

High-Rely BARE METAL CHRONICLES

ADVENTURES IN THE CHALLENGES OF OBTAINING PEACE OF MIND WHILE COMPUTING

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High-Rely does Bare Metal Restore using ShadowProtect Server Edition Version 2.0.

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Several data storage and backup companies have invested in bare metal restore capabilities. StorageCraft ShadowProtect Server Edition (SPS) Version 2.0.1.35 is capable of performing such a restore in a minimal period of time. Their current version is capable of performing the task only to the same hardware, but the company has explained that they will be releasing a version 3.0 with dissimilar hardware capabilities, a feature they refer to as Hardware Independent Restore (HIR). Here is the documentation of the process of performing a bare metal restore from a 5Bay High-Rely with the hopes that it will be a guide for those who would like to restore their own server in cases of hardware failure.

The installation process is straight forward and allows the installation of four components; the Backup Agent, Snapshot Driver, Management Console and Mount Tools. The Backup Agent is the engine that manages all local and remote issued backups and restores. The snapshot driver allows for a point-in-time image of the exact state of the system. All configurations that are implemented using the software are handled though the Management Console. This also reports the status of the Backup Agent. Finally, the mount tools can be used to view and edit restore points and examine and modify partitions on the drive.

Initially, the user is presented with the Management Console and asked to connect to a server. The local server should already be added and listed under managed nodes. The user can add any remote

server they would like to use at this stage, or connect to the local server. (See fig. 1).

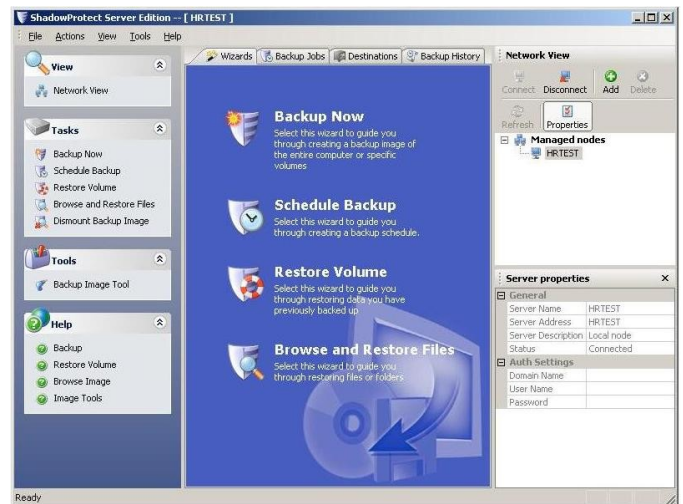


Fig. 1

For this test, the local server is an Intel Pentium D 945 (Dual 3.4GHz Processors) with 1GB of DDR2 ram accessing a SATA drive with a 20GB Windows 2003 Standard Edition partition. The motherboard is an MSI P965 Neo-F with three PCI-Express and three PCI slots. The PCI bus slots also handle PCI-X controller cards which makes testing all three interfaces possible on this board.

Once connected to a server, there are four wizards available for user convenience to perform backups, restores and browse files. I choose “Schedule Backup” and followed the wizard through the available options.

Several options are presented including backup type, volume to backup, destination, compression settings, schedule and the retention policy. Full and differential are the optional backup types, but in this case a full backup is all that is necessary to perform the test restore. Backup volumes are specified as a particular drive or multiple drives. (See fig. 2)

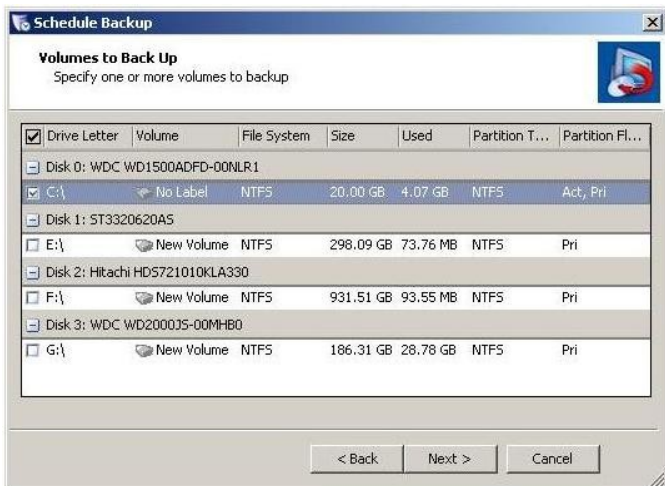


Fig. 2

In this case, the Windows 2003 Server was located on the local C drive and, as shown, it is checked. Next a destination must be provided. The user can select either a network location or a fixed local drive path. There is also an option to choose a name and backup destination. This destination I named “Monday” and it will help differentiate the drive letters when performing future backups. (See fig. 3).

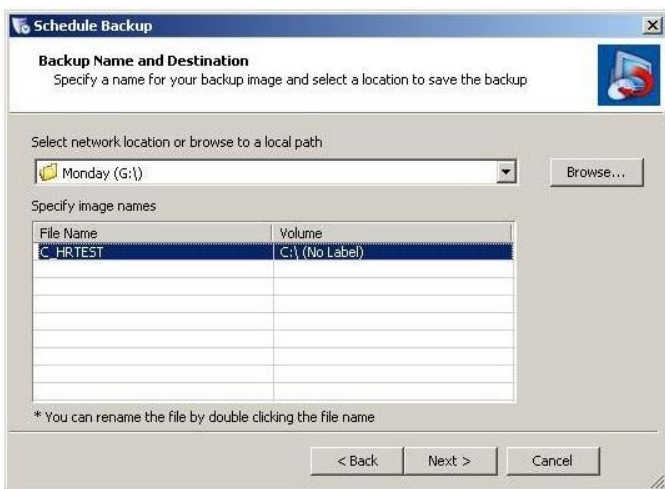


Fig. 3

A schedule is then selected for periodic backups, which can be setup to perform daily, weekly or monthly. In this case, I selected it to perform the backup once and scheduled it to occur in the following five minutes. (See fig 4).

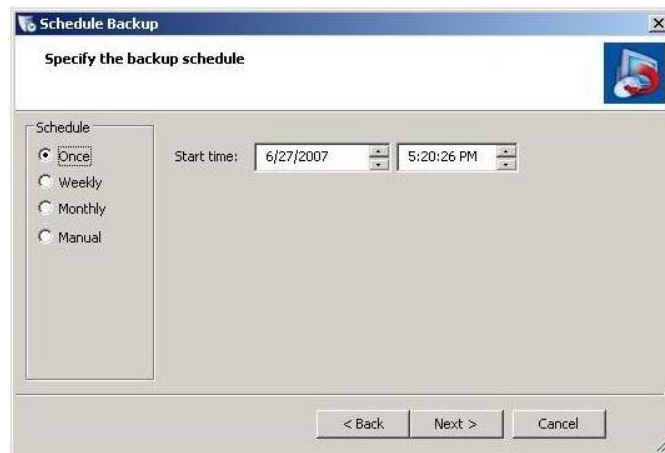


Fig. 4

Next the retention settings or number of backups to maintain on one backup disk can be set. There are also options to delete full along with incremental backups, or just incremental backups on the drive. I choose to maintain three of any type of backups on the drive. (See fig 5).

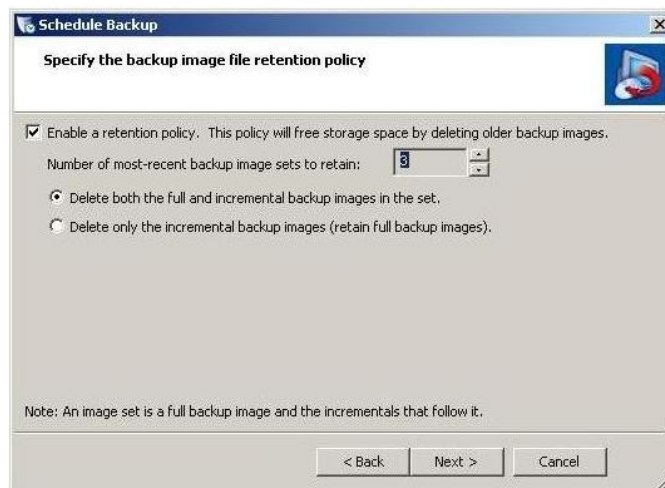


Fig. 5

Finally the user is presented with a few options including compression settings, encrypting the files, and splitting the backup file size. There are also options to include the free space found on the source drive, to enable write caching and to lock the volume. Of the many options, I just chose to enable write caching but only because it is selected by default and really has no effect on the backup unless you’re writing to a network drive. (See fig 6).

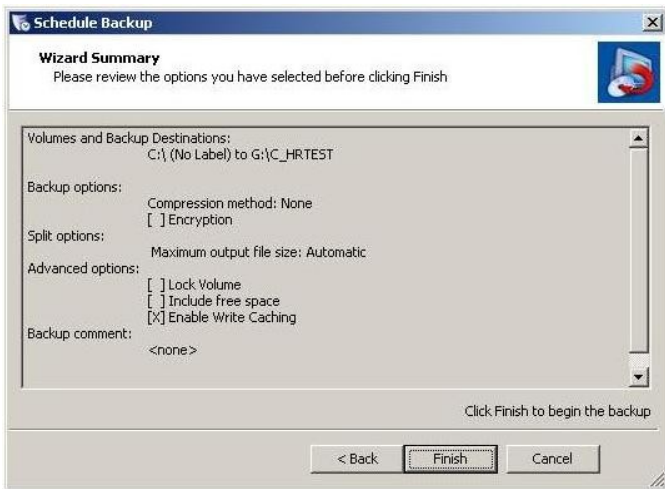


Fig. 6

The backup is completed fairly quickly and reports no errors. It takes **approximately 2 minutes and 30 seconds** to create a 9.53GB backup file with a transfer rate of approx 65.51 MB/sec. Speeds may vary according to your particular setup but this drive contained a combination of music, text and image files. Even with Exchange and SQL databases, the software claims to take only minutes to perform full system backups.

Once the ShadowProtect Full (SPF) Image file is created it can be mounted, viewed and edited at the user's convenience. This image can then be used to perform a restoration of files, an image, or to perform a full bare metal restore. The ShadowProtect Server Edition installation CD-ROM is also a bootable disk that loads the recovery environment to perform bare metal restores. The process requires a floppy drive to be installed on the server to provide drivers for the eSATA controller card. This is necessary because the option to load drivers is not currently available while in the recovery environment.

The hard drive within the server is replaced with a brand new blank hard drive with enough space to support the restored image. Then set the server to boot from CD-ROM and the disk loads the recovery environment with standard and additional drivers. Both environments require the installation of the eSATA controller drivers from the floppy drive. The High-Rely unit and drive that contains the

image should be turned on at this point. Be sure to load the necessary drivers to the root directory of a floppy in order to recognize your controller. Choose the corresponding driver and if there are any warnings, choose to use the drivers found on the floppy. In this case, I load the Silicone Image SI3124 drivers by pressing the F6 a few seconds following my selection to boot with the recovery environment with standard drivers. All of the High-Rely eSATA controllers have been tested, and can be used in the recovery environment after their drivers are loaded.

The recovery environment initially asks if the user would like to start network services, then provides the management console to perform necessary operations. Since the storage controller drivers are already loaded and the High-Rely unit is connected directly to the server, there is no need for the network services. The restore wizard is loaded and the backup image is selected by browsing to the High-Rely drive. Next, a destination is required and the brand new installed hard drive is chosen with the option to "create exact primary partition at the beginning of free space." (See fig. 7).

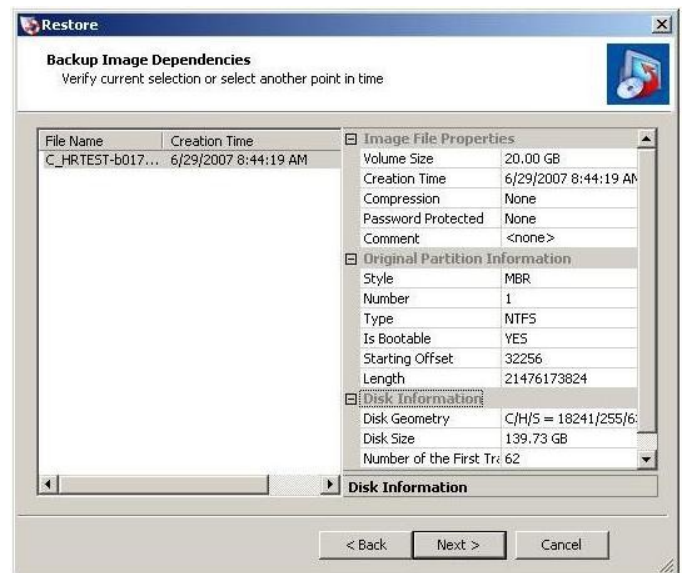


Fig. 7

Then all options necessary to boot to the drive are also selected. Set partition to active, restore MBR and restore disk hidden track are all selected to ensure proper boot. (See fig. 8).

definitely recommend this package for any company needing bare metal restore capability.

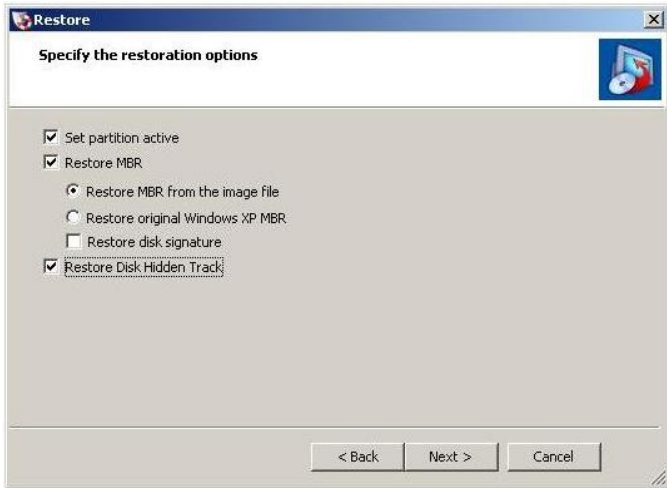


Fig. 8

The restore takes **approximately 4 minutes** and reports no errors. Once the management console is closed, the system will reboot and the drive has been restored. The 20GB partition is restored with 11.1GB of allocated space and it arrives at the login screen with no issues. All of the hardware drivers are already installed except the eSATA storage controller used for the 5Bay High-Rely unit. Once the device wizard is directed toward the floppy drive, the unit is fully functional and all drives are again visible.

As a final note, using this software in combination with the 5Bay High-Rely unit is a simple and reliable method to protect your valuable data. It not only minimizes down time but restores your settings and configurations as if no hardware failure ever occurred. The speeds of backup and recovery were the most impressive features along with the simplicity of the Management Console. I would