

# SHADOWPROTECT™

## Hardware independent Restore

**Version** 3.0 +

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## Situation

The purpose of this document is to give you a step by step guide on how to perform a hardware independent restore for one system to another. Before reading this document, please read the Shadow Protect Server Edition User Guide that is located on the Desktop and Server Edition CD under the DOCUMENTATION directory. In particular read the chapter regarding the Storage Craft Recovery Environment.

## Solution

Let's assume that you have a source system and a target system. We want to move the operating system and all the applications installed on the source system to the target system. You also have a full Shadow Protect image of the source system. This can be a single base image, or a base image and several incremental.

Note! If you are restoring to a VMware Virtual machine you must use the Image Tool to collapse the base and incremental files into a single full file \*.spf.

The target system has different hardware than the source system. For example different disks, network cards, display cards etc. So you cannot do a simple restore to the target system and expect it to work.

## Driver Requirements

Please refer to the table below which should help explain what minimum drivers you require. The Shadow Protect image of the source system has all the correct drivers to match the hardware type X for the Source operating system; however the target system has hardware type Y. This means that you will need to have available, as a **minimum**, the following drivers.

- The Y drivers for the Mass Storage Device Controller for the source operating system.
- The Y drivers for the Mass Storage Device Controller for the Windows Pre-Execution

environment that you choose when booting from the StorageCraft CD. During boot up you will be able to choose between the XP/2003 Legacy or Vista Pre-Execution environment.

If you are going to restore from an image on a Network Attached Storage (NAS) device, or from a shared disk on a system on your network, you will also need the driver for the Y Network Interface Card for the same two environments.

The Table below shows a matrix of what drivers you will need in each of the environments.

	Source System	StorageCraft CD Windows Pre-Execution Environment (PE)	Target System
Operating System	Source Operating System (SOS)	Vista or XP/2003 Legacy	Source Operating System
Applications	MSDC Type X MSDC Driver X for SOS	MSDC Driver Y for Vista or XP/2003 Legacy	MSDC Type Y MSDC Driver Y for SOS
Network Interface Card (NIC)	NIC Type X NIC Driver X for SOS	NIC Driver Y for Vista or XP/2003 Legacy	NIC Type Y NIC Driver Y for SOS

### What drivers do you already have?

The Windows pre-execution environments on the Shadow Protect CD have generic drivers for standard displays, mouse and keyboards, NIC cards etc. They also have the required drivers for Mass Storage Device Controllers which access common IDE, SATA and SCSI disk drives. If you are using these common types of disk drives, the pre-execution environments will normally have the required drivers for the HIR process to insert into the operating system laid down onto the target system, which will allow the target system to boot.

Once you have booted up on the target system you may need to fine tune the system by installing exact drivers to replace the generic drivers. For example, specific drives for video displays, multiprocessor boards etc.

## VERY VERY important

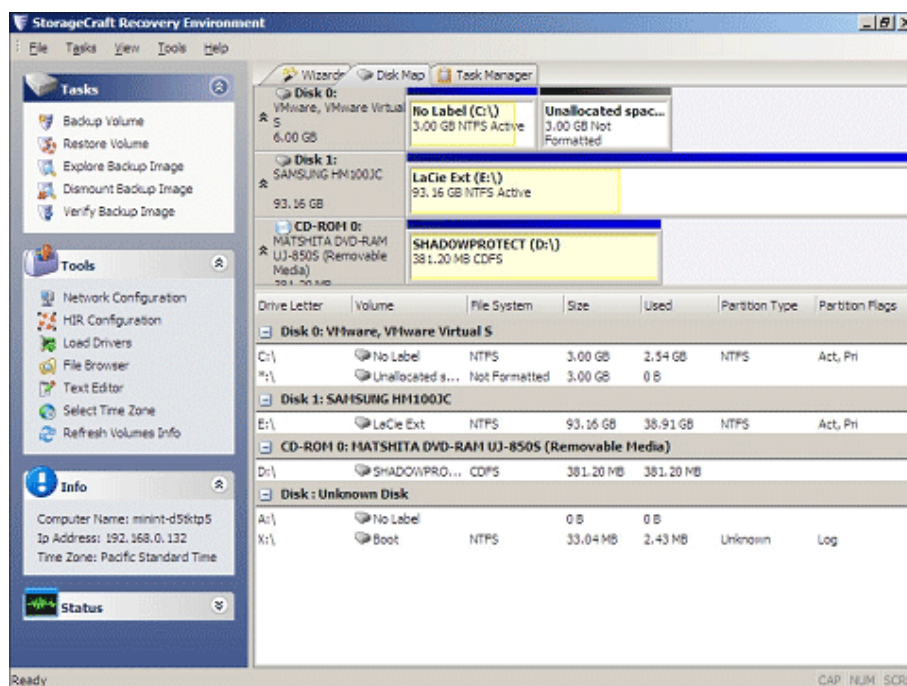
If you are restoring a Domain Controller or SQL Server you MUST carry out the steps below regarding the FIRST BOOT UP of the recovered system.

### NON GENERIC Mass Storage Device Controllers (Such as RAID Systems)

If you are restoring to or from some RAID Disc systems, you will most likely NEED to get the required drivers for the HIR process to be successful. Spezielle Mass Storage Device Controller wie beispielsweise RAID Controller (nicht generisch):

### How do to determine if you need specific drivers for the pre-execution environment

The best way to test this is to boot from the Shadow Protect CD and select the [Disk Map] Tab. Can you see the drive that contains the image that you want to restore from, and the target disk?. If you can see both of these, you are good shape.



### What if the Pre-Execution environment does not have the required drivers?

If you cannot see the source or the target disks you do not have the correct drivers for the selected preexecution environment, and you cannot proceed until you do. Try the other pre-execution environment. The Vista environment generally has more drivers..

## Adding Required Drivers to the pre-execution environments

### XP/2003 Environment

DURING the early stage of the boot into the XP/2003 pre-execution environment , you may press the [F6] key to load Mass Storage Device Controller drivers only, NOT network card drivers. These drivers can only be loaded from a Floppy Drive. These drivers must in the form of a textsetup.oem file. The [F6] option will not load drivers in the form of a \*.inf and \*.sys file.

### Vista Environment

AFTER the boot into the Vista pre-execution environment, you may load Mass Storage Device Controller drivers, or Network Card drivers from a Floppy drive, or a USB Drive, or a USB Memory stick. These drivers must be Vista Drivers in the form required by Vista which are \*.inf and \*.sys files. Thus to recover and image stored on a NAS drive or on a share on another system, you must use the Vista preexecution environment.

If you can see the source disk and the target disk, and the source operating system is the same as the pre-execution environment then the HIR process should have all the drivers it needs to lay down a bootable operating system on the target disk.

**The table below summarizes the different scenarios you may have.**

Pre Execution Env	Can you see both source and target disks?	Source OS is Vista	Source OS is XP/2003	Source OS is 2000
XP/2003	Y	Need Vista rivers for the HIR Process	OK	Need 2000 drivers for the HIR Process
Vista	Y	OK	Need XP/2003 drivers for the HIR Process	Need 2000 drivers for the HIR Process

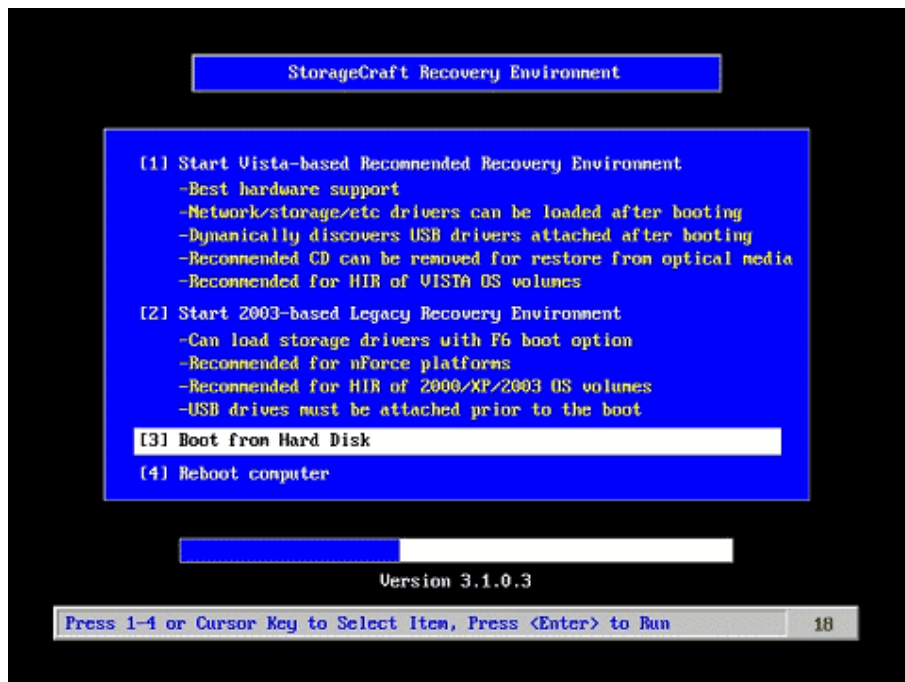
### How do you load the drivers required by the HIR Process.

The drivers that are required for hardware other than the Mass Storage Device Controllers can be loaded during the HIR process, which occurs AFTER the restore process. Please refer to the steps below

## HIR Process Steps

1. Step Boot for the ShadowProtect CD.
2. Step Select the pre-execution environment.

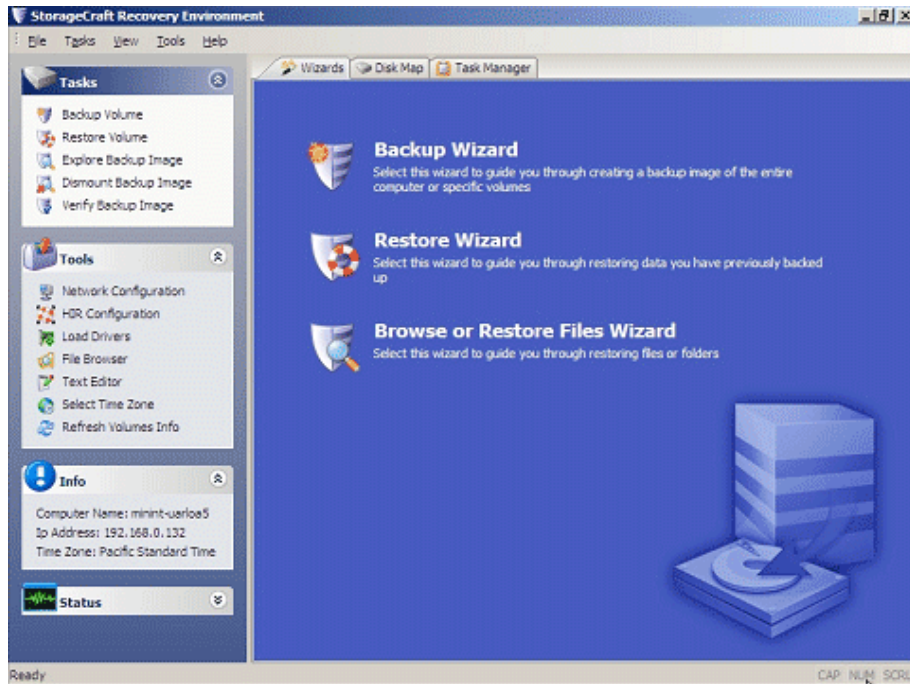
From the screen shown below select the environment that will best suit your needs, with regard to drivers for the target hardware and your source operating system.



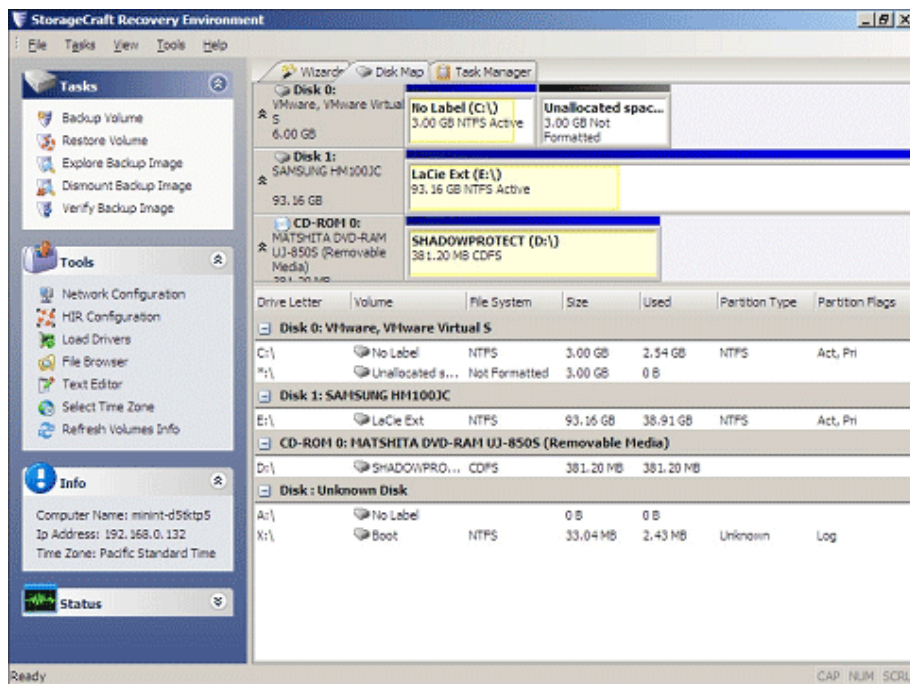
3. If you are using the XP/2003 environment and need to load drivers for the Mass Storage Device Controllers, ( for either the source or target disks) you need to press [F6] button while the prompt for the [F6] option flashes on the screen. You need to be ready for this, and be very quick as it only appears for a couple of seconds.
4. The next screen asks of you wish to start with network support. If your source image, or any required driver for the HIR process is on a network drive, then click [OK] otherwise click [Cancel]..



- You will now see the Main Screen. The screen shown is from the Vista environment which has the option called “Load Drivers”, which does not exist in the XP/2003 pre-execution environment..



- Select the [Disk Map] tab and verify that you can see the source and the target disks. If not select the [Load Drivers] tool to load the required drivers..



- Perform a right click on the first partition of the target Drive and select [Delete Partition]. Repeat this until all partitions are deleted and the drive is just unallocated space.

8. On the main Tasks menu, select [Restore Volume]. Click [Next] on the “Welcome to Restore Wizard” screen. Select [Browse] on the next screen, then browse to and select the base image that you wish to restore. If there are incremental files (\*.spi files) related to this base, you will be asked to select which incremental you wish to restore up to. When selected press [Open].
9. Select and partition the destination drive

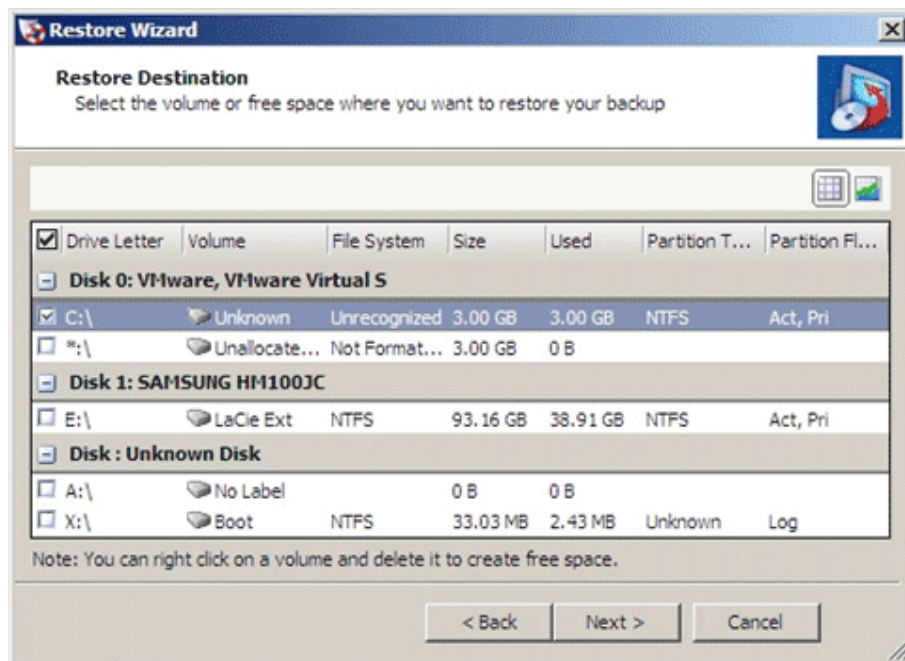
At this stage the destination partition should be unallocated space.

Right Click the destination Partition, and select option [Create exact Primary Partition at the beginning of free space].

Right Click the destination Partition, and select option [Set Active].

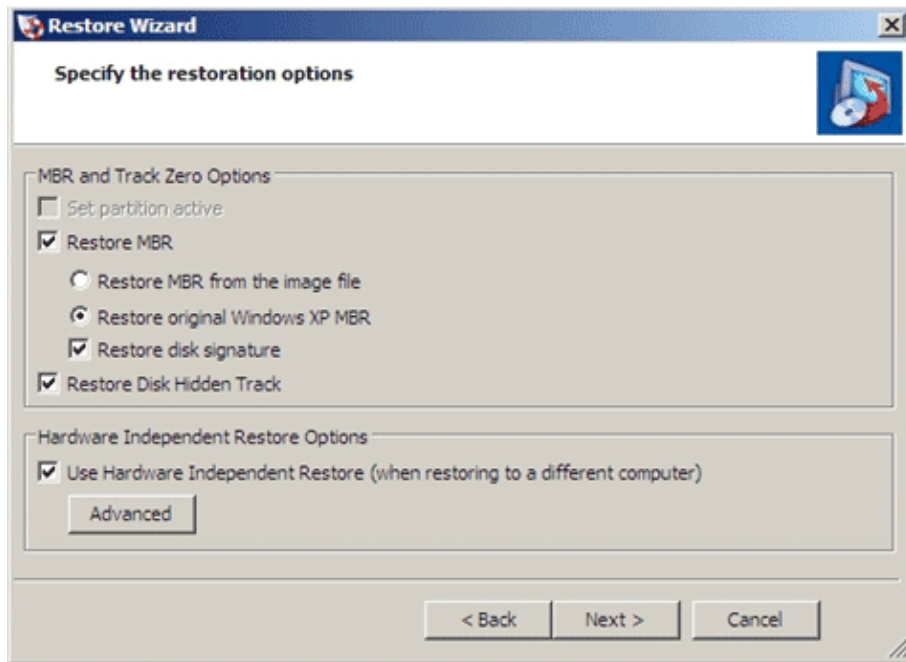
Check the box to select this partition as the target partition for the restore.

You should now have an Active Primary Partition as shown below.



10. Click [Next].

You will now see the Restoration options screen shown below.



[x] Restore MBR

[x] Restore original Windows XP MBR

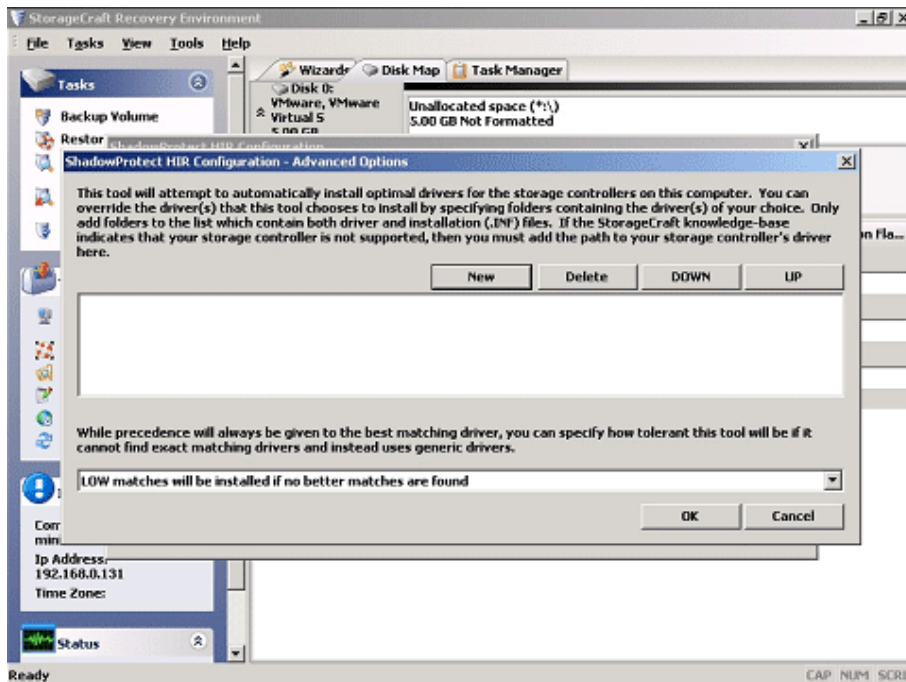
Note! If the source operating system is Vista, select [x] Restore MBR from the image file.

[x] Restore disk signature

[x] Restore Disk Hidden Track.

[x] Use Hardware Independent Restore (when restoring to a different computer)

11. Now click the [Advanced] button. You will see the following screen.



This screen allows you to specify the accuracy of the match for the required drivers for the hardware on the target machine. It also allows you to enter a list of folders from which the HIR process will look to find the required drivers.

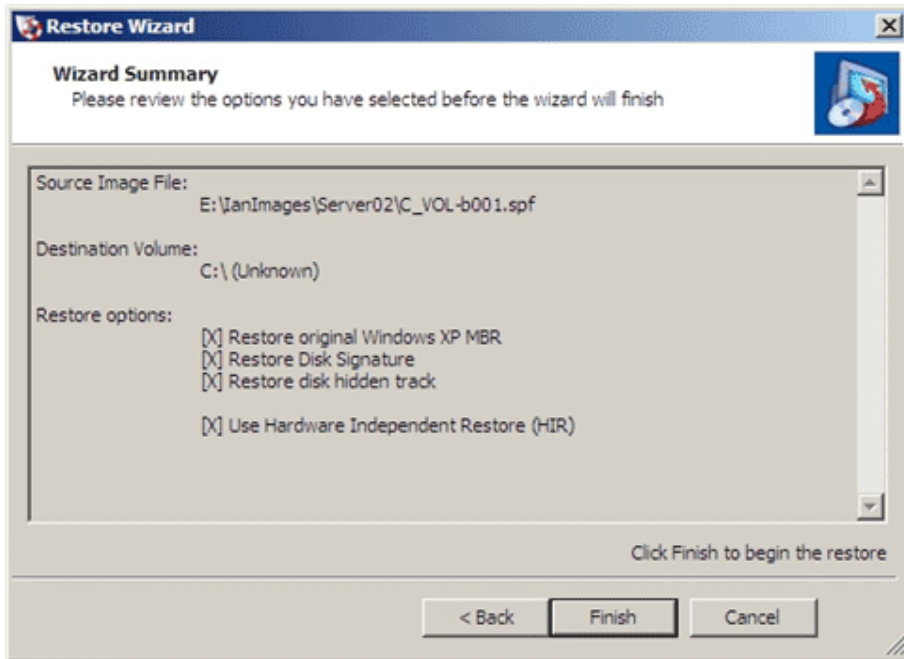
To add a new folder to search through, click the [New] button.

The buttons [Delete] [Down] and [Up] allow you to arrange the list of driver folders to search.

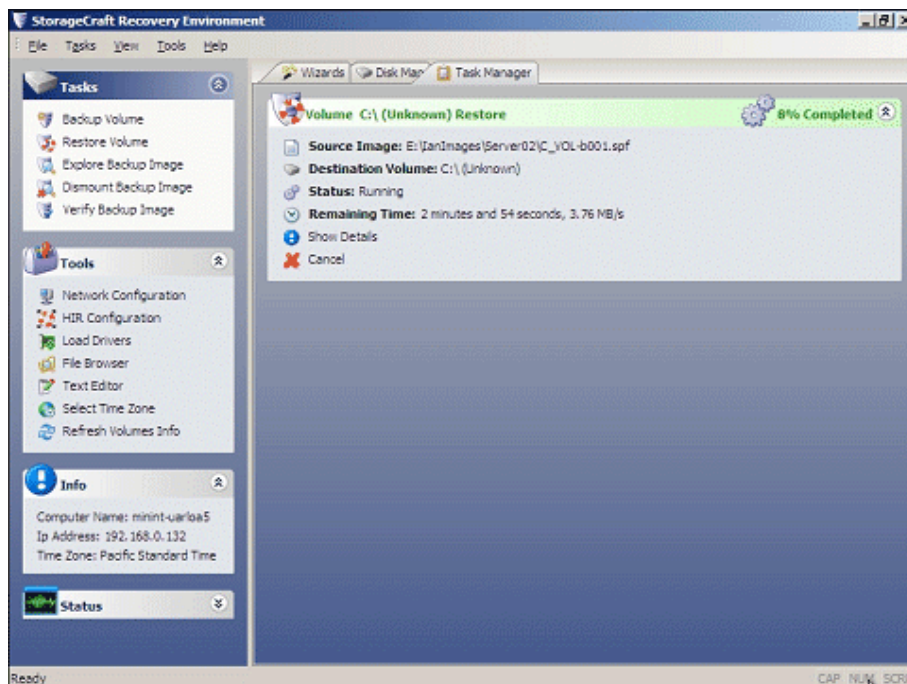
Now click [OK]. To close the Advanced Options screen.

Click [Next] and you will see the summary screen, shown below.

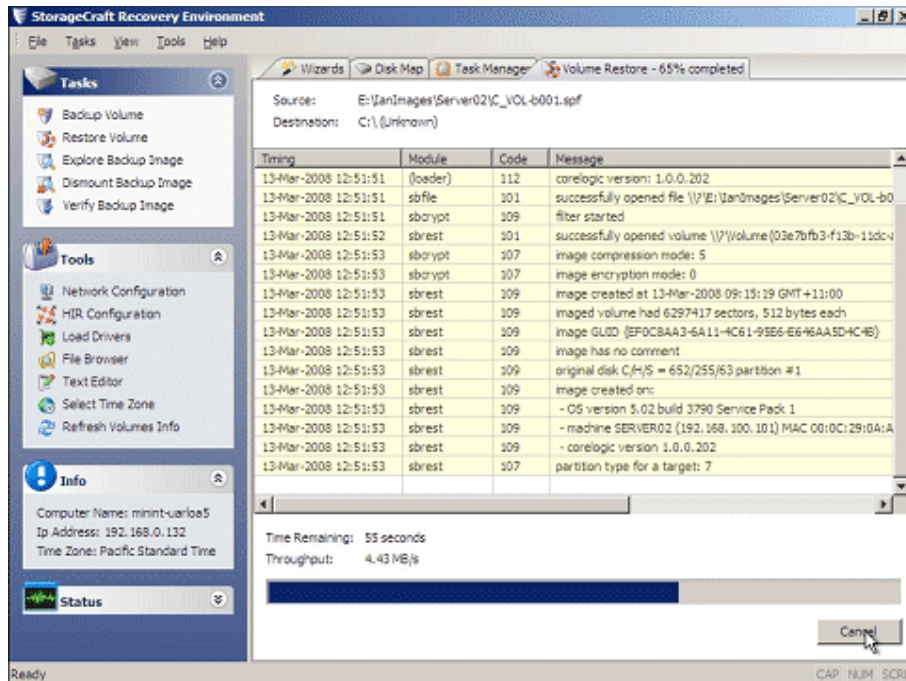
12. Now click [Finish] to start the restore.



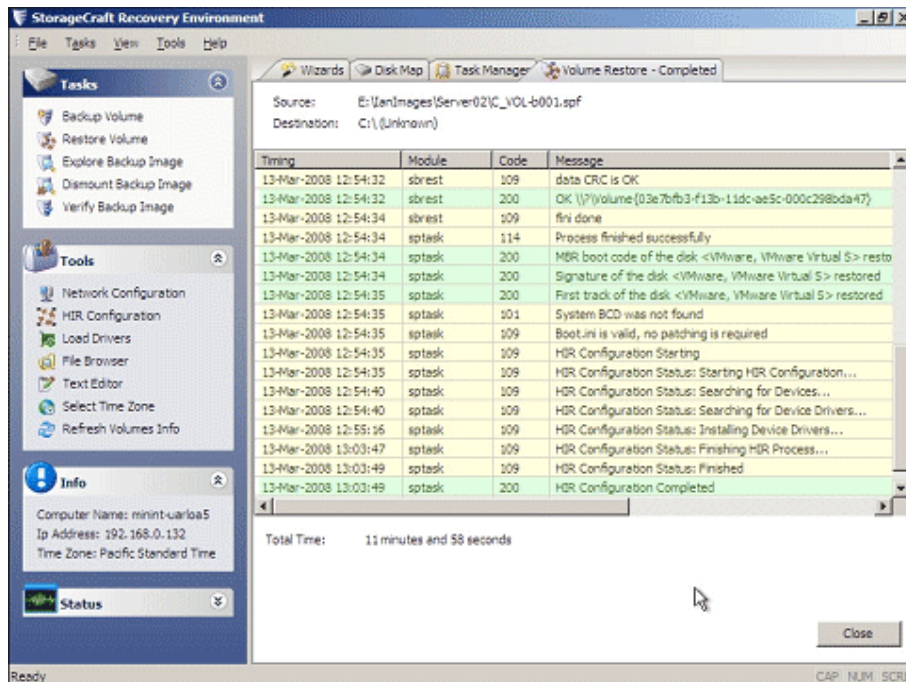
The Task Manager screen will appear and show the status of the restore operation.



13. Click [Show Details] if you wish to see more detail as shown below.



14. When the restore process completes you will see the following screen.



15. Click [Close].

Perform a Check Disk on the target Disk Drive

### VERY! IMPORTANT

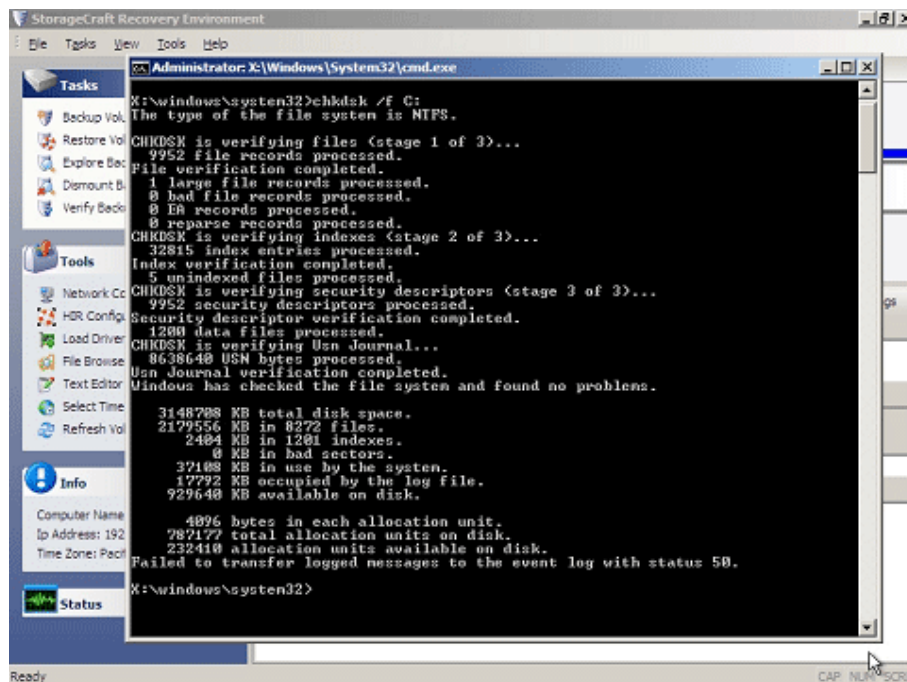
Press keys [CTRL][SHIF][F12]

From the drop down [Tools] menu, select option [Command Shell]

At the command shell prompt type the following command.

CHKDSK /f C:

The following screen will appear.:



```
StorageCraft Recovery Environment
File Tasks View Tools Help
Administrator: C:\Windows\System32\cmd.exe
X:\windows\system32>chkdsk /f C:
The type of the file system is NTFS.
CHKDSK is verifying files (stage 1 of 3)...
9952 file records processed.
File verification completed.
1 large file records processed.
0 bad file records processed.
0 EA records processed.
0 reparse records processed.
CHKDSK is verifying indexes (stage 2 of 3)...
32815 index entries processed.
Index verification completed.
5 unindexed files processed.
CHKDSK is verifying security descriptors (stage 3 of 3)...
9952 security descriptors processed.
Security descriptor verification completed.
1200 data files processed.
CHKDSK is verifying Usn Journal...
8638640 USN bytes processed.
Usn Journal verification completed.
Windows has checked the file system and found no problems.

3148708 KB total disk space.
2179556 KB in 8272 files.
2404 KB in 1201 indexes.
0 KB in bad sectors.
37108 KB in use by the system.
17792 KB occupied by the log file.
929640 KB available on disk.

4096 bytes in each allocation unit.
787177 total allocation units on disk.
232410 allocation units available on disk.
Failed to transfer logged messages to the event log with status 50.

X:\windows\system32>
```

Close the Command Prompt Window.

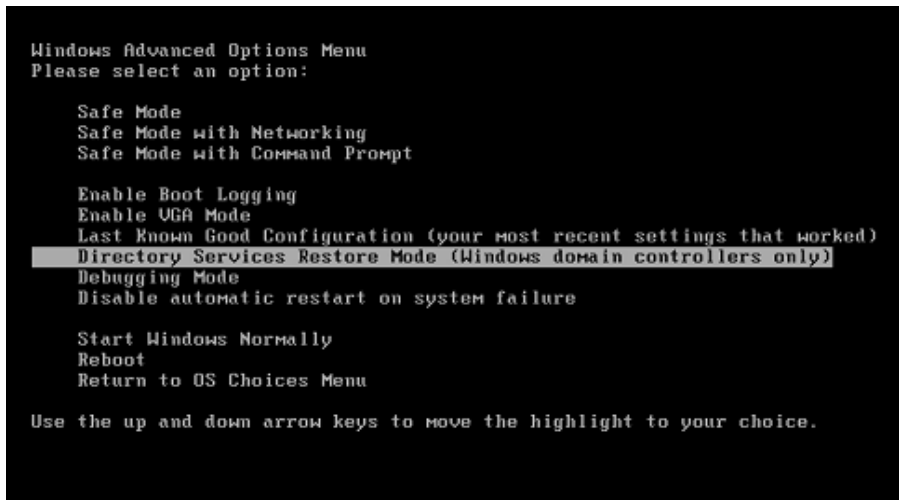
## Important

READ all of the instructions below before closing the ShadowProtect Recovery Environment window, because after closing the Restore environment window the system will automatically restart.

**If you are restoring a Domain Controller or and SQL Server you MUST NOT boot up into a full Windows environment on the first boot. If you do you will severely corrupt these servers, to the extent that it is faster to repeat the restore rather than repair the corruption.**

After closing the Restore Environment Window, the system will reboot.

PRESS [F8] to invoke the boot options window shown below.



If the system is a DOMAIN CONTROLLER select option

Directory Services Restore Mode ( Windows domain controllers only)

If the system is an SQL Server select option

Safe Mode with Networking

In the respective safe mode you MUST specify that the system has a FIXED IP Address, and

Bind the networking services to the selected Network Interface card.

When this has been completed, reboot the system to the full windows environment.

Load any non Mass Storage Device Controller drivers required.

Now that the system is operating, you may tune the system for maximum performance by loading any specific drivers required for any of the non mass storage related devices..