



Cristie Bare Machine Recovery

Quick Start Guide

For Windows PE Based Recovery

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Version 6.3

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1 Using CBMR for Disaster Recovery

This document describes the essential elements of CBMR and Disaster Recovery based upon a tailored WinPE recovery module. It is based upon version 6.3 of the software. CBMR can protect a system all the time, if set up and configured correctly. The following sections explain this procedure.

1.1 Introduction

Cristie Bare Machine Recovery (CBMR) for Windows XP, Vista, Windows 7, Server 2003 and Server 2008 (including Core and R2) is available as a single edition suitable for all platform types. You must have one of these Operating Systems correctly installed prior to proceeding with the installation of CBMR.

A low cost version of CBMR, called the Desktop version, is also available. This edition offers exactly the same functionality as the full Server version, but supports Windows XP, Vista and Windows 7 only.

IMPORTANT: Refer to the [Readme](#) HTML file (open in a browser) on the installation disk for any limitations and last minute updates. This Readme file is also provided in French, German and Japanese versions.

To minimise the impact of a hard disk failure, you need to have a restore strategy in place. CBMR allows you to recover Windows XP, Vista, 7, Server 2003 and Server 2008 Workstations and Servers without first having to re-install the operating system or backup software. This reduces the recovery time significantly. All you need is disaster recovery media from which to boot your computer and a disaster recovery backup of the Windows XP, Vista, 7, Server 2003 and Server 2008 system.

Finally, a full backup of the system can be restored using the backup features of CBMR or any other preferred Backup/Restore software.

Backups can be performed to a variety of different Backup Locations and media, including IBM's Tivoli Storage Manager, tape, disk, network-attached storage etc. For simplicity, this manual will refer to [Tape](#) as the backup media throughout.

Note: CBMR does not support Windows NT or Windows 2000.

1.2 Preparation

To use CBMR in a production environment, you must follow the procedure in the order listed below:

1. Installation (refer to the [CBMR Installation and Licensing Guide](#))

- *Install the CBMR Backup and Restore software*
- *License the Software (using a Trial or Full license)*

2. Configuration

- *Specify where the Configuration Parameters are stored*
- *Save the Configuration parameters. Update when significant hardware changes are made*
- *Ensure that you have a bootable media (normally the WinPE DR CD-ROM)*

3. Backup system and User data

- Perform regular Disaster Recovery backups as required
- Perform any extra standard data backups as required

You will then be ready to Restore the system from the Disaster Recovery Backup.

Note if using TSM, check the TSM BA Client version in use on your server. Also [Create a TSM Client Node](#).

To perform a Bare Machine Recovery you must:

1. Boot into the DR environment on the machine to be restored from the CBMR WinPE DR CD-ROM.
2. Specify the location of the machine configuration data.
3. Perform a system recovery from the specified backup location.
4. Perform conventional data recovery from your backups if necessary.

1.2.1 TSM Client Version

If you intend to use TSM as your backup location it is important to check the version of the TSM Client installed on your machine. Versions supported by CBMR are:

TSM Client 5.5.x onwards with a compatible TSM Server version (refer to the [Readme](#) document for full details).

If you are not using TSM, please skip this step.

1.2.2 Creating a TSM Node

This step is optional if TSM is not used in the recovery procedure.

CBMR will connect to a TSM server as a client node. The machine's operating system files and other important files will be stored under a Filespace in the client node. If you need to create a Client node using the TSM Admin Client, refer to the [TSM Administrator Guide](#) for further information.

To use the TSM module, you must enable CBMR to backup to the IBM Tivoli Storage Manager by creating a dedicated node via the TSM Admin client.

The settings required for the node are:

Archive Delete Allowed	YES
Backup Delete Allowed	YES
Client Compression setting	CLIENT
Force password reset	NO
Node Type	CLIENT

In addition, you must consider your password policy. If you specify a Password Expiration period,

you will have to set the password in CBMR every time the password expires.

Note: automatic password generation for the client nodes is supported in CBMR 5 and later.

Additional Configuration to Maintain Multiple Backup Versions

If it is required to hold more than one version of the DR backup in the same filespace, then the node must be setup correctly to support this.

You must have a **Management Class (MC)**, which contains a **Backup Copy Group (BCG)** and an **Archive Copy Group (ACG)**. Your node needs to be registered to use the **MC**.

The parameters of the **BCG** of interest are:

- Versions Data Exists = 2
- Versions Data Deleted = 1
- Retain Extra Versions = 30
- Retain Only Version = 60

In this example, there can be two versions of an object. The Versions Data Deleted attribute specifies the maximum number of different backup versions (1 in this case) retained for files and directories that you erased from your file system. This parameter is ignored as long as the file or directory remains in your file system.

The expiration date for the remaining versions is based on the retain extra versions and retain only version parameters. In the example, if there is more than one version and one is deleted, the deleted one will be kept for 30 days. The only remaining copy of the object will be retained for 60 days (that is AFTER you make it inactive).

Note: if several versions of a DR backup are maintained in TSM, the WinPE recovery environment will allow you to choose a specific version to restore.

1.3 Disaster Recovery

In the event of a disaster, having previously taken a backup of the system and stored the configuration information, Windows PE mode DR enables you to restore your system to the state at the last backup.

The CBMR recovery console (supplied in Windows PE form) is supplied on CD-ROM and, if your machine supports bootable CD-ROMs (most PCs do), then this is the most convenient way to boot the DR module. If the system does not support bootable CD-ROMs you can boot from the network. The WinPE DR environment can be network booted from a RIS server. The supplied Cristie document **CBMR WinPE DR RIS Network Boot** provides details on how to set this up.

The Windows PE option offers several advantages, namely:

- a familiar Windows GUI
- the ability to selectively choose which disks/partitions are going to be recovered
- the ability to inject new mass storage drivers during the boot process for dissimilar recovery
- all variations of Microsoft dynamic disks are supported (i.e. mirrored, spanned, striped and RAID-5)
- NTFS volumes/partitions are created natively
- partitions mounted on folders (junctions) and hard links are supported
- the restored backup contains the original file security information

2 The Create Configuration Wizard

Configuration information can be stored in the following locations:

- Floppy Disk
- Network share
- Local folder
- Local disk
- Locally attached USB pen drive
- Located within the DR backup itself (recommended)

Depending upon your deployment strategy, you may choose any one (or more if you wish) of the above.

As part of this process, the details about hard disks, operating system, storage controller(s), network adapter(s), network settings and the Backup Location to use will be queried and stored. You can override some of these details if you wish.

This phase of the setup comprises the following stages:

1. Specify a Backup Location to hold the DR backup
2. Specify where the DR configuration is to be stored
3. Select the disk volumes to be restored and formatted during the recovery process

The next sections discuss these stages in more detail.

2.1 Setting up the Configuration Parameters

The configuration information can be stored either:

- on a floppy
- on a local disk/folder
- locally attached USB pen drive
- on a network share
- located within the DR backup itself

If it is stored in a network share, the DR system will need to know the authentication details to gain access. Cristie recommend using the "located within the DR backup" option.

In the CBMR main window, click on **Setup Disaster Recovery Configuration:**

First, you will be offered the choice of where to store your configuration parameters. This can be stored as part of the DR backup itself, or any local Backup Location (floppy, local disk, USB disk, network share etc).

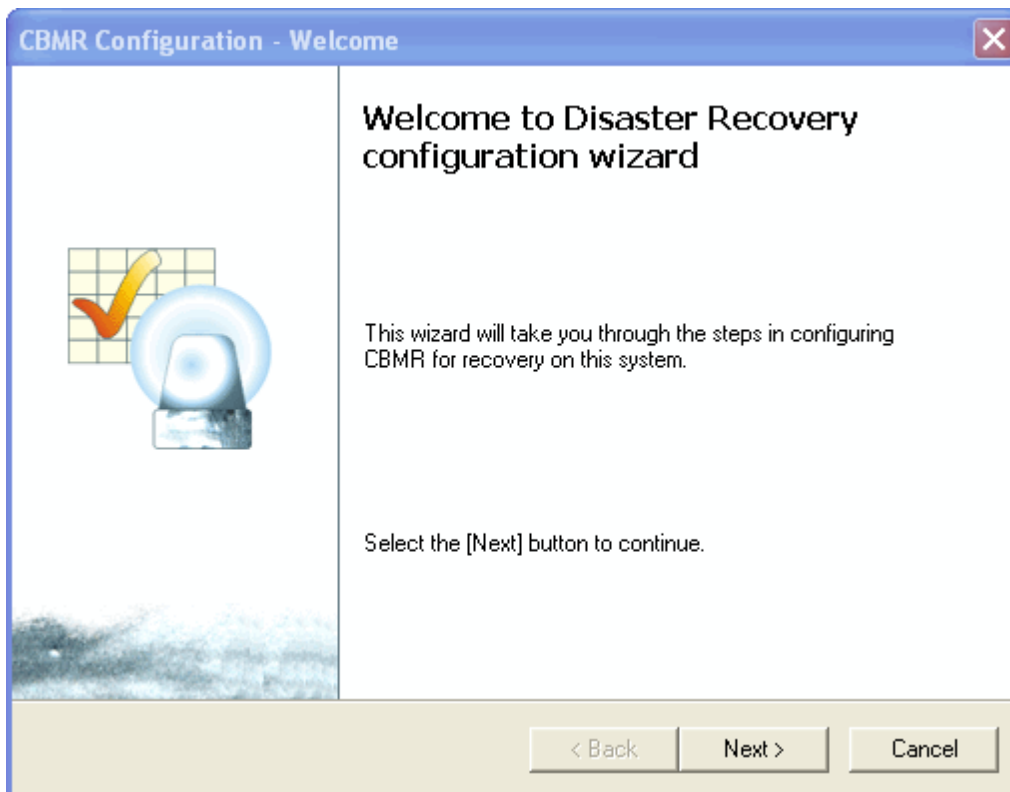
2.1.1 Storing Configuration Parameters

Note that you must setup a Backup Location from the Configuration menu before proceeding.

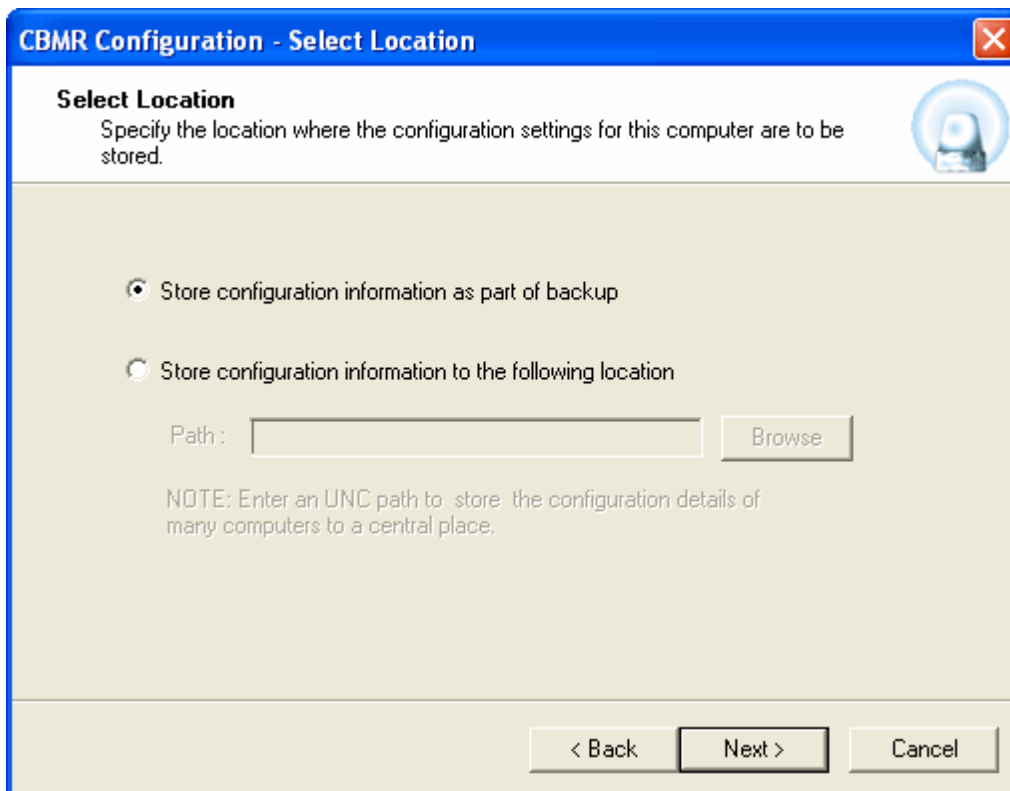
In the CBMR main window, click on **Setup Disaster Recovery Configuration:**



The CBMR Configuration Welcome dialogue will appear.



Select **Next>** and the **CBMR Configuration - Select Location** dialogue will be displayed:

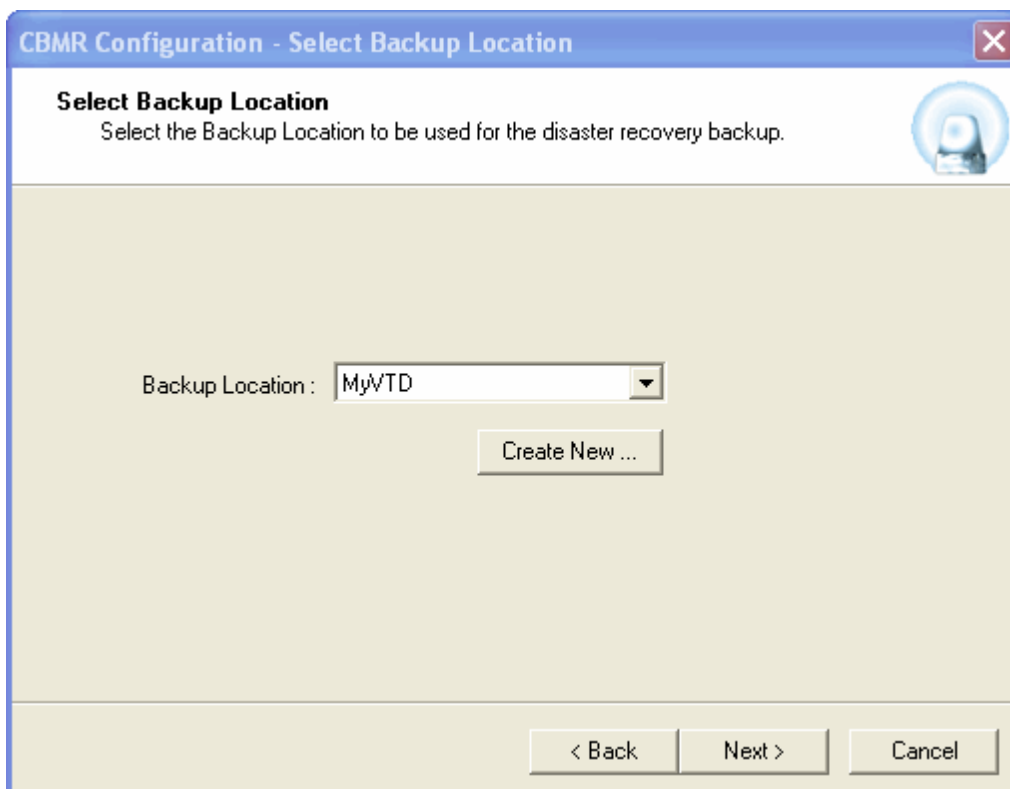


The dialog box is titled "CBMR Configuration - Select Location" and contains the following elements:

- Select Location**: Specify the location where the configuration settings for this computer are to be stored.
- Two radio button options:
 - Store configuration information as part of backup
 - Store configuration information to the following location
- A text input field labeled "Path:" followed by a "Browse" button.
- A note: "NOTE: Enter an UNC path to store the configuration details of many computers to a central place."
- Navigation buttons at the bottom: "< Back", "Next >", and "Cancel".

Select 'Store configuration information as part of a backup'.

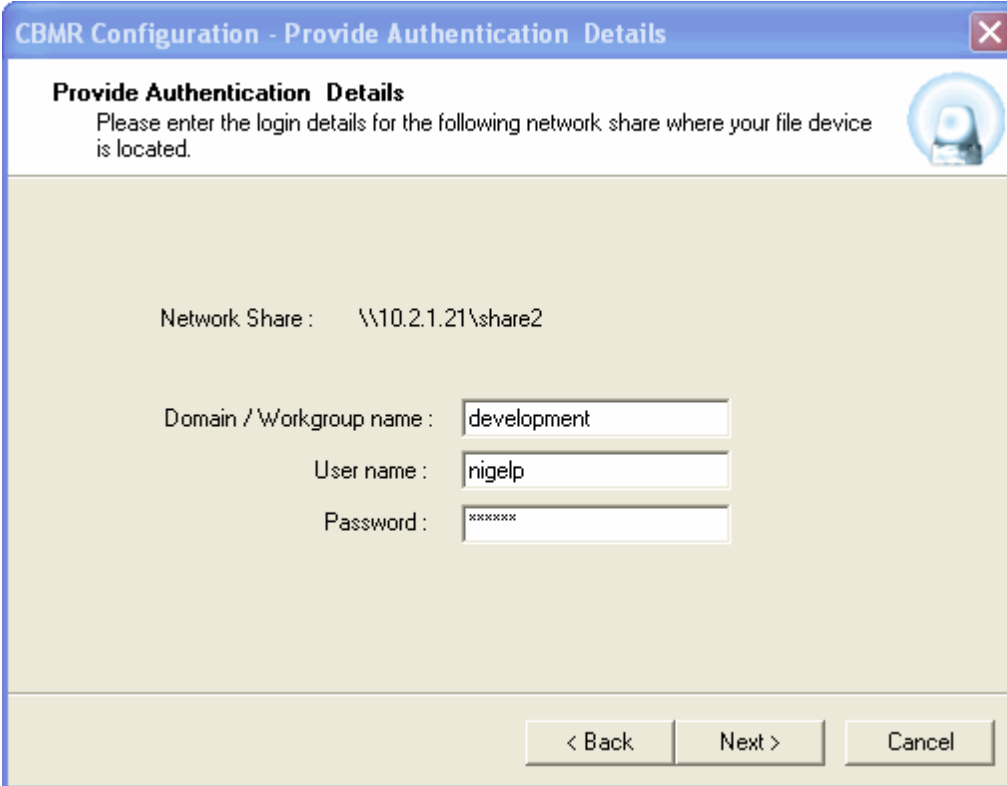
Press **Next>** and you will now be prompted to select a 'Backup Location' to contain the DR backup and configuration.



The dialog box is titled "CBMR Configuration - Select Backup Location" and contains the following elements:

- Select Backup Location**: Select the Backup Location to be used for the disaster recovery backup.
- A dropdown menu labeled "Backup Location:" with "MyVTD" selected.
- A "Create New ..." button.
- Navigation buttons at the bottom: "< Back", "Next >", and "Cancel".

If a VTD is chosen as a Backup Location and it resides on a remote share, the **CBMR Configuration - Provide Authentication Details** dialogue will be shown to allow the network authentication details to be specified:



CBMR Configuration - Provide Authentication Details

Provide Authentication Details
Please enter the login details for the following network share where your file device is located.

Network Share : \\10.2.1.21\share2

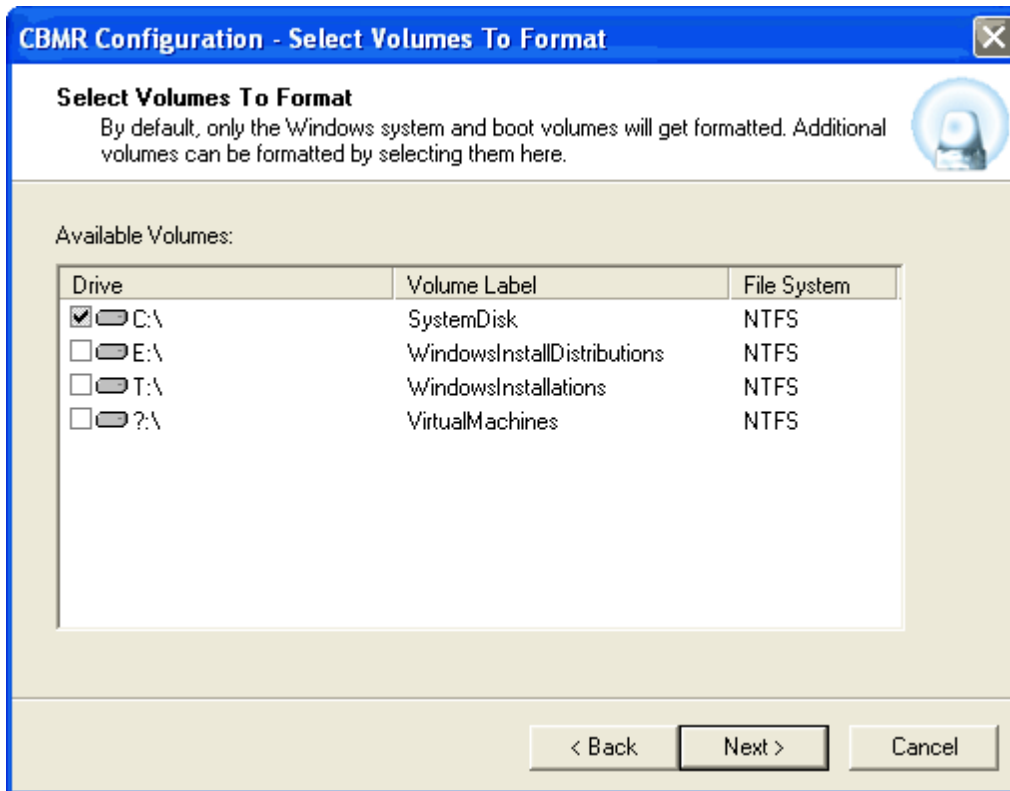
Domain / Workgroup name : development

User name : nigelp

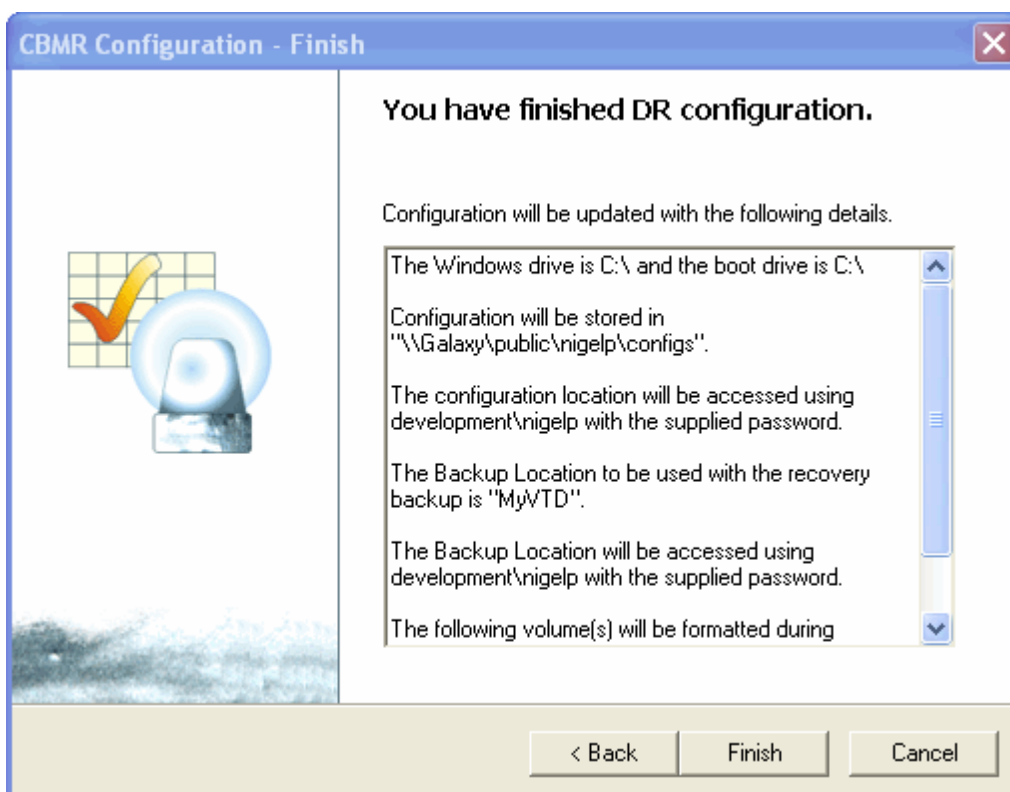
Password : xxxxxxx

< Back Next > Cancel

The **CBMR Configuration - Select Volumes to Format** dialogue will help you to select the disks and partitions which should be formatted during a recovery:



Click on **Next** to confirm the disks/partitions for formatting.



Finally, click **Finish** to save the settings. When a DR backup is run, the configuration information will be stored to a folder **CBMRCFG** on the Windows drive. This folder will be automatically included with the backup. This folder should never be removed manually, nor its attributes or contents changed.

Note: if you choose this option, you will need to manually specify the Backup Location during the recovery procedure.

2.1.2 Storing in a Specific Location

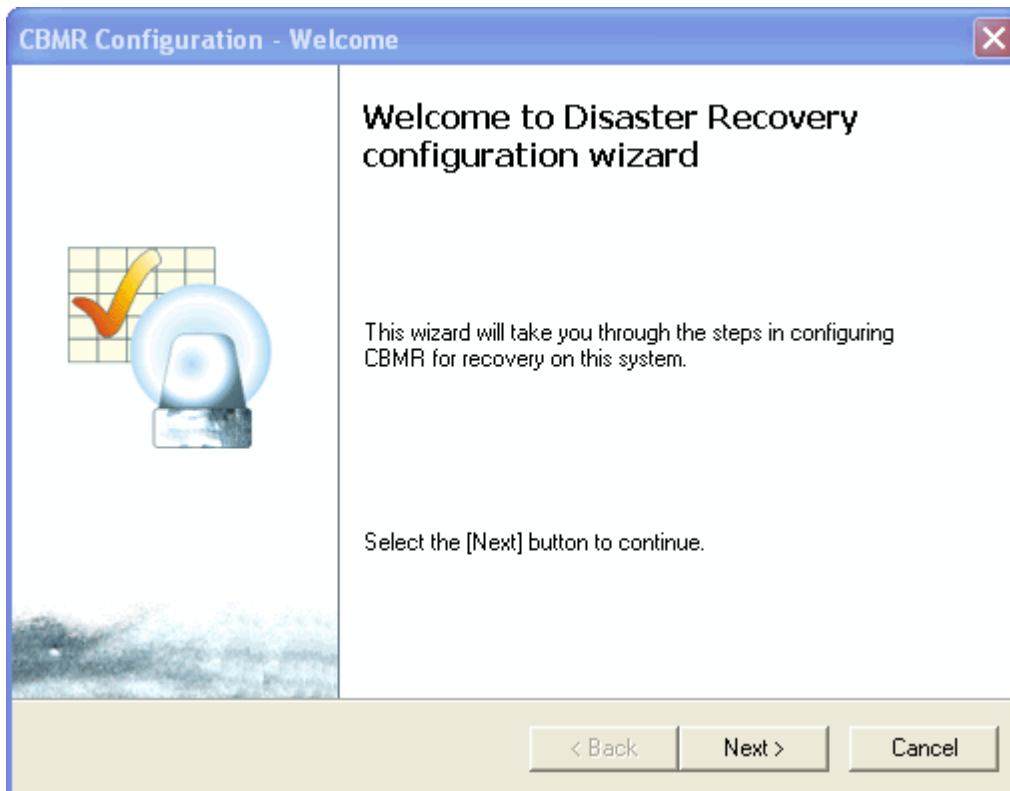
This can be useful if:

- You do not have a floppy or another locally attached drive
- A number of similar computers are connected to a network

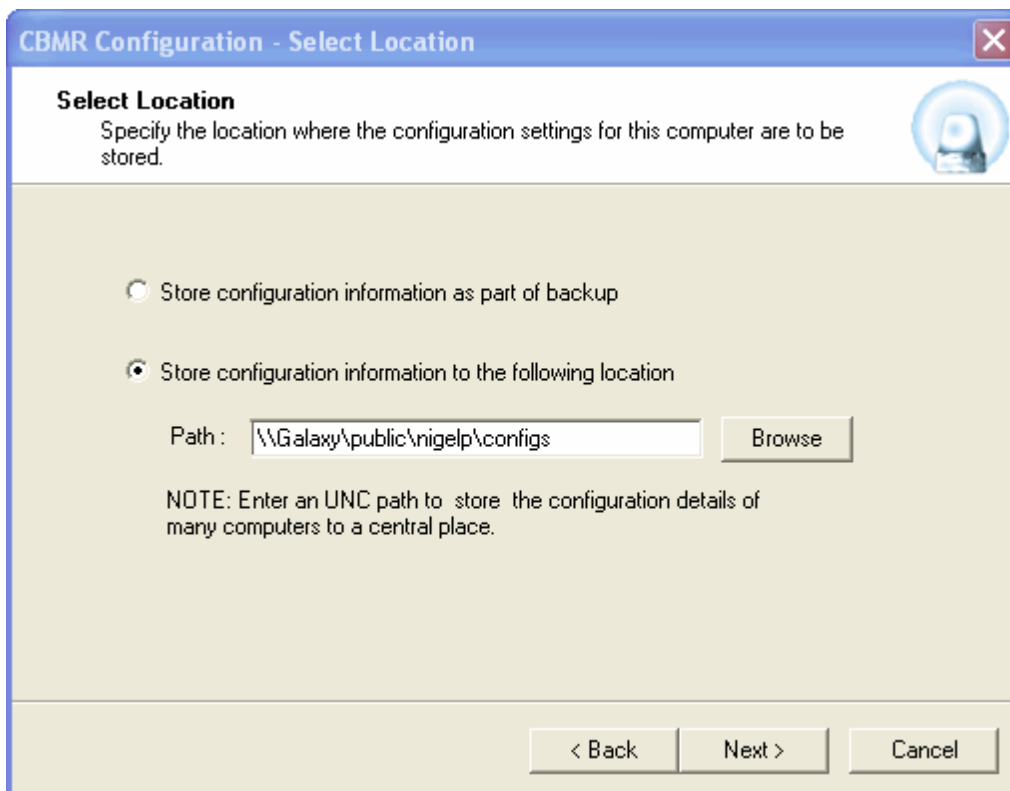
In the CBMR main window, click on the **Setup Disaster Recovery Configuration** option:



The CBMR Setup Configuration Wizard Welcome screen will appear.



Click on **Next** and the **CBMR Configuration - Select Location** page will appear.



Select 'Store configuration information in the following location'.

If the configuration is to be stored on a local drive such as a floppy, local hard disk or external USB

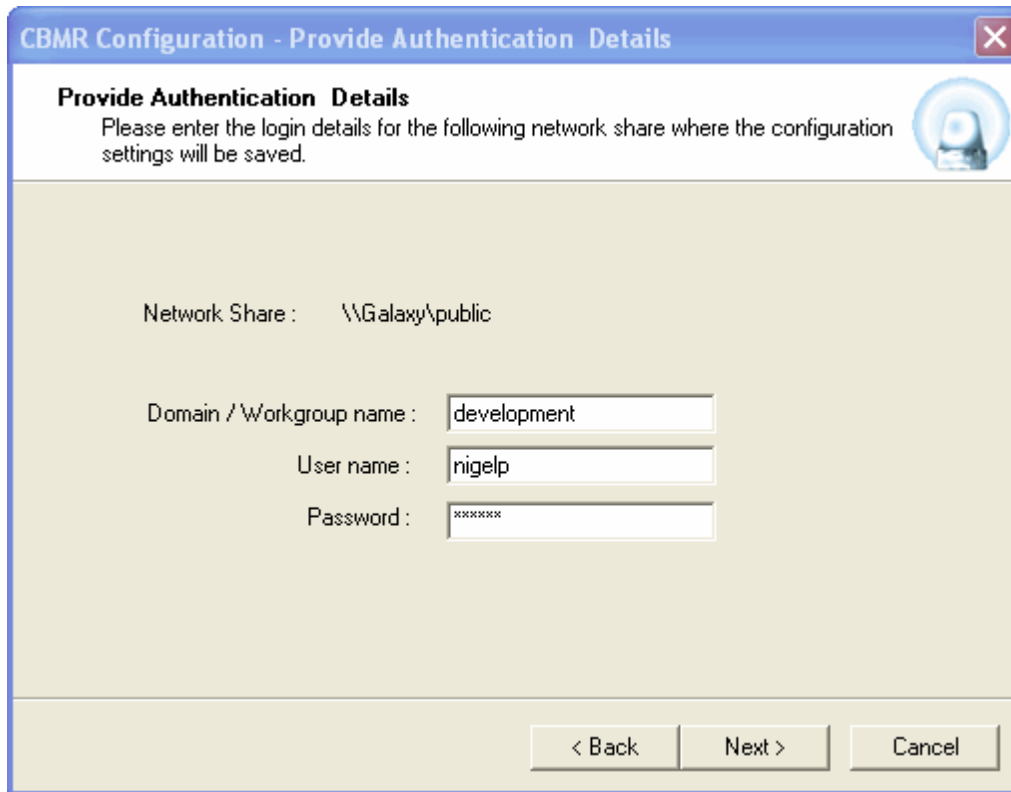
disk, either use the **Browse** button to navigate to the folder or specify the path:

- A:\ (root folder on a floppy)
- F:\Configs (folder on a locally attached USB disk)

Saving the configuration to a network share requires a full UNC path to be entered, such as:

- \\Galaxy\CBMR\Configs

To gain access to the network share, you may be required to enter your network credentials. Specify your network **Domain** or **Workgroup** and a valid network **Username** and **Password**.



CBMR Configuration - Provide Authentication Details

Provide Authentication Details
Please enter the login details for the following network share where the configuration settings will be saved.

Network Share : \\Galaxy\public

Domain / Workgroup name : development

User name : nigelp

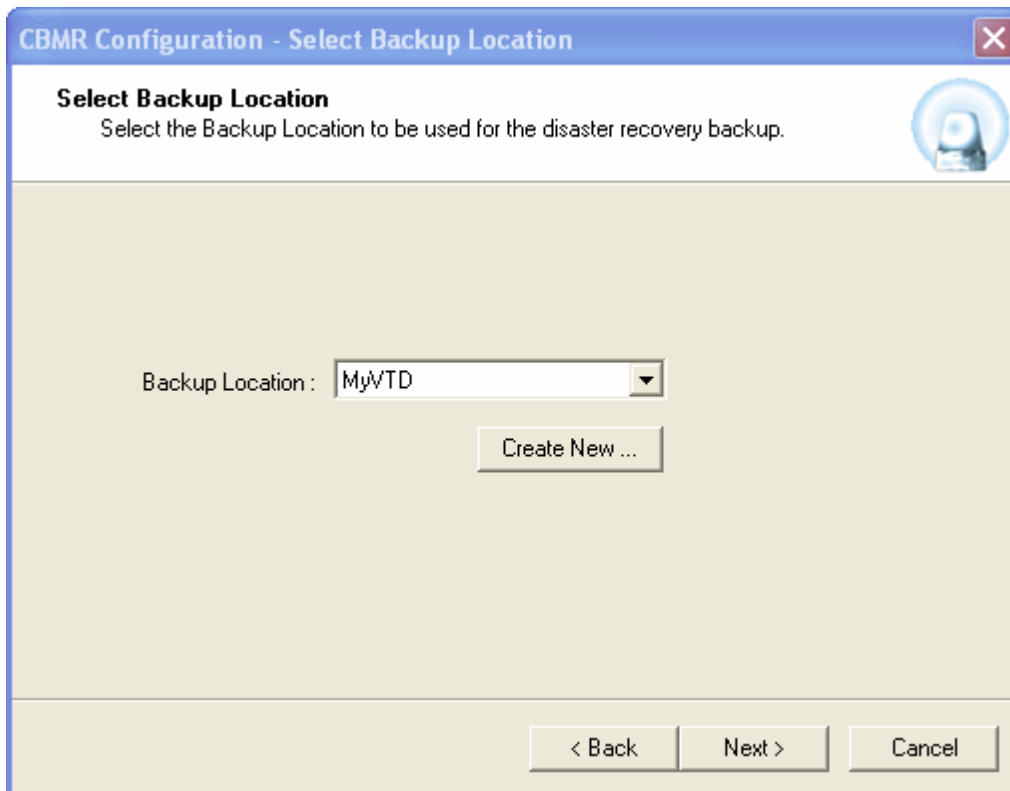
Password : *****

< Back Next > Cancel

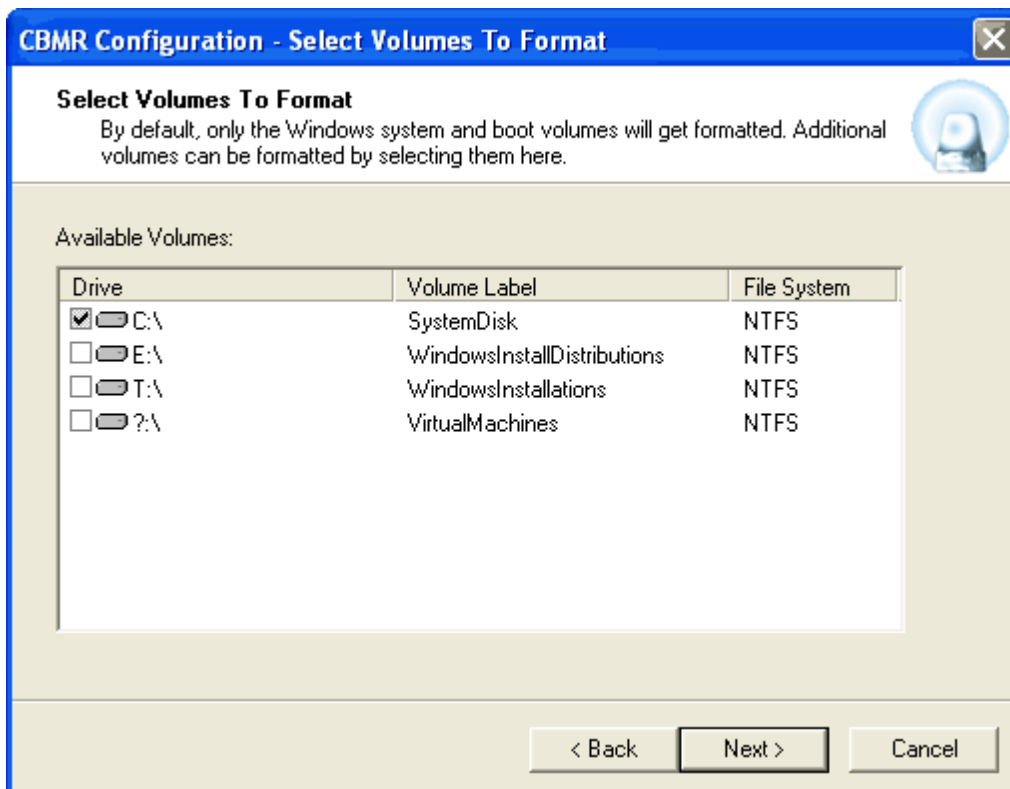
The specified credentials will be saved to the configuration to be used later during the recovery. The password will be saved in encrypted form.

Whether the configuration is stored on a network share or on a local drive, the selected folder must currently exist.

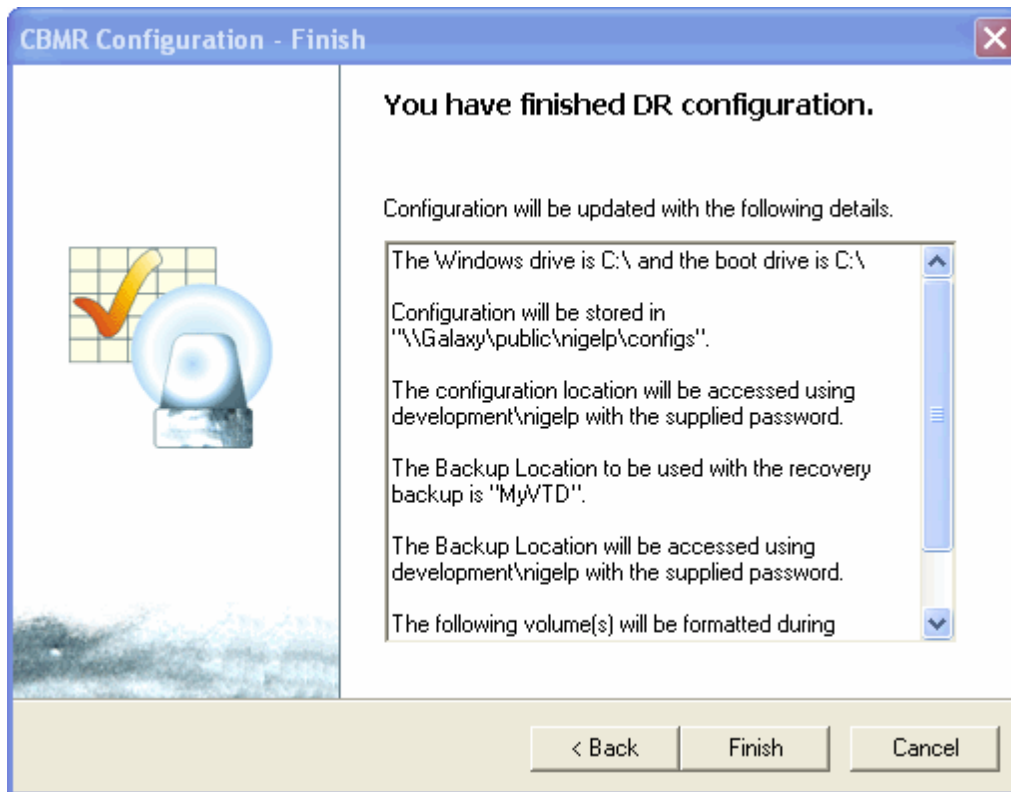
Press **Next>** and you will be prompted to select a **Backup Location** for the DR backup and configuration.



The **CBMR Configuration - Select Volumes to Format** page will help you to select the disks and partitions which should be formatted during a recovery.



Select **Next>** to confirm the disks/partitions for formatting.

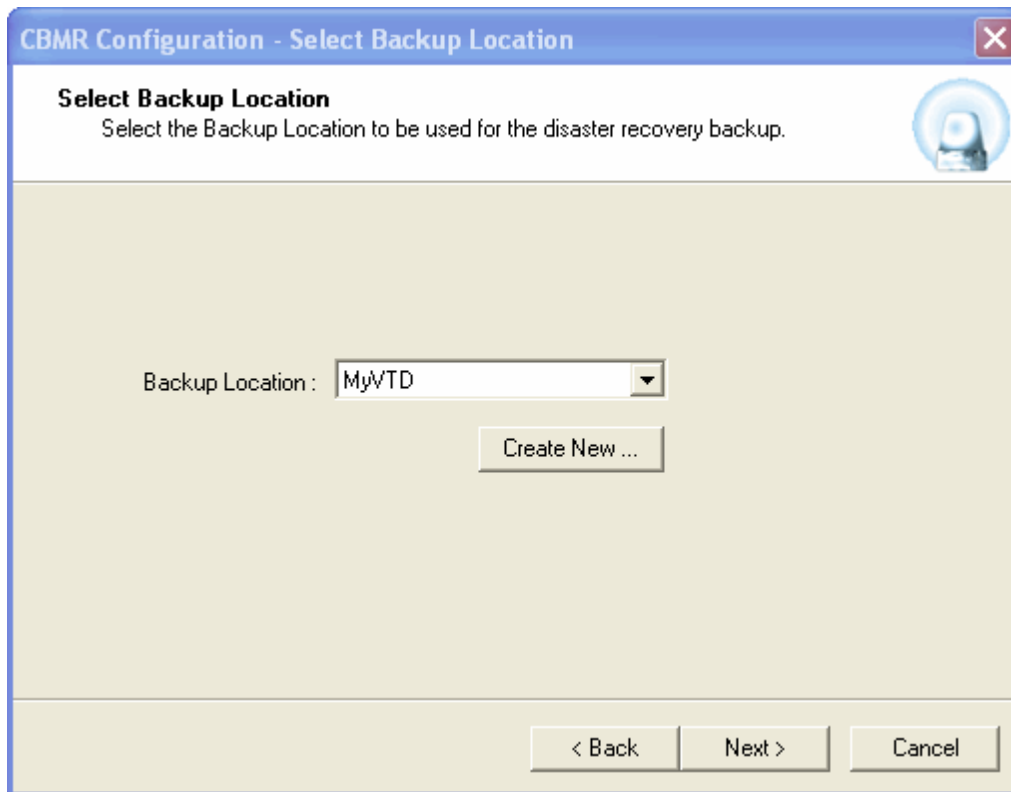


Select **Finish** to save the configuration to the selected location.

Note: if a UNC path is specified for the configuration location, the same path can be used for all the computers in the workgroup as individual system's configuration will be stored under a folder named after the system's NetBIOS name.

2.2 Choosing DR Backup Location

After choosing a location for the configuration, you will then be asked to select a **Backup Location** for the DR backup.



The dropdown control will list all the existing **Backup Locations**. If you wish to create a new **Backup Location** just for the DR backup, select **Create New...**, which will show the **New Backup Location Wizard**.

In the example above, a new TSM Backup Location is being created. Select **Create** to create the new **Backup Location**. Once done, select **Finished** and the control will return to the **Select Backup Location** page.

Select **Next>** to be prompted to select the disk options for the DR backup and configuration.

2.3 Selecting Volumes

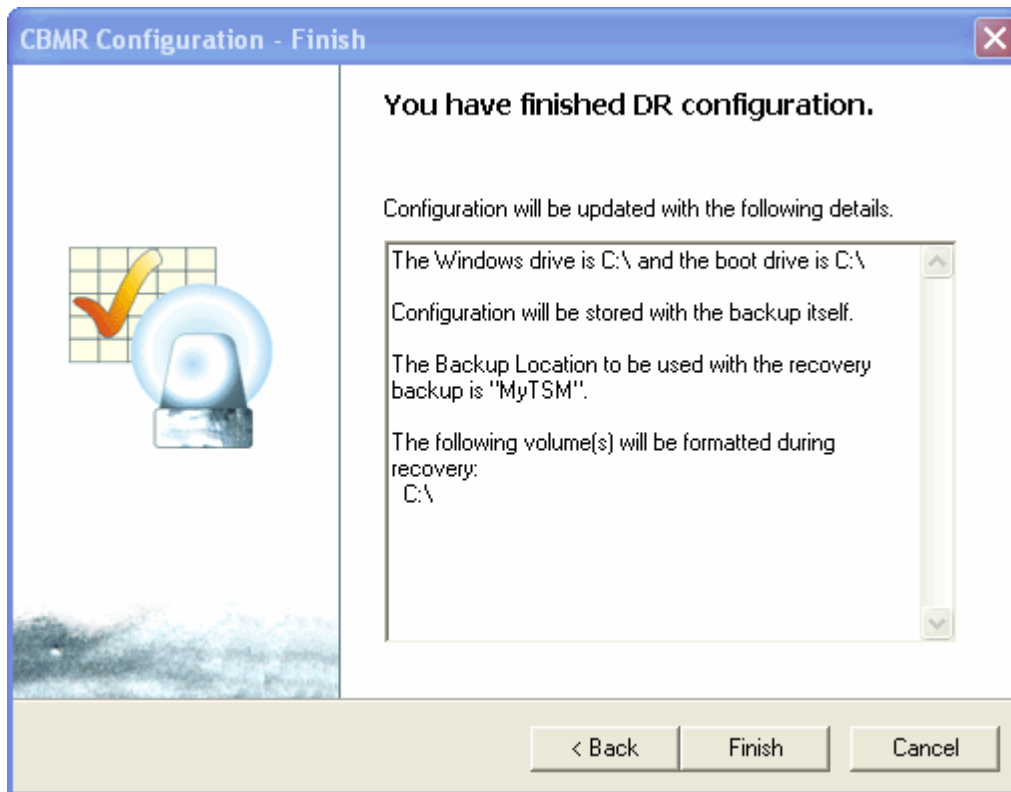
The **CBMR - Select Volumes to Format** dialogue allows you to select the volumes and partitions which should be formatted by the Recovery Console as part of the recovery procedure.

The Windows boot and system partitions will be selected by default and you cannot exclude them. All other volumes and partitions can be selected or de-selected by clicking on the selection box which toggles the current selection.

Select **Next>** when you have specified your selections.

2.4 DR Setup - Finish Dialogue

You have almost completed the **DR Configuration** setup. (The location for the configuration may be a floppy disk, a network share, a local folder or located with the DR backup itself)



All of the configuration selections are shown in the scrollable window.

Check that all your selections are correct.

If you need to modify any of these settings, choose the **<Back** button and modify your selection.

If you are happy with the selection, choose the **Finish** button and the DR Setup will add your system configuration data to the configuration location of your choice.

3 Restoring Your System

If the situation arises where you need to recover your system, you have all the necessary information on the **DR System** CD, the **DR Configuration Disk** (or file) and the **DR Backup** to get your system up and running in minimal time. The restore process requires little user intervention.

3.1 WinPE 2 based CBMR Recovery Console

When the **WinPE 2 CBMR Console** is booted, a Windows installation-like boot procedure is started.

During the boot process, WinPE 2 drivers for your **Plug and Play** devices will be loaded - in particular the **Mass Storage** devices and **Network Adapters**. When the WinPE 2 system has booted, it is possible to remove the CD if you wish.

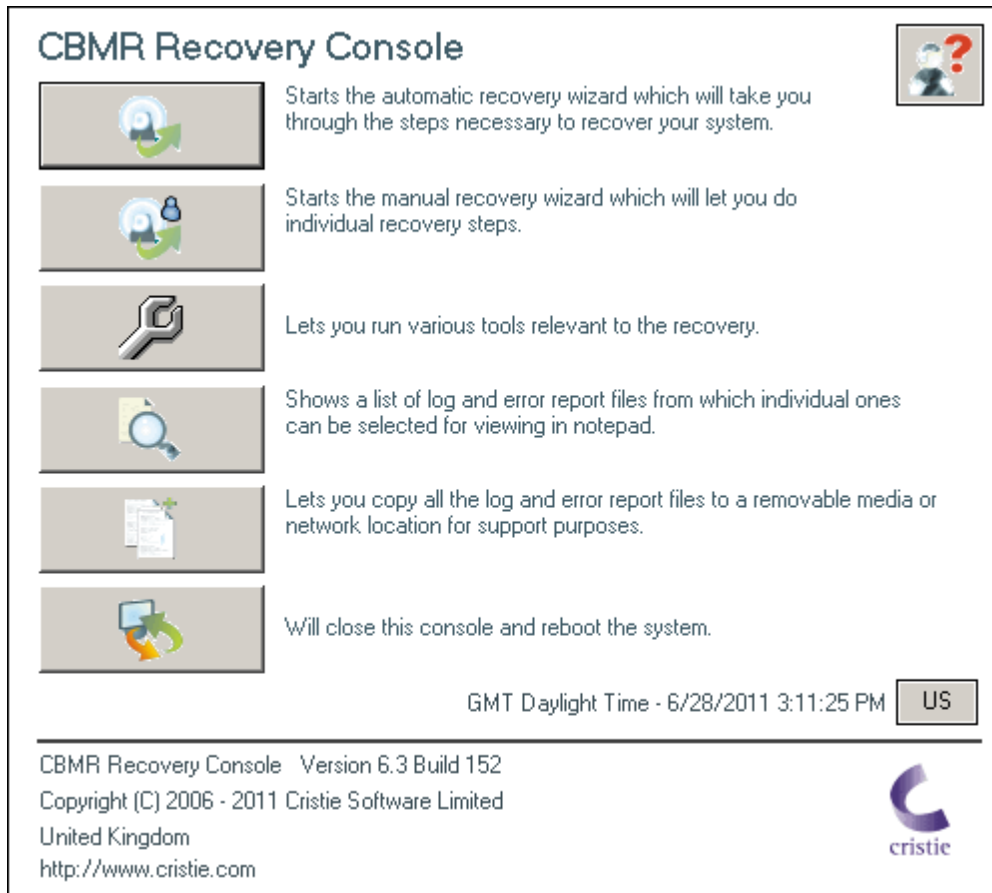
Note: the DR Console will automatically reboot 72 hours after starting. This is an operating limitation of the Microsoft Windows WinPE 2 environment.



When this sequence completes, the **CBMR Recovery Console** will be shown.

3.1.1 CBMR Recovery Console Main Menu

When you boot the **WinPE 2** DR environment, you will see the **CBMR Recovery Console** Main Menu as below:



You may configure the format of the displayed date/time and the keyboard layout, by pressing the

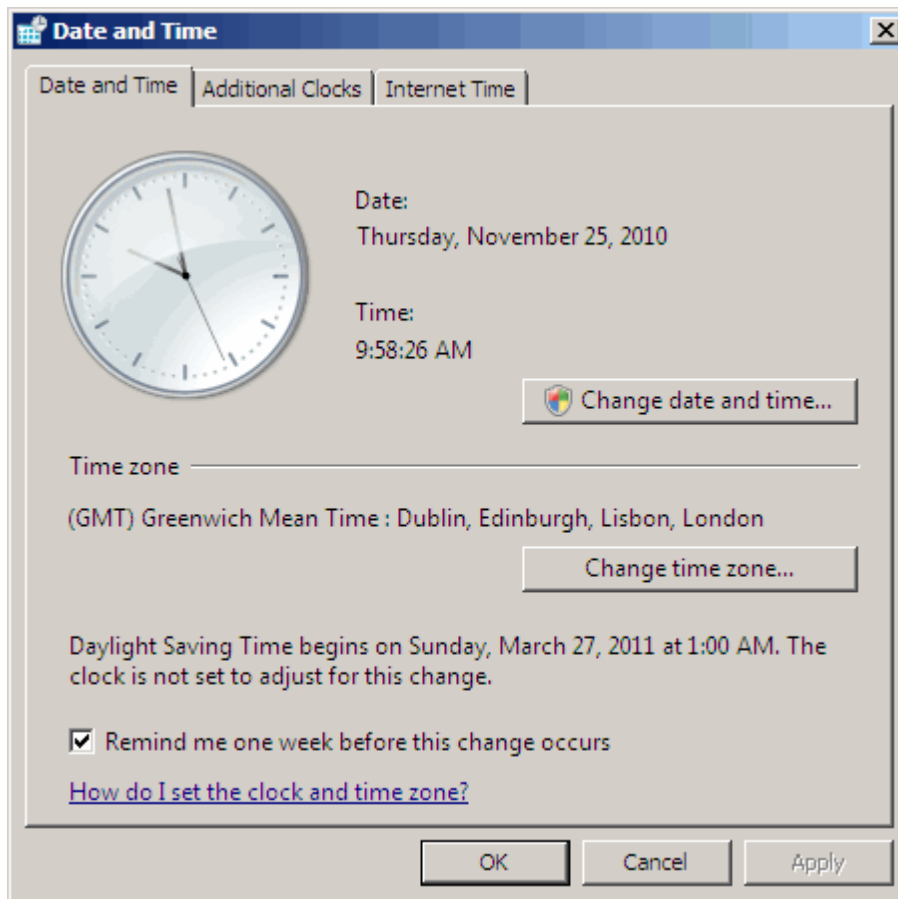
US icon.

relevant to the recovery.



By default the standard display uses US keyboard layout, but this may be changed to one of the listed alternatives. Note that this does not change the display language which is always English.

Select **Date, Time and Time Zone** to configure the locale for the recovery.



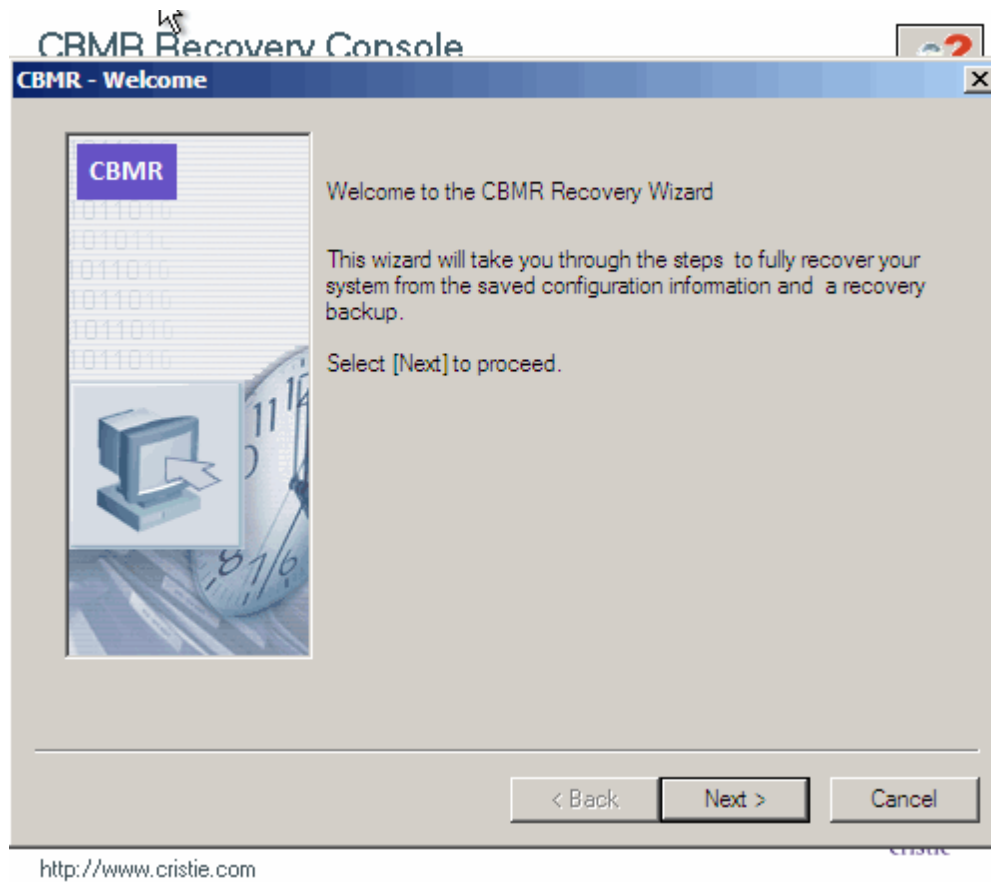
Note: the Additional Clocks and Internet Time tabs are operational. In fact it is possible to synchronise the system time with an NTP time server if required.



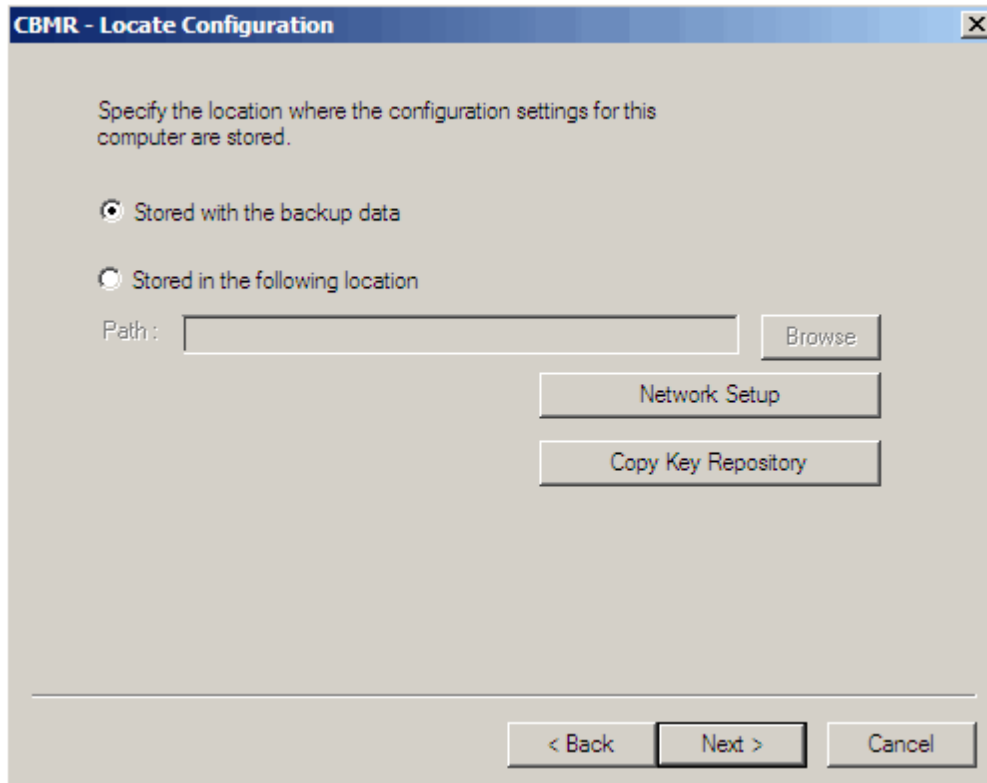
Select the Help button to show online help for the recovery environment.

3.1.2 Start Automatic Recovery Wizard

Select this option to commence an **automatic** DR sequence.

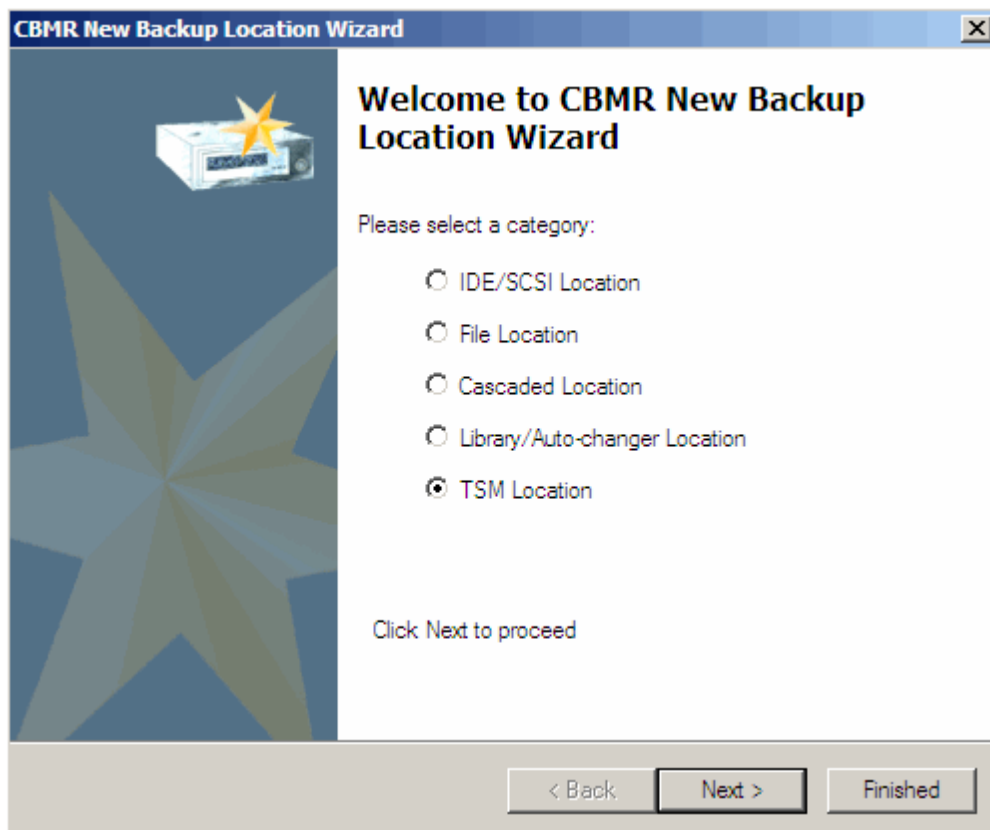


Press **Next>** to proceed to the first step of the sequence. Press **Cancel** to abort the recovery sequence at this point. You will then be presented with a dialogue prompting you to identify the location of the system configuration details required for successful recovery:

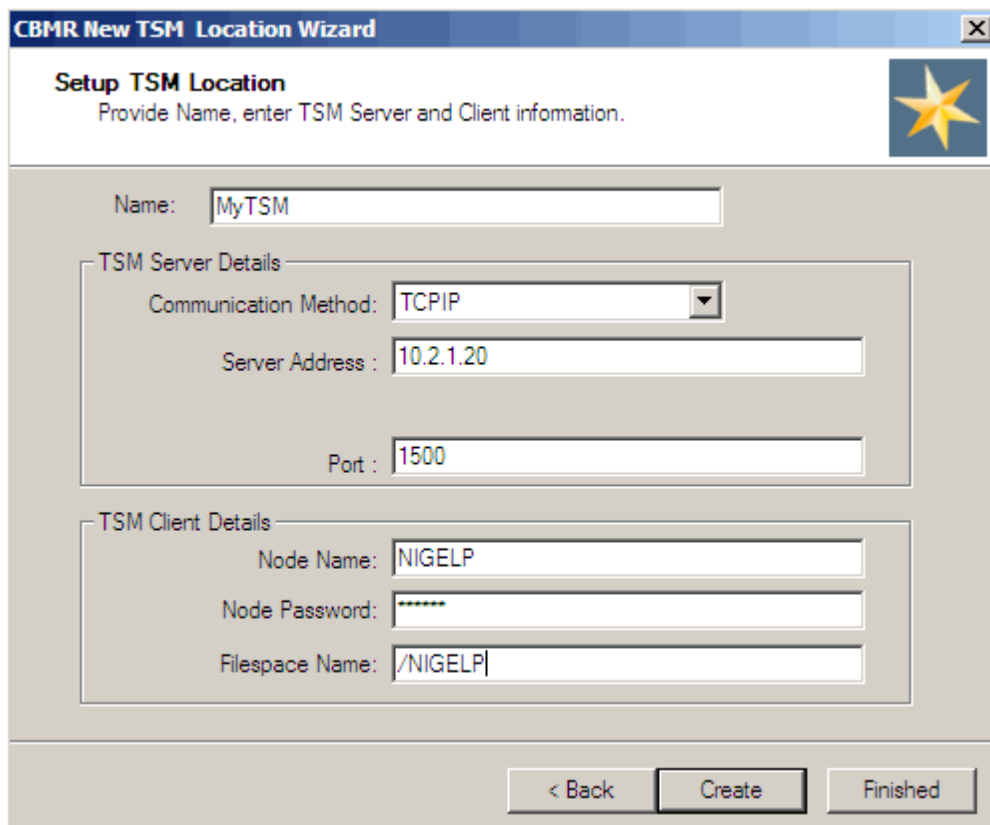


3.1.2.1 Stored with the backup data

If the configuration settings are saved with the DR backup itself, select this option. You will be required in the next step to identify the source of the backup by creating a temporary **Backup Location**. Select **Network Setup** to configure the network for accessing a remote backup share or TSM. Select **Copy Key Repository** to load a key repository file for recovering encrypted backups.



Select **Next>** and setup the Location details. The example shows a temporary TSM Location being defined. Note this Location exists for the duration of the recovery only.



Note: it is possible to change the temporary Location's details by selecting Modify on the menu. If the Backup Location resides on TSM, it may be that there are several versions of the DR backup available.

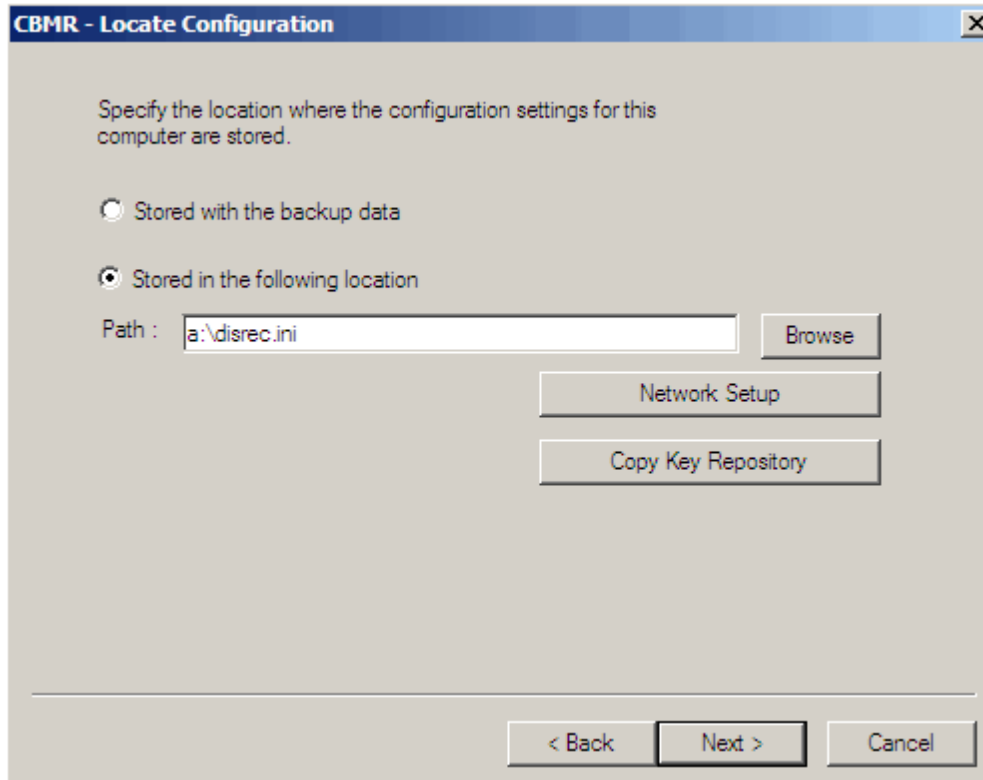
The screenshot shows a dialog box titled "CBMR Restore Selection". The dialog contains the following elements:

- Instructional text: "Specify the restore settings like the version of backup to restore and the dataset here."
- Backup Location: "MyTSM"
- Text: "Multiple versions of the backup are available in this location. Select a version to restore :"
- A dropdown menu showing three options:
 - Backup done on 04/08/2010 14:20:55 (highlighted)
 - Backup done on 04/08/2010 14:20:55
 - Backup done on 04/08/2010 14:14:35
- Dataset number to restore: "0"
- Checkbox: "Enable detailed restore log" (unchecked)
- Navigation buttons: "< Back", "Next >", and "Cancel"

Select the version appropriate to the recovery required. If the configuration is contained within the backup, it will be extracted from the selected version. Select **Enable detailed restore log** if you wish a full record of all the files restored during recovery. Beware that this could potentially become very large and is not recommended.

3.1.2.2 Stored in the following location

This following example retrieves the configuration from a local floppy disk. A USB disk would be identified in much the same way.

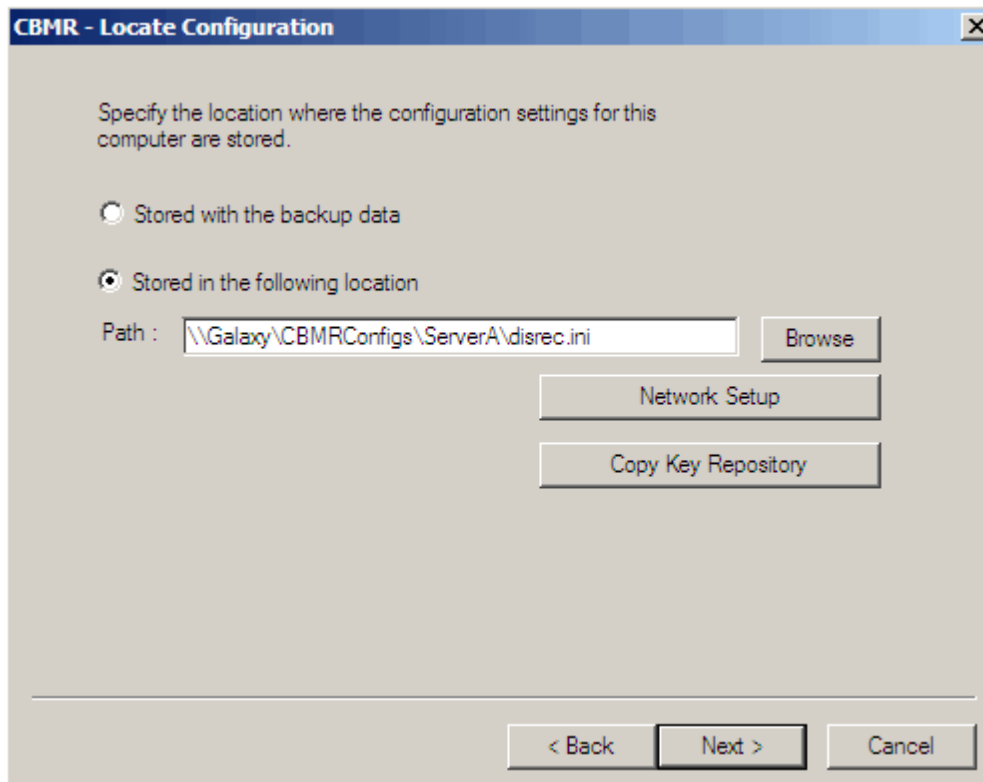


Note: USB devices must be connected to the system and powered (if required) BEFORE booting the Windows PE recovery environment. This is a restriction of Windows PE.

Note2: the configuration filename disrec.ini MUST be appended to the pathname.

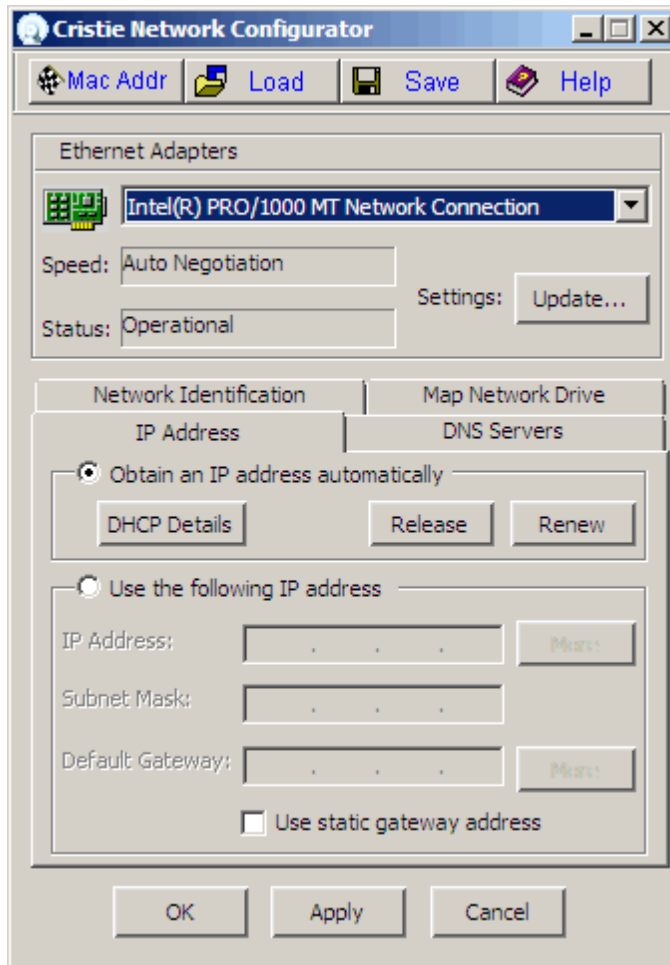
3.1.2.3 Network Setup

If the configuration is held on a network share, define the syntax in the Path field. Please see the example path below:



If the configuration is maintained on a remote network share then the network must be operational. Select this option to start the **Network Configurator** tool. Configure the required network adapter from the dropdown list and configure the IP settings accordingly.

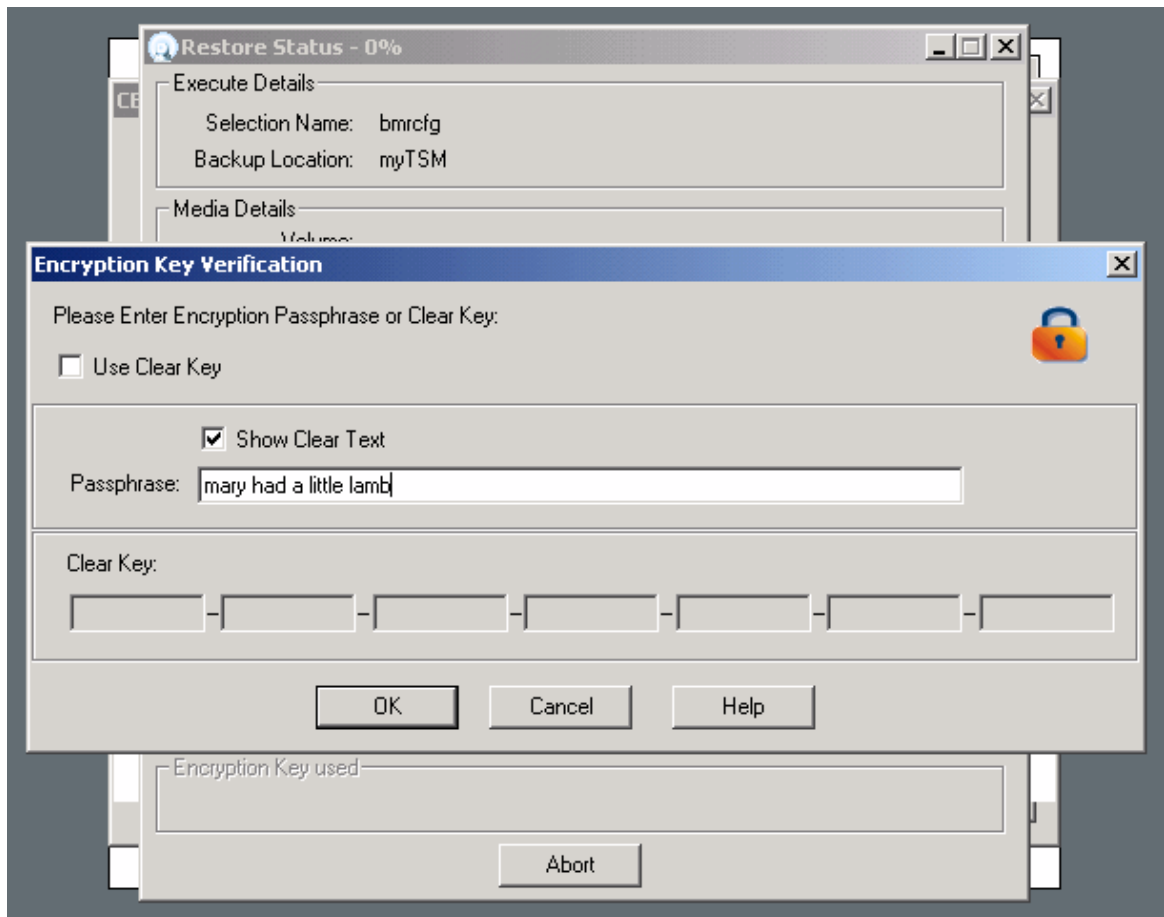
This saves having to navigate back to the **DR Console Main Menu** where the same function is provided.



Press **OK** to complete the Network Configurator dialogue and then **Next** to proceed with the next step in the recovery sequence.

3.1.2.4 Encrypted DR Backups

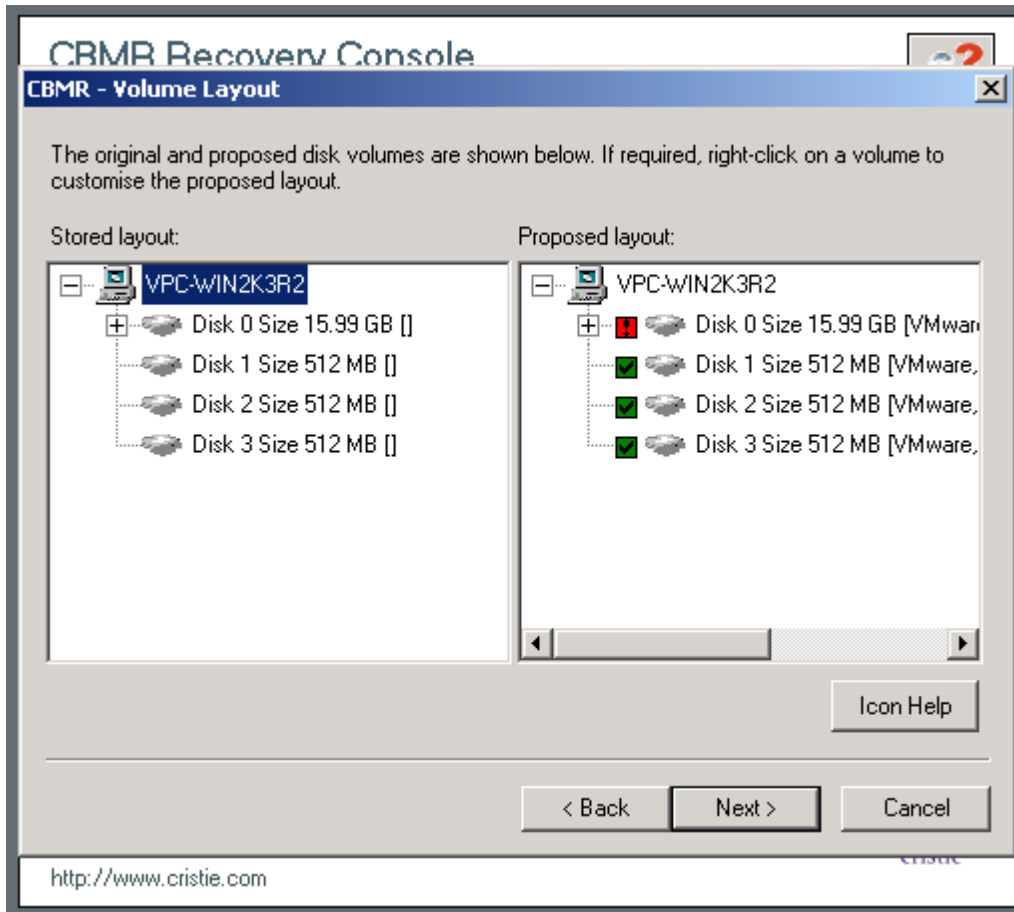
If the configuration files are contained within the backup, the backup was encrypted and no Key Repository file has been provided, then a prompt will appear for the encryption key or passphrase.



It is not possible to recover the configuration files from an encrypted backup without the key or passphrase.

3.1.2.5 Confirm Volume Layout

The next step in the Automatic recovery shows a list of the disks and partitions to be recovered.



The left-hand panel of the dialogue shows the original disk layout and partitions. The right-hand panel shows how the recovered disks will be partitioned after the recovery.

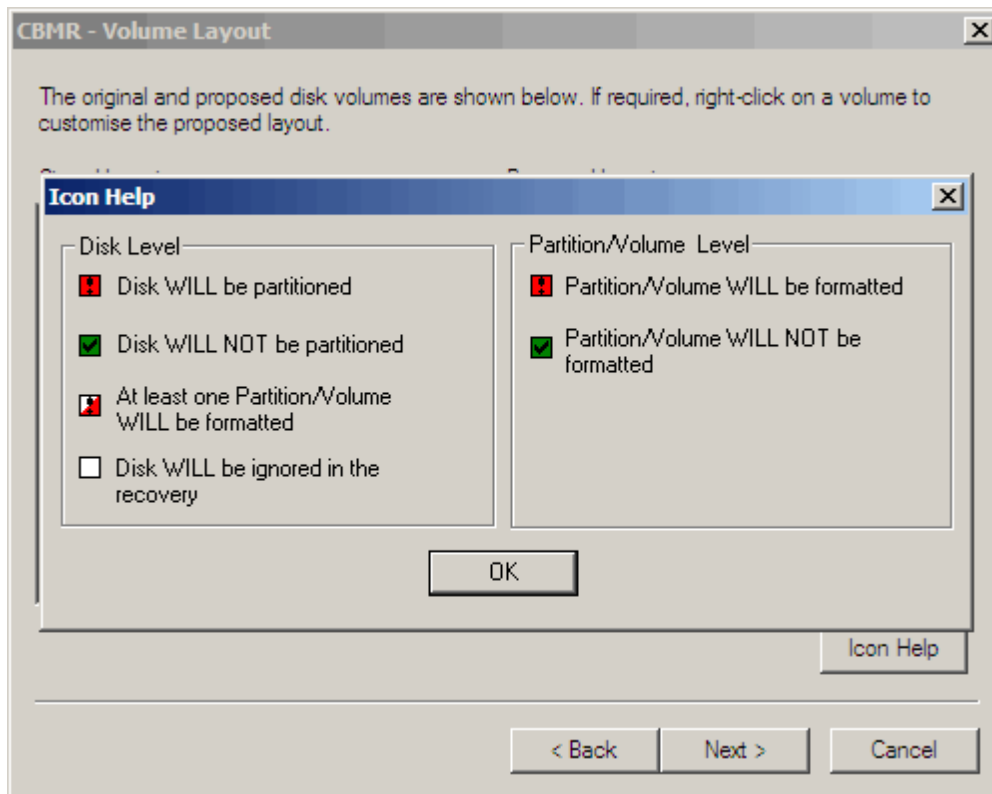
A green tick box next to a disk signifies that the disk and its underlying partitions will be left intact. Placed next to a partition/volume means that the corresponding partition/volume **WILL NOT** be partitioned.

A red exclamation mark placed next to a disk means it **WILL** be partitioned during recovery. Placed next to a partition or volume means that the corresponding partition/volume **WILL** be partitioned.

A red/white exclamation mark placed next to a disk means at least one partition/volume **WILL** be partitioned.

A white box indicates that the disk will be completely ignored during the recovery.

Click on the [Icon Help](#) button to display a summary of this:

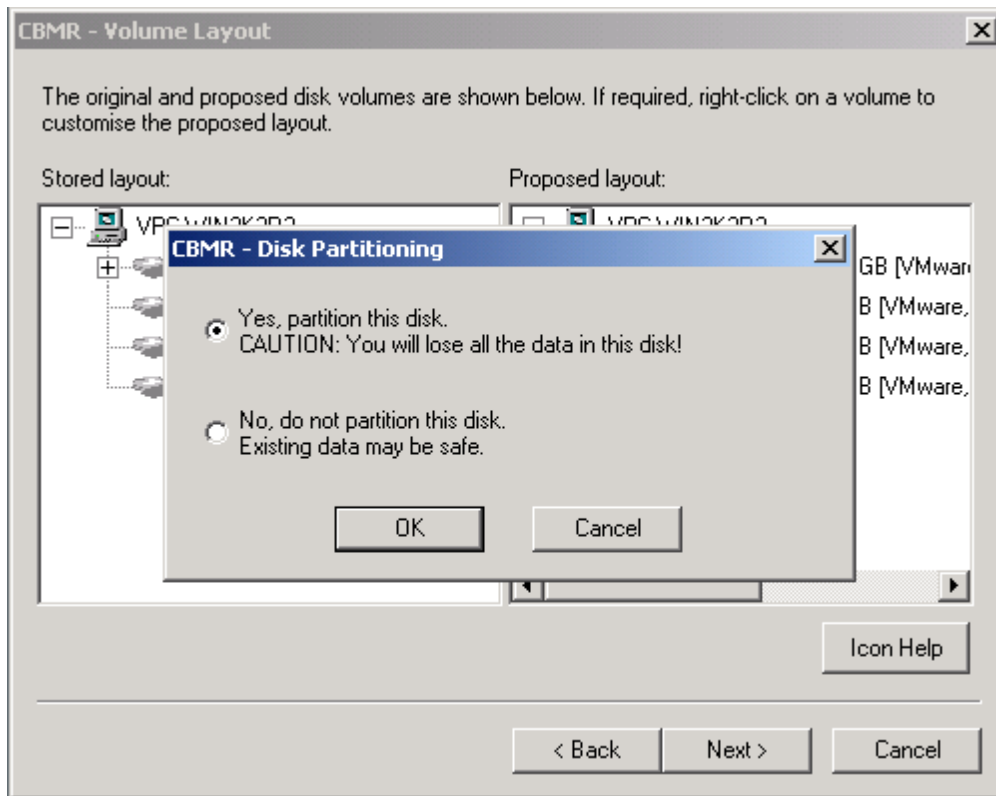


When the recovery is to the original system, the contents of both panels will look similar if the number of disks is the same. Possibly the disk sizes will be different.

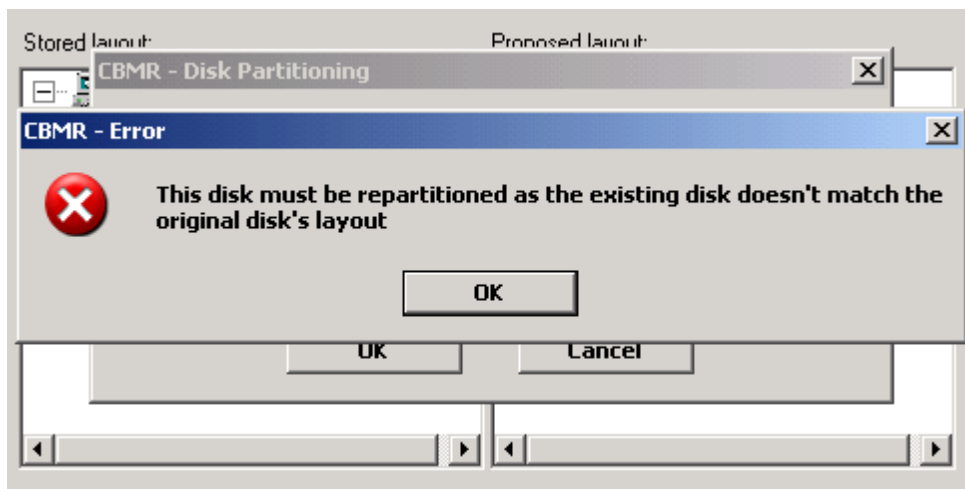
When performing a recovery to a dissimilar system, the disk mapping can be much more complex. Some of the criteria used to judge the disk mapping are:

- disk geometry
- disk capacity
- if currently formatted, the disk signature

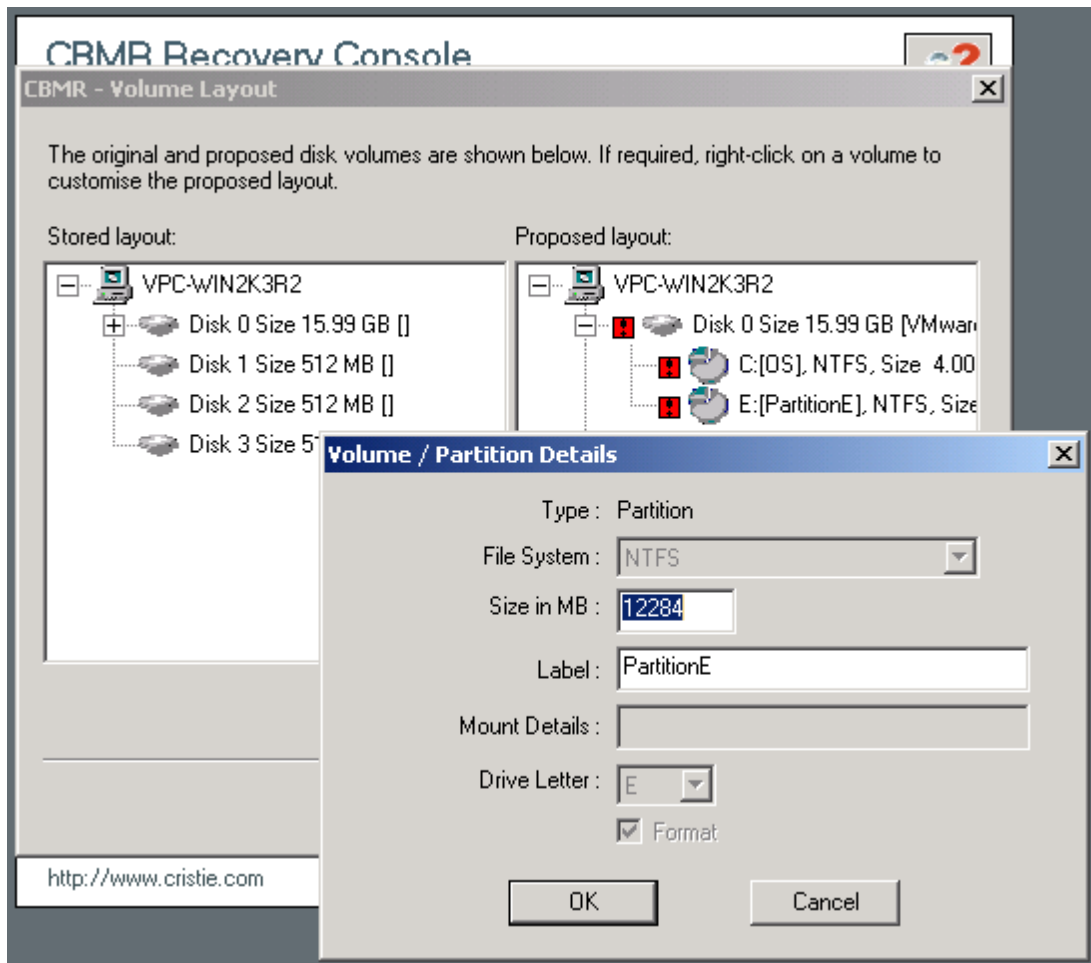
You may right-click on any disk shown in the right-hand panel to select whether the disk will be formatted or not.



Any attempt to incorrectly turn off formatting will result in this error:



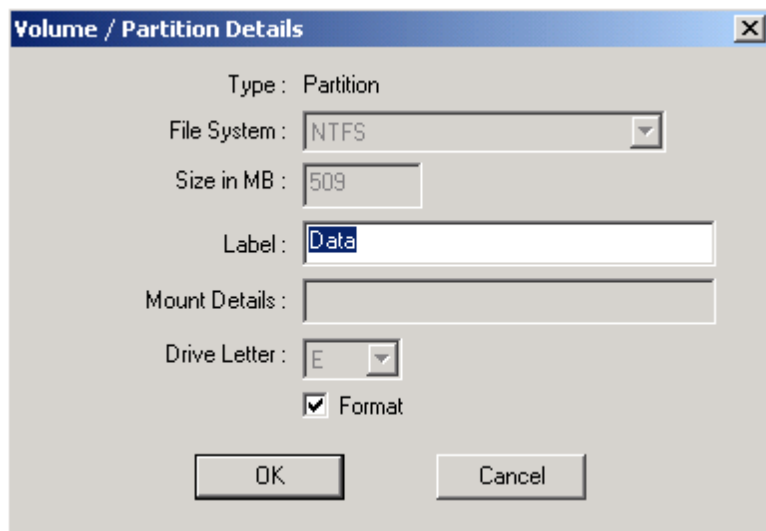
You may also right-click on a partition to allow you to selectively modify the partition parameters or remove it altogether.




You may **Modify** the following partition parameters:

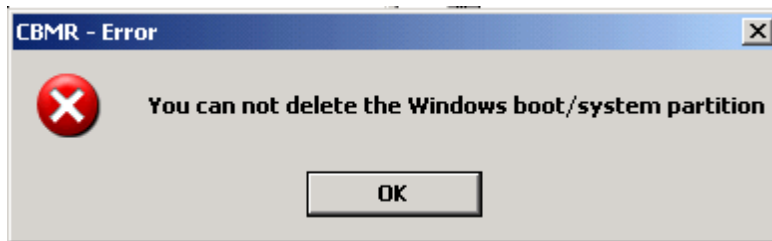
- size in MB (only if disk is shown with a **!**)
- label
- format (yes/no)

The screenshot below shows an example:



Select **Delete** to remove the partition completely (only if disk is shown with a ).

If you attempt to either not format or delete a Windows system partition, an error such as this will be displayed:





At this stage, nothing has happened to the disks. Press **Next>** to continue with the recovery.

3.1.2.6 Proceed With The Recovery

Before continuing with the actual recovery, a final warning screen is displayed.

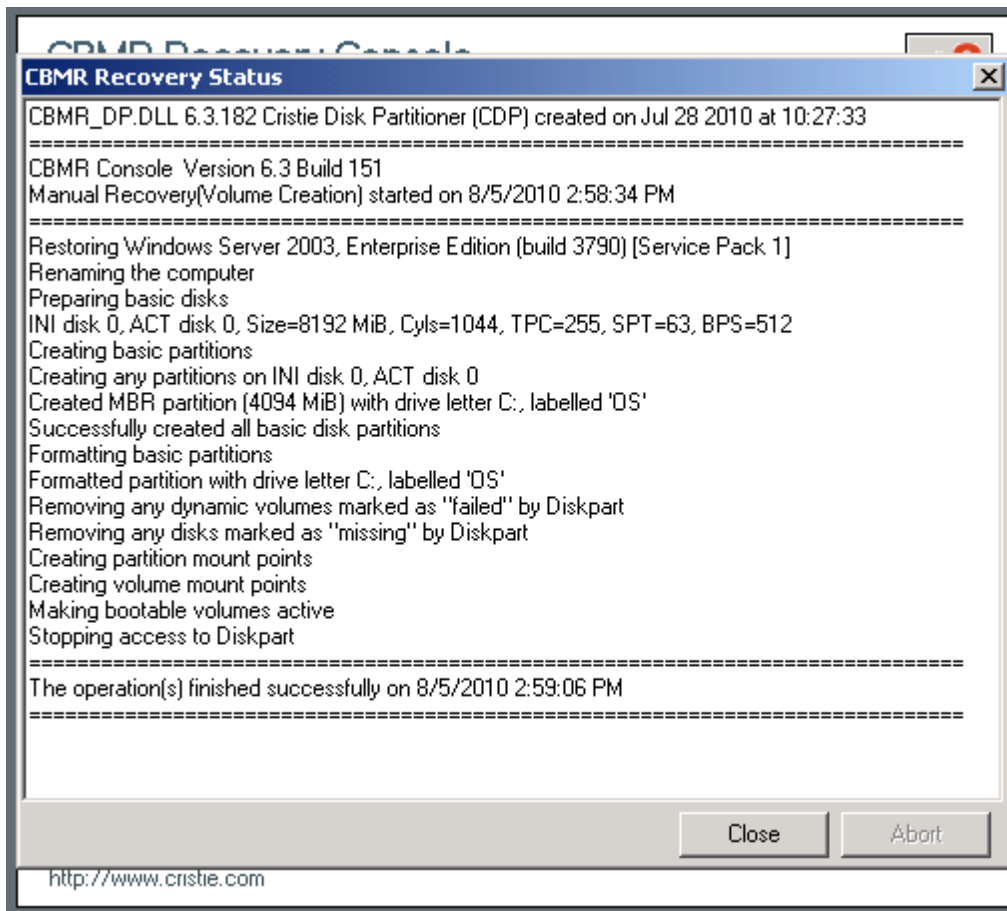


If you are happy with the specified recovery configuration, press **Finish**. This will commence the **actual** recovery.

Note: this procedure will COMPLETELY DESTROY any existing data on those disks selected for format (ie. shown with a ). Disks or partitions tagged as no format (ie. shown with a ) will remain intact.

3.1.2.7 Disk Recovery Sequence

The **Recovery Sequence** begins by preparing the disks selected for the recovery.

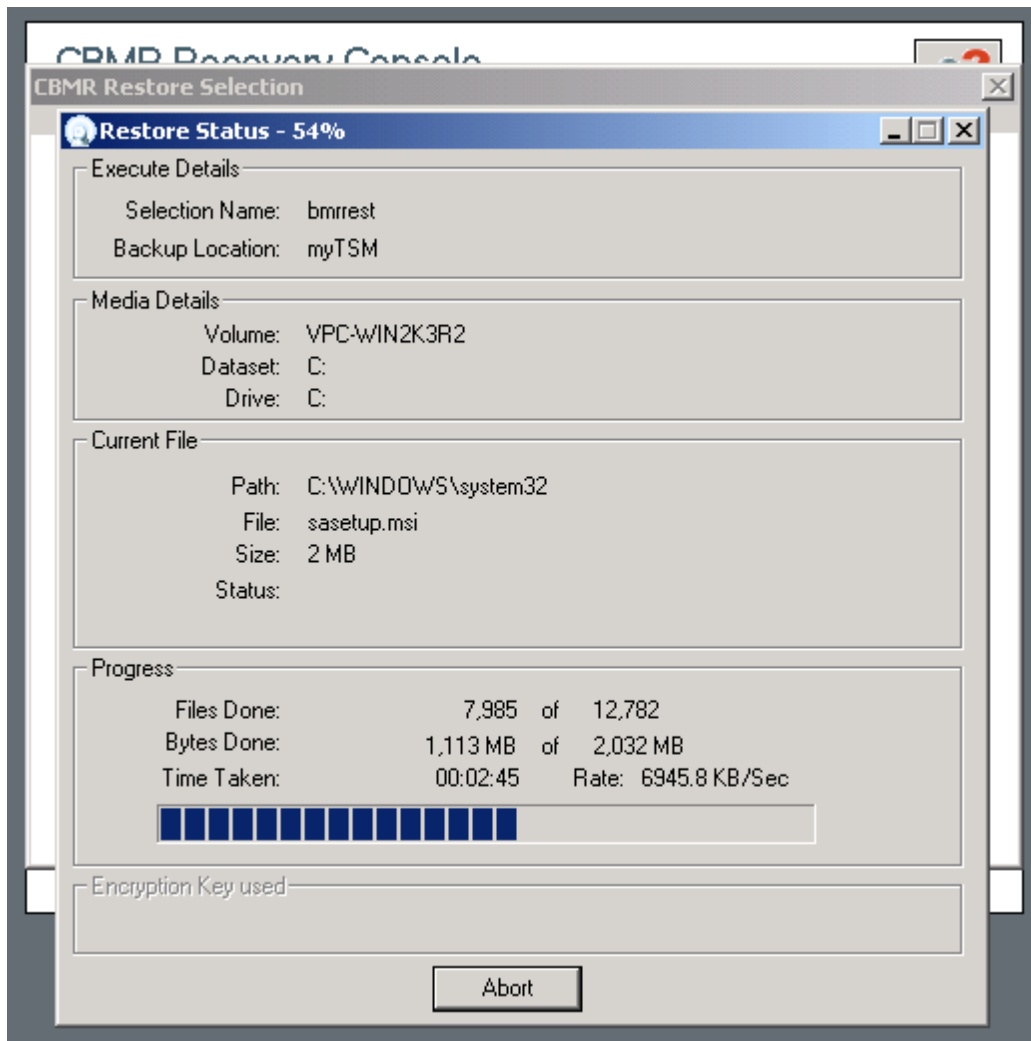


This involves:

- disk mapping original layout to new
- cleaning (removing any existing disk partitions)
- removing any existing dynamic volume databases
- re-creating the partitions
- converting to dynamic volumes if required
- formatting to the required partition type
- create partition/volume mount points
- make bootable volumes active

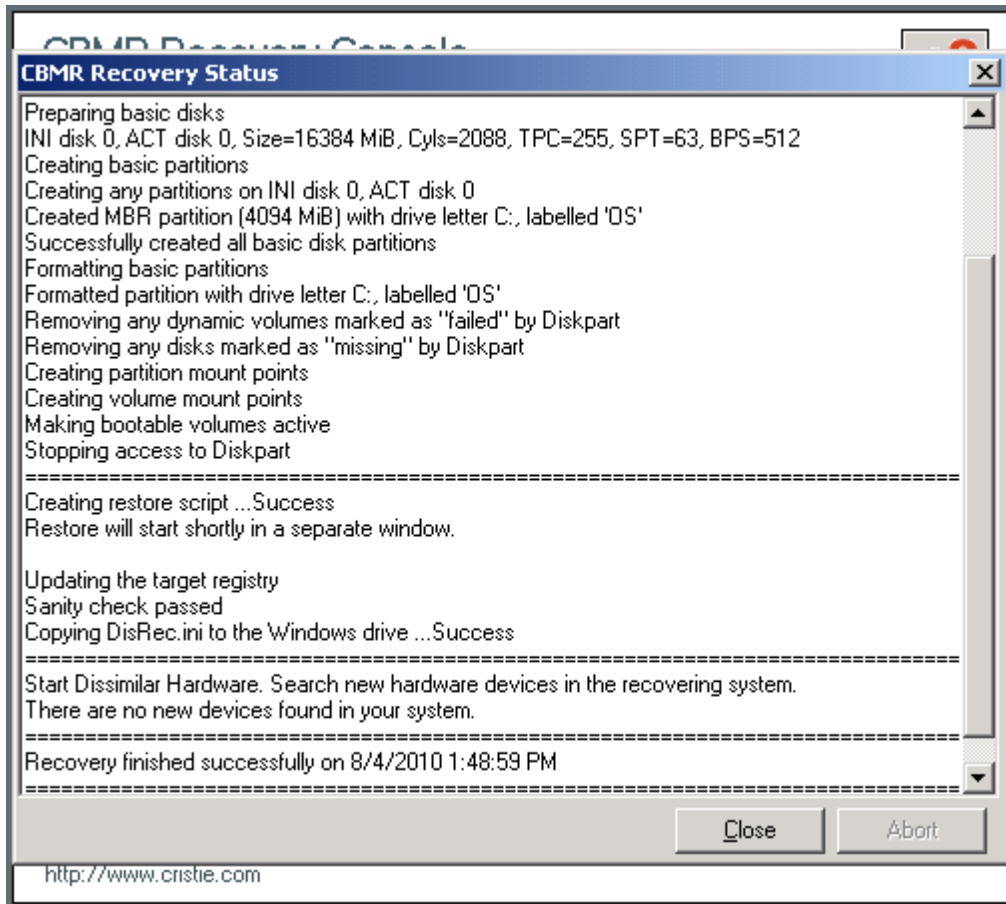
The next step is to recover the filespace to the selected target disks/partitions. A new window appears containing the restore status of recovered files, with progress bars indicating how much of the backup has been restored. This display also shows the recovery statistics in terms of time, size and throughput.

The recovery is divided into different phases: *SystemState*, followed by the recovery of each volume filespace selected:



This process may take some minutes if the backups are large. You may select the [Abort](#) button to terminate the file recovery process, but this may leave the disk or partition in an unpredictable state, which may render it unusable.

If any errors occur during the recovery, an error message will be shown in the window. Refer to the logs post recovery to establish the cause of any error.



The final steps of the recovery are to:

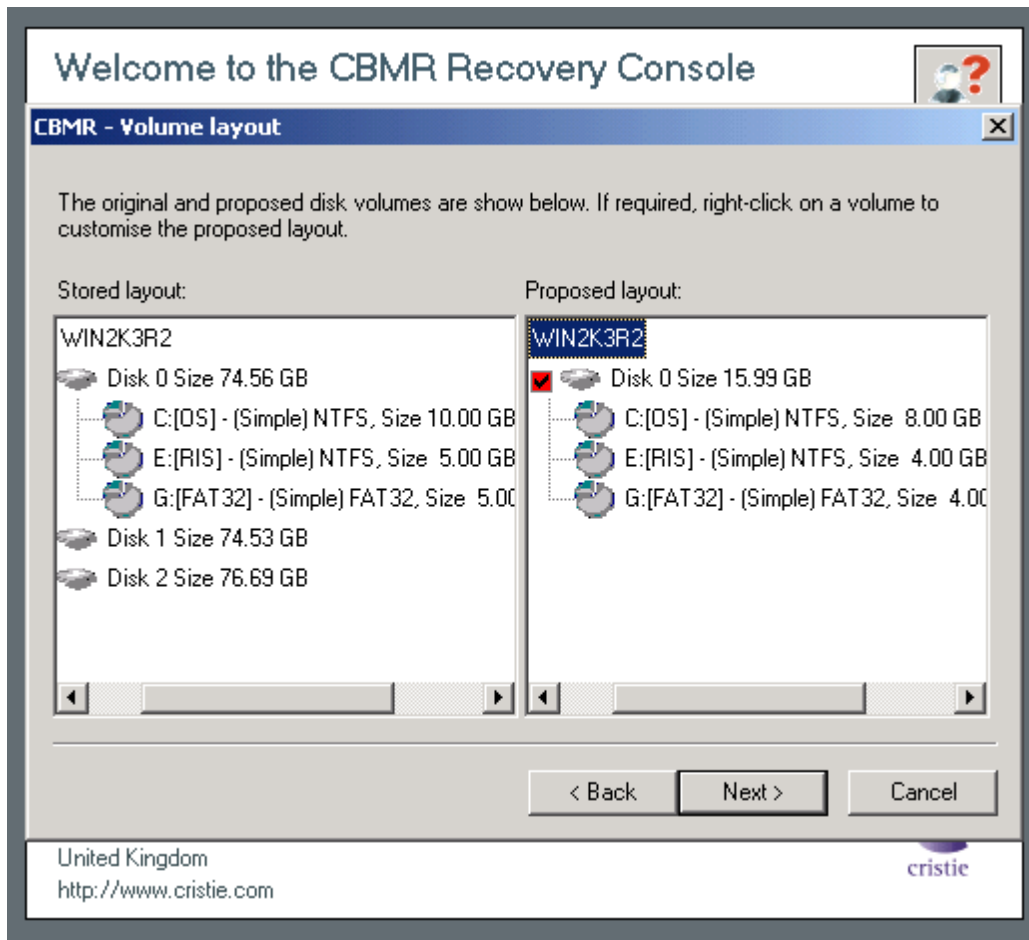
- run a sanity check to determine if all the expected boot files are present on the boot volume
- run a dissimilar hardware check to determine if new drivers are required for new boot devices

Finally, press **Close** to return to the **Recovery Console** main menu. At this point, you may want to view the recovery logs and perhaps copy the logs to a local device or remote share before selecting to reboot.

Note: recovery logs are also saved to the recovered system to the CBMR installation sub-folder 'Temp' (e.g. "C:\Program Files\Cristie\CBMR\Temp")

3.1.2.8 Disk Scaling

In situations where the target system has fewer or smaller disks than the original system, **Disk Scaling** will come into effect.



The above example shows a recovery from an original system with four physical disks, to a target system with only one disk. The target disk is also much smaller than the original system disk.

In this scenario, CBMR will select as many disks to recover as possible (in this case only one disk - the boot disk). In addition, it will scale the partitions down in proportion to their original size and occupancy. This can be complicated by having, say, mirrored dynamic volumes when the mirror will need to be broken - if only one disk exists on the target (or it has been tagged as not to modify).

Note: the Volume Layout dialogue will only show disks in the left hand panel that can be removed.

Note2: during a recovery to a system with larger disks, the partition sizes will remain the same as the original by default. However, in this case, it is possible to increase partition size manually during the recovery by right-clicking on the partition icon and selecting Modify.