to identify you to other NetMeeting users and to any ILS machine you choose to use.
- Microsoft has disabled its Internet directory servers (to encourage people to use Messenger instead of NetMeeting), but you may have local servers (for example, company servers) that you can use instead. Alternatively, you may want to use servers provided by a service such as Visitalk.com (www.visitalk.com).
- When specifying your connection speed for NetMeeting calls, be aware that NetMeeting uses this setting to choose audio and video compression options, and choose accurately. If you used the original Napster (R.I.P.) or audioGnome, you'll remember that it was often wise to publish a false connection speed, either to encourage or discourage connections. Doing the same with NetMeeting delivers problems rather than benefits. To change this setting after setup, click the Bandwidth Settings button on the General tab of the Options dialog box.

TIP

Rerun the Audio Tuning Wizard if you add new sound hardware to your computer, if you adjust your sound hardware, if you move to a new workstation or office, or if the ambient noise level increases.

NetMeeting's Options dialog box (Tools > Options) contains four tabs: General, Security, Audio, and Video. Many of the options are straightforward and are not discussed in this section, which concentrates on the options that are more important to understand.

Security Tab

The Security tab of the Options dialog box offers options that you should apply if you want to keep your NetMeeting conversations and conferences secure.

Understanding How NetMeeting's Security Works

NetMeeting takes a disappointingly pragmatic approach to security: it offers some strong security features, but it makes nonsecure calls by default, perhaps because most users aren't concerned about security. It also can't secure audio and video calls, which for many people are the prime reason for using NetMeeting.

NetMeeting's security works as follows:

- Data-only calls can be secure, but audio and video calls cannot be secure.
- By default, even data-only calls are not secure unless you specify that you want to secure them.
- Security is implemented by encrypting the data in transit and (optionally) by authenticating the identity of NetMeeting users.
- You can secure your calls by using a built-in NetMeeting certificate or by applying a certificate of your own. NetMeeting's built-in certificate provides data encryption but no authentication. A certificate of your own lets you not only encrypt data but also use authentication.
- When you host a meeting, you can specify a password so that people can't gate-crash the meeting. You can also choose which NetMeeting tools people in the meeting can use (for example, you could let them use chat but not file transfer) and whether people in the meeting can accept connections from or make connections to other people not in the meeting.

Securing Your Calls

You can secure your data-only calls either automatically or manually:

- If you want NetMeeting to make secure data calls by default, select the I Prefer To Make Secure Outgoing Calls check box. You can then place nonsecure calls manually if you want, but NetMeeting will automatically make secure calls. If you want to receive only secure calls, select the "I prefer to receive secure incoming calls. Accept only secure calls when I'm not in a meeting" check box. NetMeeting will then automatically reject nonsecure incoming calls.
- To secure your data calls manually, leave the preceding two check boxes cleared (as they are by default). Place your calls by choosing Call > New Call and select the Require Security For This Call (Data Only) check box in the Place A Call dialog box. (Don't place your calls directly from the main NetMeeting window.) When receiving an incoming call, check that the Incoming Call dialog box shows a Details button. This button indicates that the call is secure. Click the Details button to enlarge the Incoming Call dialog box to display details of the certificate used to secure the call.

Applying a Security Certificate

By default, the Use Privacy (Encryption) Only option button in the Certificate group box on the Security tab is selected, so NetMeeting uses its built-in certificate. To apply a different certificate so that you can use authentication, select the Use This Certificate For Privacy And Authentication option button, then click the Change button and use the Select Certificate dialog box to choose the certificate to use.

SEE ALSO Chapter 48 discusses where and how to get and install certificates.

Audio Tab

NOTE If your computer doesn't have sound hardware, NetMeeting doesn't display the Audio tab in the Options dialog box.

In some cases, you may need to specify the codec to use for audio compression instead of using the codec that the wizard chooses for you. To specify a codec, click the Advanced button. In the Advanced Compression Settings dialog box, select the Manually Configure Compression Settings check box and choose the codec from the Preferred Codec For Audio Compression drop-down list.

Video Tab

The Video tab of the Options dialog box contains options for choosing whether to send and receive video automatically at the start of each call; what size of video to send; which video camera to use, and so on.

For the Send Image Size options, NetMeeting uses the video formats listed in Table W03.1.

TABLE W03.1: Send Image Size Formats in NetMeeting

Send Image Size	Format	Resolution (Pixels)	Pixels
Large	Common Intermediate Format (CIF)	352×288	101,376
Medium	Quarter Common Intermediate Format (QCIF)	176×144	25,344
Small	Sub-Quarter Common Intermediate Format (SQCIF)	128×96	12,288

Three points are worth mentioning about these Send Image Size settings:

- First, CIF, QCIF, and SQCIF are standard formats, so NetMeeting can comfortably exchange video with standard videoconferencing systems.
- Second, you'll notice that SQCIF doesn't have the same aspect ratio as CIF and QCIF. NetMeeting produces it by black-banding the video top and bottom.

- Third, as you can see from the Pixels column in the table, the Medium size uses a quarter as many pixels as the Large size, and the Small size uses less than an eighth as many as Large. NetMeeting compresses all video as far as possible, but if your connection's bandwidth is limited, the smaller the image, the better the frame rate you should get. NetMeeting supports frame rates of up to 30 frames per second (fps) if the hardware and the connections on both the sending computer and the receiving computer can handle them. 30 fps gives smooth movement, but you'll get CIF at 30 fps only over the fastest connections.

NOTE

If the video camera doesn't offer a default capture frame size bigger than 160×120 pixels or a similar size, NetMeeting doesn't offer the Large Send Image Size option.

Tips for Making and Receiving Calls with NetMeeting

Making and receiving calls with NetMeeting is mostly straightforward. Here are some tips on less-obvious points.

Security

Always secure your data calls by using the features discussed in “Securing Your Calls” earlier in the chapter. Voice and video calls can't be secured.

Sending and Receiving Audio and Video

You can send audio and video to, and receive audio and video from, only one person at a time—and that person is the first person with whom you establish a connection. (This is because of a limitation in NetMeeting's implementation of the H.323 conferencing protocol.) If you remove the first person from the meeting, and then reestablish the connection to them, that person can receive audio and video again—but you can't remove the first person and send audio and video to someone else instead without ending the conference and starting another.

To see your outgoing video, either click the Picture-in-Picture button (or choose View > Picture-in-Picture) or choose View > My Video (New Window) to open a new window showing your video.

The size of the video window you receive depends, first, on the Send Image Size setting that the computer sending the video is using and, second, on whether you zoom the video. To zoom the video, use the Tools > Video > Window Size submenu. The larger you zoom the window, the “blockier” the pixels become, so you're trading image size against graininess.

Transferring Files

When someone sends you a file, NetMeeting offers you the options of accepting it or deleting it while it's being transferred, and of opening it or deleting it after it has been received. Treat all incoming files with suspicion, and check them for viruses before opening them.

By default, NetMeeting places files you receive in the `\Program Files\NetMeeting\Received Files\` folder. Because this folder is shared with all other users of the computer unless you protect it, it's a good idea to change the folder. To do so, choose **File > Change Folder** from the File Transfer window.

To open a Windows Explorer window to your received files folder, choose **File > Open Received Folder** from the File Transfer window.

Whiteboarding

NetMeeting's Whiteboard tool is easy to use, but four things are worth mentioning:

- Use multiple pages to create different drafts of a document or to work on different ideas.
- If you're conferencing with NetMeeting 2.x clients, choose **Tools > Whiteboard (1.0–2.x)** to run the backward-compatible version of Whiteboard instead of the NetMeeting 3.x–only version.
- Whiteboard is synchronized by default, so you see the changes other people are making. To give yourself some peace to make changes, click the **Unsyncronize** button or choose **View > Synchronize** to toggle off synchronization. Click the **Synchronize** button or repeat the command when you're ready to rejoin the fray.
- You can also lock Whiteboard when you want to prevent other people from making changes.

Sharing a Program

Sharing a program with one or more participants in a meeting can be a great way of working together on a document that's not suitable for whiteboarding: You can let the other people in the meeting see the actions you perform in the program, or you can let them take control of the program, either automatically or with your specific permission, so that they can take actions themselves. But before you share any program and allow other users to take control of it, you need to understand the threat that allowing control of a program poses to the security of your computer and the integrity of your files.

Even from a common dialog box, such as the **Open** or **Save As** dialog boxes that are available from most programs, you can delete files and folders, create folders, copy or rename files, and so on. From Windows Explorer, you can take a wide variety of actions, including launching other programs and installing programs. From VBA-enabled programs, such as the programs in Microsoft Office or Corel WordPerfect Office, you can create and run macro programs that can perform any action short of formatting the drive the program is running on.

All that said, you may still want to share a program and allow control in order to get some work done—for example, to perform joint editing on a Word document. To do so, choose **Tools > Sharing**, or press **Ctrl+S**, and choose options in the Sharing window.

TIP

Don't use the Share In True Color option unless all participants have high-speed connections to the meeting—for example, all are on the same LAN or CAN. Sharing in true color requires far greater bandwidth and so reduces performance.

Once you've shared a program or your Desktop, the other people in the meeting see a NetMeeting window bearing your name and a general description ("programs" or "Desktop," as appropriate). If you've chosen to allow control, the title bar of the window also says "Controllable." If an unshared window overlaps a shared window, it blots out that portion of the shared window, so don't position unshared windows over shared windows.

Sharing Your Desktop

Instead of sharing just a program, you can share your whole Desktop. When you share your Desktop and allow control, the other people in the meeting can take just about any action on your computer as if they were sitting at it. Before you allow control of your Desktop, assess the security risks carefully. There's seldom a compelling reason to let anyone else take control of your Desktop—and if you need remote advice to get you through a problem, Remote Assistance is a better tool than sharing for doing so.

Hosting a Meeting

Instead of setting up a conference by calling multiple people, you can host a meeting. You can secure the meeting with a password, and you can specify which tools the participants in the meeting can and cannot start. (You yourself can start any of the tools.) You can also specify whether the participants can accept incoming calls and place outgoing calls while they're in the meeting.

To host a meeting, choose Call > Host Meeting and specify the details in the Host A Meeting dialog box. When you dismiss this dialog box, NetMeeting starts the meeting, with you as the sole participant. When others try to join the meeting, NetMeeting prompts them for the password. If they get it right, NetMeeting then prompts you to accept or ignore their call as usual.

To end a meeting, hang up as usual.

Joining a Meeting

To join a meeting, call the host as usual. (If the host has chosen to make the meeting secure, you need to make a secure call to get in.) NetMeeting prompts you for the password, then prompts the host to accept your call.

Making a Web Page Call NetMeeting

To let NetMeeting users connect to you from a web page, embed a `callto` hyperlink with the address format `callto:DNS_Name` or `callto:IP_Address` on the page. The `URL:CallTo` Protocol file type needs to be registered to NetMeeting on the computer that's calling for this to work.

Deleting Your Call Log

NetMeeting stores a log of your incoming calls in the file `\Program Files\NetMeeting\CallLog.dat`. If you're concerned about security, you can delete this file—even when NetMeeting is running.

Editing Your Call History

You can edit or clear your NetMeeting call history by running Registry Editor and working in the key

```
\HKEY_CURRENT_USER\Software\Microsoft\Conferencing\UI\CallMRU
```

Removing the List of Directory Servers

You can remove the list of directory servers in NetMeeting by deleting the key

```
\HKEY_CURRENT_USER\Software\Microsoft\Conferencing\UI\Directory
```

NetMeeting re-creates the Directory key next time you run it, but then the key is empty.

Troubleshooting NetMeeting

Because NetMeeting digs deep enough into the Windows API to control Windows remotely (as discussed in the next section); because it needs to work with a wide variety of audio and video hardware; and because it implements a wide variety of functions—because of all these things, it's hardly surprising that NetMeeting sometimes gives trouble. Because almost everything worthwhile that you can do with NetMeeting involves connecting two or more computers that are somewhat or very remote from each other, and because the computers can be running not only different versions of Windows but also different versions of NetMeeting, problems can prove difficult to troubleshoot.

This section discusses some of the more persistent problems with NetMeeting. For details of problems with particular pieces of hardware, visit the Microsoft Knowledge Base and search for information on NetMeeting and the device in question.

Generally speaking, problems in NetMeeting tend to break down into the following categories:

- You're not able to connect to the remote user, or the connection gets dropped.
- Audio doesn't work, or doesn't work properly.

- Video doesn't work, or doesn't work properly.
- File transfer doesn't work.
- The collaboration tools don't work.

The following sections discuss these categories of problems in turn.

Troubleshooting Connections

This section discusses some key points in troubleshooting connections with NetMeeting: firewall problems, ILS problems, and error messages with hidden meanings.

If you're having problems connecting through a firewall, configure it to pass through primary TCP connections on ports 389, 522, 1403, 1720, and 1731, and secondary UDP connections on dynamically assigned ports between 1024 and 65535. The UDP connections are needed for audio and video, so if you can connect and use chat, but not use audio and video, the UDP ports may be the problem. Table W03.2 lists the ports NetMeeting uses and what it does with them.

If you can make outgoing connections but not receive incoming connections through a firewall, check that the firewall can virtualize internal IP addresses on the fly.

SEE ALSO Chapter 32 discusses how to configure Internet Connection Firewall (ICF) and other firewalls.

TABLE W03.2: NetMeeting Ports and Uses

Port	Protocol	Use
389	TCP	Internet locator server
522	TCP	User location server
1503	TCP	T.120
1720	TCP	H.323 call setup
1731	TCP	Audio call control
Dynamically assigned	TCP	H.323 call control
Dynamically assigned	RTP running over UDP	H.323 streaming

Most of NetMeeting's error messages mean what they say, but a couple have secret meanings that it's helpful to know:

- The error messages "User is unable to accept NetMeeting calls" or "User did not accept your call" can mean that your installation of NetMeeting has become damaged. If so, reinstall it.

- The error message “There was a problem connecting to the directory server” can indicate that a word in your directory information has fallen afoul of an acceptable-use policy on the Internet locator server. Remove anything your ILS administrator might deem offensive and try again.

Troubleshooting Audio

Generally speaking, audio in NetMeeting gives two types of problems: Either there’s no audio, or the audio sounds atrocious.

If there’s no audio, take the following steps:

- Make sure that your sound hardware is working: Use Sound Recorder or another basic sound program to play some sounds and to check that the microphone is working.
- Turn off any other audio source that you’re using. NetMeeting sometimes can’t play back audio while other audio is playing.
- Check your protocols. Make sure that you’re using TCP/IP to establish the NetMeeting conference. If you’re using Windows XP, you’ll almost certainly be using TCP/IP—but if the person at the other end is using an older version of Windows, their (older) version of NetMeeting might be trying to establish the conference using another protocol. NetMeeting needs TCP/IP to transfer audio and video via the H.323 conferencing protocol, but it can establish a connection using other protocols. If you’re using dial-up networking connections, make sure that the ISPs at both ends support IP header compression. If either ISP doesn’t, you’ll need to turn off IP header compression at both ends.
- If you’re using a firewall or proxy, check your ports as discussed in the previous section. To send audio, NetMeeting needs ports 1720 and 1731 to be open.
- Check your timing. If you try to accept an incoming call while Windows is still loading NetMeeting, your copy of NetMeeting may miss the H.323 handshaking, causing the other computer to try T.120 instead. The T.120 connection won’t give you audio or video.

If you’re getting audio, but it sounds poor (or worse), take the following steps:

- Check your expectations. If you’re using a low-bandwidth connection at either end, audio will necessarily be poor. You may not be able to increase bandwidth, but you might consider sacrificing program sharing, file transfer, or video in order to improve audio over a slow connection.
- Check your microphone placement and sensitivity at each end. Run the Audio Tuning Wizard or adjust the microphone sensitivity manually by using the Recording Control applet (or whatever equivalent your sound card uses) if necessary. Reduce background noise if practicable.

- Check your network bandwidth setting (click the Bandwidth Settings button on the General tab of the Options dialog box). If NetMeeting thinks you have a faster connection than you actually do, it may be trying to send too much information. Likewise, check that NetMeeting isn't using a low-bandwidth codec over a high-bandwidth connection.
- Check whether your sound card can handle full-duplex audio. If not, clear the "Enable full-duplex audio so I can speak while receiving audio" check box on the Audio tab of the Options dialog box (Tools > Options)—and practice saying "Over" at the end of your sentences.
- Check whether your sound card can handle DirectSound. If not, clear the Enable DirectSound For Improved Audio Performance check box on the Audio tab of the Options dialog box.
- Check the Knowledge Base for sound hardware that's known to cause trouble with NetMeeting.

Troubleshooting Video

As with audio problems, video problems in NetMeeting tend to divide into not getting any video at all and getting poor video. Let's start with the former.

If you're not getting any video, follow these steps:

- Make sure your video camera is working. Open Paint, choose File > From Scanner Or Camera, and see whether the Capture Pictures From Video dialog box shows Paint receiving a video feed from Windows Image Acquisition.
- If you have more than one video camera, check the Video Camera Properties group box on the Video tab of the Options dialog box to make sure NetMeeting is using the right camera.
- Change the video source and format if necessary.
- Make sure the camera isn't using video overlay mode (which sends the video signal straight to the video-capture card, bypassing the processor), because NetMeeting doesn't support overlay.
- Make sure that NetMeeting is trying to send video. Select the "Automatically send video at the start of each call" check box on the Video tab of the Options dialog box if you want to send video automatically. Otherwise, click the Start Video button in the main NetMeeting window or choose Tools > Video > Send to start sending video manually.
- Check the Knowledge Base for video hardware that's known to cause trouble with NetMeeting.

Before you start trying to troubleshoot poor-quality video, make sure your expectations for the video are realistic for the hardware and connection you're using. Many webcams are designed to provide a basic image under good lighting, so they struggle horribly in dim light. The resolution of most webcams is limited, but in most cases even NetMeeting's Large image size doesn't use the camera's maximum resolution—so don't expect too much.

With these limitations firmly in mind, take the following steps to troubleshoot poor-quality video:

- If the image is dark and muddy, improve the lighting of the subject.
- If the image is still dark and muddy, adjust the camera's properties. If you're not in a call, click the Start Video button so that you see the image your video camera is picking up; if you are in a call, choose View > My Video (New Window) so that you can see your image at a good size. Then open the Options dialog box, pull it off the main NetMeeting window or the My Video window so that you can see the image, and click the Source button on the Video tab of the Options dialog box. Use the controls in the resulting dialog box to tweak the brightness, contrast, and other relevant controls. (Which controls are available depends on the camera's capabilities.) Watch the video window to see how the image improves.
- If parts of the video are the wrong colors, try reducing the size of image you're sending.
- If the video image has frozen when you unplugged the camera and plugged it back in: NetMeeting doesn't support unplugging a video camera and plugging it back in during the call. Usually, unplugging the video camera freezes the image. To get video running again, you'll need to end the call, quit NetMeeting, and restart it after plugging the camera back in.
- If video is intermittently patchy and you don't think bandwidth is the problem, make sure your processor isn't maxed out computing interstellar distances or searching for Mersenne primes. As I mentioned a moment ago, NetMeeting doesn't support video overlay mode, so your processor is involved in the video rendering. If the processor is too busy to render the video, the video will look even worse.

Troubleshooting File Transfer

File transfer usually gives no problems beyond the obvious—that transferring files cuts into the bandwidth available for audio, video, program sharing, and chat.

One problem *is* worth mentioning, though. NetMeeting 2 clients running on Windows 95 sometimes fail to show up in the NetMeeting 3 File Transfer window, so you can't send files to them. To force the File Transfer window to list a NetMeeting 2 client, have them send you a file—preferably a small one.

Troubleshooting the Collaboration Tools

Generally speaking, NetMeeting's collaboration tools manifest problems only if you're trying to share programs or collaborate with people using NetMeeting 2.x on earlier versions of Windows.

In particular, NetMeeting 2.x users can't take control of programs shared by NetMeeting 3.x users, though they can see shared programs. This is because NetMeeting 3 uses a different specification for sharing programs. There's no workaround except to upgrade NetMeeting 2.x to NetMeeting 3—or use Windows Messenger's sharing instead if the other users have it available.

Remote Desktop Sharing

Remote Desktop Sharing gives a twist to NetMeeting's collaboration features: It lets you control your own Desktop remotely, which can be great for retrieving e-mail, collecting files, or getting work done from a distance. Remote Desktop Sharing runs only when NetMeeting itself isn't running, so it doesn't interfere with your regular use of NetMeeting.

TIP

If you're using Windows XP Professional, use Remote Desktop and Remote Desktop Connection rather than Remote Desktop Sharing, because not only are they fully integrated with XP's logon and security model, they're also optimized for transferring the screen display over slow connections. Remote Desktop Sharing is very much a poor cousin to Remote Desktop—but it's quite viable if you don't have Remote Desktop.

To use Remote Desktop Sharing, configure it by choosing **Tools > Remote Desktop Sharing** and letting the wizard walk you through the short process. Then start Remote Desktop Sharing by choosing **Call > Exit And Activate Remote Desktop Sharing** from the main NetMeeting window. Remote Desktop Sharing then listens for you to call. When you call, you supply your account name and password, and you can control your computer remotely.

Microsoft recommends that you use a password-protected screensaver when using Remote Desktop Sharing, so that the computer is locked outside your Remote Desktop Sharing sessions. If your monitor is visible, turn it off as well, because Remote Desktop Sharing displays a remote session as if you were there.

When you've finished a Remote Desktop Sharing session, hang up the call as usual. To stop Remote Desktop Sharing running on the host computer, right-click the notification-area icon for NetMeeting Remote Desktop Sharing and choose **Turn Off Remote Desktop Sharing** from the context menu.

Chat, Audio and Video Calls, File Sharing, and Collaboration with Windows Messenger

Windows Messenger is inextricably integrated into Windows XP and provides chat, audio and video conversations, and file sharing with users of both XP and earlier versions of 32-bit Windows. It's also used for Remote Assistance (in XP only).

Before you start using Windows Messenger and build up such an impressive list of contacts that inertia will prevent you from transitioning to another instant-messaging program, let's take a look at the advantages and disadvantages of Windows Messenger.

Understanding the Advantages and Disadvantages of Windows Messenger

If anyone asked you the greatest advantage of e-mail, you might well cite its working seamlessly on different platforms. Just as you can make a phone call to almost anywhere in the world and be sure that the person will be able to receive it, whether they're using the latest wireless phone or a hand-cranked field phone, you can send text e-mail to nearly anyone and be sure they'll be able to read it. Similarly, browsing works more or less seamlessly on different platforms—after 10 years of hammering down different standards, of course.

By contrast, and unfortunately, instant messaging is still at the wouldn't-it-be-nice-if-everyone-used-the-same-software stage. And that's the first major disadvantage of using Windows Messenger: It interoperates with earlier versions of Messenger, of course, but not with widely used IM programs such as America Online's AOL Instant Messenger (usually abbreviated to AIM).

To be fair to Microsoft, the reason that Windows Messenger doesn't work with AIM is that AOL doesn't want it to. Having watched carefully how Microsoft has used proprietary file formats and nonstandard extensions to standards to keep its customers firmly tied to its operating systems and programs, AOL has decided not to risk its 100 million AIM users migrating to Windows Messenger instead—so AOL blocks messages from Windows Messenger from getting to AIM. Microsoft has tried to circumvent this blocking, by persuasion and by technology, but AOL has reinstated it. AOL would like everyone to use AIM; Microsoft would love everyone to use Windows Messenger but would settle for access to AIM users. Right now, there's a stalemate.

The second disadvantage of Messenger is that you have to have a .NET Passport in order to use it. Depending on whom you talk to, .NET Passport is either

- A harmless technology used to speed up authentication to websites and services,
- The cosmetic end (the “.NET experience,” as Microsoft calls it) of Microsoft's .NET platform for building distributed applications, or

- Microsoft's attempt to wrest control of the Internet from, well, whoever has it at the moment.

But however you look at it, the .NET Passport is a constant identifier that provides a way of tracking what you're doing online. To sign on to Messenger, you use your .NET Passport, so if they wanted to, Microsoft could see when you're online, who you talk to, which files you exchange, and so on. The information in your .NET Passport doesn't necessarily identify *you* by name, but your user entity (so to speak) can be tracked.

Those are heavy disadvantages. But Windows Messenger has strong advantages as well, besides being free and built in:

- First, it's easy to use.
- Second, it offers most of the features that its competitors offer, such as text chatting, audio conversations, and video calls—plus some well-thought-out extras. For example, it lets you know when the people you're chatting with are typing in your Messenger window, so that you can tell when they're replying to you. This helps you avoid getting your conversations out of sync.
- Third, it runs on all 32-bit desktop versions of Windows. Anyone running Windows can install Messenger, get a .NET Passport, and start chatting, conversing, and transferring files.

Configuring Windows Messenger

By default, Windows XP gives Messenger an icon in the notification area. Until you add your .NET Passport to XP and sign in to Windows Messenger, this icon appears with an error icon on it—a red circle with a white cross—suggesting that something's broken and encouraging you to click it.

If you haven't added your .NET Passport to XP when you first run Messenger from the icon or from Start > All Programs > Windows Messenger, the .NET Passport Wizard launches and shepherds you through the process of adding your existing .NET Passport or applying for a new .NET Passport and adding that to XP.

Tips on Choosing Options for Messenger

Most of the options on the five tabs of Messenger's Options dialog box—Personal, Phone, Preferences, Privacy, and Connection—are easy to understand. This section discusses only the options that are less obvious or have hidden subtleties.

Personal Tab

Choose whether to have Internet Explorer prompt you for your password (when it needs to supply it to access a .NET Passport-enabled website) or to have Internet Explorer supply the

password automatically. Being prompted not only lets you decide whether to supply the information but also shows you which sites are demanding your .NET Passport.

Phone Tab

Any home, work, and mobile numbers that you choose to publish through Windows Messenger appear on the Properties page that you can display for a user.

Preferences Tab

For privacy, don't allow Messenger to run automatically when you start Windows, and don't allow Messenger to run in the background when you close its window. If privacy doesn't worry you, remember that leaving Messenger running with you signed in will hold your Internet connection open.

If you clear the "Show me as 'away' when I'm inactive for nn minutes" check box, Messenger shows you as Away after the length of inactivity specified by the Wait period of your screensaver in the Display Properties dialog box. If you select this check box, this setting overrides the screensaver Wait period.

Privacy Tab

If you're not interested in unsolicited contacts, move the All Other Users item from My Allow List to My Block List.

Use the View button to monitor the lists of contacts on which you currently appear. Use the "Alert me when other users add me to their contact lists" check box to monitor when another user adds you to their contact list. You can then return the compliment if you're interested in the user in question.

Connection Tab

Internet connections that go through Internet Connection Sharing (ICS) and Internet Connection Firewall (ICF) are classified as "direct connection [no firewall]" because ICF is configured by default to allow outgoing TCP connections on port 1863 (more on this shortly).

To connect through a proxy server other than a transparent proxy, select the I Use A Proxy Server check box and fill in the appropriate fields. (SOCKS 5 proxies require a username and password; SOCKS 4 and HTTP proxies don't.) If that doesn't work, check that the proxy server is configured as described in the next section.

Connecting through a Proxy Server or Firewall

This section discusses considerations for making Windows Messenger connect to the Messenger service through a proxy server or firewall.

Windows Messenger attempts to connect directly to the Messenger service via TCP. If it can't connect directly, it uses the HTTP connection that your default browser (for example,

Internet Explorer) uses in order to connect. Such HTTP connections support instant messaging, but you won't be able to place calls or send files via them. Table W03.3 lists the ports used by Messenger.

TABLE W03.3: Ports Used by Windows Messenger

Port	Protocol	Usage
1863	TCP	Outgoing TCP connection to .NET Messenger Service
2001–2120	UDP	Net2Phone (MSN Messenger)
6901	TCP	Outgoing TCP connection for voice communication
6901	TCP	Incoming computer-to-computer call
6901	UDP	Incoming and outgoing voice traffic
6891–6900	TCP	Incoming and outgoing file transfer
7801–7825	TCP	Net2Phone (MSN Messenger)

Configuring for Direct Connection

To enable Windows Messenger to establish a direct connection through a proxy or firewall, do the following:

- Configure port 1863 to be open for outgoing TCP connections.
- Configure port 1863 so that sockets stay open for an extended period of time. (If the sockets close quickly, Messenger file transfers may be interrupted.)
- Make sure the LAN has access to DNS servers to resolve external host names.

Configuring for File Transfer

To enable Windows Messenger to transfer files, make sure that TCP ports 6891–6900 are open. To prevent file transfers, make sure these ports are closed. To limit file transfers, open one port for each concurrent file transfer that you want to allow.

Tips on Using Windows Messenger

Windows Messenger is designed to be easy to use, and most of its commands are simple to find. The following sections point out more details you need to know to use Messenger most effectively.

Signing In and Signing Out

Before you can do anything with Messenger, you need to sign in. When you sign in, you tell Windows Messenger which .NET Passport you're using. Messenger checks your Internet

connection, validates your .NET Passport, and signs you on with the server end of the Messenger service.

The program alerts those people who have you listed as a contact and who are currently online that you have signed on, and lists you under the Online category in their main Messenger window. Likewise, Messenger checks the status of your contacts and sorts them into the Online and Not Online categories.

Once you've signed in, .NET Messenger Service monitors your actions until you sign out. If you leave Windows Messenger unattended for the length of time specified on the Preferences tab of the Options dialog box or your screensaver's Wait time, Messenger lists you as being Away. You can also manipulate your status by right-clicking your entry in the main Messenger window and choosing Online, Busy, Be Right Back, Away, On The Phone, Out To Lunch, or Appear Offline from the context menu.

Adding and Managing Contacts

Before you can have a conversation with any Messenger user, you need to add them as a contact. You can add a contact by e-mail address or Messenger sign-in name or by searching the Hotmail member directory (or your local address book) by specified information.

When someone adds you to their contact list, Messenger prompts you by default to add that person as a contact. Most people find this feature useful, but if you don't like it, turn it off on the Privacy tab of the Options dialog box.

All your contacts appear in the main Windows Messenger window, sorted into the Online and Not Online categories. From here, you can contact a contact, view the properties of a contact (including any phone numbers they've published), block a contact, or delete the contact. Note that Messenger doesn't confirm a deletion before executing it.

Adding Audio and Video to a Conversation

Like NetMeeting, Messenger supports audio and video conversation between only two people.

Transferring Files

You can transfer only one file at a time to any given contact, so you may want to zip files together so that you don't have to transfer them individually. But you can send several different files to several different contacts at the same time—one file to each contact—provided the right ports are open. (More on this in the "Troubleshooting Windows Messenger" section.)

Sharing Programs or Your Desktop

Windows Messenger's sharing works in almost exactly the same way as NetMeeting's (see the discussion earlier in this chapter). The main difference is that Messenger displays the Sharing Session toolbar window, which gives access to program sharing and Whiteboard.

Whiteboard with Messenger

Whiteboard in Messenger works in almost exactly the same way as Whiteboard in NetMeeting (except that Messenger doesn't offer a version of Whiteboard for earlier versions of NetMeeting). See the section "Whiteboarding" earlier in this chapter for a brief discussion of key points.

Closing Messenger

If you allow Windows Messenger to run in the background, you can close it only by clicking the notification-area icon and choosing Exit from the pop-up menu. Clicking File > Close, clicking the Close button, or pressing Alt+F4 doesn't close Windows Messenger—it closes the Messenger window, but Messenger keeps running in the background. This means that you can stay signed in and available to be contacted even when the Messenger window is closed. It also means the application holds your Internet connection open, which you may not want.

If you want Messenger to exit when you close its window, prevent Messenger from running in the background by clearing the Allow This Program To Run In The Background check box on the Preferences tab of the Options dialog box.

Troubleshooting Windows Messenger

This section discusses how to troubleshoot frequently encountered problems with Messenger.

Unable to Log On

If you can't log on to Windows Messenger, point your browser to messenger.microsoft.com/support/status.asp to see if there's a known problem with the network status. There's no point in struggling to log in if the service is out or temporarily overloaded.

If all seems well there, check that you don't have Caps Lock on and that you're not miscapitalizing your .NET Passport name. Some Passport names are case sensitive, while others aren't.

Check that you can log on with your .NET Passport at a Passport-enabled site, such as Hotmail, MSN, or Passport.com. If you can log on at such a site, your .NET Passport is valid, and the Messenger servers are probably taking a coffee break.

If you use a proxy server, double-check your proxy settings.

If you get the message "The display name you chose was invalid. Please choose another display name and try again," it means your display name includes a trademarked name that Microsoft has blocked or a word that Microsoft has deemed offensive. Offensive words include most of the usual suspects. Remove the offending word or words from your display name, and you should be able to log on.

If none of the above solves the problem, make sure that your ISP or network administrator isn't actively trying to prevent you from using Messenger. If they *are* trying to prevent you from using Messenger, they may be employing any or all of the following techniques:

- Filtering outbound traffic and closing ports to block a direct connection.
- Denying you access to the .NET Messenger Service servers. (This is because if you can't log on to the servers, you can't do anything with Messenger—not even chat.)
- Rerouting traffic to the .NET Messenger Service servers by using dummy static routes. Doing this prevents you from accessing Messenger via a DNS proxy.

Unable to Connect via a Firewall

If you're unable to connect using Windows Messenger through a firewall, make sure the following ports are open on the firewall: 6801, 6901, 2001 to 2120, and 6891 to 6900.

Unable to Transfer Files

If you *can* connect, but you're unable to transfer files, check that your firewall or ISP isn't blocking TCP ports 6891–6900, which are used for file transfer. Some ISPs block these ports to protect their bandwidth. Others block some of these ports. If these ports (or some of them) *are* open, you can perform one file transfer per separate contact per port.

Can't Adjust Microphone Volume in Conversation Window

If you can't adjust the microphone sensitivity in the Conversation window, you may need to link the microphone control to the Recording control rather than the Playback control. To change this, start the Volume Control applet, choose Options > Properties, and select the Recording option button in the Adjust Volume For group box.

Receive an Invitation from Someone Who's No Longer There

If a Windows Messenger contact sends you an invitation (for example, to start application sharing or Whiteboard) but then uses Fast User Switching to log off while leaving Messenger running, your acceptance of the invitation will go unheeded, because the user won't be there to see it. Microsoft says this behavior is intentional—and indeed it lets you keep a Messenger session running (for example, for file transfer) while another user is active. But it can also lead to odd effects such as that described here.

Remote Computer Is Unable to Accept Remote Assistance Invitation

When you invite a contact to start a Remote Assistance session, Messenger doesn't check that the remote computer is running Windows XP and can run Remote Assistance before delivering the invitation. If the computer isn't running XP, or if it's running XP Professional

but an administrator has disabled Remote Assistance for security, you receive a message that the remote computer is unable to accept the invitation.

Third-Party Chat and Conferencing Applications

As you've seen so far in this chapter, NetMeeting and Messenger offer strong features for collaboration, text and audio chat, videoconferencing, and file transfer. But they're not to everyone's liking—especially the fact that Messenger requires you to use a .NET Passport. Windows Messenger—the version discussed in this chapter—runs only on Windows XP, but you can also get versions of MSN Messenger for earlier versions of Windows, for the Mac, for Pocket PC, for Microsoft TV, for MSN TV, and for MSN Companion.

The alternatives to Windows Messenger and NetMeeting are multiple if not legion. In this section, I touch briefly on three of the most popular alternatives.

Eyeball Chat

Eyeball Chat is a chat package that supports audio and video conversations and file transfer. Eyeball coordinates connections through a central site, letting you see which of your contacts are online and which are offline. In addition to contacts you set up directly yourself, you can cruise Eyeball's chat rooms for people to talk to, and chat to them via text, audio, or video.

To use Eyeball Chat, download the latest version from the Eyeball Networks website (www.eyeball.com), sign up for an Eyeball ID, and install the software. Eyeball Chat uses a multi-window interface that's easy and intuitive, with a notification-area icon that gives access to key functions, from logging in and out to changing your status.

Eyeball's free software is limited to one-to-one chatting. If you pay for premium service, you can chat with multiple people at the same time.

Eyeball Chat lets you log in to Windows Messenger, AIM, and Yahoo! Messenger as well as Eyeball itself, making it a strong contender for one-stop messaging on Windows. At this writing, Eyeball isn't available for platforms other than Windows.

Yahoo! Messenger

If you want to cast your net wider than just Windows, Yahoo! Messenger has you covered, as it comes in versions for Windows, Mac, Unix/Linux, Java, Palm OS, Windows CE, and even some mobile phones. To get started with Yahoo! Messenger on Windows, download the software from the Yahoo! website (messenger.yahoo.com) and create a Yahoo! ID. Put the two together, and you're away.

Yahoo! Messenger provides a full-fledged implementation of chat, audio, and video. You can use video with multiple people at the same time, which gives Yahoo! Messenger quite an edge over Windows Messenger.

Yahoo! Messenger's communication side includes other well-thought-out features, such as asking the user's permission before adding them to someone's contact list. Yahoo! Messenger also integrates with Yahoo!'s stock-tracking, calendar, news, and weather features, providing quick access to a great deal of information through its interface.

AOL Instant Messenger (AIM)

As I mentioned earlier in this chapter, AOL Instant Messenger (AIM) wants to be a direct competitor to Windows Messenger. Conscious that it needs to appeal beyond the Windows user base, America Online (www.aol.com) provides versions of AIM for the Macintosh (including older Macs), Windows CE, Palm OS, and Linux as well as Windows. More than conscious that Windows Messenger is free, AOL not only makes AOL Instant Messenger free for download but also makes the service available both to AOL subscribers and nonsubscribers. At this writing, AIM offers text and audio chat but no video chat, putting it behind all of its competitors in one important area.

AIM has strong privacy features, letting you control the information shared about you, block other users, and even use Warnings (either under your name or anonymously) to fire shots across their bows when they've offended you. Beyond chat, AIM's interface integrates mail alerts, a stock ticker, and a news ticker, so you can keep track of what's going on.

To get started with AIM, create a screen name for AIM, download the version of AIM for your operating system, and fire it up.