Summary

This step-by-step article describes how to examine a small memory dump file. A small memory dump file can help you determine why your computer crashed.

If you are looking for debug information for Windows 8 or later, please check http://msdn.microsoft.com/en-US/library/windows/hardware/ff551063(v=vs.85).aspx

For more information about small memory dump, please check http://msdn.microsoft.com/en-us/library/windows/hardware/ff556895(v=vs.85).aspx

Small memory dump files

If your computer crashes, how can you find out what happened, fix the issue and it prevent it from happening again? You may find the small memory dump file useful in this situation. The small memory dump file contains the smallest amount of useful information that could help you identify why your computer crashed. The memory dump file contains the following information:

- The Stop message, its parameters and other data
- A list of loaded drivers
- The processor context (PRCB) for the processor that stopped
- The process information and kernel context (EPROCESS) for the process that stopped
- The process information and kernel context (ETHREAD) for the thread that stopped
- The Kernel-mode call stack for the thread that stopped

To create a memory dump file, Windows requires a paging file on the boot volume that is at least 2 megabytes (MB) in size. On computers that are running Microsoft Windows 2000, or a later version of Windows, a new memory dump file is created each time that a computer crash may occur. A history of these files is stored in a folder. If a second problem occurs and if Windows creates a second small memory dump file, Windows preserves the previous file. Windows gives each file a distinct, date-encoded file name. For example, Mini022900-01.dmp is the first memory dump file that was generated on February 29, 2000. Windows keeps a list of all the small memory dump files in the %SystemRoot%\Minidump folder.

The small memory dump file can be useful when hard disk space is limited. However, because of the limited information that is included, errors that were not directly caused by the thread that was running at the time of the problem may not be discovered by an analysis of this file.

Configure the dump type

To configure startup and recovery options to use the small memory dump file, follow these steps.

Note Because there are several versions of Microsoft Windows, the following steps may

be different on your computer. If they are, see your product documentation to complete these steps.

1. Click **Start**, and then click **Control Panel**.
2. Double-click **System**, and then click **Advanced system settings**.
3. Click the **Advanced** tab, and then click **Settings** under **Startup and Recovery**.
4. In the **Write debugging information** list, click **Small memory dump (64k)**.
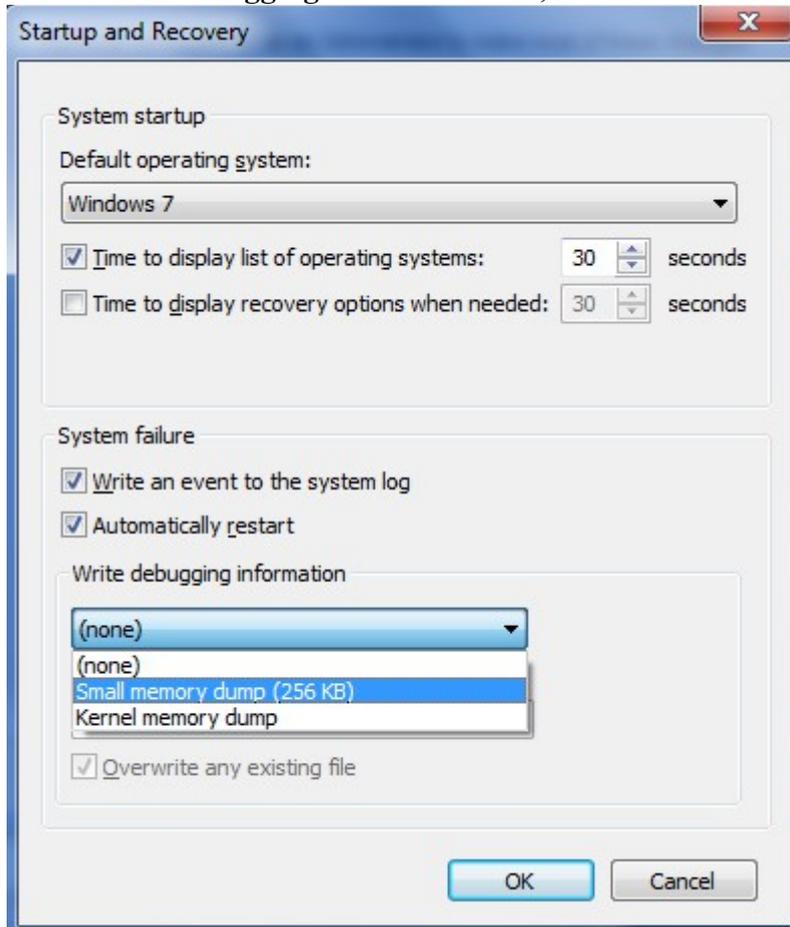
To change the folder location for the small memory dump files, type a new path in the **Dump File** box (or in the **Small dump directory** box, depending on your version of Windows).

Tools to read the small memory dump file

Use the Dump Check Utility (Dumpchk.exe) to read a memory dump file or verify that the file has been created correctly.

Note: The Dump Check Utility does not require access to debugging symbols. Symbol files hold a variety of data which are not actually needed when running the binaries, but which could be very useful in the debugging process.

For more information about how to use Dump Check Utility in Windows NT, Windows 2000,

Windows Server 2003 or Windows Server 2008, see Microsoft Knowledge Base article [156280: How to Use Dumpchk.exe to check a memory dump file](#).

For more information about how to use Dump Check Utility in Windows XP, Windows Vista or Windows 7, see Microsoft Knowledge Base article [315271: How to use Dumpchk.exe to check a Memory Dump file](#).

Or, you can use the Windows Debugger (WinDbg.exe) tool or the Kernel Debugger (KD.exe) tool to read small memory dump files. WinDbg and KD.exe are included with the latest version of the Debugging Tools for Windows package.

To install the debugging tools, see the [Download and Install Debugging Tools for Windows](#) webpage. Select the Typical installation. By default, the installer installs the debugging tools in the following folder: C:\Program Files\Debugging Tools for Windows

This Web page also provides access to the downloadable symbol packages for Windows. For more information about Windows symbols, see Microsoft Knowledge Base article [311503: Use the Microsoft Symbol Server to obtain debug symbol files311503: Use the Microsoft Symbol Server to obtain debug symbol files](#), and the [Download Windows Symbol Packages](#) webpage.

For more information about dump file options in Windows, see Microsoft Knowledge Base article [254649: Overview of memory dump file options for Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7, and Windows Server 2008 R2](#)

Open the dump file

To open the dump file after the installation is complete, follow these steps:

1. Click **Start**, click **Run**, type cmd, and then click **OK**.
2. Change to the Debugging Tools for Windows folder. To do this, type the following at the command prompt, and then press ENTER:

   cd c:\program files\debugging tools for windows
3. To load the dump file into a debugger, type one of the following commands, and then press ENTER:

   windbg -y *SymbolPath* -i *ImagePath* -z *DumpFilePath*

   kd -y *SymbolPath* -i *ImagePath* -z *DumpFilePath*

The following table explains the use of the placeholders that are used in these commands.

Placeholder	Explanation
SymbolPath	Either the local path where the symbol files have been downloaded or the symbol server path, including a cache folder. Because a small memory dump file contains limited information, the actual binary files must be loaded together with the symbols for the dump file to be correctly read.
ImagePath	The path of these files. The files are contained in the I386 folder on the Windows XP CD-ROM. For example, the path may be C:\Windows\I386.

DumpFilePath The path and file name for the dump file that you are examining.

Sample Commands

You can use the following sample commands to open the dump file. These commands assume the following:

- The contents of the I386 folder on the Windows CD-ROM are copied to the C:\Windows\I386 folder.
- Your dump file is named C:\Windows\Minidump\Minidump.dmp.

Sample 1:
kd -y srv*c:\symbols*http://msdl.microsoft.com/download/symbols -i c:\windows\i386 -z c:\windows\minidump\minidump.dmp
Sample 2. If you prefer the graphical version of the debugger instead of the command line version, type the following command instead:
windbg -y srv*c:\symbols*http://msdl.microsoft.com/download/symbols -i c:\windows\i386 -z c:\windows\minidump\minidump.dmp

Examine the dump file

There are several commands that you can use to gather information in the dump file, including the following commands:

- The **!analyze -show** command displays the Stop error code and its parameters. The Stop error code is also known as the bug check code.
- The !analyze -v command displays verbose output.
- The lm N T command lists the specified loaded modules. The output includes the status and the path of the module.

Note The !drivers extension command displays a list of all drivers that are loaded on the destination computer, together with summary information about their memory use. The !drivers extension is obsolete in Windows XP and later. To display information about loaded drivers and other modules, use the lm command. The lm N T command displays information in a format that is similar to the old !drivers extension.

For help with other commands and for complete command syntax, see the debugging tools Help documentation. The debugging tools Help documentation can be found in the following location:
C:\Program Files\Debugging Tools for Windows\Debugger.chm

Note If you have symbol-related issues, use the Symchk utility to verify that the correct symbols are loaded correctly.For more information about how to use Symchk, see Microsoft Knowledge Base article 311503: Use the Microsoft Symbol Server to obtain debug symbol files .

Simplify the commands by using a batch file

After you identify the command that you must have to load memory dumps, you can create a batch file to examine a dump file. For example, create a batch file and name it Dump.bat. Save it in the folder where the debugging tools are installed. Type the following text in the batch file:

cd "c:\program files\debugging tools for windows"

kd -y srv*c:\symbols*http://msdl.microsoft.com/download/symbols -i c:\windows\i386 -z %1
When you want to examine a dump file, type the following command to pass the dump file path to the batch file:
dump c:\windows\minidump\minidump.dmp