

## **Shadow protection, The Shadow really knows!**

By COOLCAT

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*We all know how important it is to schedule regular backups and test those backups to. But we also know that many smaller companies don't have the time or the resources they need in order to achieve these laudable goals.*

### Shadow protection

Storage Craft's ShadowProtect from COOLCAT INC comes in server and desktop editions and it gets its 'shadow' name from its interaction with Microsoft's Volume Shadow Service (VSS). In order to make backups, ShadowProtect triggers the VSS to produce a snapshot; it backs that up to your chosen medium, and then deletes the snapshot from your hard drive. [http://coolcatinc.com/ShadowMode\\_Explained.htm](http://coolcatinc.com/ShadowMode_Explained.htm) Using this technology causes the bare minimum of interruption to the operation of Windows Server 2003, and guarantees that all open files and databases are correctly snapped. The load on the server is only the load of a file transfer, which is one thing servers are very good at doing.

ShadowProtect allows you to schedule full backups and incremental backups at any time you choose, and provides for incremental backups to be taken as often as every 15 minutes. You can also specify how many earlier full backups should be retained, so you don't overflow your backup storage device. The choice of storage device is up to you, as any hard drive your server can see is supported, including directly attached USB or eSATA hard drives, along with NAS boxes. If you find that the backup is taking too much off the performance of your server you can throttle back ShadowProtect's activity.

Under test we found it able to backup around 50GB of SQL databases to an 8GB image in about 20 minutes on a Windows SBS Server 2003 installed on an AMD Athlon dual CPU server with 4GB of RAM, with negligible effect on the performance experienced by logged in users. The incremental snapshots took less than a minute to produce images around 20MB in size.

When it comes time to restore a broken server or desktop there are a couple of gotchas you need to consider. Firstly, Microsoft has never published the APIs to its "dynamic" disk partitions. Only the code for their "basic" partitions is available to Storage Craft and other third-party software vendors. In practice 99% of desktops and 80% of servers will only have basic disk partitions. However, anyone using Microsoft's built-in software RAID services for mirroring disks or making little disks look like bigger disks, has to be running "dynamic" disk partitions.

This won't stop ShadowProtect from correctly backing up the information on these disks. It just means that ShadowProtect, and you, get a major headache when it comes time to restore. If all you are doing is restoring a few accidentally deleted files, it doesn't matter what sort of disks you are running. You just double-click on the backup image and ShadowProtect mounts the image as a new volume which you can then browse with Windows Explorer, copy the files you lost back to where they should live and you're done. Easy. It's when you try to recover from a total disk crash that it gets interesting if you are running dynamic disks.

To do a complete restore of a crashed system you boot from ShadowProtect's supplied recovery CD. This CD has options to choose from after booting which include reboot, continue to boot from the hard disk, and your choice of Windows XP- or Windows Vista-based recovery console. The default if you do nothing is to continue booting from the hard disk - this lets you leave the recovery CD in the drive and still have the server reboot normally. This is designed for those who operate their servers remotely, so you can step in and choose one of the recovery options instead of allowing a regular unattended hard disk boot. Storage Craft recommends you choose the WinXP option if restoring WinXP and Server 2003 disks. All very well, but your options are a tad more limited under the XP console than under the newer Vista console.

Firstly, if you're going to be restoring to a whole new server, not just recovering from a dead disk, then you'll find the Vista version knows about a lot more of the newer network cards than the older XP console

knows about. This is important if you're trying to restore from a NAS device and you need to locate the thing on the network. If you're recovering from a USB device it doesn't seem to matter which console you choose, but the WinXP version won't see your USB-drives unless they're plugged in and spinning when you boot. There's also another important gotcha inherent in using USB-attached hard drives for backups. Many of the little swine tell lies. That is, when they're receiving data at a very rapid rate from a ShadowProtected file server, many brands don't report minor errors in the file transfers. Perhaps they can recover from such errors in individual files, but ShadowProtect is sending byte-by-byte disk sector data and it needs to be 100% accurate.

One way to find out if your USB-drive suffers from this propensity to tell lies about the success of transfers is to attempt to recover from a deceased server disaster. However, you probably want to know about it before then, and you can use the built-in 'verify' function in ShadowProtect to test a backup image to see if it can be restored. If it can't then you need to ditch that USB-drive and select another brand. Under testing we discovered that the Maxtor OneTouch and the Taurus RAID USB-drives worked as advertised and could be relied upon to restore a totally trashed server or desktop every time. While you are preparing to restore one of the options presented by the recovery console allows you to specify a 'hardware independent restore'.

You choose this if you are not just replacing a dead disk but are migrating to a whole new box. What this does is, after the restore, is delete all the drivers in Windows and then tries to add new drivers to match the new hardware. You'll need to insert the appropriate motherboard driver CD and any other CDs for things it complains about. ShadowProtect completed this operation quite well on several different brands of PCs which were nothing like the original desktop or server. You can also restore to a VMWare virtual server or desktop from the ShadowProtect image.

After you have completed the recovery, your new PC will reboot as a complete clone of your old server or desktop, 99% of the time. However, if your old machine had been using dynamic disks, you won't get a clean boot, instead you'll get what looks like a Windows boot but it will then hang on a blank screen. Now you need to dig out your original Windows install CD or DVD, boot from that, then choose "Recovery console" from the menu and issue the commands "FIXBOOT C:" followed by "FIXMBR". This puts back the missing bits, which are not located in the same place on a dynamic disk as they are on a basic disk.

If you really insist on turning your new disk back into a dynamic disk, don't forget to leave about 10GB of space at the end of the disk when you make the main partition in ShadowProtect's recovery console. That's where Windows stores its information about dynamic disks and now you know why you can't make Windows allocate every last byte of your hard disk for one single partition.

We recommend sticking with basic disks unless you have a serious need for dynamic disks. You can achieve RAID protection for your drives using readily available hardware, in fact many motherboards provide this as an option, instead of Microsoft's 'freebie' software. If you do your mirroring in hardware ShadowProtect won't have any trouble restoring server or desktop to a functioning bootable clone of its former self. If you're looking for a backup solution that's fast, and can allow you to roll back to just 15 minutes before the crash, Storage Craft's offering is awesome. Plus, being able to recover to different hardware isn't just handy in a disaster; it's quite useful for migrating old servers and desktops to new hardware at any time.

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