

# Basic ShadowProtect Troubleshooting

## Synopsis

This article describes basic ShadowProtect troubleshooting that can be investigated prior to logging a Support Call.

## General

### Service Packs

The following are the recommended minimum Service Pack levels for the various platforms. This ensures that all necessary operating subsystems are at correct levels.

Platform	Minimum Service Pack	Comments
Windows XP Professional	SP2	
Windows Vista	SP1	All versions
Windows 2000 Server	SP4	
Windows Server 2003	SP1	SP2 recommended
Windows Small Business Server 2003	SP1	SP2 recommended
Windows Server 2008		SP1 is already included with the release
Windows Small Business Server 2008		SP1 is already included with the release
Windows Home Server		Based on Windows Server 2003 SP2

### Disk Space

Check the free space available on volumes. The following is suggested good storage practice for volumes.

Volume Utilisation	Status	Comments
0 – 70%	Good	Utilisation is good.
71 – 80%	<b>Warning</b>	Utilisation is outside optimal limits. Monitor the volume growth and look at cleaning up unnecessary files and moving non-essential data to other storage.
81 – 100%	<b>CRITICAL</b>	Volume is becoming critical. Snapshots will start to fail, disk queue lengths will increase, it will not be possible to defragment the volume. Create space.

It is also recommended to defragment volumes on a regular basis. This will improve general system performance and snapshot performance. The recommended time to perform a defragmentation is between the last incremental for the week and before the next full backup.

**Note:** By default, Windows Vista and Windows Server 2008 have a configured task to perform a defragmentation at 1am every Wednesday every week.

### Paging Files

For best performance of the server, paging files should be a fixed size. That is, their minimum and maximum values should be the same. This avoids fragmentation of the paging file(s) which slows performance. They should also be made contiguous.

Size and location of the paging file(s) are also important. Ideally, they should not be on the operating system volume but on the first partition of a separate disk or another partition on the same disk if only one disk is present. As a guide, paging files should be sized as follows:

Server Role	Paging File Size	Comments
File and Print server	One and a half times the physical memory	Example: System has 2GB of memory installed. Create a paging file of 3GB.
Exchange server	Twice the physical memory	Example: System has 4GB of memory installed. Create a paging file(s) of 8GB.
SQL server	Twice the physical memory	
Windows SBS	Twice the physical memory	

On some platforms, an individual paging file is limited to a size of 4095MB. There is a Microsoft Knowledge Base article which explains how to locate multiple paging files on the same partition.

<http://support.microsoft.com/default.aspx?scid=kb;en-us;237740>

## Device Drivers

There are two particular categories that are especially important to address with device drivers. One is the mass storage controller device driver and the network interface card device driver. It is essential that the correct driver is installed. Use the device driver published by the manufacturer of the hardware (even if the driver is not signed) and do not use the driver installed by Windows Update. It may be necessary to override Windows and force the correct driver to be used.

Why? Even though the drivers provided through Windows Update will appear to work correctly, invariably they are generic older drivers. With mass storage controllers, when the system goes under load, such as when a snapshot of a volume is taken and a backup or other disk intensive operation occurs, the deficiencies in these drivers start to show with errors beginning to occur in the form of failed backups, failed snapshots and disk I/O errors being logged in the Windows System and Application Event logs; symptoms that the driver is not able to handle the requests being asked of it.

## Log Files

The first place to look for errors is in the ShadowProtect logs. The default location for these is:

`C:\Program Files\StorageCraft\ShadowProtect\Logs`

or for 64-bit operating systems:

`C:\Program Files (x86)\StorageCraft\ShadowProtect\Logs`

Also check the Windows System and Application Event logs for events around or preceding any issue that occurs, specifically events where the source is **DMIO**, **NTFS**, or **VSS**.

## Cannot take a snapshot

### Scenario 1

In the log file for the job you see:

```
18-Mar-2009 06:30:00 service 302 Cannot take snapshot. Error: VSS provider bad state. Method: VSS API by STC provider. Volumes count: 1.
```

Run the following command from the command prompt:

```
vssadmin list writers
```

You will see that some of the writers may have a state of 'waiting for completion' or 'failed'. You will need to perform a reboot to clear the writers. This may be caused by more than one application trying to use the VSS writers at the same time. Check the following:

- Whether another application such as a backup application and ShadowProtect are scheduled to run at the same time.
- Multiple ShadowProtect jobs are scheduled to run at the same time.
- Shadow Copies are enabled. By default these are scheduled for 7am and 12pm each day.
- On Windows Server 2008 that is a Domain Controller (Active Directory), limit the interval between ShadowProtect incrementals to a minimum of 60 minutes (this is due to the current issues with the Microsoft NTDS Writer in the Release to Manufacturing (RTM) release).

### Scenario 2

In the log file for the job you see:

```
08-Sep-2008 17:30:23 sbvol 503 Fatal I/O error on \\?\STC_SnapShot_Volume_21_2 offset 137e545a00 on read (-31 A device attached to the system is not functioning.)
```

Check the following:

- The free space on the volume being backed up.
- Check Average Disk Queue Lengths. Values should be less than 2. Monitor this for at least a six hour period.
- Refer to Knowledge Base Article *00000190 A device attached to the system is not functioning.*

## Errors writing the backup images

### Scenario 1

In the log file for the job you see:

```
13-Mar-2009 14:16:48 sbfile 503 Fatal I/O error on
\\ServerGamma\Images\ServerAlpha\C_VOL-b001.spf offset 15ce1c2c00 on write (-
112 There is not enough space on the disk.)
```

Check the free space on the destination. There is not enough space to store the image. Also check the file system used on the destination volume. If the file system is FAT32 (common with external USB drives), you can only create files with a maximum size of 4GB. You will need to use the **Split image file** option in the job parameters in this instance.

Check the retention parameters associated with the job. You may need to reduce the number of image sets that are retained or use a destination with more capacity.

## Scenario 2

In the log file for the job you see:

```
10-Mar-2009 10:51:34 sbfile 503 Fatal I/O error on
\\ServerGamma\Images\ServerAlpha\C_VOL-b001.spf offset 17d01200 on write (-121
The semaphore timeout period has expired.)
```

This error is commonly associated with network issues. Check the following:

- Network cards are using up to date manufacturer drivers and not generic operating system drivers.
- Network cards are running at the speed of the switch segment.

Other items to check include:

- Check Average Disk Queue Lengths on the destination. Values should be less than 2. Monitor this for at least a six hour period.
- Are multiple jobs writing to the destination at the same time causing network congestion and / or overloading the image repository server and / or its disk subsystem.
- If a Windows XP machine is being used for an image repository, ensure that it is configured for server mode performance.

## Scenario 3

A job starts out at 50Mbps and slowly over time degrades to 3-5Mbps.

This is a known Windows issue with very large files (over a 100GB in size) between Windows machines. The workaround is to use the **Split image file** option in the job parameters. Limit the image sizes to 10 or 20GB.

## Diagnostic Tool

StorageCraft Asia Pacific Support has developed a diagnostic tool that helps identify issues with server configurations. It may be useful to download and run this tool to aid with the above issue resolutions. The latest version can be obtained from <ftp://ftp.storagecraft.com.au/tools/>.

In almost all cases, Support will request the output from this programme when placing a Support Call.

## Products Affected

- ShadowProtect Desktop Edition Version 3.3.0.16
- ShadowProtect Small Business Server Edition Version 3.3.0.16
- ShadowProtect Server Edition Version 3.3.0.16

## Platforms Affected

- All

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