# Diagnose and Understand Windows Blue Screens (BSOD)

By **Rich** on July 29, 2010 (**9 Comments**)

If you get a Blue Screen of Death (BSoD), your first inclincation may be to turn of your computer, turn it back on again and hope if never comes back. Sometimes, this is a good option because the blue screen may have been a freak accident and, because the stars aligned that one time, may not happen again. However, if you receive more than one blue screen, I suggest you take some time to diagnose the issue and try to come to a resolution. In this guide, I'll show you what each part of the blue screen means, how to diagnose the problem, and where to go for help when you're not sure what to do it.
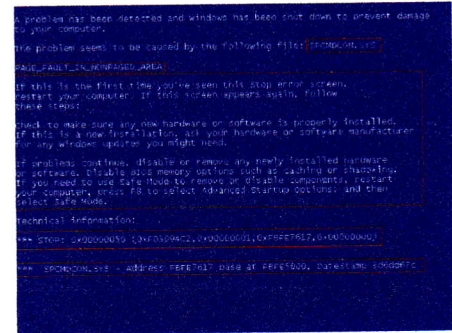
## Basic Troubleshooting

Before we dive deep into the abyss of BSOD diagnosis and prevention, you may save a bunch of time by stopping and asking yourself the following questions:

1. Is this the first time I've received a BSOD with this Error Name? (See below for the definition of Error Name.)
2. Did I recently install new hardware like RAM, a Hard Disk Drive, or even a new fan?
3. Was I doing something that wouldn't be considered normal use? i.e. a CPU test, overclocking, seeing how many instances of Flash I could run at one etc.

If you answered "Yes" to any of the questions above, you should (1) restart your computer if this was the first time you've had this message, (2) check the hardware installation for a secure connection, remove the hardware and test your machine again, and make sure the hardware really is compatible with your other components, or (3) stop stressing your PC and run it normally.

If you answered "No" to all three questions, read on and we'll get to the bottom of the issue.

## What if the Blue Screen Doesn't Show Long Enough to Read?

From Windows Vista onward, you may find that you see the Blue Screen (if at all) for just a second before the computer reboots. When Windows loads again, you'll be greeted with a popup that is titled "*Windows has recovered from an unexpected shutdown*".

If you'd like to see the blue screen in the future (so you can follow this guide), do the following:

1. Click the *Start* button, right click *Computer* and click *Properties*.
2. Click on *Advanced System Settings*.

3. On the *System Properties* window, click the *Advanced* tab, and click *Settings* under *Startup and Recovery*.
4. Uncheck *Automaticall Restart* and click *OK*.

Now you'll get a blue screen that stays up so you can collect the needed information.

I should note, at this point, that the previously-mentioned "*Windows has recovered from an unexpected shutdown*" dialog does come with a *Check for solution* option — good luck with that…

## Collect Blue Screen Information

In this part of the guide, I'll show you an example of a blue screen and desribe what each part means and how it can potentially help you. You'll need to either write this information down or take a picture as the Print Screen function won't work on a blue screen. (This screenshot was taken in a VM running in a perfectly healthy installation of Windows.)

Here's an example of a blue screen:

```
A problem has been detected and Windows has been shut down to prevent damage
to your computer.

The problem seems to be caused by the following file: SPCMDCON.SYS

PAGE_FAULT_IN_NONPAGED_AREA

If this is the first time you've seen this stop error screen,
restart your computer. If this screen appears again, follow
these steps:

Check to make sure any new hardware or software is properly installed.
If this is a new installation, ask your hardware or software manufacturer
for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware
or software. Disable BIOS memory options such as caching or shadowing.
If you need to use Safe Mode to remove or disable components, restart
your computer, press F8 to select Advanced Startup Options, and then
select Safe Mode.

Technical information:

*** STOP: 0x00000050 (0xFD3094C2,0x00000001,0xFBFE7617,0x00000000)

*** SPCMDCON.SYS - Address FBFE7617 base at FBFE5000, DateStamp 3d6dd67c
```

Here's what each part of the blue screen means:

"*The problem seems to be caused by the following file: xyz.abc*"

You won't get this level of detail every time but if the execption was caused by a particular file, the blue screen will tell you so and this can be very useful information.

## Error Name

*"PAGE_FAULT_IN_NON_PAGED_AREA"*

This is an example of an **Error Name**. The error name is the most important component of the error message and can help you in your self-diagnosis or search for an answer.

## Troubleshooting Advice

*"If this the first time you've seen this stop error screen..."*

This part of the error message, the **Troubleshooting advice**, is pretty generic but gives you basic advice such as:

1. Restart your computer.
2. Check hardware installation.
3. Run your computer under "normal" settings.

If these steps sound familiar, it's because you read the *Basic Troubleshooting* section above and have already made these checks.

## Technical Information

The error message is the most important component of the blue screen and the technical information is the second-most important component. The technical information section contains:

- A **Stop Code**: The stop code is in hexadecimal form. This code will be useful in the *Diagnose the Problem* and *Where to go for Help* sections below.
- A **Memory Dump**: When Windows encounters a blue screen, it dumps whatever is in memory into a file. This information is useful if you really want to dig in an determine the problem or if you are sending the information to Micrsoft so they can determine what caused the crash.

## Diagnose the Problem

If the error code is hardware related or alludes to a driver, I recommend you identify what hardware the driver is used for and either remove the hardware (if possible) and attempt to reinstall the driver again (don't trust drivers you download online) by going to the vendor's site or by using the disc that came with the hardware.

If the problem relates to memory, try removing one stick at a time to see if the problem goes away. If it does (not only for memory but all devices), get the hardware replaced by the manufacturer.

*NTFS_FILE_SYSTEM* or *FAT_FILE_SYSTEM* errors: if the error code mentions something about a file system, backup your data immediately as you may not get another chance. Fixing an issue like this can be as simple as making sure cables are connected properly or running a CHKDSK /f /r on the command line to repair any errors on your disk. If the S.M.A.R.T status of your drive has tripped, you should call in a warranty replacement for the

drive if it's available. By going to the warranty section of the site for the manufacturer of your drive (which you'll know when you check the cables to the drive and look at the top of the drive), you'll learn what S.M.A.R.T status is and how to determine if it's been tripped.

System overheating? I had a chronic case of blue screens on my desktop about nine months ago. The solution? An 80mm intake fan on the front and a 120mm exhast fan on the back. Problem solved (all for about $7.)

In the example above, the error was caused by "spcmdcon.sys", which contains a set of functions that manage disk partitions, load Registry hives, and display and manage video output. Getting a clean version of the file from your Windows disc may fix this issue, but it is likely fauly RAM, video card, L2 cache etc. I found this out by using a search engine (see *Where to go for Help.)*

If the error code isn't shedding much light, try using the help aids listed below.

## Where to go for Help

Your first port of call should probably be a search engine or an error code lookup tool. If you're still stuck after this, I recommend Windows Forums:

## BSOD Help from a Search Engine

I use search engines all the time to diagnose and find solutions to problems. I recommend you search for the error code and, of nothing comes up, the first part of the Stop code (the first 0×00000000.)

**Caution**: Don't blindly follow advice on forums like "*try putting your hard drive in the oven at 375 for 3 hours.*" I've seen some bad advice on forums and I've even seen some terrible advice like: "*submerge your phone in rubbing alcohol for 24 hours after it gets wet to clean it out.*" In other words, make sure the glues and solvents that make your phone work are completely destroyed in the process I just described.

Be sure to read the comments below the advice and take notes of every step you take so you can reverse them if they don't fix the issue.

## Windows Error Code Lookup Tool

If you'd like to get a little more information from the hexadecimal code you got on your blue screen, download the **Windows Error Code Lookup Tool** (scroll down the page nearly to the bottom), and try your hand and putting the code in. The explanation can be instrumental in helping you find a solution.

## Windows Forums

If all else fails and you still can't find a solution, come join us at **Windows Forums** and post the information I asked you to gather above. We'll do our best to find a solution. Select your OS below for the best forum to post the question:

- **Windows 7**
- **Windows Vista**

- **Windows XP**
- **Other versions of Windows**

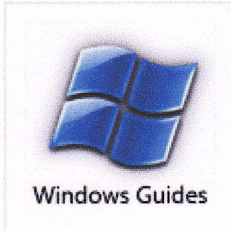What do you do to diagnose blue screens? Any success stories? Les us know in the comments.

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## About Rich

Rich is the owner and creator of Windows Guides; he spends his time breaking things on his PC so he can write how-to guides to fix the problems he creates.

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