



## System Recovery in Next to No Time

by Jürgen Heyer

The advantages of an image-based backup system become obvious when a server fails to start up following an error in the boot partition or when a server requires complete recovery after a total server loss. ShadowProtect Server Edition 3.3 by software manufacturer StorageCraft—still little known in this country—takes care of this in next to no time. We have taken a closer look at the product.

For several years now, Germany's image-based backup segment has been dominated by two companies: Acronis and Symantec. We tested Acronis True Image Echo Server in our March 2008 edition. Symantec's product is called Backup Exec System Recovery (BESR).

A third supplier by the name of Ultrabac plays a minor role in our country. StorageCraft, too, is still little known: its product ShadowProtect is available in different versions for desktop computers and servers and in a universal version for all Windows operating systems from Windows 2000 onwards. The current version 3.3 is the first version available in German as well, which is apparent from some very clumsy translations in places.

The main advantage of an image-based backup system over the traditional file-based backup system consists in the ability to recover even a defective operating system partition from a backup (known as "bare metal restore") in next to no time, regardless of the cause of the problem (logic error, hardware failure or total loss). Recovery may take place just as easily on new, different hardware as on the existing system. ShadowProtect's Hardware Independent Restore (HIR) tool even allows recovery to be carried out using completely different hardware or a virtual environment such as VMware. The main feature of operating system partition recovery is that the system is started up using a bootable CD, in this case Windows 2003 Server or Vista based. The CD contains a ShadowProtect recovery environment, which administrators can use to restore the content from the existing images, which avoids the complicated, time-consuming method used by traditional backup software requiring prior installation of a temporary Windows OS with a restore client.

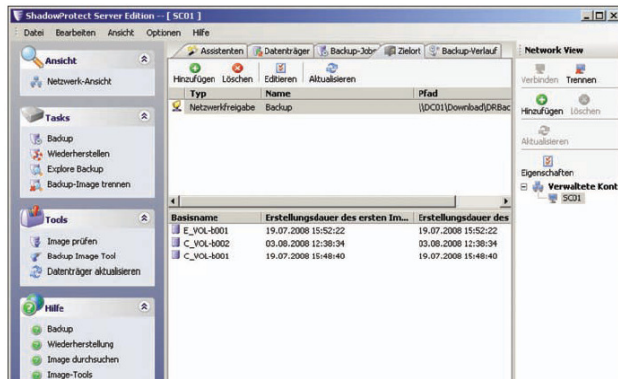


Figure 1: The ability to specify default destinations makes it easier to set up multiple jobs when scheduling tasks.

## Easy to Install

ShadowProtect Server Edition is compatible with Windows 2000/2003/2008 Server versions. A special version is available for Windows 2003 Small Business Server. The installation procedure requires minimal administrator input and features a backup agent and a management console. To complete the procedure, we had to restart the server. When we first opened the console, we found that its look reminded us of Acronis True Image Echo Server: the developers had evidently been greatly inspired in terms of icons and overall layout.

However, upon closer inspection, we noticed various functional differences: for example, a panel on the right features a Network View, which can display other servers on which ShadowProtect is installed. The systems do not necessarily have to be located in the same domain. Name, description, domain name and login information may be entered for each node. In addition, the console shows the corresponding client version and last connection. So it's very easy to manage several servers via a single console without having to install an expensive management system.

## An Intuitive Tool

ShadowProtect has three main wizards to guide users through the most common tasks: a Backup Wizard, a Restore Wizard and an Explore Backup Wizard. The functions available are clearly summarized in a menu bar on the right, and the Help section is arranged by topic, too, consistent with the wizards.

The center panel features four more views in keeping with the number of tabs next to the wizard list:

- For instance, it shows a Disk Map (with a similar structure to the disk manager in Windows), which allows you to create or delete partitions and execute backup jobs or recovery.
- The Backup Jobs tab shows the scheduled backup jobs and allows changes to be made.
- The Destinations tab allows you to set various default destination paths (local drives and directories or network shares), which are then presented for selection when backup jobs are created.
- The Backup History tab provides access to log files for executed backup jobs in the form of an overview as well as a detailed view for each individual job.

For active notification, SMTP information may be entered for each backup agent so that the user is notified by email whenever a job is complete. Alternatively, the user may choose to receive notification only in the event of a successful or unsuccessful outcome. The latter configuration helps administrators focus on important issues so that they are notified only in the event of any problems.

## Flexible Backup Scheduling

During what is probably the most important task, i.e. backup, we were first asked to select the partitions to be backed up, but entire partitions always had to be selected. The option of backing up selected individual files or directories only, as in competing products, was not available. However, this is of secondary importance given the way in which the software works. After that, we had to select the destination from a list of possible destinations displayed by ShadowProtect, or a different destination path could be selected via a browse function.

The scheduling tool proved extremely versatile, allowing the user to set very useful scenarios. Here, the developers demonstrate considerable skill. For example, in the case of weekly backups—which combine a full weekly backup and supplementary incremental backups—several daily incremental backups may be activated at specified intervals. For example, ShadowProtect may perform a full backup on Sundays (with no backup on Saturdays) and an incremental backup every hour on other weekdays during normal working hours, i.e. between 8 a.m. and 6 p.m. That amounts to eleven backups every day. Likewise, daily incremental backups may be scheduled with

a full monthly backup, and individual days may be excluded—for example specific days of the week or specific calendar days such as the fifth day of each month.

Another special feature of this product is ongoing incremental backups: an initial full backup is followed by incremental backups only. An additional tool—the Image Manager (described below)—then consolidates the incremental backup image files so as to maintain a constant number of backup files. The only feature missing is an event-driven backup system, where the triggering event might be, for example, the number of changes made or the fact that a program is about to be installed, as in Symantec BESR. In terms of backup options, ShadowProtect allows the user to split the image file into a certain size so that it may be burnt to a CD, for example. It also allows compression and encoding.

An additional option menu offers less frequently required features. For example, the administrator may adjust the performance in the event of insufficient computing power for certain running applications during the backup process. The user may also enable a write cache and define instructions to be carried out before or after a snapshot as well as after backup. This can be useful, for example, for stopping a database briefly to create a snapshot for the purpose of achieving a consistent backup and then starting it again. In addition, the number of stored backups may be limited by automatically deleting old backups. Here, the oldest backup may be deleted either before or after the current task is carried out. An existing backup may also be encoded or split at a later time if necessary. In addition, full and incremental backups may be consolidated manually at any time.

## **Fast Recovery**

Recovery of a partition other than the boot drive may be carried out directly via the ShadowProtect console. The user is asked to specify only the source file and target volume and to select an option for recovery of the master boot record (MBR). Like the backup, the recovery option focuses on complete volumes (individual files cannot be restored: this task is handled by the mount utility described below).

Far more frequent than the need to recover an entire data volume is probably the need to restore the boot drive. As with competing products, ShadowProtect carries this out via a boot CD containing a complete recovery environment. A special feature of ShadowProtect is that the ISO image and the CD-ROM supplied by the manufacturer contain two launch environments for the administrator to choose from when booting the CD-ROM: One is Windows Server 2003 based and is suitable for recovering systems running under Windows 2000, 2003 or XP. It is important to bear in mind that any USB drives must be connected before booting so that they are properly recognized. In addition, this environment allows subsequent loading of external memory drivers only. The other recovery environment for systems running under Windows 2008 or Vista is Vista based and is slightly more flexible. Here, for example, USB devices are recognized during operation, and any drivers may be loaded subsequently. The boot CD may also be removed in order to subsequently load any additional drivers from a different CD-ROM.

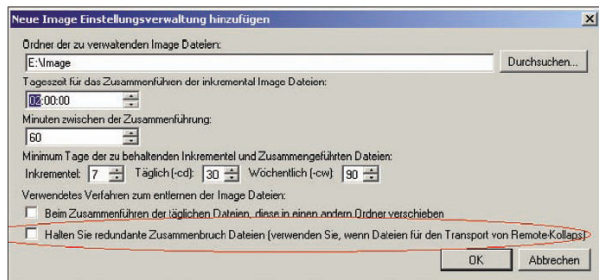
However, this orientation towards the target operating system is only a recommendation, and, when using ShadowProtect, each administrator should ascertain in advance which launch environment is best suited to the specific server hardware used and which additional drivers are needed if any. That way, the administrator will avoid a hectic search for drivers when these are needed. However, the current operating system configuration cannot be searched for unknown drivers as with Symantec's Backup Exec System Recovery. These must be determined during a separate recovery test.

The recovery procedure follows the same steps regardless of the launch environment chosen. If the image is to be installed from the LAN, the network components need to be started up. The administrator may choose to skip this step and save time if the image file is available locally. When the network is started up, the boot environment obtains an IP address via the DHCP. The DNS and WINS servers may be entered manually, which makes the following steps easier, ensuring that

name resolution works properly. All sorts of drivers may be subsequently loaded using the hardware independent restore (HIR) option, which also allows a bootable image to be restored to different hardware (P2P). This includes recovery in a virtual environment such as VMware (P2V).

In some tests, the recovery process on identical hardware worked just as smoothly from the network as from a USB removable hard disk. To test the HIR option, we chose the most complex case by backing up a Windows 2003 server running under VMware Workstation 6.0 and then restoring it to real hardware (V2P). On booting, the advantage of dual recovery environments became clear: The Vista-based environment was better suited to the hardware at hand and automatically loaded the correct network drivers.

During the restore procedure, the destination partition had to be added manually, which was easily accomplished via the software's integrated disk map. A special feature of the program is that images can also be restored to smaller partitions—not all competing products offer this feature. Upon completion of the restore procedure and start-up of the target system, Windows performed hardware recognition. After another reboot, the server was ready for use. However, Windows had to be newly registered with Microsoft as a result of the very different hardware. During the test, the entire process took less than 20 minutes, most of which was spent booting the CD-ROM.



**Figure 2: In places, the German translation of the user interface leaves much to be desired.**



**Figure 3: In the boot CD network tool, the administrator may enter a DNS and a WINS server independently of the DHCP.**

To enable administrators to recover systems from remote locations, the launch environment features a VNC server, which may be called up with the click of a mouse. That way, only one person is needed on site to insert the CD and carry out a few mouse-clicks as instructed in order to launch the VNC server and obtain the IP address. After that, the specialist may step in and carry out the actual recovery procedure.

A major advantage of the ShadowProtect recovery environment is that it allows you to perform backups as well. The tool by Acronis offers a similar function, unlike the Symantec tool. This can be useful, for example, if one wishes to maintain certain files from the previous configuration before performing recovery. In that case, the administrator may first obtain an image which can later be analyzed and from which content may be obtained as necessary.

## Searching Through Images

To enable the administrator to view the content of an image and, if necessary, recover individual files, ShadowProtect offers a mount utility for images. Here, image files are connected as a virtual drive and may be searched through at will. A special feature of this product consists in the

possibility to not only read an image but also modify it, a feature which sets ShadowProtect apart from its competitors. Changes are not made directly to the original but are added in the form of an incremental image.

The Image Manager is a very useful tool: it consolidates full and incremental backups producing a full backup. This is necessary, for example, in the case of a backup plan involving merely ongoing incremental backups. In this case, the Image Manager prevents the number of images from growing uncontrollably, ensuring at all times the presence of a single full backup and a specific number of incremental backups.

## Conclusion

StorageCraft ShadowProtect is still largely unknown in our country but is well worth considering as an alternative to the dominant tools of Acronis and Symantec. The program has an appealing clean, uncluttered overall look and allows central administration essentially from each client. It is also very flexible in terms of scheduling—although event-driven backup is not available—and the dual-boot CD offers extensive hardware compatibility. Another desirable feature would be an integrated hardware test. The German translation of the user interface needs improving in places.

A feature that sets this product apart from competing products is the possibility to modify images after they have been created, where the changes are stored as an incremental backup. The fact that partitions need to be added manually on an empty disk before recovery reduces comfort somewhat, but another of the software's special features is that it can also restore to smaller partitions. Overall, ShadowProtect has proven a highly versatile and mature product requiring very few improvements. (jp)

## Product

Software for backing up and recovering Windows servers using images

### Manufacturer

StorageCraft  
[www.storagecraft.de](http://www.storagecraft.de)

### Price

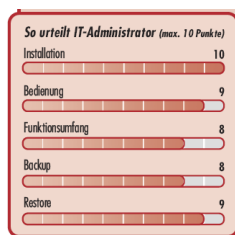
ShadowProtect Server Edition is available for EUR595 with discount prices for multiple licences

### Technical data

[www.it-administrator.de/downloads/datenblaetter](http://www.it-administrator.de/downloads/datenblaetter)

## IT-Administrator ratings (points out of 10)

Installation	10
Operation	9
Range of facilities	8
Backup	8
Restore	9



This product is **well suited** for recovering Windows 2000 to Windows 2008 servers and is suitable for use in connection with large networks as well as a small number of systems. The use of homogeneous hardware is recommended.

It is **less well suited** to heterogeneous environments, as the administrator has to determine the best procedure for each piece of different hardware in order to remain as calm and in control as possible in the event of an urgent recovery.

It is **unsuitable** for servers running under operating systems other than Windows.

StorageCraft ShadowProtect Server Edition 3.3