

*Knowledge Base***How to perform advanced clean-boot troubleshooting in Windows XP**

PSS ID Number: 316434

Article Last Modified on 7/14/2004

The information in this article applies to:

- Microsoft Windows XP Home Edition
 - Microsoft Windows XP Professional
-

This article was previously published under Q316434

Important This article contains information about modifying the registry. Before you modify the registry, make sure to back it up and make sure that you understand how to restore the registry if a problem occurs. For information about how to back up, restore, and edit the registry, click the following article number to view the article in the Microsoft Knowledge Base:

[256986](#) Description of the Microsoft Windows Registry

In this article

- [INTRODUCTION](#)
- [MORE INFORMATION](#)
 - [How to restart in Safe mode or in Safe mode with networking support](#)
 - [How to remove unsigned drivers](#)
 - [How to remove registry entries](#)
 - [How to test user profiles](#)
 - [How to turn off third-party services](#)
 - [How to remove programs](#)
- [REFERENCES](#)

INTRODUCTION

Many issues that you may experience on a Windows XP-based computer occur because of an incompatible or corrupted program. To determine whether this is the case, you can either perform a clean boot or restart Windows without starting the program in question.

This article describes how to perform advanced clean-boot troubleshooting to determine whether the problem in question is affiliated with the core operating system or with a program that is loading in the Windows environment.

For additional information about how to clean boot your computer, click the following article number to view the article in the Microsoft Knowledge Base:

[310353](#) How to perform a clean boot in Windows XP

[Back to the top](#)

MORE INFORMATION

Clean-boot troubleshooting is designed to isolate a performance problem. To perform clean-boot troubleshooting, you must take a number of actions, and then restart the computer after each action (to test whether the action resolved the problem).

The clean-boot troubleshooting protocol involves the following steps:

1. [Restart in Safe mode or in Safe mode with networking support](#)
2. [Remove unsigned drivers](#)
3. [Remove registry entries](#)
4. [Test user profiles](#)
5. [Turn off third-party services](#)
6. [Remove programs](#)

[Back to the top](#)

How to restart in Safe mode or in Safe mode with networking support

To troubleshoot potential environmental issues, first restart your computer in Safe mode or in Safe mode with networking support. If the issue is with a program that does not depend on network connectivity, Safe mode is appropriate. If the issue is with a network program, and you are using a network adapter to connect to a network, Safe mode with networking support may permit you to test the networking program, including browser issues.

Note You cannot use Safe mode with networking support when you use a modem or a PC Card connection to a network because modem drivers and PC Card drivers do not load in Safe mode or in Safe mode with networking support.

If you start the computer in Safe mode or in Safe mode with networking support, and you can perform an operation that you previously experienced problems with, the issue is most likely environmental.

Note In Windows XP, you can perform a clean-boot by using the System Configuration Utility (Msconfig.exe).

For additional information about the System Configuration utility, click the following article number to view the article in the Microsoft Knowledge Base:

[310560](#) How to troubleshoot by using the Msconfig utility in Windows XP

See the "[How to remove registry entries](#)" section for information about how to determine which program components may be causing the issue.

Note You may not be able to test some operations in Safe mode because not all services and devices load in Safe mode or in Safe mode with networking support. For example, you cannot test multimedia issues that involve sound, nor can you test suspend or hibernation issues in Safe mode. Also, any network programs that rely on the Remote Procedure Call Subsystem (RpcSS) do not work because the RpcSS service does not load in Safe mode with networking support.

If you start the computer in Safe mode or in Safe mode with networking support, and the issue still occurs, an environmental issue may still be the cause. Many function or filter drivers that third-party software installs may continue to load in Safe mode. Therefore, you may have to take an additional step to test and remove third-party drivers in Safe mode.

To start the computer in Safe mode, follow these steps:

1. Print these instructions before you go to step 2. They will not be available after you shut down the computer in step 2.
2. Restart your computer.
3. Use the F8 key. On a computer that is configured to start to multiple operating systems, you can press F8 when you see the **Startup** menu.
4. Use the arrow keys to select a Safe mode option, and then press ENTER.

Note NUM LOCK functionality must be turned off for the arrow keys on the numeric keypad to work.

5. If you have a dual-boot or multiple-boot system, use the arrow keys to select the installation that you want to access, and then press ENTER.

In Safe mode, you have access to only basic files and drivers (such as mouse, monitor, keyboard, mass storage, base video, default system services, and no network connections). You can select from the following options:

- The **Safe Mode with Networking** option loads all these files and drivers and the services and drivers necessary to start networking.
- The **Safe Mode with Command Prompt** option is the same as Safe mode except that a command prompt starts instead of the graphical user interface (GUI).
- The **Last Known Good Configuration** option starts your computer by using the registry information that was saved the last time that your computer shut down.

Safe mode helps you diagnose problems. If a symptom does not reappear when you start in Safe mode, you can rule out the default settings and minimum device drivers as possible causes. If a newly added device or a changed driver is causing problems, you can use Safe mode to remove the device or reverse the change.

There are circumstances where Safe mode cannot help you. For example, Safe mode cannot help you when Windows system files that are required to start the computer are corrupted or damaged. In this case, the Recovery Console may help you.

[Back to the top](#)

How to remove unsigned drivers

All the drivers that are included with Windows XP use digital signatures to verify that they have been tested by the Windows Hardware Quality Labs (WHQL). Many third-party programs are written for Windows XP must install additional drivers that have not been tested by WHQL. Therefore, they do not receive a digital signature.

Note Some third-party vendors have tools that they can use to generate a valid digital signature even if these products were not tested by WHQL. The following procedure cannot be used to determine whether these drivers are installed.

Windows XP includes the File Signature Verification tool (Sigverif.exe). You can use this tool to find all files on your computer that are not digitally signed. For the purposes of Windows XP clean-boot troubleshooting, you have to test only the files in the %Windir%\System32\Drivers folder.

To use the Sigverif.exe tool, follow these steps:

1. Click **Start**, click **Run**, type `sigverif` in the **Open** box, and then click **OK**.
2. Click **Advanced**, click **Look for other files that are not digitally signed**, click **Browse**, locate the Windows\System32\Drivers folder, and then click **OK** two times.
3. Click **Start**.

After Sigverif.exe is completed, a list of all unsigned drivers that are installed on your computer appears.

Note Many video drivers are not digitally signed. The following steps may cause problems with your video resolution. These problems may prevent you from starting the computer.

The list of all signed and unsigned drivers that the Sigverif.exe tool finds is in the Sigverif.txt file in the %Windir% folder (typically, the Winnt or Windows folder). All unsigned drivers are noted as "Unsigned."

When you determine which drivers are unsigned, create a folder to move the unsigned drivers to. Typically, SysDriversBak is an easy folder name to remember.

Move the unsigned drivers, restart the computer (without the unsigned drivers in the Windows\System32\Drivers folder), and then test the program or other functionality to see whether the same error messages or issues still occur.

Note Because most driver files are associated with registry entries that have not yet been changed, you may receive the following error message:

At least one driver or service failed to start...

If the issue no longer occurs, the issue was caused by a third-party unsigned filter or function driver. A function driver is a driver that is used to load a specific device that uses one of the computer buses. A filter driver loads at a level above or below a function driver to add or modify the behavior of the function driver.

To determine which unsigned driver is causing the problem, use one of the following methods:

- Put drivers that are related to the same program or device back into the Windows\System32\Drivers folder together in the same test.
- Put the top half of the drivers back into the Windows\System32\Drivers folder in the same test.

The first technique is generally better at determining the cause of an issue, but you may not be able to determine which drivers are related. After you determine which driver is causing the issue, you can either remove the driver or program, disable the driver, or turn off service.

To turn off a service, follow these steps:

1. Click **Start**, and then click **Run**.
2. Type `%systemroot%\system32\services.msc /s`, and then click **OK**.
3. Double-click the service, click **Disabled** in the **Startup Type** list, and then click **OK**.
4. Restart your computer.

Search for drivers or other program updates, or replace the software or driver with a program or driver that is written specifically for Windows XP.

To disable a driver, follow these steps:

1. Click **Start**, and then click **Run**.
2. Type `%systemroot%\system32\compmgmt.msc /s`, and then click **OK**.
3. Click **Device Manager**.

4. Double-click the device, click **Do not use this device (disable)** in the **Device Usage** list, and then click **OK**.
5. Search for an updated driver for the device from the vendor.

For information about how to contact the manufacturer of your program, click the appropriate article number in the following list to view the article in the Microsoft Knowledge Base:

[65416](#) Hardware and Software Third-Party Vendor Contact List, A-K

[60781](#) Hardware and Software Third-Party Vendor Contact List, L-P

[60782](#) Hardware and Software Third-Party Vendor Contact List, Q-Z

Microsoft provides third-party contact information to help you find technical support. This contact information may change without notice. Microsoft does not guarantee the accuracy of this third-party contact information.

Note Not all devices and services are listed in the Windows XP user interface.

If the device or service is not available in the Windows XP user interface, use the **Recovery Console** to turn off the driver or service.

For additional information, click the following article number to view the article in the Microsoft Knowledge Base:

[314058](#) Description of the Windows XP **Recovery Console**

[Back to the top](#)

How to remove registry entries

Warning If you use Registry Editor incorrectly, you may cause serious problems that may require you to reinstall your operating system. Microsoft cannot guarantee that you can solve problems that result from using Registry Editor incorrectly. Use Registry Editor at your own risk.

If you no longer experience problems running programs in Safe mode, the issue is likely caused by programs that are loading while the Windows XP computer is starting.

Programs that are a part of the startup process for Windows XP are generally added to one of the following locations:

- The Startup folder on the **Programs** menu.
- The **Run** line for all users in the registry.
- The **Run** line for particular users in the registry.
- The **Load** entry for all users in the registry.

Note Because the registry is the location for all computer and program settings for Windows XP, make sure that you back up the registry and particular registry entries in case you cannot start the computer after you edit the registry. To back up the Windows XP registry, use Windows Backup, and then perform a full system backup, including the system state.

Note The Backup utility is not included in the default installation of Windows XP Home Edition. The Backup icon is not present on the **Start** menu in Windows XP Home Edition, nor is **Backup** listed in the Add Remove Programs tool for Windows XP Home Edition.

For additional information about how to install the Backup utility in Windows XP Home Edition, click the following article number to view the article in the Microsoft Knowledge Base:

[302894](#) How to install Backup from the CD-ROM in Windows XP Home Edition

To back up the System State data, follow these steps:

1. Click **Start**, point to **All Programs** (or **Programs**), click **Accessories**, click **System Tools**, and then click **Backup**.
2. Click **Advanced Mode**.
3. Click the **Backup** tab, and then click to select the **System State** check box.
4. Click **Start Backup**.

This method backs up the System State data together with any other data that you have selected for the current backup operation.

For additional information about how to back up the system registry, click the following article number to view the article in the Microsoft Knowledge Base:

[240363](#) How to use the Backup program to back up and restore the system state in Windows 2000

The **Startup** folder icons are loaded from two locations. To remove these entries, follow these steps:

1. Right-click **Start**, and then click **Explore**.
2. Locate and select the following folder, and then click **Cut** on the **Edit** menu:
Documents and Settings\All Users\Start Menu\Programs\Startup
3. Create a SysDriversBak folder on the desktop, create a UserStartup folder inside this folder, open the **UserStartup** folder, and then click **Paste** on the **Edit** menu.
4. Repeat steps 1 and 2, and then locate the All Users\Start Menu\Programs\Startup folder.
5. On the **Edit** menu, click **Cut**, locate and click the **SysDriversBak** folder on the desktop, create an AllUsersStartup folder, and then click **Paste**.

To remove values for the **Run** line in the registry for all users, follow these steps:

1. Click **Start**, click **Run**, type `regedit`, and then click **OK**.
2. Locate and then click the following registry key:
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
3. Click **Export** on the **File** menu.
4. Locate the **SysDriversBak** folder that you created, type `HKLMRun` in the **File** name box, and then click **Save**.
5. In the right pane, right-click each value except for the **Default** value, click **Delete**, and then click **Yes** to confirm.
6. View the related **RunOnce** and **RunOnceEx** keys to determine whether a program was not completely installed, and then repeat steps 3 through 5 with different save names to reflect the **RunOnce** and **RunOnceEx** keys.

To remove values for the **Run** line in the registry for the user account that you are logged on with, follow these steps:

1. Click **Start**, click **Run**, type `regedit`, and then click **OK**.
2. Locate and then click the following registry key:
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
3. Click **Export** on the **File** menu.
4. Locate the **SysDriversBak** folder that you created, type `HKCURun` in the **File name** box, and then click **Save**.
5. In the right pane, right-click each value, and then click **Delete**.
6. View the related **RunOnce** key to see if a program was not completely installed, and then repeat steps 3 through 5, but change the name to reflect **RunOnce**.

To remove value data under **Load**, follow these steps:

1. Click **Start**, click **Run**, type `regedit`, and then click **OK**.
2. Locate and then click the following registry key:
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Windows
3. In the right pane, click **Export** on the **File** menu. If the value **load** has any value data, locate and click the **SysDriversBak** folder, type `HKCUload` in the **File name** box, and then click **Save**.
4. Double-click the **load** value in the right pane, remove the value in the **Value Data** box, and then click **OK**.
5. Restart the computer, and then test.

If the problem no longer occurs, merge the values that you removed in the following order:

1. Startup icons from both the All Users group and the user account that you log on with.
2. **HKCURun**
3. **HKLMRun**
4. **HKCUload**

Note To merge the values, you can double-click the .reg file in Windows Explorer or My Computer to automate the import. When you do this, you are prompted to confirm that you want to merge data into the registry. Click **Yes** to start the merge. After the file successfully merges into the registry, a success message appears. If the file has the wrong syntax and the merge is not successful, you receive an error message that explains that the file is not a registry script and cannot be imported to the registry.

To add the icons for the **Startup** menu, follow these steps:

1. Click **Start**, point to **All Programs** (or **Programs**), point to **Accessories**, and then click **Windows Explorer**.
2. Locate and then click the **SysDriversBak** folder that you created earlier, open the **AllUsersStartup** folder, click **Select All**, and then click **Copy** on the **Edit** menu.

3. Locate and click the following folder, and then click **Paste**:
Documents and Settings\All Users\Start Menu\Programs\Startup
4. Locate and then click the **SysDriversBak\UserStartup** folder, and then click **Copy** on the **Edit** menu.
5. Locate and click the following folder, and then click **Paste**:
Documents and Settings\user name\Start Menu\Programs\Startup
Where *user name* is the name of the user who you have logged on as.
6. Restart your computer, and then test.

[Back to the top](#)

How to test user profiles

A user's specific information may be corrupted, but other users on the same computer may have no problems. To determine whether this is the case, log on as a new user, or create a new user account, and then test the new logon.

Note A program may work correctly only when you log on with the default Administrator account. For example, older programs may demonstrate this behavior.

If the default Administrator profile becomes corrupted, reinstall Windows XP to correct this issue.

All user-specific configuration information (which appears in the `HKEY_CURRENT_USER` registry key) is stored in the `Ntuser.dat` file in the `Documents and Settings\user name` folder.

[Back to the top](#)

How to turn off third-party services

To prevent or work around problems, you may have to turn off installed third-party services. Safe mode and Safe mode with networking do not load third-party services. If Safe mode works, the problem may be caused by a third-party service that is loading.

The following table is a partial list of core operating system services that load. However, this list varies according to the services that are installed and the version of Windows XP that you are using.

Service	Description	Start Mode
Alerter	Alerter	Automatic
AppMgmt	Application Management	Manual
ClipSrv	Clipbook	Manual
EventSystem	COM+ Event System	Manual
Browser	Computer Browser	Automatic
DHCP	DHCP Client	Automatic
Dfs	Distributed File System	Automatic
TrkWks	Distributed Link Tracking Client	Automatic
TrkSrv	Distributed Link Tracking Server	Manual
MSDTC	Distributed Transaction Coordinator	Automatic
DNSSCache	DNS Client	Automatic
EventLog	Event Log	Automatic
Fax	Fax Service	Disabled
NtFrs	File Replication	Manual
IISADMIN	IIS Admin Service	Automatic
cisvc	Indexing Service	Manual
SharedAccess	Internet Connection Sharing (Firewall)	Manual

PolicyAgent	IPSEC Policy Agent(IPSEC Service)	Automatic
LicenseService	License Logging Service	Automatic
dmserver	Logical Disk Manager	Automatic
dmadmin	Logical Disk Manager Administrative Service	Manual
Messenger	Messenger	Automatic
mbspadmin	Microsoft Proxy Server Administration	Automatic
wspsrv	Microsoft Winsock Proxy Service	Automatic
Netlogon	Net Logon	Automatic
mnmsrvc	NetMeeting Remote Desktop Sharing	Manual
Netman	Network Connections	Manual
NetDDE	Network DDE	Manual
NetDDEdsdm	Network DDE DSDM	Manual
NtLmSsp	NT LM Security Support Provider	Automatic
OnlBroad	On-Line Presentation Broadcast	Manual
SysmonLog	Performance Logs and Alerts	Manual
PlugPlay	Plug and Play	Automatic
Spooler	Print Spooler	Automatic
ProtectedStorage	Protected Storage	Automatic
mailalrt	Proxy Alert Notification Service	Automatic
RSVP	QoS RSVP	Manual
RasAuto	Remote Access Auto Connection Manager	Manual
RasMan	Remote Access Connection Manager	Automatic
RpcSs	Remote Procedure Call (RPC)	Automatic
RPCLOCATOR	Remote Procedure Call (RPC) Locator	Manual
RemoteRegistry	Remote Registry Service	Automatic
NtmsSvc	Removable Storage	Automatic
seclogon	RunAs Service	Automatic
SamSs	Security Accounts Manager	Automatic
lanmanserver	Server	Automatic
ScardSvr	Smart Card	Manual
ScardDrv	Smart Card Helper	Manual
SNMP	SNMP Service	Automatic
SNMPTRAP	SNMP Trap Service	Manual
SENS	System Event Notification	Automatic
Schedule	Task Scheduler	Automatic
LmHosts	TCP/IP NetBIOS Helper Service	Automatic
TapiSrv	Telephony	Manual
W3svc	World Wide Web Publishing Service	Automatic
LanmanWorkstation	WorkStation	Automatic

Additional services that can be installed include the following services:

- Asc
- AsynMac
- Beep
- Diskperf
- Fastfat
- Fsrec
- Ftdisk
- Gpc
- Ismserv
- Mountmgr
- MSFTPSVC
- MSIServer
- MSKSSRV
- MSPCQ
- NDIS
- NdisTapi
- NdisWan
- NDProxy
- NetBIOS
- NetBT
- NetDetect
- PartMgr
- ParVdm
- RCA
- Schedule
- SchedulingAgent
- TermService
- TlntSrv
- TrkSrv
- UPS
- UtilMan
- W32Time
- WinMgmt
- WMI

The third-party products that this article discusses are manufactured by companies that are independent of Microsoft. Microsoft makes no warranty, implied or otherwise, regarding the performance or reliability of these products.

[Back to the top](#)

How to remove programs

If none of these methods resolve your issue, use the Add/Remove Programs tool in Control Panel to start removing programs. Restart your computer, and then test after each removal.

If these steps still do not resolve your issue, contact Microsoft Product Support Services, or reinstall the operating system and your programs.

[Back to the top](#)

REFERENCES

For additional information about troubleshooting startup issues in Windows XP, click the following article numbers to view the articles in the Microsoft Knowledge Base:

- [310353](#) How to perform a clean boot in Windows XP
- [308041](#) Resources for troubleshooting startup problems in Windows XP
- [310560](#) How to troubleshoot by using the Msconfig utility in Windows XP
- [229716](#) Description of the Windows Recovery Console
- [242518](#) Long pause during Windows startup process
- [244905](#) How to disable a service or device that prevents Windows from starting
- [249000](#) Windows Advanced Options Boot Menu missing at startup
- [252448](#) How to create an MS-DOS network startup disk in Windows 2000
- [266169](#) How to troubleshoot problems with standby mode, hibernate mode, and shutting down your computer in Windows 2000
- [298427](#) How to restore the disabled startup programs after an upgrade from Windows 98 or Windows Millennium Edition
- [300886](#) A description of the "Restore Startup Programs" option that is used when you upgrade to Windows XP
- [303561](#) Windows XP shortcuts in the Startup group do not work when you first start the computer
- [306084](#) How to restore the operating system to a previous state in Windows XP
- [310126](#) Troubleshooting device conflicts with Device Manager
- [244601](#) How to troubleshoot unknown devices listed in Device Manager

[Back to the top](#)

Keywords: kbenv kberrmsg kbHOWTOmaster kbsetup kbtshoot KB316434

Technology: kbWinXPHome kbWinXPHomeSearch kbWinXPPro kbWinXPProSearch kbWinXPSearch

[Send feedback to Microsoft](#)

[© 2004 Microsoft Corporation. All rights reserved.](#)