

## Chapter 7

# Using Remote Assistance and Remote Desktop

End-user support for most IT departments is a major concern and a time-consuming endeavor. As administrators, anything we can do to provide an efficient solution to user problems is a major benefit. Basic telephone or chat support works in many cases, but what if you could see what the end users see, or even interface with them... Enter Remote Assistance and Remote Desktop. If you've been using these features with Windows XP and Vista, you're really going to be pleased with Windows 7.

Remote Assistance in Windows Vista provided many enhancements over previous versions, including improvements in security, performance, and usability. Windows 7 goes even further by adding Easy Connect, which makes it even easier for novice users to request help from expert users. Group Policy support has been enhanced as well. There's also command-line functionality (meaning we can add scripting), bandwidth optimization, logging, and even more.

Remote Desktop is a tool that allows you to take control of a remote computer's keyboard, video, and mouse. This tool does not require someone collaborating with you on the remote computer. Remote Desktop is used to access a remote machine's applications, troubleshoot issues, and meet end-user needs when you want complete control of the remote machine.

In this chapter, we'll explain some of the new features and benefits to using Remote Assistance and Remote Desktop in Windows 7. We'll describe how to support end users, and implement Group Policy and scripting. We'll explain the integration of the previous operating system Remote Assistance and Remote Desktop with Windows 7 as well as highlight the Windows 7 to Windows 7 functionality.

In this chapter, you'll learn how to:

- ◆ Assist novice users with Windows 7
- ◆ Provide help from Windows 7 to older operating systems
- ◆ Access a machine from a remote location
- ◆ Script a session for automated connection

## Using Remote Assistance

Windows 7's Remote Assistance provides a method for inviting help by instant message, email, a file, or an Easy Connect option. To use Remote Assistance, the computer requesting help and the computer providing help must have Remote Assistance capabilities, and both computers must have network connectivity.

Remote Assistance is designed to have an expert user provide assistance to a novice user. The terms *expert* and *novice* describe the assistor (expert) and the user needing help (novice). When you assist a novice user, you can use the text-based chat built into Remote Assistance. You can also take control of a novice user's desktop (with the user's permission, of course). Common examples of when you would use Remote Assistance include the following:

- ◆ Diagnosing problems that are difficult to explain or reproduce. Remote Assistance can allow you to remotely view the computer and the novice user can show you an error or problem.
- ◆ Guiding a novice user to perform a complex set of instructions. You can also take control of the computer and complete the tasks if necessary.

## New and Updated Features in Remote Assistance

The Windows 7 Remote Assistance feature builds on the implementations in previous versions of Windows. Multiple sessions over a shared network are now reliable using the connectivity improvement of network address translation (NAT) traversal using IPv6 and Teredo tunneling. (We'll cover the specifics of TCP/IP [IPv4 and IPv6] in Chapter 11, "Configuring Network Connectivity.") A stand-alone executable (`msra.exe`) accepts several options, thus making script options available as well. Performance enhancements that optimize bandwidth, shorten connect time, and improve startup times have also been added. Group Policy settings have been added for improved manageability. The new Easy Connect feature for soliciting Remote Assistance will provide one more level of simplicity for the end users — always a huge benefit to any IT department.

## Using Easy Connect

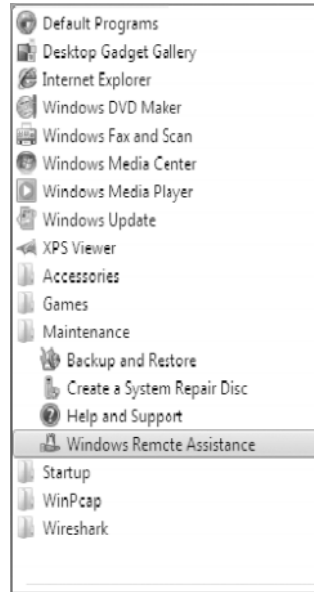
The Easy Connect method for getting Remote Assistance is new for Windows 7. Easy Connect uses the Peer Name Resolution Protocol (PNRP) to set up direct peer-to-peer transfer using a central machine in the Internet to establish the connection. PNRP uses IPv6 and Teredo tunneling to register a machine as globally unique. You're not using IPv6? You are with PNRP; Windows 7 (as well as Vista and Server 2008) has IPv6 turned on natively as well as the currently used standard of IPv4. You will, however, only be able to use Easy Connect with Windows 7 and beyond. To establish a Remote Assistance session with a user using Easy Connect, open the Windows Remote Assistance screen by selecting Start > All Programs > Maintenance > Windows Remote Assistance, as shown in Figure 7.1.

You can also access the Remote Assistance feature by clicking the Start button and choosing Help And Support, then selecting More Support Options in the lower left of the Windows Help And Support window. Some users might be accustomed to opening the Windows Help And Support window in previous operating system versions. The window looks different, but it's still there. You can also launch the Windows Remote Assistance screen by typing `msra` in the Start menu's search box, as shown in Figure 7.2.

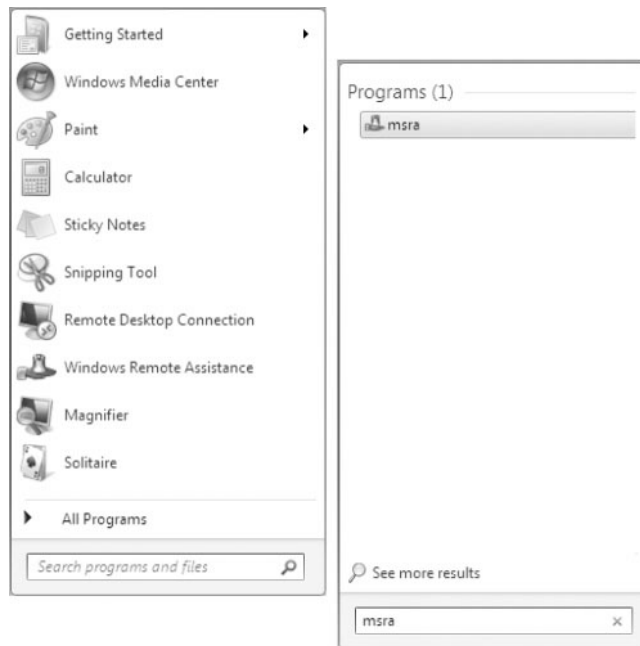
Whichever way you and the novice user launch the feature, the Windows Remote Assistance screen opens. To get started using Easy Connect, the novice user should select Invite Someone

You Trust To Help You. The initial Remote Assistance window where the novice user initiates an invitation is shown in Figure 7.3.

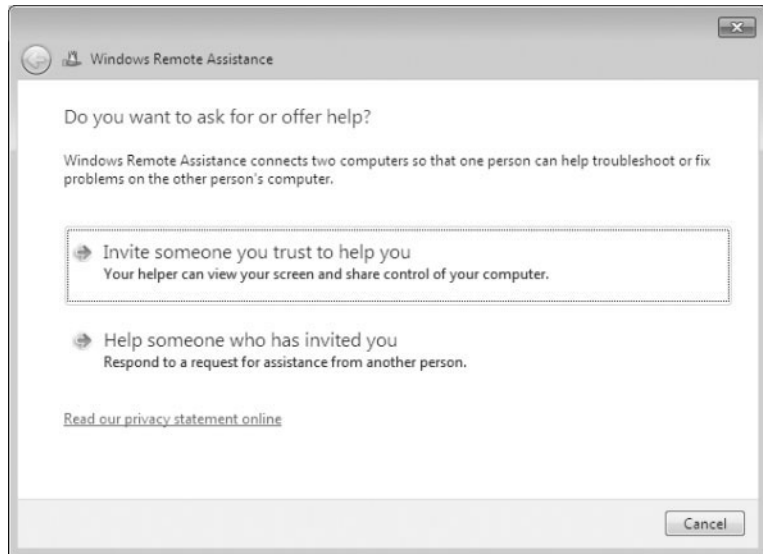
**FIGURE 7.1**  
 Accessing Remote Assistance via the Start menu



**FIGURE 7.2**  
 Accessing Remote Assistance via the search box



**FIGURE 7.3**  
The Remote Assistance  
initial screen



### ALLOWING REMOTE ASSISTANCE

The Windows 7 machine is configured by default to allow Remote Assistance. If this feature has been disabled in the configuration, an error will be generated at this point and you must enable Remote Assistance. To enable a remote computer to allow Remote Desktop access, select Start > Control Panel > System And Security > System. Click Remote Settings in the left pane. Select the “Allow Remote Assistance connection to this computer” check box and click OK. This creates an exception in the Windows Firewall to allow Remote Assistance.

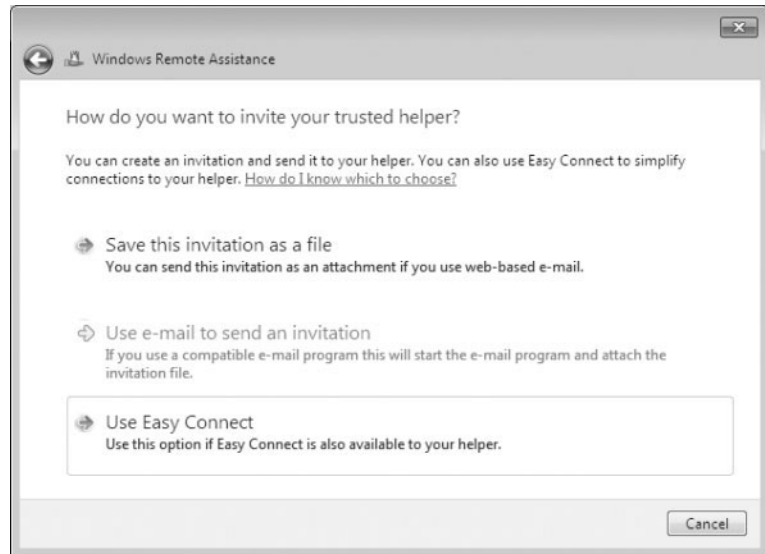
The Windows Remote Assistance screen, as shown in Figure 7.4, asks How Do You Want To Invite Your Trusted Helper? and offers the user the option Use Easy Connect.

### REMOTE ASSISTANCE INVITATION METHODS

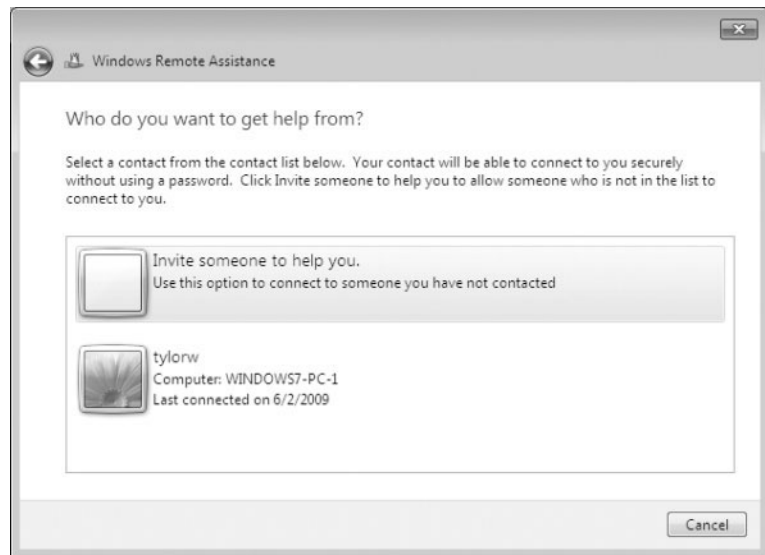
We are using the Easy Connect request method here. The Remote Assistance session is the same regardless of which request method is used. The options Save This Invitation As A File and Use E-mail to Send An Invitation are covered later in this chapter in the section, “Requesting an Invitation as a File.”

One nice feature of Easy Connect is that if the novice user has already established an Easy Connect session previously with an expert user, the screen after selecting Use Easy Connect offers the novice the ability to connect to the same expert user. The novice user can also choose to invite someone new and/or delete the old contact if necessary, as shown in Figure 7.5. The expert user has the same option after choosing Use Easy Connect from the machine used in a previous Easy Connect session.

**FIGURE 7.4**  
The Remote Assistance  
invite screen



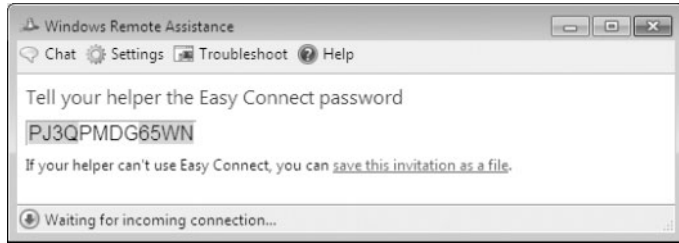
**FIGURE 7.5**  
Remote Assistance  
makes it easy to  
reconnect.



After the novice user selects the Use Easy Connect option, Windows 7 verifies network connectivity briefly. This is the point at which the PNRP actions take place and the novice user's information is added to a *cloud* in the Internet space. The cloud is the group of machines holding little pieces of information (the identifiers of users needing connectivity), set up in a peer-to-peer sharing environment. PNRP uses this distributed infrastructure for its peer-to-peer name resolution. The novice user's contact information is entered in the PNRP cloud; then an associated password is created, as shown in Figure 7.6, and displayed to the novice user.

**FIGURE 7.6**

The Remote Assistance password is displayed to the user.



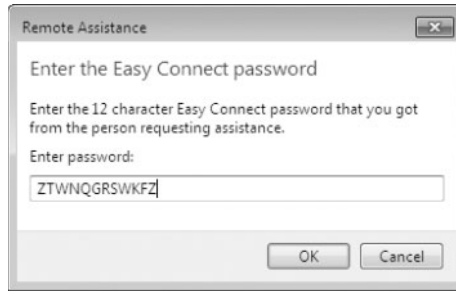
At this point, the novice user relays the password to you (the expert user) by text message, telephone, or any convenient conversation method. The novice will simply have to wait for you to initiate your part; they will still have to accept the connection after you start the Remote Assistance session.

You must start a Remote Assistance session in much the same way the novice did, but you instead choose Help Someone Who Has Invited You from the Windows Remote Assistance screen.

As shown in Figure 7.7, a dialog box prompts you to enter the password given by the novice user who is initiating the Remote Assistance session.

**FIGURE 7.7**

Enter the password supplied by the novice user who is initiating the Remote Assistance session.



After a few moments of querying the PNRP cloud and finding the connection path back to the novice user, Remote Assistance presents the novice user with a confirmation box, as shown in Figure 7.8, that verifies that they want to allow help from you.

**FIGURE 7.8**

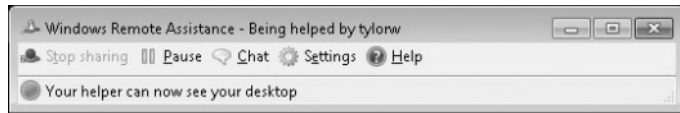
This screen asks the novice user to verify that they want to allow help from the expert user.



Once the novice user clicks Yes, they will have a control bar on their screen that indicates the Remote Assistance session is active, as shown in Figure 7.9. From this control bar the

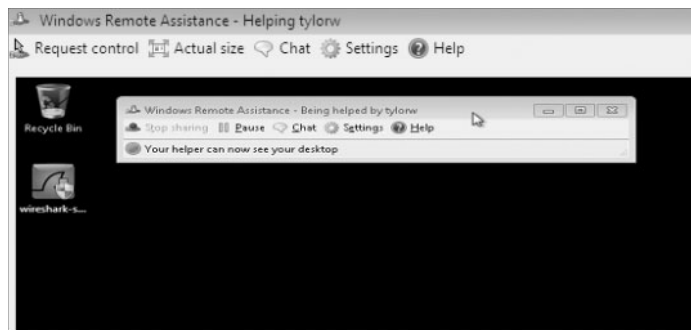
novice can initiate a chat session with you, the expert user, and modify general session settings (bandwidth, logging, contact information exchange, and sharing control) if necessary to improve the performance of the Remote Assistance session.

**FIGURE 7.9**  
The Remote Assistance control bar for the novice user



You are shown the novice user's desktop within a separate Remote Assistance window. You'll also have general configuration setting capabilities as well as an option to request control of the novice user's desktop, as shown in Figure 7.10. The novice user will, of course, be allowed to accept or reject your request.

**FIGURE 7.10**  
The Remote Assistance control bar for the expert user



You and the novice user can now have an interactive session in which you can provide the necessary assistance. This method of help takes out the “Can you tell me what you see on your screen?” issues between two users. Remember, only Windows 7 and later versions of Windows can connect using this feature.

## Requesting an Invitation as a File

Requesting Remote Assistance from Windows 7 and other operating systems can also be initiated by using an invitation as a file. As the expert user, you must ask the novice user to send a file to you. The novice user also has to provide the password for the connection to you.

### REMOTE ASSISTANCE SETUP

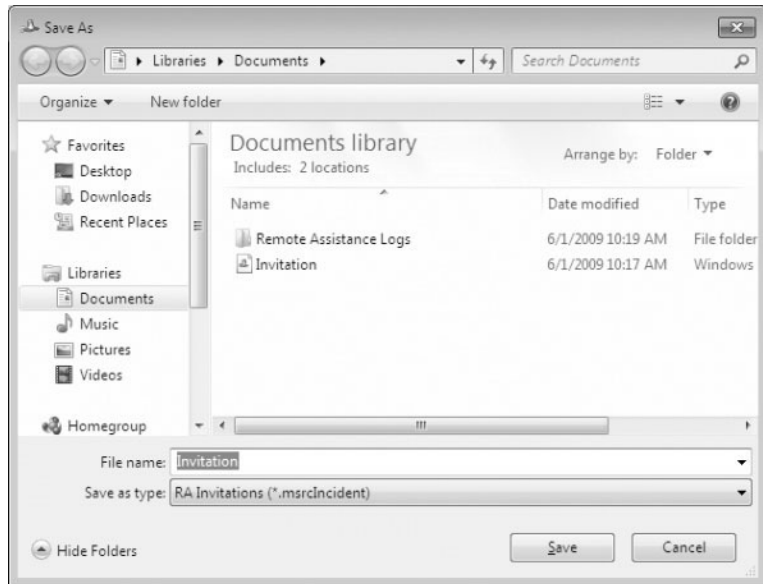
Most procedures presented in this section require two machines (real or virtual) to be connected to provide Remote Assistance novice and Remote Assistance expert functionality.

In the following example, a novice user generates an invitation file to be sent to you to initiate a Remote Assistance session. You then accept the invitation, and the novice user allows you to complete the connection.

Perform the following steps to use an invitation by file:

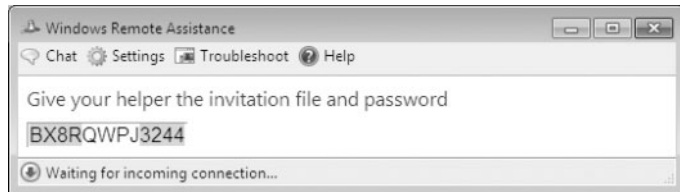
1. Ask the novice user to generate an invitation file and password by selecting Start > All Programs > Maintenance > Windows Remote Assistance.
2. Instruct the novice user to choose Invite Someone You Trust To Help You.
3. Instruct the novice user to choose Save This Invitation To A File.
4. The novice user is given the option to save the invitation file. The default location is Libraries/Documents with a filename of Invitation.msrcIncident. Ask the novice user to accept the default location by clicking the Save button, as shown in Figure 7.11.

**FIGURE 7.11**  
Saving the Remote Assistance invitation as a file



5. The novice user sees the Windows Remote Assistance window, as shown in Figure 7.12, with a password and the instructions Give Your Helper The Invitation File And Password. The invitation file must now be delivered to you, and you must also be given the password to complete the Remote Assistance connection.

**FIGURE 7.12**  
The Remote Assistance Password window



6. Save the invitation file received from the novice user to the machine being used for Remote Assistance. You can use the default location or Documents/Libraries. You should also have the password that the novice user generated.



7. Continue the establishment of the Remote Assistance session by selecting Start ➤ All Programs ➤ Maintenance ➤ Windows Remote Assistance.
8. Choose Help Someone Who Has Invited You.
9. Select Use An Invitation File.
10. Select the saved invitation file and choose Open.
11. You'll be presented with a Remote Assistance password dialog box. Enter the password supplied by the novice user. Your machine now establishes a connection to that of the novice user. Once the novice user accepts the connection, the Remote Assistance session continues.

Administrators, desktop support personnel, knowledgeable users in the working environment, as well as folks in their home environment are often asked a “quick question” and can use the Remote Assistance feature to work with users to provide answers.



## Real World Scenario

### HELPING NOVICE USERS WITHOUT BEING THERE

Many times it is far easier to guide a novice user through the process of fixing a problem by looking at their machine. But most of the time it's extremely inconvenient to travel to the user's machine, and therefore Remote Assistance is a valuable tool.

Recently, one of the authors was traveling to a customer site when he received a telephone call from his cousin. When the cousin had opened his Internet browser, it had opened to a page he wasn't comfortable with. Someone had changed the home page as a joke and the cousin didn't know how to change it back. The author explained to his cousin how to use Help And Support on his Windows XP machine to email him a Remote Assistance invitation. The author then pulled into a local shop providing Internet access, and using web-based email, opened the invitation file, provided the password, and walked his cousin through the process of changing his home page back. This potentially saved lots of time and anxiety for both of them.

## Requesting an Invitation as Email

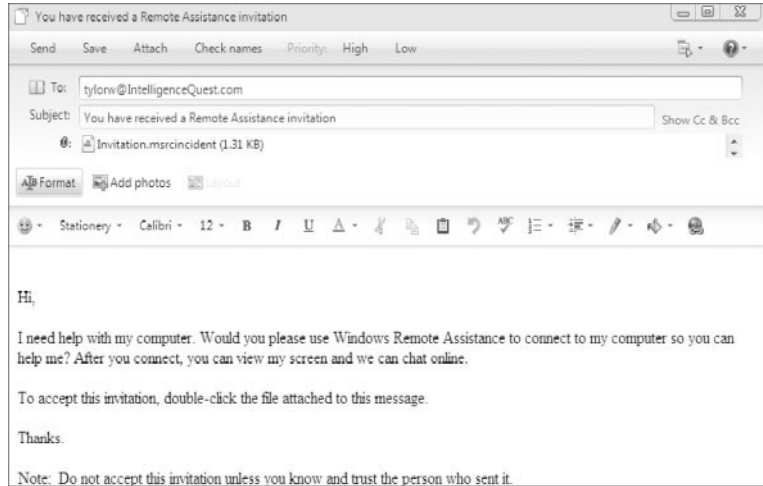
Requesting Remote Assistance from Windows 7 and other operating systems can also be initiated by using an invitation sent by the default email program on the novice user's machine. You must instruct the novice user to email the invitation to you as well as provide the password for the connection.

Perform the following steps to have a novice user create an email invitation and send it to you to request Remote Assistance:

1. Ask the user needing assistance to generate an email invitation file and password by selecting Start ➤ All Programs ➤ Maintenance ➤ Windows Remote Assistance.
2. Ask the novice user to choose Invite Someone You Trust To Help You.
3. Ask the novice user to choose Use E-mail To Send An Invitation As A File. If the user does not have a default email program setup, this option will be unavailable.

- The novice user's default email application launches with the invitation file as an attachment and a generic message that requests help (see Figure 7.13). Ask the novice user to enter your email address and then send the email.

**FIGURE 7.13**  
An email invitation for  
Remote Assistance



- When the novice user sees the Windows Remote Assistance window with a password and the instructions Tell Your Helper The Connection Password, ask the user to tell you the password.
- When you receive the email, open the attachment to initiate the connection to the novice user. You should also have the password that the novice user generated.
- You'll be presented with a Remote Assistance password dialog box. Enter the password supplied by the novice user. Your machine establishes a connection to that of the novice user. Once the novice user accepts the connection, the Remote Assistance session continues.

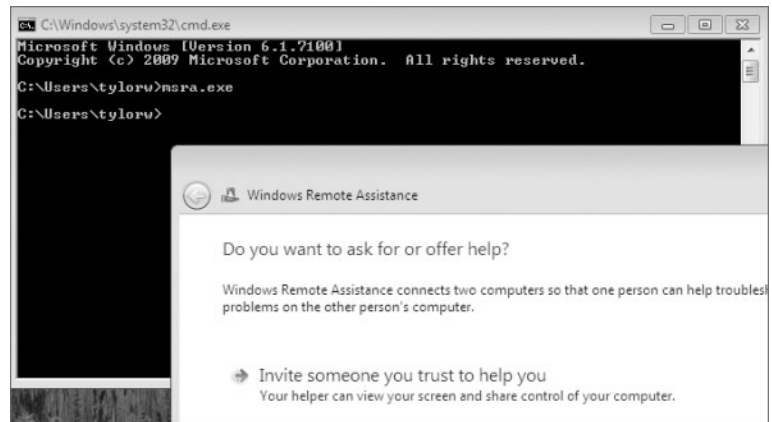
#### LIVE MESSENGER REMOTE ASSISTANCE

Remote Assistance can also be initiated by using Windows Live Messenger. Although you can share an invitation file through Live Messenger, a menu item is available (as an Action item from the chat window) that allows a simplified Remote Assistance invitation offer. This could be a useful function for users who participate in the Windows Live Messenger experience.

### Using Command-Line Remote Assistance

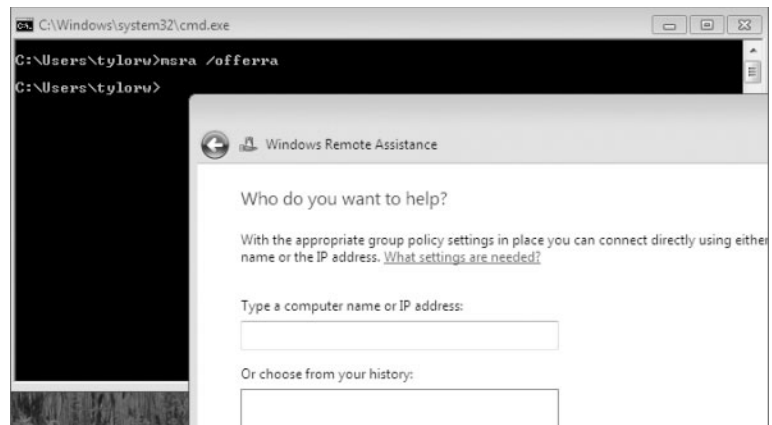
Windows Remote Assistance is also available from the command line using the Microsoft Remote Assistance executable (`msra.exe`) in both Windows 7 and Vista. This feature allows you to launch any of the functions of Remote Assistance from the command line. It also allows you to set up a scripted environment for novice users. Type `msra.exe` without any switches at the command line to open the initial Windows Remote Assistance screen shown in Figure 7.14.

**FIGURE 7.14**  
Accessing the initial  
Windows Remote  
Assistance screen via  
the command line



You can also incorporate Remote Assistance in Group Policy in an enterprise environment by configuring yourself as a helper for users in the enterprise (by domain or organizational unit). Once configured as a helper, you can initiate a Remote Assistance session by issuing the command `msra/offerRA`. This brings up the Who Do You Want to Help? Remote Assistance screen, as shown in Figure 7.15. You can also include the novice user's IP address or computer name as an option to the `/offerRA` switch to initiate the Remote Assistance session in one step (for example, `msra /offerRA ipaddress | computername`).

**FIGURE 7.15**  
The Who Do You  
Want to Help? Remote  
Assistance screen



Several switches are available to further control the establishment of the Remote Assistance session for both the novice and expert user. Table 7.1 highlights many of the switches.

Being able to run Windows Remote Assistance from the command line has many benefits to an IT team. Scripting is one benefit of `msra.exe` in addition to simplicity for administrators who are comfortable with using the command line. Let's go through the process of establishing an Easy Connect session and a reestablishment of the session using `msra.exe`. The following two examples use the command line.

**TABLE 7.1:** MSRA Command-Line Switches

SWITCH	OS AVAILABILITY	FUNCTIONALITY
<code>/?</code>	Vista and Windows 7	Displays the help options.
<code>/novice</code>	Vista and Windows 7	Starts Remote Assistance at the Invite screen.
<code>/expert</code>	Vista and Windows 7	Starts Remote Assistance at the Help Someone screen.
<code>/offerRA ip   computer</code>	Vista and Windows 7	Starts Remote Assistance at the Expert Initiated screen or with the options, by automatically initiating with the novice user (used with Group Policy configured in an enterprise environment).
<code>/email password</code>	Vista and Windows 7	Creates an email invitation to be sent to an expert user to request assistance using the novice user's default email program; a random password is generated and needs to be conveyed to the expert user, or a password can be specified with the password option and conveyed to the expert user.
<code>/saveasfile path password</code>	Vista and Windows 7	Creates a file invitation to be given to an expert user to request assistance; a random password is generated or optionally a password can be specified with the password option and conveyed to the expert user.
<code>/openfile path</code>	Vista and Windows 7	Used to open the invitation file sent to the expert user; can be local or on a shared network drive; the expert user enters the password given to the user when the session was initiated.
<code>/geteasyhelp</code>	Windows 7 only	Starts a novice user's Remote Assistance session using Easy Connect; presents the novice user with the password to convey to the expert user.
<code>/offereasyhelp</code>	Windows 7 only	Starts an expert user's Remote Assistance session using Easy Connect; presents the expert user with the screen to enter the password from the novice user.
<code>/getcontacthelp address</code>	Windows 7 only	Reestablishes a Remote Assistance session from a novice user's machine to the <i>address</i> from the previous session. The <i>address</i> is in the <code>RAContactHistory.xml</code> file as a 20 byte hexadecimal string with an <code>.RAContact</code> extension.
<code>/offercontacthelp address</code>	Windows 7 only	Reestablishes a Remote Assistance session from an expert user's machine to the <i>address</i> from the previous session. The <i>address</i> is in the <code>RAContactHistory.xml</code> file as a 20 byte hexadecimal string with an <code>.RAContact</code> extension.

## CONNECTING WITH THE COMMAND LINE, FIRST-TIME ESTABLISHMENT

Perform the following steps to initiate a first-time Remote Assistance connection establishment:

1. Ask the novice user to launch Easy Connect from the command line by select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and then typing **msra/geteasyhelp**.
2. Ask the novice user to give you the Easy Connect password.
3. Launch Easy Connect from the command line: select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and type **msra/offereasyhelp**.
4. Enter the Easy Connect password generated from the novice user's machine for this session.
5. The novice user's machine displays the screen to accept help from the expert user; instruct the novice user to choose Yes to establish this session.

The Remote Assistance session is established and you can help the novice user.

## USING msra.exe TO REESTABLISH AN EASY CONNECT SESSION

Perform the following steps to reconnect to the same party:

1. Acquire the Remote Assistance address for the session that is going to be reestablished from the novice user's machine; this is in the `\users\user\appdata\local` directory on the novice user's machine in the file `RAContactHistory.xml` (see Figure 7.16). The entry is in the `ADDRESS=` line near the bottom of the file and is 20 bytes in length.

**FIGURE 7.16**  
RAContactHistory.xml  
text

```

C:\Users\tylorw\AppData\Local>type RAContactHistory.xml
[ Output Omitted... ]
/tPm/tPm/tBh/s9g/s9g/s9g/s9g/s9g/s9g/s9f/s9f/s1Z/s9f/s9e/s1Z/s1Y
/s1Z/s1ZAA=
" PUBLICKEY="BgIAAAcKAABSU0EAAQAAEAQAQBJKuUgUm48pHLnQsax9qa4QGdY6cM4PAm6ke/U
va7GbuN9Bndq5P1UsssPA1Uyp7n94xeJHRFRRuHMocn0FUPall0nyFTp8gb1VMoL1
GlsuqgZAr+CKuazr+qT8U+HHIEAItKAc6S,jhnDc1HP2n5H/uuCKs8aeQPCHA/L8g
zA4m2g==
" ADDRESS="F71f7ec433ed6455547b53ebe6a4417c0cc80e23.RAContact" TYPE="1" TIME="20
070608083127.881000"/></RAINITIATIONCOLL

```

2. Ask the novice user to launch Easy Connect from the command line by selecting Start ➤ All Programs ➤ Accessories ➤ Command Prompt and typing **msra/getcontacthelp address**.

The novice user's machine is now waiting for you to establish the connection.

3. On your machine, acquire the Remote Assistance address for the session that is going to be reestablished to the novice user's machine; this is in the `\users\user\appdata\local` directory on your machine in the file `RAContactHistory.xml`. The entry is in the `ADDRESS=` line near the bottom of the file and is 20 bytes in length.

4. Launch Easy Connect from the command line: select Start > All Programs > Accessories > Command Prompt and type **msra/offercontact help address**.
5. The novice user's machine displays the screen to accept help from the expert user; instruct the novice user to choose Yes (if this Remote Assistance session is to be reestablished).

The Remote Assistance session is established, and you can help the novice user.

The `msra.exe` command-line options for saving as a file and emailing an invitation can also be valuable to the IT staff. Scripting to the command line for creating an email invitation can be a time-saver for IT personnel. Remember that a password can be defined or it can be randomly generated if the `password` parameter is not included in the `msra.exe` command.

### CREATING AN EMAIL INVITATION WITH A PASSWORD DEFINED BY THE NOVICE USER

Perform the following steps to create an email invitation with a specific password:

1. Ask the novice user to select Start > All Programs > Accessories > Command Prompt and type **msra /email ratylorW** (the password is case sensitive). If the `password` parameter is not entered, a random password will be generated.
2. The default email program on the novice user's machine launches with a message stating help is desired. The message includes an attachment: the invitation file `Invitation.msraincident`. Ask the novice user to enter your email address and send the invitation. The novice user must provide you with the password so that you can establish the Remote Assistance session.
3. When you receive the email that the novice user sent, open the attachment, which launches the Remote Assistance program and requests the password for the novice user's session.
4. Enter the password (this is case sensitive) and click OK. The novice user will accept, and the Remote Assistance session continues normally.

You might want to create a scripted invitation using `msra.exe` that chooses a random password rather than a predefined one. You might do this for security reasons or just to achieve consistency in policy. An IT staff creating a Remote Assistance request script will probably use the same password over and over again. If the password is generally known, a nonadministrative person could ultimately discover the password (from a past session), and the possibility of someone establishing a Remote Assistance session inappropriately becomes a possibility. To avoid this, you should let `msra.exe` create the password dynamically. Doing so will force the novice user to be involved and convey the password back to the expert user. If you chose the password when you created the invitation file, the novice user would see the password, but you would not have to ask for it; this is a security flaw.

### CREATING A REMOTE ASSISTANCE INVITATION AS A FILE USING A RANDOM PASSWORD

Perform the following steps to create an invitation file using a random password:

1. Ask the novice user to select Start > All Programs > Accessories > Command Prompt and type **msra /saveasfile path** (the `path` is an accessible directory and filename for the invitation). The file will be saved with the `.msraincident` extension. A password can optionally be added to the command to specify a password to be used (it is case sensitive).

2. The novice user's machine displays the password to be conveyed to you, the expert user. Ask the novice user to give you the file in the *path* location.
3. When you receive the file from the novice user, open the file by selecting Start > All Programs > Accessories > Command Prompt and typing `msra /openfile path` (the *path* is an accessible directory and filename for the invitation).
4. Enter the password (it is case sensitive) and click OK. The novice user accepts and the Remote Assistance session continues normally.

## Using Remote Desktop

Remote Desktop is a tool in Windows 7 that allows you to take control of a remote computer's keyboard, video, and mouse. This tool does not require that someone be available to collaborate with you on the remote computer. While the remote computer is being accessed, it remains locked and any actions that are performed remotely will not be visible via the monitor that is attached to the remote computer.

Remote Desktop has been available for several releases of Windows. With each release, improvements are made and new features added. Windows 7 is no different.

### New and Updated Features in Remote Desktop

Windows 7 Remote Desktop is again an enhanced version of remote desktop functionality that has been with us for many of the previous versions of Windows, both client and server operating systems. Remote Desktop uses the Remote Desktop Protocol (RDP) to provide the data between a host and a client machine. Windows 7 uses the latest version, RDP 7.0. Windows 7 Remote Desktop enhancements include:

- ◆ RDP core performance enhancements
- ◆ True multimonitor support
- ◆ Direct 2D and Direct 3D 10.1 application support
- ◆ Windows 7 Aero support
- ◆ Bi-directional audio support
- ◆ Multimedia and Media Foundation support

There are many uses for Remote Desktop. The most popular use is an administrator attempting to perform a task on an end-user machine (or server). This is a valid use, but you can take it further and make it an end-user function as well. Previous versions of RDP gave users a workable experience, but the new enhancements to the core of RDP make keyboard input and mouse movements even more responsive. RDP's enhanced performance gives users a seamless integration of a home and office environment. Along with the RDP core enhancements, the addition of Direct 2D and Direct 3D 10.1 application support means more program video is supported and applications will look the same from the local machine as well as from a Remote Desktop session. Multimedia and Media Foundation support as well as bi-directional audio support add to the functionality and allow more applications that run on a local machine to be available to a Remote Desktop session.

The one caveat is that the end user expects the same functionality and performance regardless of which keyboard they're sitting at (home or office). If you notice the enhancements to

Remote Desktop (which are enhancements to RDP), you can see that the main goal of enhancing Remote Desktop is to make the user experience as comfortable and seamless as possible. Let's look at true multimonitor support, one of Remote Desktop's enhancements. In the previous version of Remote Desktop, we could span multiple monitors. This did not give us the multiple-monitor functionality we would have at the local machine (in the case of a laptop with an external monitor). The Windows 7 implementation allows independent multiple-monitor functionality. The end-user experience is also enhanced with the new audio functionality. This becomes a better environment for the administrator as well.



## Real World Scenario

### USING REMOTE DESKTOP FUNCTIONALITY

We speak many times about using Remote Desktop for troubleshooting client computers. As administrators, we like to take control of an end-user machine and fix it. Although this can be done with Remote Assistance, the end user is required to allow us access and then can watch what we do. With Remote Desktop, we just take control and close the interactive session at the remote machine (yes, the remote end user can block us or take over the session, but not if they want their problem solved). We also refer to Remote Desktop as a Terminal Service client (in fact, Microsoft is calling the Terminal Services client from the legacy functionality Remote Desktop now).

There are other uses for Remote Desktop as well. At our company, we provide our clients a server with resources that need to be changed or updated on a regular basis (sometimes a couple of changes in a day). The clients access the files on the provided server using a proprietary client program. As administrators, we might have to make changes at any time to the clients server. Remote Desktop allows us to maintain their server and database from wherever we are without affecting our clients or other administrators. Where Remote Desktop takes over an active session on the remote server, every once in a while when we log in to perform maintenance, it seems as though someone locally was right in the middle of doing something (and they were). The other admin can simply retake over the session (my screen disconnects). No problem, I wait a few minutes and reconnect and complete my tasks. This allows me to save time by not having to go back to the office and also not trying to direct someone to make a change for me.

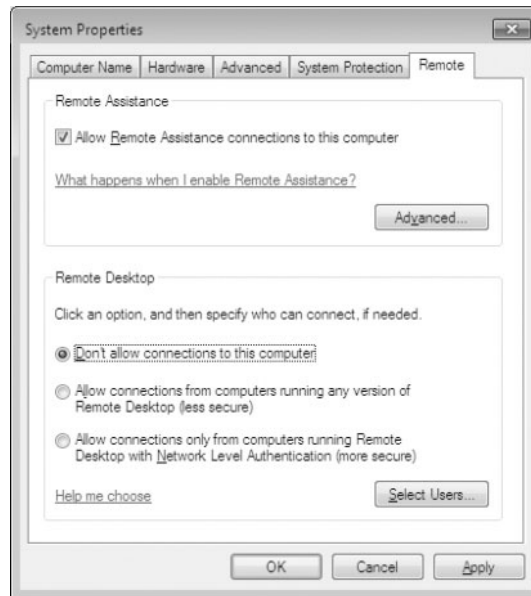
A few steps are involved to make sure that you can connect to a Windows 7 machine using Remote Desktop.

### Configuring a Computer for Remote Desktop

To enable a remote computer to allow Remote Desktop access, select Start > Control Panel > System And Security > System. Click Remote Settings in the left pane. On the Remote tab of System Properties, choose either Allow Connections From Computers Running Any Version Of Remote Desktop (Less Secure) or Allow Connections Only From Computers Running Remote Desktop With Network Level Authentication (More Secure). The option Don't Allow Connections To This Computer is the default selection. The Allow selections create an exception in Windows Firewall to permit Remote Desktop sessions. Figure 7.17 shows the Remote tab of the System Properties dialog box where Remote Desktop access is configured.



**FIGURE 7.17**  
The Remote tab of  
System Properties



By default, only members of the Administrators group can access a computer that has been configured to use Remote Desktop. To enable other users to access the computer remotely, choose **Select Users**. You'll add users in the Remote Desktop Users dialog box, shown in Figure 7.18, and users are added to the Remote Desktop Users group on the machine.

**FIGURE 7.18**  
The Remote Desktop  
Users dialog box



You can verify the exceptions in Windows Firewall by choosing **Start > Control Panel > System And Security > Windows Firewall**. Select **Allow A Program Or Feature Through Windows Firewall** in the left pane. Remote Desktop should be selected in the **Allowed Programs And Features** box.

### REMOTE DESKTOP SETUP

Most procedures presented in this section require two machines (real or virtual) to be connected to provide Remote Desktop host and Remote Desktop client functionality.

After you complete the configuration that allows a Remote Desktop session on the computer being accessed remotely (the host) and permissions have been granted for the user to access the machine, then a Remote Desktop session can be started.

### INITIATING A REMOTE DESKTOP SESSION

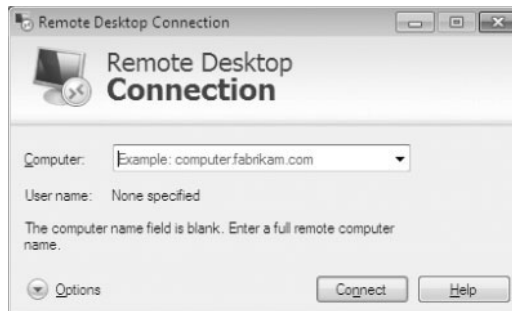
Perform the following steps to set up a Remote Desktop session to a remote machine:

1. From the machine where the Remote Desktop session is being initiated (the client), choose Start > All Programs > Accessories > Remote Desktop Connection. This opens the Remote Desktop Connection window, as shown in Figure 7.19.

### REMOTE DESKTOP LAUNCH OPTION

You can also type `mstsc.exe` at the command line to initiate the Remote Desktop session.

**FIGURE 7.19**  
The Remote Desktop Connection window



2. Enter the computer name or IP address of the host machine where the Remote Desktop session is going to be established. This is a machine that has been configured to accept Remote Desktop connections.
3. Click the Connect button.
4. Enter user credentials with permission to establish a Remote Desktop session on the remote machine, as shown in Figure 7.20, and click OK.
5. You might be asked to continue with a certificate that cannot be verified. If you are confident you are connecting to the correct machine, you can choose Yes to continue.

**FIGURE 7.20**  
Remote Desktop  
Credentials Window



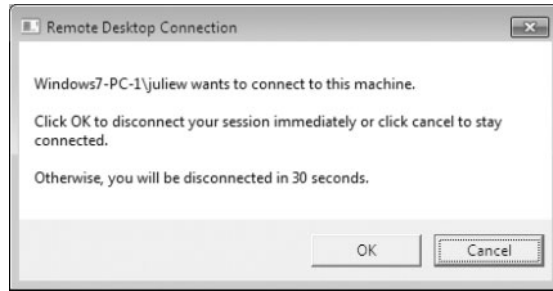
### CONNECTION CERTIFICATE WARNING

When a connection is attempted, the host machine sends a certificate to the client to allow a secure connection to be made. If the client machine cannot validate the certificate as coming from an entity it trusts, the user will be notified. Initially, the host machine will use a self-signed certificate and will not be trusted — hence the warning, as shown here:



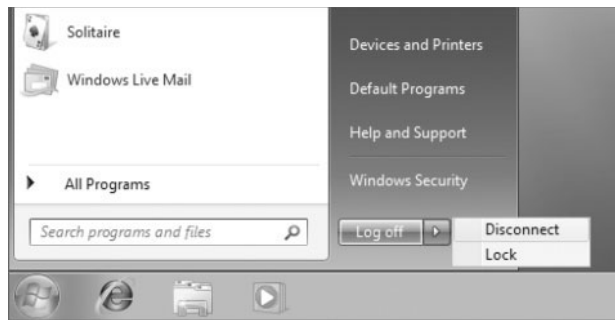
6. If a user was logged on to the remote machine, you may continue by clicking OK, as shown in Figure 7.21, but the user will be disconnected from the terminal. The user will remain logged in to the machine, but will not have access while the Remote Desktop session is active. The user at the remote machine will be given the opportunity to cancel the connection, but the connection will be established if no intervention occurs.

**FIGURE 7.21**  
Clicking OK disconnects  
the local user.



7. The client machine now displays the Desktop of the host machine. Administrative and/or user functions can be carried out as if the administrator or user is sitting at the host machine.
8. When the session is complete, end the terminal session by closing the Remote Desktop window or by choosing Start > Logoff > Disconnect, as shown in Figure 7.22. This ends the interactive session; however, the logon session will remain active on the host machine. To disconnect and log off the Remote Desktop session, choose Start > Logoff.

**FIGURE 7.22**  
Choosing Start > Logoff  
> Disconnect



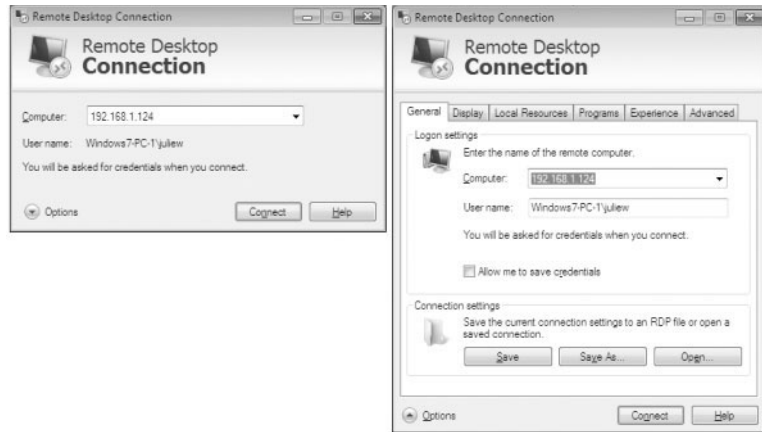
## IDENTIFYING REMOTE DESKTOP CONNECTION OPTIONS

When you connect to a Remote Desktop host machine, there are several options available to enhance the client user session. The options allow configuration for general settings, display options, local resource access, programs to be executed on startup, the user experience, and advanced options for security and Remote Desktop gateway access. Access these options by clicking the Options button in the lower left of the initial Remote Desktop Connection screen. Figure 7.23 shows the options window both hidden and displayed.

On the General tab, you select the host computer and username. You can choose and save user credentials on this tab as well. You can save the connection settings to a file or open an existing RDP file on the General tab.

On the Display tab, shown in Figure 7.24, you can choose the size of the display screen. This is also where you can select the option to use multiple monitors. You select the color depth (color quality) on the Display tab. The option to display the connection bar when using full-screen display is available here as well.

**FIGURE 7.23**  
Remote Desktop options



**FIGURE 7.24**  
Remote Desktop Display tab



On the Local Resources tab, shown in Figure 7.25, you configure remote audio settings, keyboard settings, and local device and resources access.

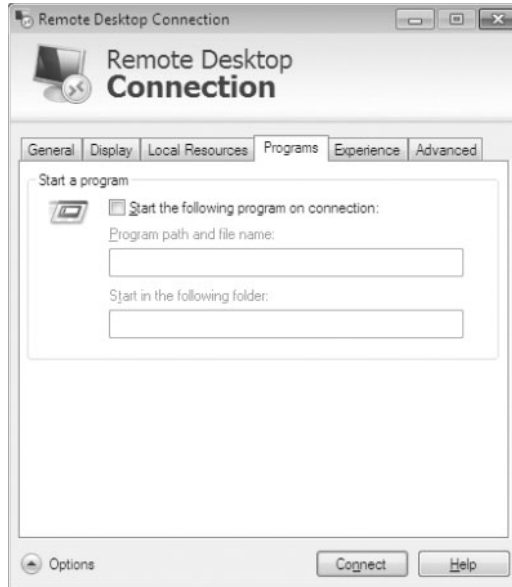
The Programs tab, shown in Figure 7.26, lets you specify a program to run at connection startup. The program name and path are specified as well as a startup folder if necessary.

The end-user experience is important to the overall success of using Remote Desktop in the user environment. Remember that Remote Desktop can be used to give a user the ability to connect to their machine and “remote in.” The most seamless environment from the work to the remote location is desirable, but is dependent on the bandwidth available. The more bandwidth, the more high-end features can be made available to the end user. This is also nice for the administrator who is working on an end-user machine. The Experience tab (Figure 7.27) allows you to configure options related to the end-user experience.

**FIGURE 7.25**  
Remote Desktop Local  
Resources tab

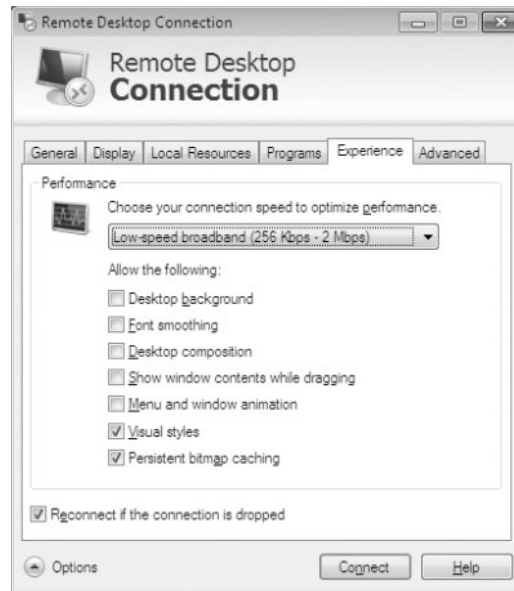


**FIGURE 7.26**  
Remote Desktop  
Programs tab

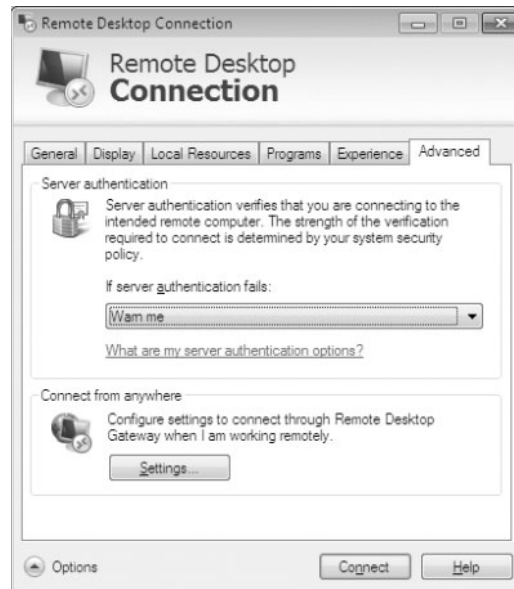


To control the behavior of the Remote Desktop connection with regard to security, you configure the connection properties on the Advanced tab, as shown in Figure 7.28. The Advanced tab also lets you configure a Remote Desktop Gateway to allow Remote Desktop connections to be established from any Internet location through SSL. The user must still be authorized and the Remote Desktop client must still be available.

**FIGURE 7.27**  
Remote Desktop  
Experience tab



**FIGURE 7.28**  
Remote Desktop  
Advanced tab



## USING REMOTE DESKTOP CONNECTION OPTIONS

A nice feature of Remote Desktop is the ability to save your RDP connection parameters as a file that can then be opened (as simply as double-clicking the file on a machine with a Remote Desktop client available).

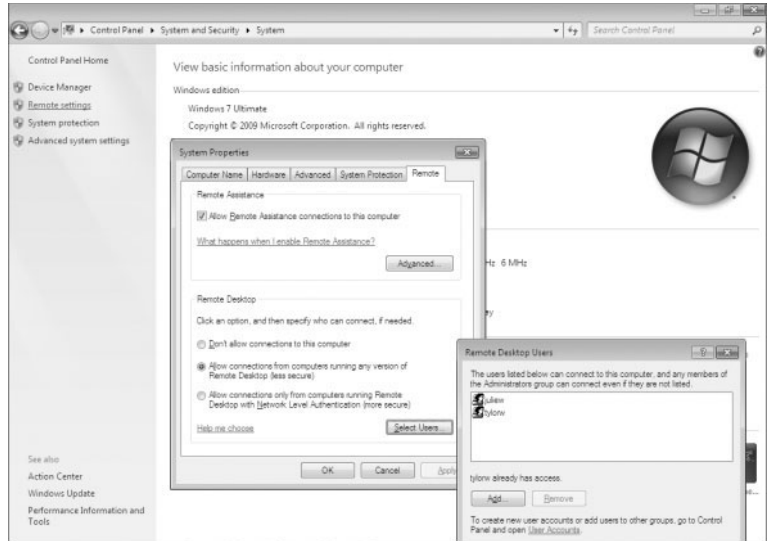
## SAVING A REMOTE DESKTOP RDP FILE

Perform the following steps to save an RDP file used to supply preconfigured parameters to a Remote Desktop session establishment:

1. Ensure that the user's host machine is configured to allow Remote Desktop connections. The user should be a member of the Remote Desktop Users group, as shown in Figure 7.29.

**FIGURE 7.29**

The user must be a member of the Remote Desktop Users group.

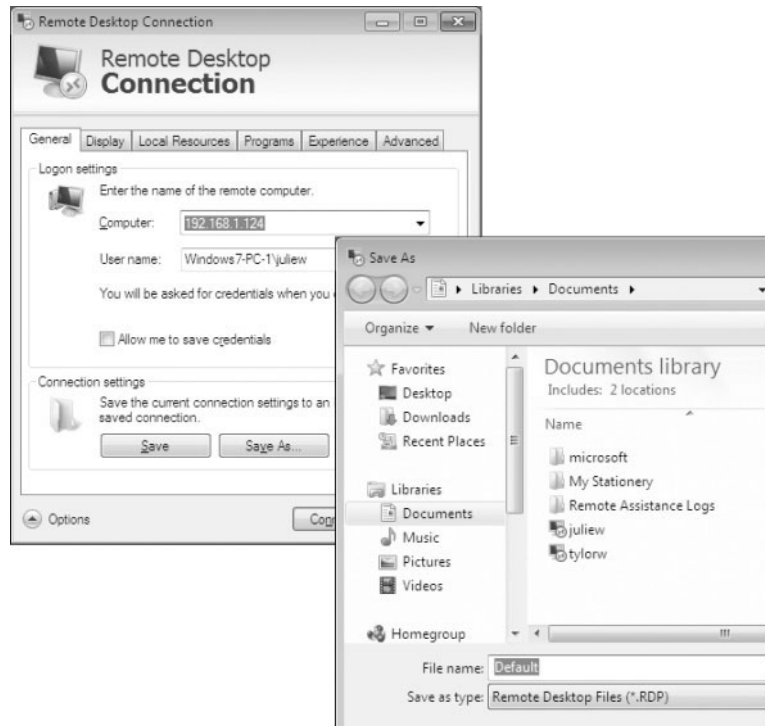


2. Launch the Remote Desktop Connection dialog box by selecting Start ➤ All Programs ➤ Accessories ➤ Remote Desktop Connection.
3. Click Options in the lower left of the Remote Desktop Connection dialog box to expand to the options.
4. Ensure the computer name or IP address and username are entered for the desired connection.
5. Optionally, configure other options if desired.
6. Click Save As on the General tab.
7. Enter a filename for the RDP connection file, as shown in Figure 7.30, and click Save to save the file. Note the default location is Documents from the Libraries parent. You might want to access this file later; it does not need to be run from this directory.

The perfect ending to using an RDP Remote Desktop file is to reestablish a Remote Desktop session using the saved file.



**FIGURE 7.30**  
Saving the RDP  
connection file



### USING A SAVED RDP REMOTE DESKTOP FILE

Perform the following steps to reestablish a Remote Desktop session using a saved RDP file:

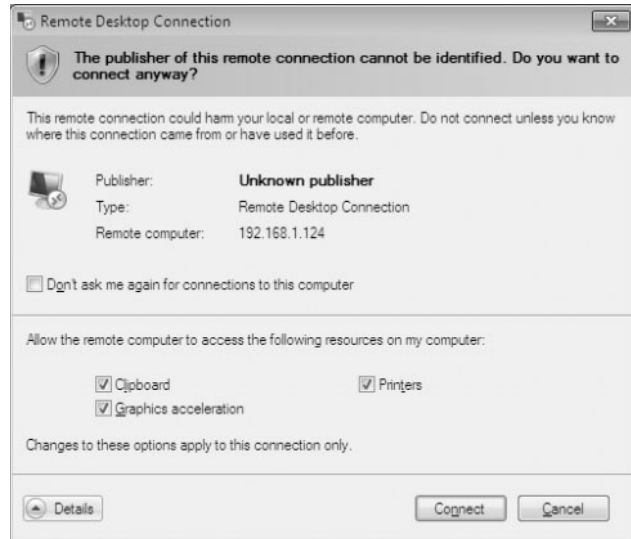
1. Launch the Remote Desktop Connection dialog box by selecting Start ➤ All Programs ➤ Accessories ➤ Remote Desktop Connection.
2. Click Options in the lower left of the Remote Desktop Connection dialog box to expand to the options.
3. On the General tab of the Remote Desktop Connection screen, with the Options screen expanded, click Open.

### ACCESSING A SAVED RDP CONNECTION FILE

You can also browse to a previously saved RDP connection file and double-click the file. The file is a standard configuration file and can be moved to a more convenient location if desired as well as to another machine as long as the other machine has the Remote Desktop client available.

- The RDP file opens. As you can see, the connection parameters appear on the Remote Desktop Connection screen. Click Connect to establish the Remote Desktop session using the configured parameters. A warning message might appear (Figure 7.31) stating that the publisher of the remote connections cannot be verified. You can continue if you are confident this is the correct file. From this warning box, you can also open options to allow or prohibit resource access for this connection.

**FIGURE 7.31**  
Publisher warning for  
Remote Desktop



- The Remote Desktop session will now begin.

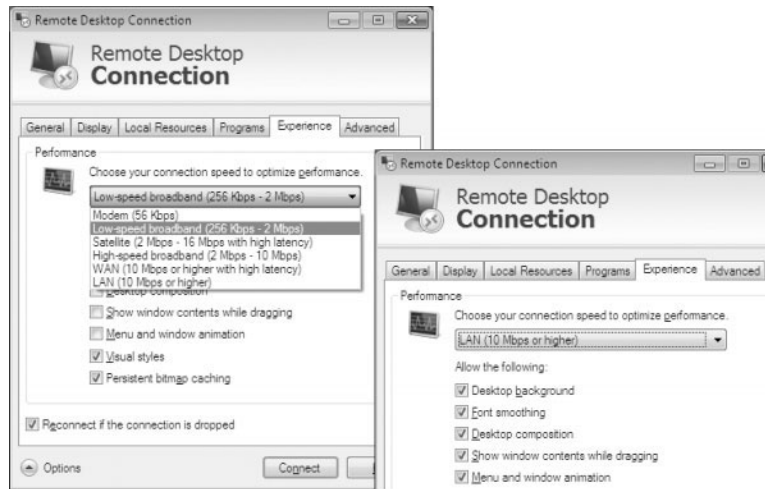
One of the added features of Remote Desktop in Windows 7 is the ability to handle the Windows Aero interface. The Aero interface uses opaque window borders as well as the flip functionality available since Vista. This experience was not available in previous versions of Remote Desktop. To have the full Windows Aero experience, you must select the Desktop Composition option in the Remote Desktop Connection window on the Experience tab.

### SETTING THE USER EXPERIENCE OPTION OF REMOTE DESKTOP

Perform the following steps to go through the process of enabling Desktop Composition:

- Launch the Remote Desktop Connection dialog box by selecting Start ➤ All Programs ➤ Accessories ➤ Remote Desktop Connection.
- Click Options in the lower left of the Remote Desktop Connection window.
- Select the Experience tab.
- Specify the appropriate bandwidth or type of connection between the client and the host (choose the slowest link between them). Bandwidth-based experience parameters, as shown in Figure 7.32, are suggestions and they can be modified by choosing the desired (or undesired) experience item. Remember, Desktop Composition is going to present the client user with the Windows Aero experience.

**FIGURE 7.32**  
Choose the appropriate bandwidth or type of connection.



### ADVANCED REMOTE DESKTOP GATEWAY OPTIONS

Windows Server 2008 has the ability to be a Remote Desktop Gateway when you add the TS Gateway role. Once installed, a client can connect to (or through as the case may be) the host via the Terminal Server. This can be accomplished via Internet Explorer and an HTTPS session (the Remote Desktop client can be automatically installed when connecting) or by configuring a Remote Desktop Gateway on the Advanced tab of the Remote Desktop Connection dialog box.

### VIEWING THE ADVANCED REMOTE DESKTOP GATEWAY OPTIONS

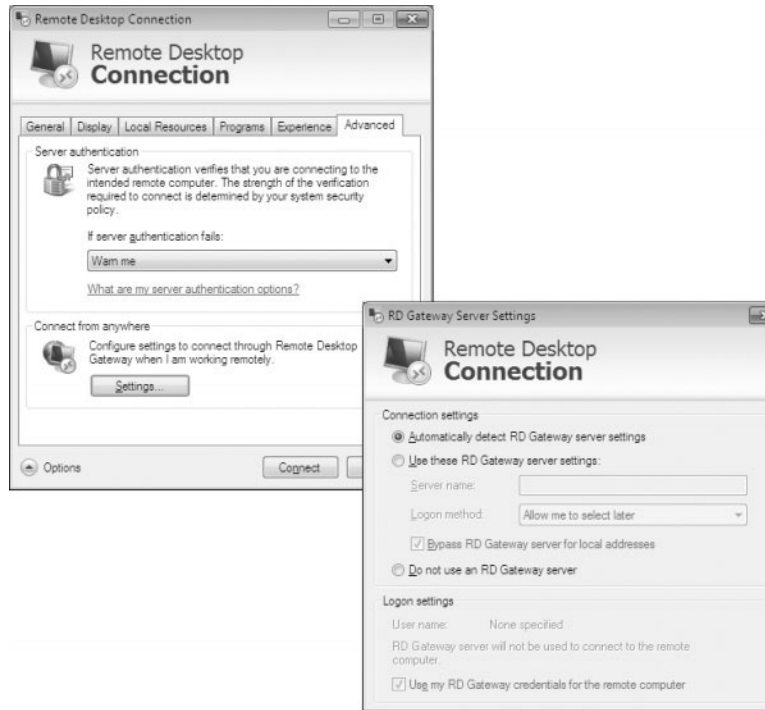
Follow these steps to view the advanced Remote Desktop gateway options:

1. Open the Remote Desktop Connection dialog box by selecting Start ➤ All Programs ➤ Accessories ➤ Remote Desktop Connection.
2. Click Options in the lower left of the Remote Desktop Connection window.
3. Choose the Advanced tab.
4. In the Connect From Anywhere section, click the Settings button.
5. Review the Remote Desktop Gateway configuration items, as shown in Figure 7.33.

### Providing Command-Line Remote Desktop

It is possible to initiate a Remote Desktop session using command-line functionality. This provides an administrator with scripting capabilities for Remote Desktop. The command line uses the `mstsc.exe` (Microsoft Terminal Server Client) application with optional switches for configuration. Several switches can be included on the same command line if appropriate (screen width and screen height, for example). The command-line options are shown in Table 7.2.

**FIGURE 7.33**  
Advanced configuration  
for Remote Desktop



Rather than use the menu structure to launch the Remote Desktop Connection screen, you can launch it through the command prompt or from the Start menu's search.

### USING MSTSC TO INITIATE A REMOTE DESKTOP SESSION

To launch Remote Desktop from the command prompt:

1. On the client machine, launch Remote Desktop from the command line: select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and type `mstsc`.
2. Enter the name or IP address of the host machine where the Remote Desktop session is to be established. The host machine must be configured to allow Remote Desktop sessions and the user connecting will need to have authorization to establish a Remote Desktop session.
3. On the client machine, enter credentials and the Remote Desktop session continues normally.
4. When the session is complete, end the terminal session by closing the Remote Desktop window or choosing Start ➤ Logoff ➤ Disconnect. This ends the interactive session, but the logon session remains active on the host machine. To disconnect and log off the Remote Desktop session, choose Start ➤ Logoff.

If you know the IP address (or name) of the machine you want to establish a Remote Desktop session with, you can include the IP or name as a parameter to the `mstsc.exe` command.

**TABLE 7.2:** MSTSC Command-Line Switches

SWITCH	FUNCTIONALITY
/?	Displays the help options.
/v:<server[:port]>	Starts Remote Desktop, specifying the host machine to connect to and a port if the default is not used.
/admin	Starts Remote Desktop in admin mode bypassing TS Cal (Terminal Server Client Access License) requirements and disabling several functions not required for administration services.
/f	Starts Remote Desktop in full-screen mode.
/w:<width>	Specifies the width of the Remote Desktop connection window.
/h:<height>	Specifies the height of the Remote Desktop connection window.
/public	Starts Remote Desktop in public mode; passwords and bitmaps will not be cached.
/span	Matches the Remote Desktop width and height with the local virtual desktop. This can span multiple monitors if necessary; monitors must be arranged to form a rectangle.
/multimon	Configures the Remote Desktop session to match the client-side configuration for multiple monitors. The layout does not have to be rectangular and can consist of various size monitors.
/edit	Opens a previously defined RDP file for editing. The opens the file in the Remote Desktop Connection window with Options selected, allowing you to edit the existing parameters in the RDP file.
/migrate	Migrates legacy connection files created with the previous Client Connection Manager to the new .rdp connection file format.

## USING MSTSC TO INITIATE A REMOTE DESKTOP SESSION BY IP ADDRESS

To initiate a Remote Desktop session by IP address:

1. On the client machine, launch Remote Desktop from the command line: select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and type **mstsc /v:ip-address** (use the IP address of the host machine). The host machine must be configured to allow Remote Desktop sessions and the user connecting needs to have authorization to establish a Remote Desktop session.
2. On the client machine, enter credentials and the Remote Desktop session continues normally.
3. When the session is complete, end the terminal session by closing the Remote Desktop window or choosing Start ➤ Logoff ➤ Disconnect. This ends the interactive session, but the

logon session remains active on the host machine. To disconnect and log off the Remote Desktop session, choose Start ➤ Logoff.

If you have previously configured a Remote Desktop connection and saved the file, you can open the file for editing by using `mstsc.exe`. When you open the file for editing, the file is loaded into the Remote Desktop Connection dialog box without attempting to establish the connection. The Remote Desktop Connection window is opened with the Option screen expanded (you don't have to click the Options button).

### USING MSTSC TO EDIT A PREVIOUSLY SAVE RDP CONFIGURATION FILE

Perform the following steps to use `mstsc.exe` to edit an `.rdp` configuration file that has been previously saved:

1. On the client machine, launch Remote Desktop from the command line: select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and type `mstsc /edit filename` (where *filename* is the path and filename for a previously defined RDP connection file).
2. The Remote Desktop Connection window opens with the Options window expanded and the parameter from the previously defined RDP file loaded for editing.
3. Make changes (or verify parameters) by viewing the configuration of the various option tabs.
4. Save any changes made to the RDP file by clicking Save As on the General tab.
5. Use the existing filename or enter a new filename for the RDP connection file and click Save to save the file.

You can specify other parameters when launching a Remote Desktop session from the command line as well. Two more options for `mstsc.exe` are the width and height of the display window on the local machine. Next, you'll configure the IP address of the machine you are connecting to as well as set the local machine's display size to 640×480 for Remote Desktop.

### USING MSTSC TO SPECIFY AN IP ADDRESS AND DEFINE WIDTH AND HEIGHT FOR THE DISPLAY

To use `mstsc.exe` to specify an IP address as well as define the local machine's display width and height for Remote Desktop:

1. On the client machine, launch Remote Desktop from the command line: select Start ➤ All Programs ➤ Accessories ➤ Command Prompt and type `mstsc /v:ip-address /w:640 /h:480`. The host machine must be configured to allow Remote Desktop sessions and the user connecting to it needs to have authorization to establish a Remote Desktop session.
2. On the client machine, enter credentials and the Remote Desktop session continues normally.
3. When the session is complete, end the terminal session by closing the Remote Desktop window or choosing Start ➤ Logoff ➤ Disconnect. This ends the interactive session, but the logon session remains active on the host machine. To disconnect and log off the Remote Desktop session, choose Start ➤ Logoff.

## The Bottom Line

**Assist novice users with Windows 7.** Remote Assistance is a great collaboration tool used between an expert and a novice user that allows the expert to help the novice by watching the novice user's actions on another machine. If desired, the expert can even request control (which has to be granted by the novice user) to perform an action. Remote Assistance can be used as a teaching tool or simply to fix a problem for a novice user.

**Master It** You are an administrator on your local network, and one of your users is trying to find their IP address. You know it's easiest to open the command prompt and type **ipconfig**, but you're not sure if the user can follow your instructions and you would like to watch them so they don't get lost while you give the instructions. You know you've said too many times, "Tell me what you see." You have decided to use Remote Assistance to help the user. Both you and the user needing assistance are using Windows 7. How can you assist your novice user to get the IP address of their machine?

**Provide help from Windows 7 to older operating systems.** Remote Assistance is available on legacy operating systems as well as Windows 7. It works the same way on most current operating systems, except that the Easy Connect option (available in Windows 7) is not available on previous operating system versions. To integrate a Windows 7 Remote Assistance session with a previous version, an invitation file or email invitation is a solution. The Remote Assistance established by a file or email invitation will allow an expert user to assist a novice user interactively (both can see what's happening).

**Master It** You are the network administrator for your company and you have taken a phone call from a novice user asking for help changing the default printer they are on from one device to another. You know this is a fairly simple operation but would like to be looking over the user's shoulder as the changes are made to avoid any problems that may be created by the change. The novice user is running Windows Vista and you are running Windows 7. How can you have the user request a Remote Assistance session with you so you won't have to physically go to the novice user's location?

**Access a machine from a remote location.** Remote Desktop is another form of remote access that allows a user to connect to a machine and have access to that machine's resources. The host machine is the machine being connected to; the client machine is where the user accessing the remote resources is located. The host machine can be the end users in the case of telecommuting or even that of the end user if the user is in a different office for the day.

**Master It** You are currently working in a remote office and realize you have left an important document on your home office machine. You thought you'd put it on your stick, but alas, it's not there and you don't think asking someone to log into your machine and retrieve it is a good idea (good thinking, by the way). You need to access your machine remotely to get the file. How will you do it?

**Script a session for automated connection.** As the network administrator, you need to log in to a server machine on a regular basis to check on its performance and make minor changes. You have been going down to the server room and physically logging in every time you have

to make changes or log data. You now know you can use Remote Desktop to access the server and would like to start using the application.

**Master It** You know you can launch Remote Desktop from the menu structure of Windows 7, but you would like to be able to have an icon on your Desktop to launch a Remote Desktop session with one of the servers you are responsible for. You know that down the road you will have to manage more machines this way, and if you create an icon for one now it will be pretty easy to create more icons later so you can simply double-click any one of the individual icons to initiate the Remote Desktop session to any of several individual servers. You want to create a Notepad file with the appropriate command line to launch a Remote Desktop session to a server at 192.168.1.62 and make it so double-clicking it will initiate the Remote Desktop session.