

Troubleshooting

Section Ten

Researched Techniques

Introduction

GENERAL

These troubleshooting techniques have been compiled from a variety of sources. Please take the time to browse them and try them out when you get the chance. Be wary that any changes to the registry can damage your system and you should only do so when you have no alternative.

Finding the Tools

LOCATE XP'S TROUBLESHOOTING TOOLS

Troubleshooting is a difficult task in and of itself, but it can get even worse without the right tools. Fortunately, Microsoft shipped several extremely useful tools with Windows XP. However, users may have trouble finding these tools, as they are somewhat hidden.

To view these troubleshooting tools, open the Help And Support Center and then click Use Tools To View Your Computer Information And Diagnose Problems under the Pick A Task section. You'll receive a complete list of tools that ship with Windows XP.

One very useful tool is the Network Diagnostics, which will perform several network tests and scan your computer to gather information about hardware, software, and network connectivity. The tool can test network connectivity, DNS and DHCP configuration, proxy configuration, mail and news settings, and more. If you have problems that you think relate to the network, make sure you run this tool. Once you're finished, you can also save the output to a file.

There are several other useful tools as well. Make sure you don't overlook the command-line reference and the list of command-line tools that are new to Windows XP.

**TROUBLESHOOT
ADVANCED
COMPATIBILITY ISSUES**

Although compatibility mode is a useful way to make older applications work on Windows XP, sometimes the applications still refuse to work. In such cases, you'll want more advanced methods. The first step to advanced compatibility troubleshooting is to install the Compatibility Administration Toolkit. You can install the toolkit by running the Act20.exe file from the folder on your Windows XP CD.

The toolkit includes several helpful utilities and documents, which allow you to look behind the scenes at compatibility mode. Specifically, the toolkit includes the following utilities:

- **AppVerifier:** This is a GUI application that can help you test the specified application for any compatibility problems under Windows XP.
- **CompatAdmin:** This utility provides an interface for browsing and editing the compatibility fix database in Windows XP.
- **GrabMI:** This is a command-line tool that "grabs" the information about files in a given folder.
- **QfixApp:** This utility creates a list of fixes that are necessary for an application to work in Windows XP.

**UNLOCK XP'S HIDDEN
FEATURES**

Most users will notice the obvious enhancements in Windows XP, such as the new user interface, which is more colorful and user-friendly than the gray interface in previous versions. But some of the best new features are often those you never notice. Locking is one such feature.

You may have noticed that you can't move the taskbar and toolbars in various Windows XP applications. For instance, if you open Internet Explorer, you can't move either the Address bar or the icon bar. The same is true in Windows Explorer. This is because all toolbars are locked by default.

In order to move them, you must first unlock them. You can do this by right-clicking on the toolbar and selecting the Lock The Toolbars option. The check should disappear from the context menu. You can now move the toolbars around. Once you have positioned the toolbars, lock them once more. This will prevent you from accidentally moving them. The same locking feature is implemented on the Taskbar. Simply right-click on a free area of the Taskbar and select Lock The Taskbar.

**ACCESS XP'S ADDITIONAL
UTILITIES**

Although the most important product on the Windows XP CD is the operating system itself, the CD also includes additional applications that are not installed during the Windows XP setup. If you insert the CD in your CD-ROM drive, you'll receive several options in the autorun dialog box. Selecting Perform Additional Tasks allows you to run some of them, but not all are accessible through this dialog box.

You can find most of them, however, in the folders on the CD. You should take a look at two folders in particular: support and valueadd. The support folder contains:

- Support Tools in the Support.cab file, which is a minicollection of former Resource Kit utilities.
- Application Compatibility Toolkit (Act20.exe), which includes several utilities that can help you run older applications on Windows XP.
- Files and Settings Transfer wizard (Fastwiz.exe), which allows you to transfer user settings from machines running older Microsoft operating systems.

- Remote Desktop Connection client (Msrdpcli.exe), which allows users to connect to a Windows XP Remote Desktop from machines running older Microsoft operating systems.
- Deployment tools like Sysprep.exe in the Deploy.cab file.

The valueadd folder contains:

- Citrix ICA Win32 client software (ICA32.exe).
- Terminal Server Client for the Handheld PC.
- Phone Book Administrator.
- WMI ODBC driver.
- NetBEUI.
- User State Migration Tool.

ICS

TAKE CONTROL WITH DISCOVERY AND CONTROL

Internet Connection Sharing (ICS), which is built into Windows XP, allows you to easily share one connection to the Internet with other computers. Strictly speaking, ICS is not new; it was included in previous versions of Windows (Windows 98/Me and Windows 2000), but Windows XP's version includes some new features.

One of the most useful features is Discovery and Control, which allows you to monitor the shared Internet connection from a remote computer. When you share an Internet connection, Windows XP automatically broadcasts information about the connection to all other computers on the local network.

Discovery and Control uses the Universal Plug and Play (UPnP) protocol to inform other computers on your network of this connection. They then obtain a new icon in the network connections folder, indicating that they have successfully "discovered" a shared Internet connection. They use this icon to monitor the connection: They can monitor the status of the connection, the connection speed, the duration of the connection, and other properties.

You can also give users permission to connect and disconnect the shared Internet connection. To do this:

1. Right-click the shared Internet connection.
2. Select Properties.
3. Check the Allow Other Network Users To Control Or Disable The Shared Internet Connection option on the Advanced tab.

Troubleshooting Drivers

CHECK SYSTEM DRIVER STATUS WITH DRIVERQUERY

It seems that Microsoft has taken complaints from administrators seriously, as it has added several new command-line utilities to Windows XP. One of them, called driverquery, which is useful for checking the status of system drivers, is included in Windows XP Professional edition.

The primary task of `driverquery` is to display all drivers installed on the system. When you run the utility, you'll receive a list of the drivers, their short name, description, driver type, and link date and time. You can add the `/v` parameter to get detailed information about drivers or the `/si` parameter to get information about signed and unsigned drivers on the system. This can be very useful.

Listing all drivers from the remote system makes the utility even more useful. Everything you can do with a local system, you can also do on a remote system by adding the `/s` parameter.

The key feature of `driverquery` is the ability it provides to define the output type. By default, the utility displays all drivers in table form. In order to redirect the output to a text file, you may want to choose CVS format, which you can easily view with Excel or any other spreadsheet application.

USE DRIVER ROLLBACK TO REMOVE A NEW DRIVER

Among the most critical pieces of software running on your computer are device drivers. Drivers are executed in the kernel mode and communicate directly with the operating system. Because they have access to parts of the hardware and operating system that other applications cannot access, drivers can create a great deal of damage, if written improperly.

A single driver can cause your computer to continuously crash. (Microsoft discovered that most crashes are caused by faulty drivers.) If you have ever experienced this for yourself, you'll appreciate a new feature in Windows XP, called Driver Rollback.

Whenever you install a new device driver on your computer, Windows XP will create a backup copy of the old driver. If the system crashes or if you are not satisfied with the new driver, you can use Driver Rollback to remove the new driver and reinstall the old driver. (The system keeps only one previous driver.)

To restore the previous driver:

1. Log on with an account that has administrator privileges.
2. Open Device Manager by right-clicking the My Computer icon and selecting Properties. On the Hardware tab, click Device Manager.
3. Right-click a device and select Properties.
4. On the Driver tab, click Roll Back Driver.

This feature works for all device drivers, except drivers for printers. Installing printers is done through the Printers and Faxes folder and thus doesn't support the Driver Rollback.

Debug Services

MANAGE AND DEBUG SERVICES USING SC.EXE

Although the primary focus of Windows XP was to make it easy for home users to use, Microsoft also included some additional features for advanced users and administrators. One of these features is the command line utility, `Sc.exe`.

This utility allows users to manage and debug services from the command line. You can use it to query the status of a service; to start, pause, and stop the service; to change the configuration of a service; to enumerate service dependencies; to delete the service from the registry; and for many other purposes. To obtain the list of all supported commands, type `sc` at the command line.

The `Sc.exe` utility is quite powerful. For example, it will allow you to query services not only by their name but also by their type (driver, service, both), their state, group, and so on. If, for instance, you wanted to query all of the services that are stopped, you would type:

```
"  
sc query state= inactive  
"
```

Be sure to type the command exactly as shown. There is no space between the state and the equal sign; however, there is a space between the equal sign and "inactive." If the correct syntax is not used, you will receive an error.

Remote Access

REMOTE DESKTOP TO CONNECT TO A REMOTE COMPUTER

Remote Desktop and Internet Connection Firewall (ICF) are two new features in Windows XP. Remote Desktop allows you to connect to a remote computer and see its screen as if you were working on it directly. ICF prevents TCP/IP traffic from accessing your network and computer.

Since ICF blocks all network traffic by default, it's necessary to open it a bit in order to connect to a computer that's behind a firewall. Remote Desktop uses TCP port 3389; therefore, you'll have to open this port on your firewall. If you use another third-party firewall, consult the manual for opening its port. If you use ICF in Windows XP, follow these steps on the remote machine (the machine you want to connect to using Remote Desktop):

1. Open the Network Connections folder (located in the Control Panel).
2. Right-click on the firewall connection and select Properties.
3. Click the Settings button on the Advanced tab.
4. Check the Remote Desktop box on the Services tab.
5. Close all of the dialog boxes.

REMOTE ASSISTANCE: NO INVITATION REQUIRED

Windows XP includes a Remote Assistance feature that allows you to help others, by seeing their desktop or even gaining control over the remote computer. Remote Assistance uses the same technology as Remote Desktop but with one major difference--Remote Assistance is invite only. This means that the remote user has to send you an invitation.

But sometimes you might not want to deal with invitations on your local network. You can also configure Windows XP to accept Remote Assistance sessions without special invitations by changing a setting in the Group Policy.

1. Open Group Policy and browse to Local Computer | Administrative Templates | System | Remote Assistance.

2. Change the state of Offer Remote Assistance to Enabled.
3. Choose the appropriate setting in the enabled dialog box.
4. Click the Show button and the users or group of users allowed to use Remote Assistance without invitation.
5. Click OK.

Once you configure this option, specified users will be able to offer you Remote Assistance without invitation. However, this doesn't mean they will be able to control your system without your permission. When they connect to your machine, you will receive a prompt asking for permission. If you deny permission, they will not be able to view or control your computer.

CONTROL REMOTE DESKTOPS THROUGH A WEB BROWSER

Remote Desktop is a new feature in Windows XP that allows you to control a remote computer and see the screen as if you were sitting behind that computer. Usually, you would use a special client application to connect to the remote computer. By default, Windows XP setup installs such an application: Remote Desktop Connection.

You can also access the remote computer without another application, using instead your Web browser. However, before you can do this, you must first install certain components on the remote computer. To do this:

1. Open Control Panel.
2. Open the Add/Remove Programs dialog box.
3. Click Add/Remove Windows Components.
4. Select Internet Information Services in the Windows Components Wizard and then click Details.
5. Select World Wide Web Service and click Details.
6. Make sure Remote Desktop Web Connection and World Wide Web Service are checked.
7. Click OK.
8. Click OK.
9. Click Next and follow the wizard to complete the installation.

After the setup installs all of the necessary files, you can access the remote computer by typing `http://remote_computer/tswb` in your Web browser. When you connect to the remote computer for the first time, the computer will download ActiveX components, which requires you to have administrative privileges on the local computer.

CMD Utilities

WINDOWS XP'S NEW COMMAND-LINE TOOLS

Windows XP ships with some new command-line tools that can help you manage your computers and networks. Here are a few:

- **Tasklist** replaces Tlist from Windows 2000 Support tools and can list all of the processes currently running on the system. Tasklist is quite powerful and can display detailed information about processes running on remote computers as well.
- **Taskkill** goes hand in hand with Tasklist. Its primary function is to destroy running processes, either on local or remote machines.

- **Defrag** is a command-line defragmentation utility built into Windows XP. You can use it to analyze your hard drive or to perform actual defragmentation.
- **Systeminfo** is another useful command-line utility, which displays basic system configuration information from operating system data to installed memory to some network settings. If you are working behind a computer and want to quickly learn more about it, this is the first utility you should run. It's not as powerful as the full GUI version of SystemInfo, but it's much faster and works from the command line.

Netstat with the `-aon` parameters (`Netstat -aon`) is another useful utility. Even though Netstat existed before Windows XP, it includes a new parameter (`o`), which makes it even more useful. Netstat displays protocol statistics and current TCP/IP network connections. Parameter `o` causes Netstat to display the process ID of the process associated with the connection. This allows you not only to see the open connections but also to identify which applications are using them.

Compatibility

IDENTIFY THIRD-PARTY BURNING SOFTWARE COMPATIBILITY ISSUES

Although Windows XP includes a burning engine, you can still use third-party burning applications. Before you use third-party applications, however, you should ensure that they are compatible with Windows XP. Many applications will not work at all, and some might crash your system, requiring complex troubleshooting. Before you install a third-party burning application, check the vendors' Web site for any compatibility issues. Windows XP is known to be incompatible with:

- Roxio DirectCD Creator versions 5.00, 5.01, 5.02, and 5.02a
- Roxio Easy CD Creator 3.x and 4.x, CD Creator 5 Platinum IS compatible
- Hewlett-Packard CD Writer 8200

One reason for choosing a third-party application over XP's integrated burning engine is the lack of support for burning so-called ISO files. ISO files or images are files that contain an image of the entire CD. To burn ISO files, you don't need to purchase a third-party application; you can obtain it for free. Alex Feinman has written a small application that uses the engine from Windows XP to burn ISO images.

CD Burner Issues

BURNING ENGINE LIMITATIONS

Microsoft has integrated more and more features in Windows XP that were previously available only through third-party applications. One such feature is integrated support for CD burning. In addition to the CD burning issues already discussed in previous TechMails, you should be aware of a few other issues, as well.

The burning engine doesn't include packet writing, obtainable from third-party vendors. This has several consequences to how the engine works. For instance, you cannot delete individual files from the CD-RW; you can only erase the whole CD-RW. Additionally, you cannot format CD-RW discs. You can only erase them.

When you write files to your CD-R, the engine creates a new session, burns the files, and then closes the session. However, the disc is not closed, which means that you can still add files to the CD-R. The engine opens another session, burns files, imports the previous session, and closes the new session. This causes some overhead (21 MB for the first session and 12 MB for each additional session).

Data Transfer

TRANSFER FILES WITH BITS

Background Intelligent Transfer Service (BITS) is a useful addition to the Windows XP arsenal of system services. BITS is hosted by the Svchost.exe. You can manage this service like all others through the Services console and other command-line utilities.

Even though BITS works only when someone is logged on, that "someone" can be another service. If another service is executed with a local service logon (Local System, Local Service, or Network Service account), it can use BITS for file transfers. This is how Automatic Update downloads updates. BITS supports downloading only over HTTP in HTTPS, where the remote server must support HTTP 1.1. Either Challenge/Response or Basic authentication can authenticate the download.

If you want to take a sneak peek behind the service, use the BITSAdmin Tool (Bit-admin.exe), which is installed with the Windows XP Support Tools (\support\tools folder on the CD). You can use this command-line utility to: manage the BITS service; list the current jobs in the BITS queue; cancel, resume, or suspend a job; get a job status; get information about the number of bytes transferred; etc.

License Issues

ACTIVATING WINDOWS XP

In order to minimize the likelihood of piracy, Microsoft has included Product Activation technology within Windows XP. The following are twelve facts that you should know about activation:

- Activation is mandatory.
- Activation is anonymous.
- Activation and registration are two different things.
- After you install Windows XP, you have 30 days to activate it. If you fail to do so, you will not be able to use it.
- You can activate either over the Internet or with a phone call.
- You can activate Windows XP on only one computer at a time.
- You can activate Windows XP an unlimited number of times on a given computer.
- If you install the same copy of Windows XP on another computer, you'll need to remove the copy from the first system and use the phone activation.
- Substantially changing your hardware might require that you reactivate Windows XP. In such cases, you'll need to call Microsoft and explain the situation.
- Windows XP is not the only Microsoft program that uses activation. Office is another application.

- Microsoft is not the only company that uses activation in its products.

If you buy several copies of Windows XP, you can get the version without the product activation code. In other words, anyone can purchase versions that don't require activation.

Applying Patches, hotfixes and Service Packs

AUTOMATICALLY DOWNLOAD NEW SYSTEM PATCHES

Almost every day, new security holes and bugs are found in Microsoft applications. Manually looking for patches and updating several computers can be a daunting task. Microsoft's Windows Update Web site can help save you time. This site scans your computer and provides any updates that apply to the software and hardware installed on your system.

If you are already familiar with Windows Update and its problems and are looking for more automated ways to update your system, a new feature, Automated Update, may be what you're looking for. This feature can automatically download and install updates for your computer. It uses Background Intelligent Transfer Service (BITS) and will not, therefore, affect any of your other downloads.

There is very little about Automatic Update that requires configuring. Its only user interface is the Automatic Updates tab on the System Properties dialog box, which you can access by:

- Logging on as administrator.
- Right-clicking the My Computer icon.
- Selecting Properties and then going to the Automatic Updates tab.

You should note three settings. If you want to automatically download and install the updates, choose the first option. If you want notification about an update before a download occurs, choose the second option. The third option lets you turn off automatic updating.

Asking for Help

KNOWING HOW TO ASK FOR HELP IN XP

Even the experts don't know everything. Sometimes they come across a problem and can't find a solution. In such cases, it's time to ask for help. However, you don't have to call a friend or use some type of instant messaging program. Instead, you can ask for help directly from the Help and Support Center.

Open Help and Support and click the Support button. On the screen that appears, take a look at the options provided in the Support pane. The first one, Ask A Friend To Help, allows you to initiate a Remote Assistance session with a friend. With Remote Assistance, your friend, the remote "Expert", sees your desktop and is able to help as if sitting right next to you.

The second option is Get Help From Microsoft. This option allows you to directly send an incident to Microsoft. You can use this method to send your query over the Internet instead of having to call via the phone.

The final option, Go To A Windows Web Site Forum, allows you to ask for help in an online help forum. This Web site forum is simply a front-end to the NNTP server, which runs the newsgroups. Although the newsgroups are run by Microsoft, Microsoft employees typically do not answer the posts. Instead, posts are answered by other users who are interested in assisting others. You'll also come across Microsoft Most Valuable Professionals (MVPs), who have been recognized for their volunteer spirit and willingness to help others. You can learn more about [MVPs](#) on Microsoft's Web site.

**KNOW HOW TO SEARCH
FOR INFORMATION IN
WINDOWS XP**

With Windows XP, the first thing you should do is to check the new online Help, called Help And Support Center. The second thing is to make sure your users know about the improved online Help. Most of the problems that users confront are explained in the Help files. However, many users never look them up. So, instead of asking you or calling Microsoft, make sure your users first check the online Help.

The new online Help is not only better looking but also includes several features that weren't included in the previous version. One of the best features is the integrated search of the Microsoft Knowledge Base. When you conduct a search, online Help not only searches local Help files but also goes out on the Internet and searches the Microsoft Knowledge Base, as well. After the search is done, you'll receive three categories of results. The first are complete topics that might interest you, followed by matches within the individual articles found during the full-text search, and finally, matches found in the Knowledge Base.

Searching the Knowledge Base is particularly useful because it is frequently updated with new information. And, because the search is integrated in Windows XP's online Help, you don't have to manually search the Knowledge Base. Make sure your users know this.

SUMMARY

Troubleshooting issues takes time and patience. Research what happened prior to the problem occurring and see if you can trace those events to one thing. Don't apply registry changes unless that's the only option left. Don't panic!