TBMR

BMR for TSM

TBMR v6.2.x for Linux Quick Start Guide

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Contents

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1.0 Description

Cristie Bare Machine Recovery for IBM Tivoli (TBMR) for Linux can recover a Linux machine in the event of a disaster. It is possible to recover to the same or dissimilar hardware. It can backup to tape drives, file locations, Tivoli Storage Manager (TSM) and cascaded locations. Extra modules are available to support tape libraries and autochangers, and Cristie Storage Manager (CSM) location. Command line and GUI interfaces are available. Backups can be taken periodically along with configuration information which includes details of hard disks, network interfaces, etc. This quick start guide shows the user how to configure backup locations, save configuration, backup and recover a Linux machine using TBMR. More detailed information is available from man pages for the TBMR components.

2.0 System Requirements

TBMR for Linux can be installed on a x86, x86_64 or PPC Linux machine with glibc >= 2.2. If using TSM, the system should have TSM API client version >= 5.1 already installed. For TBMR backups, TSM BA client should be installed. Recovery requires at least 128MB RAM.

3.0 Installation

Installation files may be downloaded from Cristie website at http://www.cristie.com or can be found in the linux/install directory on the TBMR CDROM. There are 2 available versions to support newer and older Linux distributions. The main installation files are contained in the linux/install/main directory and the installation files for older distributions are contained in linux/install/compat.

If the system supports Redhat Package Manager (RPM), this is the simplest way to install TBMR. To install from an RPM package:

```
rpm -i cbmr-xxx.xxx.rpm
rpm -i tbmr-xxx.xxx.rpm
```

To uninstall the RPM package, use

```
rpm -e cbmr
rpm -e tbmr
```

If RPM is not available, the gzipped tar file may be installed as follows:

Copy the installation file to a temporary directory.

```
tar xvzf cbmr-xxx.linux.xxx.tar.gz
cd cbmr
./install

tar xvzf tbmr-xxx.linux.xxx.tar.gz
cd tbmr
./install
```

This will install all the relevant files and licences. To uninstall the package, use the install script with -u option.

TBMR is installed with a 30 day trial licence. To extend this licence, contact Cristie at cbmr@cristie.com.

4.0 Setting Up A Backup Location

4.1 Setup TSM API Client

If the UBax backup is to be written to a TSM server, the TSM API client should be configured. To set up the TSM API client, the TSM dsm.sys file should be edited. Note that the TSM BA client usually uses a separate dsm.sys file. The default location for TSM API client setup file for 32 bit applications is:

```
/opt/tivoli/tsm/client/api/bin/dsm.sys
```

and for 64 bit applications is:

```
/opt/tivoli/tsm/client/api/bin64/dsm.sys
```

This file should be edited to point to the TSM server to be used:

```
SErvername  server_a
   COMMmethod         TCPip
   TCPPort            1500
   TCPServeraddress   10.2.1.20
```

A dsm.opt file may need to be created in the same directory, this can be an empty file if no special options are required.

4.2 Setup TSM BA Client

If the backup is to be written using TSM BA client, the BA client dsm.sys file should be configured. The default location for TSM API client setup file is:

```
/opt/tivoli/tsm/client/ba/bin/dsm.sys
```

This file should be edited to point to the TSM server to be used:

```
SErvername  server_a
   COMMmethod         TCPip
   TCPPort            1500
   TCPServeraddress   10.2.1.20
```

The TSM BA client should be configured to backup all files which are required for OS recovery. By default, the /dev directory is not backed up. To make sure this is backed up, the following line should be added to the dsm.sys file:

```
virtualmountpoint /dev
```

This will create a separate filespace for /dev which will be restored by the recovery environment.

4.3 Saving Configuration

Configuration information including details of disks, networks, etc. must be saved for each machine to be recovered. This may be saved to the backup location, to a unique floppy disk or memory key for each machine, or to a central configuration store located on a network share. **When saving configuration information to the backup location, this must be done before the backup is run.** To save the configuration information for each machine, a command line program tbmrcfg may be used.

4.4 tbmrcfg

To use the command line configuration saving program, type tbmrcfg followed by the required options. The available options to tbmrcfg can be shown using:

```
tbmrcfg -?

tbmrcfg vx.xx (c) Cristie Software Ltd. 2004-2008

Usage: tbmrcfg [options]

Options:
-a[dir]                            Add files to backup (default dir /TBMRCFG)
-b<name>, --bootloader=<name>      Set boot loader to <name> (default is lilo)
-c<dir>, --copyto=<dir>            Copy files to <dir>/<hostname>
-d<name>, --bootdevice=<name>      Set boot device name to <name>
-f, --floppy                      Copy required files to floppy disk
-l<file>, --logfile=<file>       Set log file (default is tbmrcfg.log)
-o<file>, --output=<file>         Set output file (default is disrec.ini)
-v, --verbose                      Verbose mode
--disshw=<n>                       Use dissimilar hardware support if n != 0
--filedev_mount_options=<string> Set file device mount options
--filedev_mount_target=<string>  Set file device mount target
--floppy_device=<string>          Set the floppy disk device node
--floppy_mount=<string>           Set the floppy disk mount point
--format_pattern=<pattern>         Only format devices matching pattern
--partition_pattern=<pattern>      Only partition devices matching pattern
--licence=<licence>                Use licence code <licence>
-?, --help, --usage                Print this message and exit
```

Some examples are shown here:

To save configuration information from a machine that boots using grub installed on /dev/sda to the backup location, use:

```
tbmrcfg -a -b grub -d /dev/sda
```

To save configuration information from a machine that boots using grub installed on /dev/hda to an NFS mounted share /nfs/configs, use:

```
tbmrcfg -b grub -d /dev/hda -c /nfs/configs
```

To save configuration information from a machine that boots using grub installed on `/dev/sda` to a removable disk device `/dev/sdc` which can be temporarily mounted at /mnt/tmp, and backs up to a file location mounted using SMB in `//server/share/` directory, use:

```
tbmrcfg -f --floppy_device=/dev/sdc --floppy_mount=/mnt/tmp -b grub -d /dev/sda
--filedev_mount_target=//server/share --filedev_mount_options="username=me,passwo
rd=secret,workgroup=mygroup"
```

There is a full manual page for `tbmrcfg` available by typing `man tbmrcfg`.

5.0 Backing Up

5.1 TSM BA Client Backup

The backup may be performed using the command line TSM BA Client dsmc or the GUI interface. Please consult the TSM user manual for instructions on how to do this.

6.0 Performing a Recovery - Graphical Mode (Recommended)

When a machine has crashed it can be recovered using the CBMR bootable CD-ROM. This is the same CD from which you installed the software. You should ensure your machine's BIOS is set up to boot from CD-ROM.

The process is in four or five stages:

- **Boot into Recovery OS**
- **Read Configuration Data**
- **Restore Files**
- **Load additional drivers (if necessary)**
- **Reboot into recovered OS**

Boot the machine using the CBMR bootable CD-ROM. You will be presented with the screen shown in figure 1.

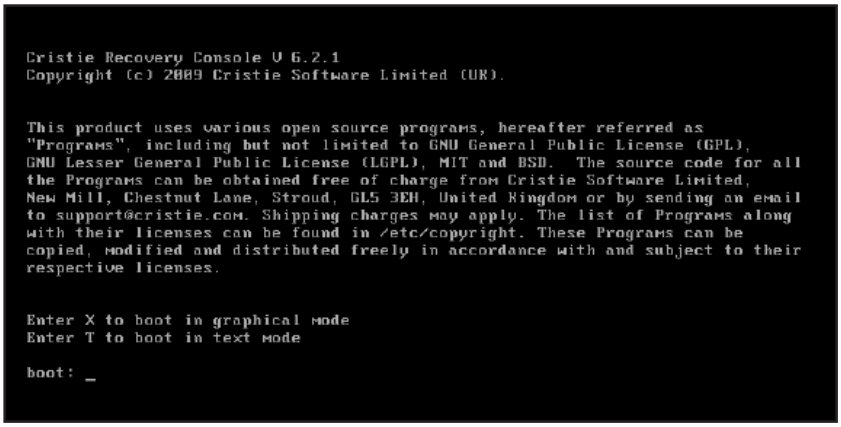


Figure 1.

Cristie recommends that you choose the graphical mode which loads the Cristie Recovery Console (CRC), so enter `x` and press Enter.

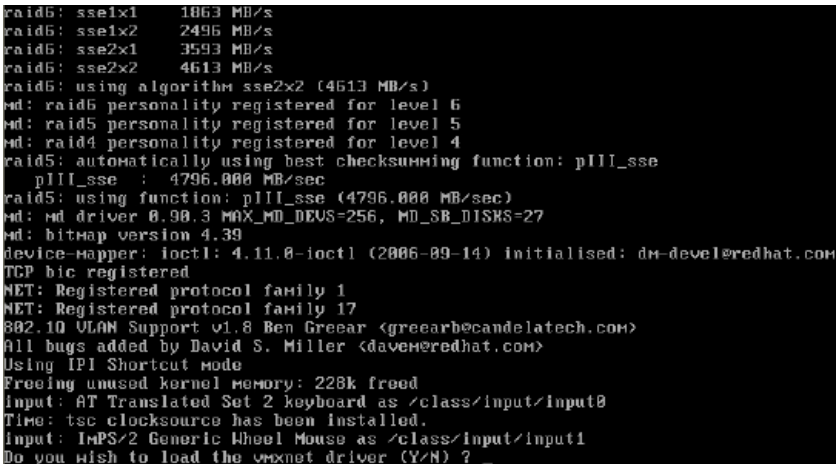


Figure 2.

Load any drivers specific to your system when asked by pressing `y`.

In most cases you should load every driver that is requested. The exceptions are when there are SAN drivers which you may not want to load if you do not wish the recovery process to have access to your SAN disks.

You will be presented with the license screen. Click 'I Accept' if you agree with the CBMR licensing terms.

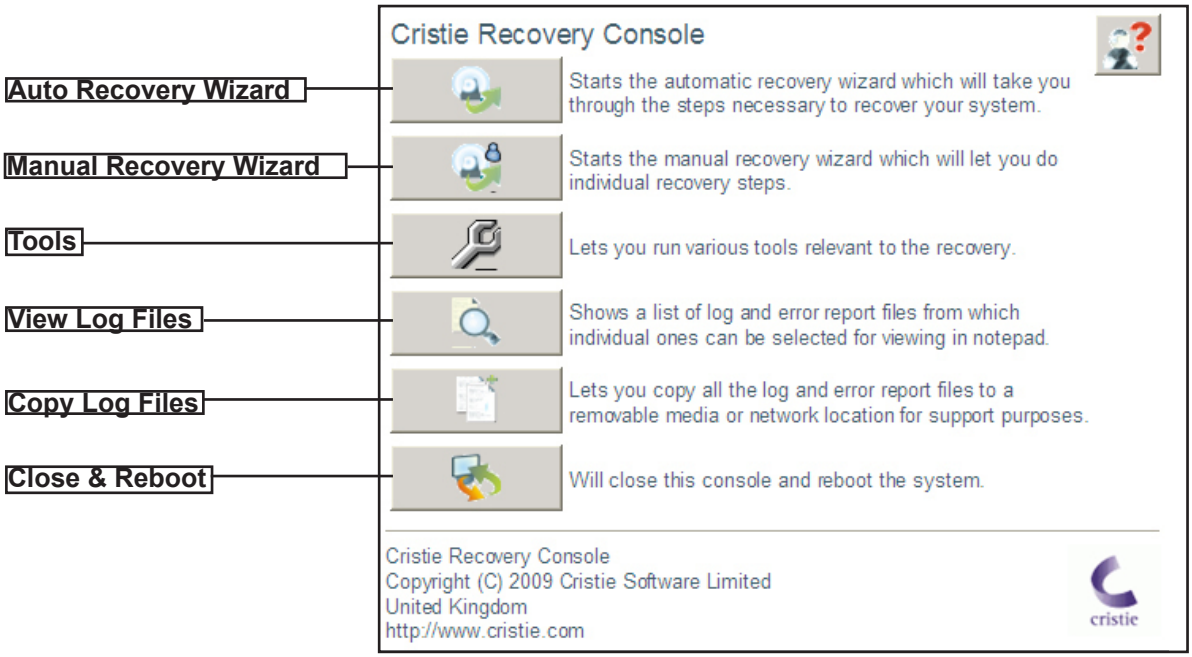


Figure 3.

The quickest way to begin the recovery is by clicking on the Auto Recovery Wizard button (see figure 3 for an explanation of the buttons on the CRC menu) which will result in the following screen:

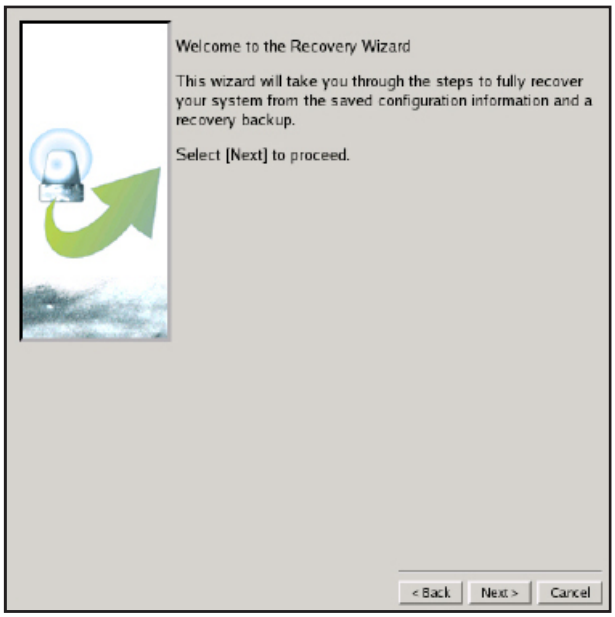


Figure 4.

The configuration files containing details of the machine should be loaded before the recovery can begin. These files may be stored in the backup location, on a remote network share, or on a removable device.

Click **Next** on the first dialogue box (figure 4); you will then be presented with a box that will allow you to enter where your backup configuration information is stored (figure 5).

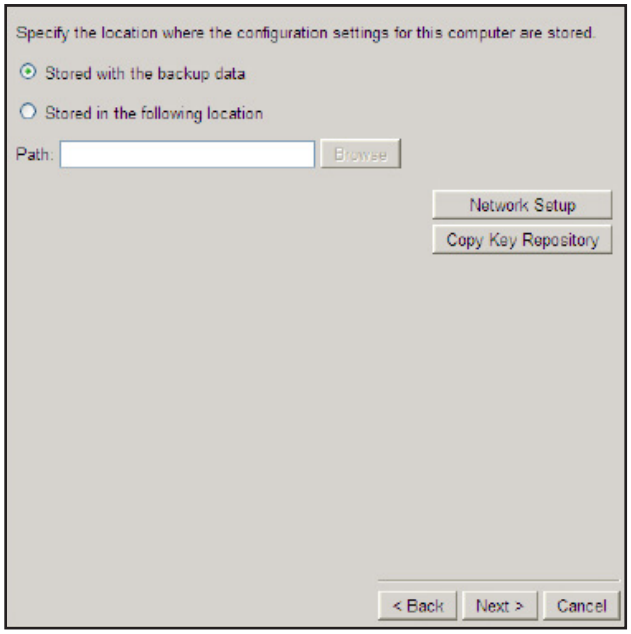


Figure 5.

Cristie normally recommend that configuration information is held with the backup data; if, however, you have chosen to store it in another location, you can browse for configuration files stored on a network share or a local device by selecting the **Stored in the Following** and then clicking the **Browse** button to enter where the configuration data is stored.

From the resulting dialogue box (figure 6), you can browse any configuration files stored on a local device or on a network share. If necessary, any required network shares may be mounted by clicking **Mount Network Shares** filling in the form (figure 7) and clicking **OK**. Make sure you enter the full network path in **Share**.

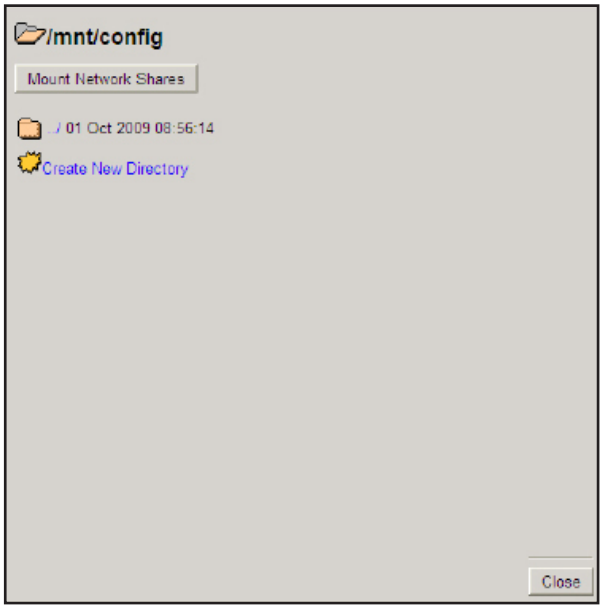


Figure 6.

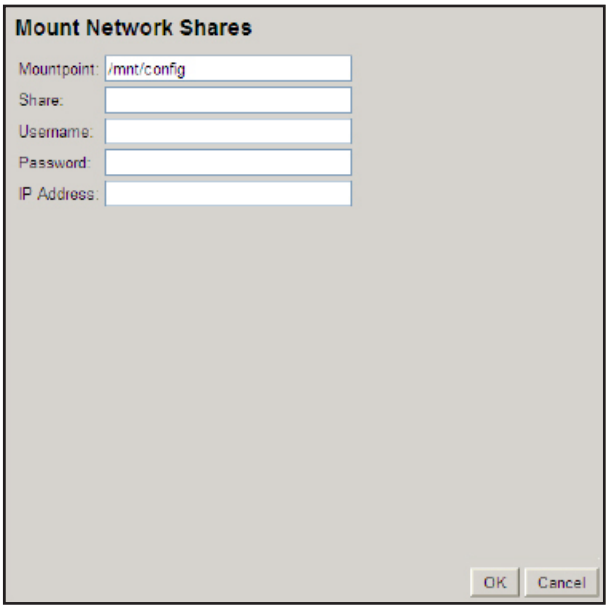


Figure 7.

Click **Next** when you have completed this task.

You will then be asked which type of backup that you wish to restore; select the **CBMR radio button** as shown in figure 8, then click **Next**.

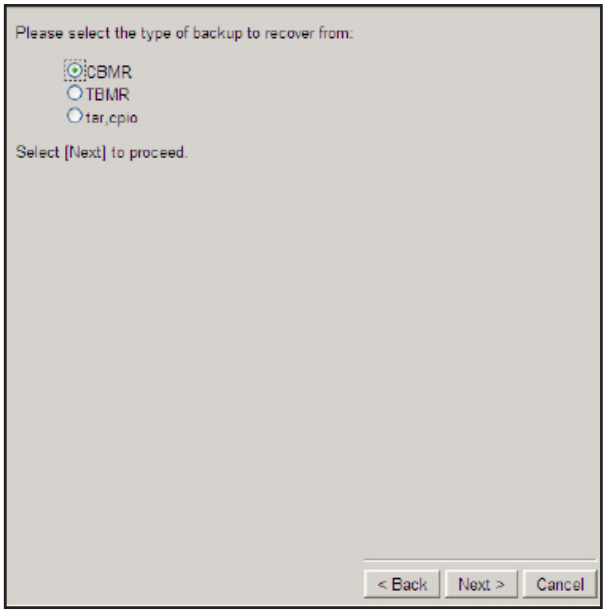


Figure 8.

The **New Backup Location Wizard** dialogue box will now show. At this point you must tell CBMR where your backup file(s) are located. In this example we will choose **File Location**; the other options are explained in figure 9. For all other options a related dialogue will open.

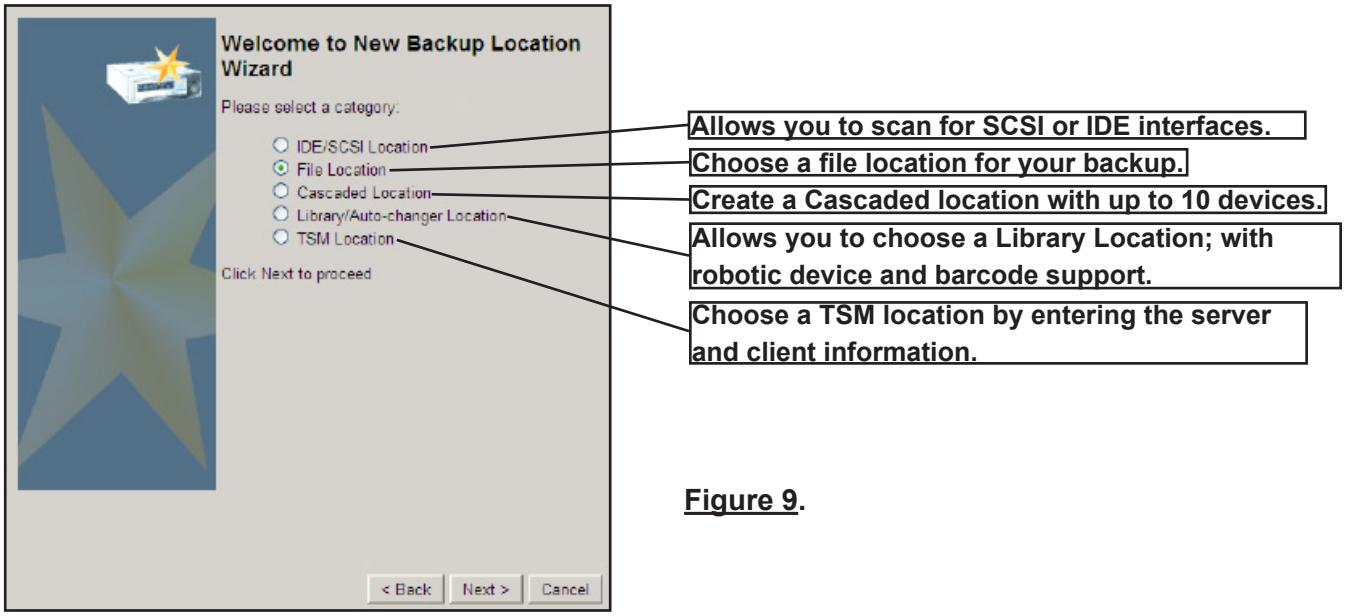


Figure 9.

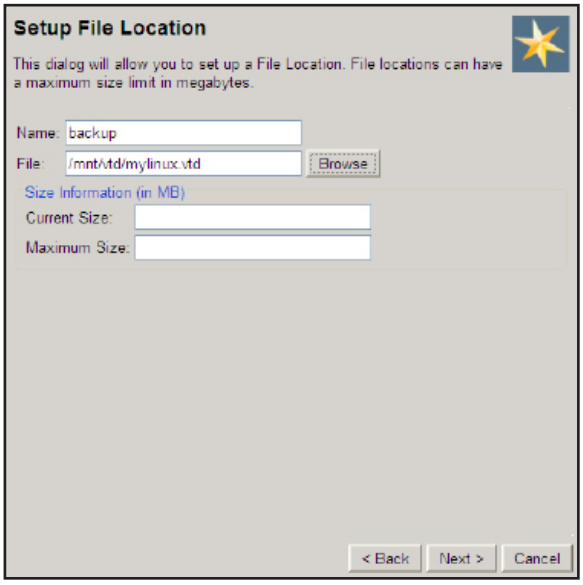


Figure 10.

You can browse to where your backup file(s) are located by clicking the **Browse** button; you can also mount any required network shares as shown in figure 6.

You do not need to fill in the size information.

When you have finished entering your data, click **Next** to continue.

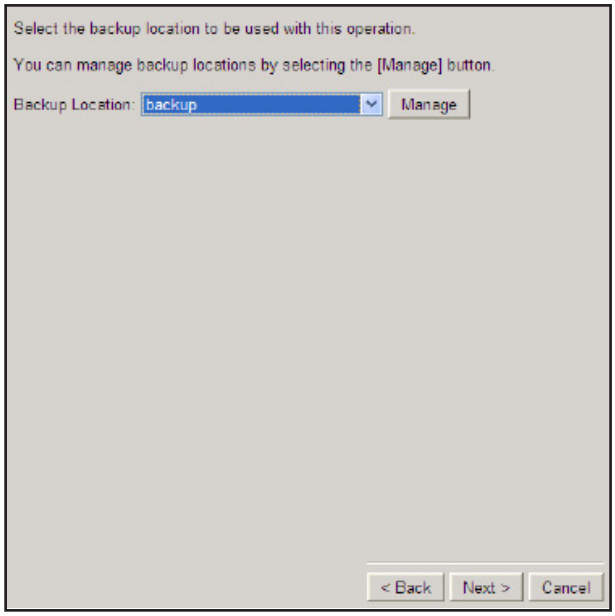


Figure 11.

The next dialogue box (figure 11) will ask you which backup location you wish to use. Choose the one you created in the last screen.

In this example, the backup is called **backup.** You should make sure you enter your own information as the one in this guide is an example only.

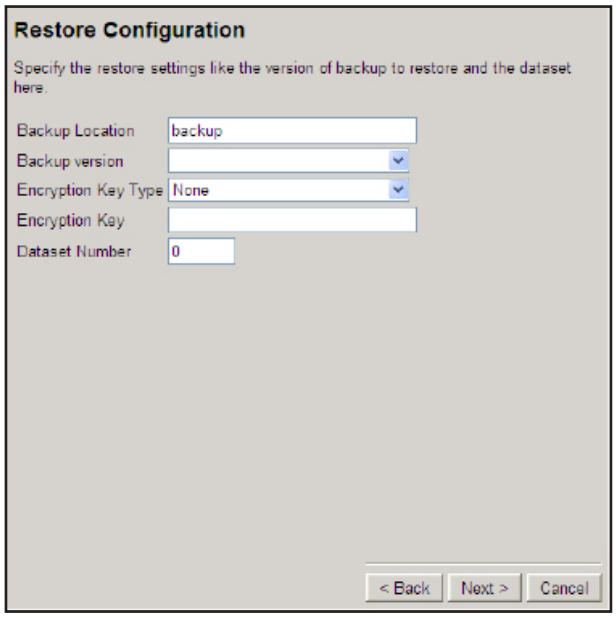


Figure 12.

You will then be presented with the Restore Configuration dialogue box (Figure 12).

The name of the backup location you just created will appear under **Backup Location.**

You may specify any version number of a particular backup that you need restored.

If the backup is encrypted you should select the **Encryption Key** Type drop-down menu, select the correct encryption, then enter the correct **Encryption Key**.

Under normal circumstances you should leave 'Dataset Number' as 0. Click **Next** to continue.

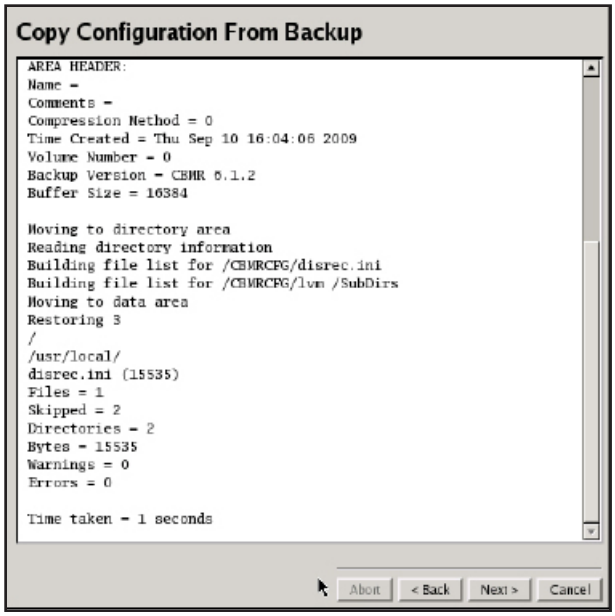


Figure 13.

You will then be presented with a screen which summarises the copying of the Configuration from the backup file you just selected.

It will look like the example shown here (figure 13).

Click **Next** to continue.

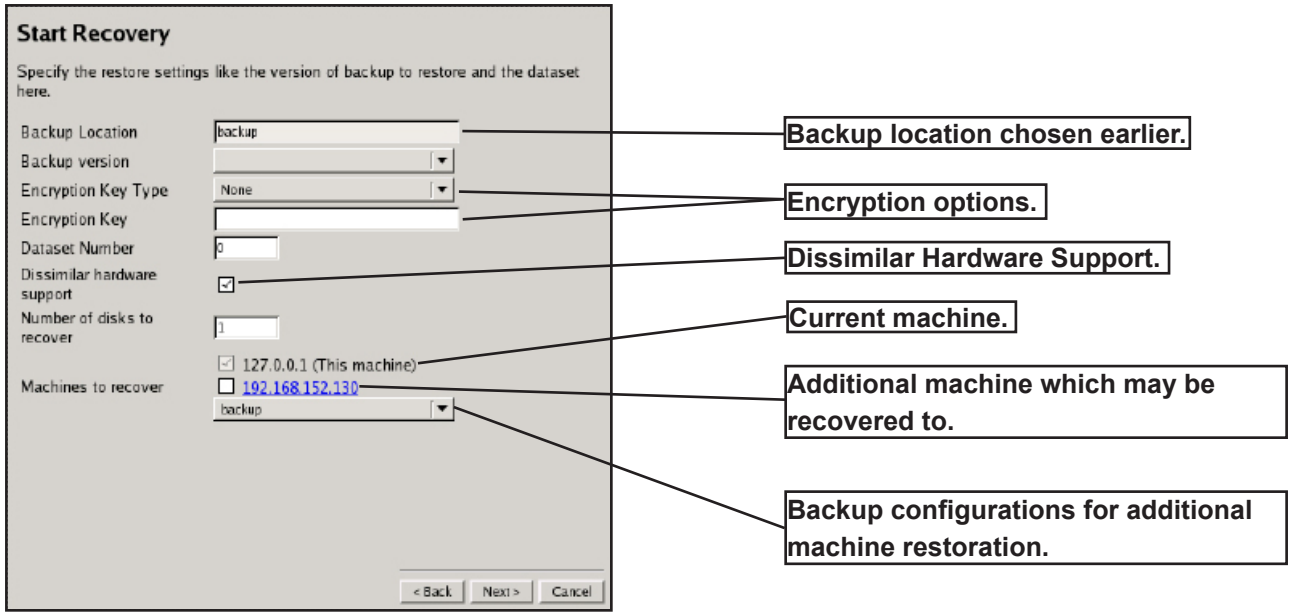


Figure 14.

You are now almost ready to start the recovery.

You should select the relevant encryption options from the drop-down menu if you chose to encrypt your backup.

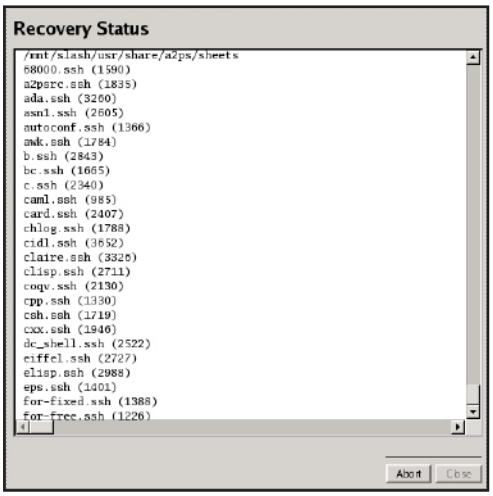
If you are **not** recovering to dissimilar hardware, you must un-check the box for **Dissimilar Hardware Support**. Not doing so can cause problems when restoring to similar hardware.

If you are recovering to dissimilar hardware: TBMR will find the required module(s) automatically. Normally this will happen with no further user intervention. If TBMR cannot find the required module, you will be prompted at the end of the recovery to provide a location that contains the required module(s).

You can choose to recover several machines which are running the CRC simultaneously by checking the corresponding tick-boxes beside the machine's IP address.

These machines may be recovered using the currently loaded configuration, or other configurations retrieved from the selected backup location. Select which backup configuration you wish to use from the drop down menu below the IP address tick-boxes. CBMR will default to the one that you have just created; as in the example shown here (figure 14).

When you are satisfied that all options are correct, click **Next** to begin recovering your machine(s).



Your recovery will now begin! You will see the files being recovered in the Recovery Status window (figure 15).

Figure 15.

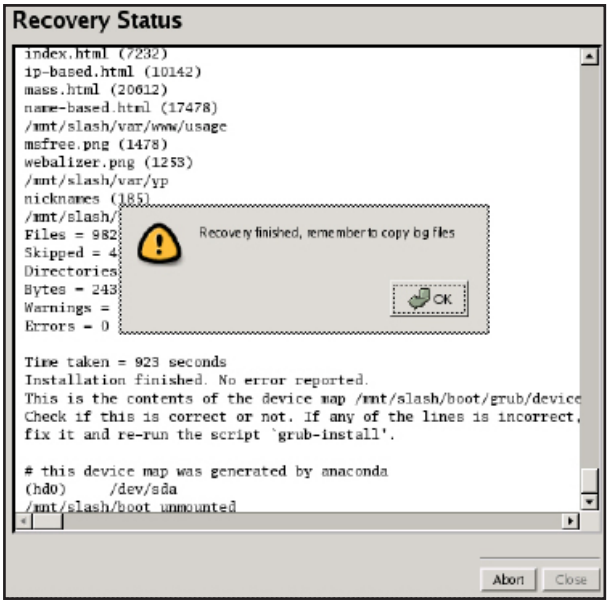


Figure 16.

Upon completion of the recovery you will see the message shown in figure 16.

You should copy your log files as the message suggests; this will be covered in the next stage of this guide.

Click **OK** to clear the message.

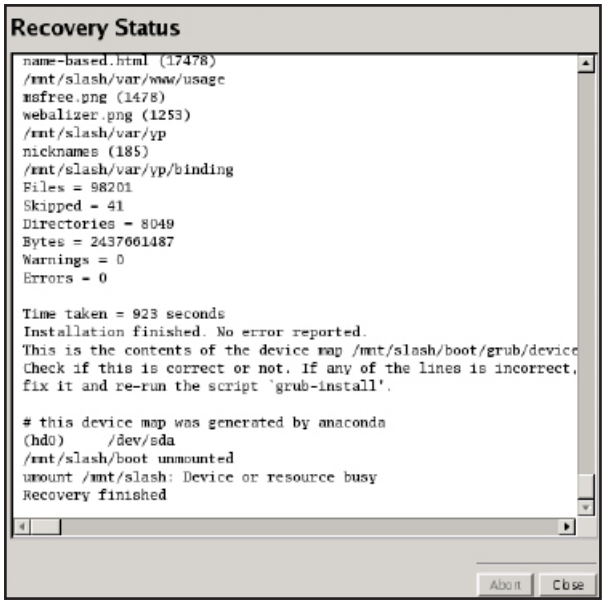


Figure 17.

Check the summary information at the bottom of the recovery status report for any errors.

Check the contents of the device map as the report suggests; if this is incorrect or you are unsure that the recovery has been completed correctly then you should run it again. Click **Close** to finish.

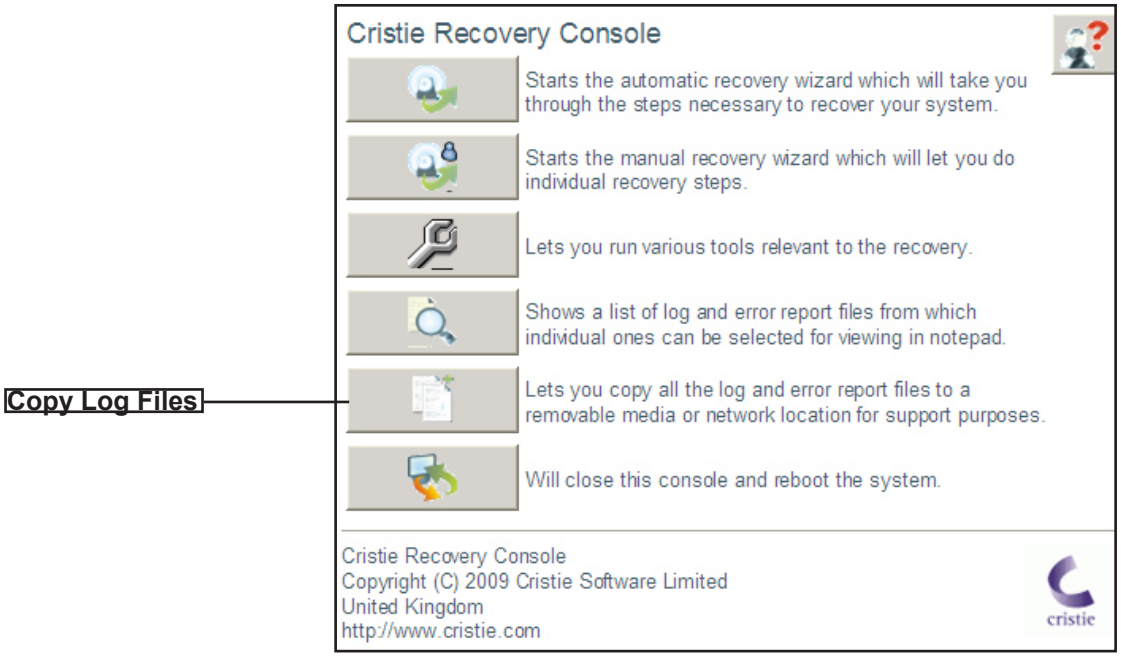


Figure 18.

You will now return to the CRC main menu.

Regardless of whether or not your restore has been successful, you should now copy your log files to a separate location where they can be accessed.

Log files are essential if you require support from Cristie; they detail exactly what has happened during the recovery on your system. **Without them, it is very difficult for Cristie to offer meaningful support.**

Figure 19.

Select the Copy Log Files as shown in figure 18.

Click **Browse** to select a location to copy the log files to.

Make sure this is a location which can be easily accessed in case there is a need to email and log files to Cristie for support purposes.

In the CRC main menu you can click on the  *button to view the log files.*

You should now re-start the recovered machine by clicking  **on the CRC Menu.**

7.0 Performing a Recovery - Text Mode

When a machine has crashed it can be recovered using the CBMR bootable CD-ROM. This is the same CD from which you installed the software. You should ensure your machine's BIOS is set up to boot from CD-ROM.

The process is in four or five stages:

- **Boot into Recovery OS**
- **Read Configuration Data**
- **Restore Files**
- **Load additional drivers (if necessary)**
- **Reboot into recovered OS**

Boot the machine using the CBMR bootable CD-ROM. You will be presented with the screen shown in figure 1.

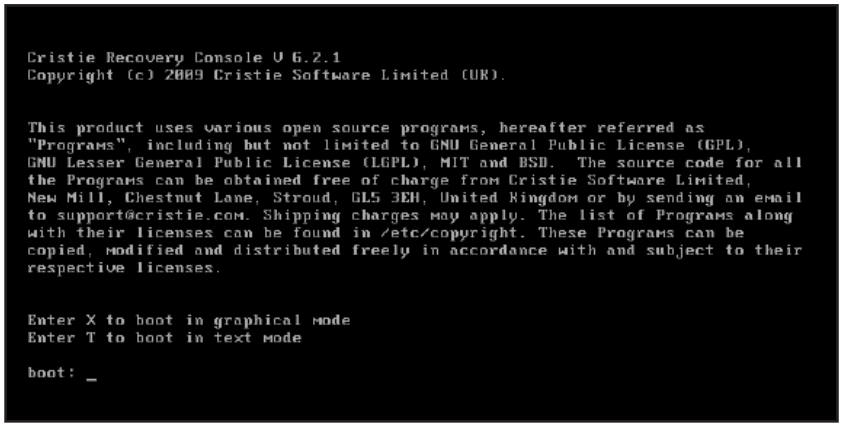


Figure 1.

Cristie highly recommend that you choose the graphical mode (go to section 6.0, page 7) which loads the Cristie Recovery Console (CRC), if, however, you wish to use the text menu based mode as shown in this section, press `T` and then press Enter.

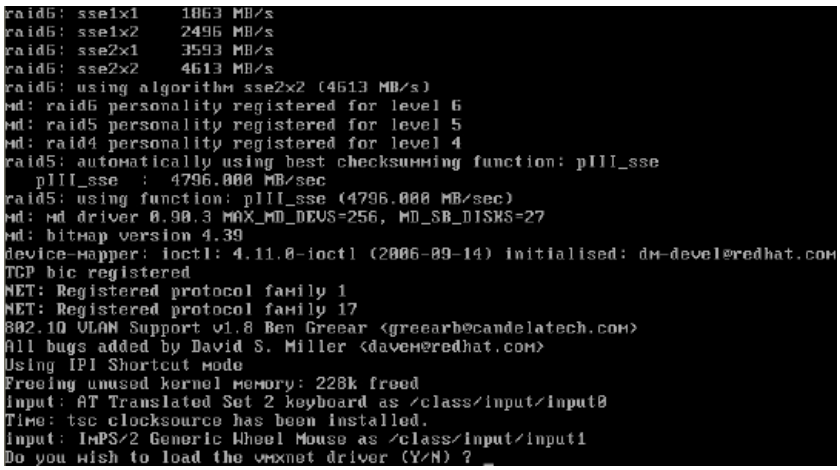


Figure 2.

Load any drivers specific to your system when asked by pressing `y`.

In most cases you should load every driver that is requested. The exceptions are when there are SAN drivers which you may not want to load if you do not wish the recovery process to have access to your SAN disks.

The recovery console main menu should appear.

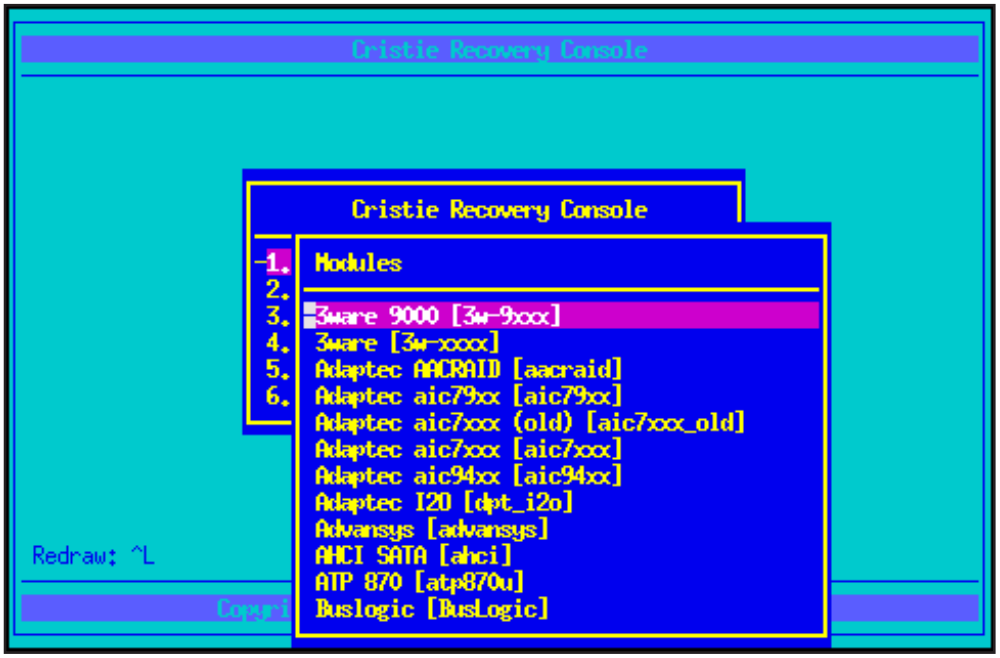
The simplest way to recover a machine is to use the *Automatic Recovery* option.

7.1 Load Hardware Drivers

Some, but not all, device drivers are loaded automatically at boot time. If the disk controller and network drivers required for recovery were automatically detected and loaded, the *Load Hardware Drivers* option may be ignored. If further drivers are required, or modules need to be listed or removed, this option should be selected. This menu may also be used to change the keyboard layout if the recovering system does not use a standard US keyboard.

To load additional storage modules, the Storage Modules option should be selected from the *Load Modules* menu.

To load additional network modules, the *Network Modules* option should be selected from the Load Modules menu.



7.2 Access Configuration

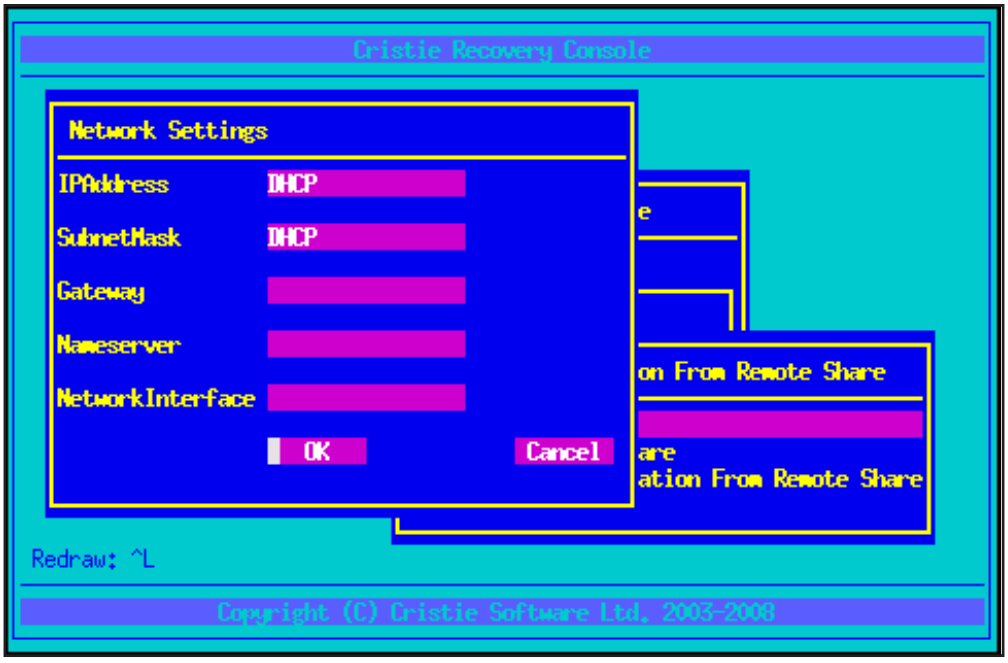
The configuration information must be retrieved before files can be restored. The *Access Configuration* menu item should be used for this.

7.3 Access Configuration From Remote Share

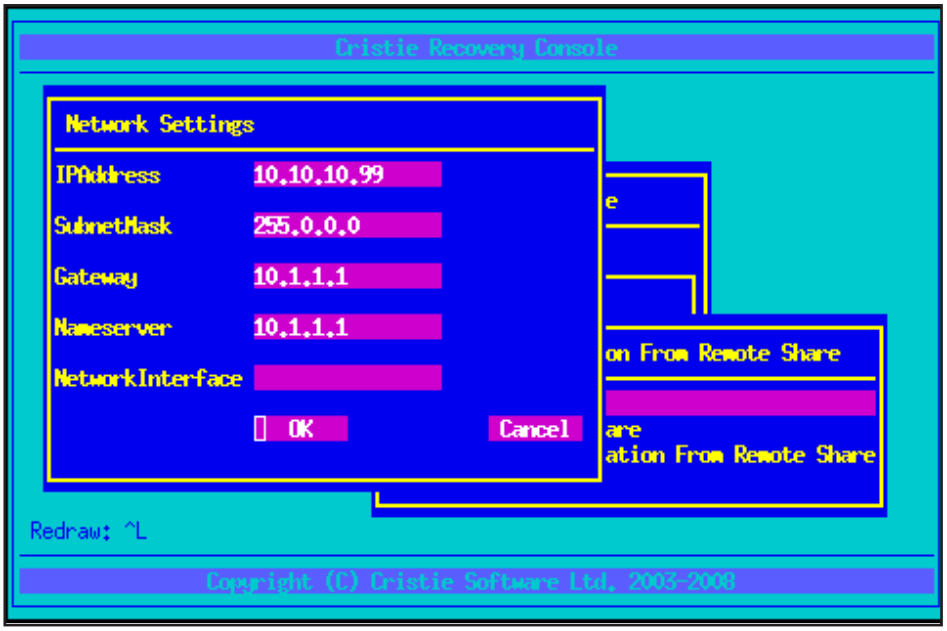
To access the configuration information from a remote share, the network must be configured and then the share mounted locally so that config files can be copied.

7.4 Setup Network

The network should be configured to allow access to the share containing configuration information. To set up the network using DHCP, DHCP should be entered into the appropriate form fields.

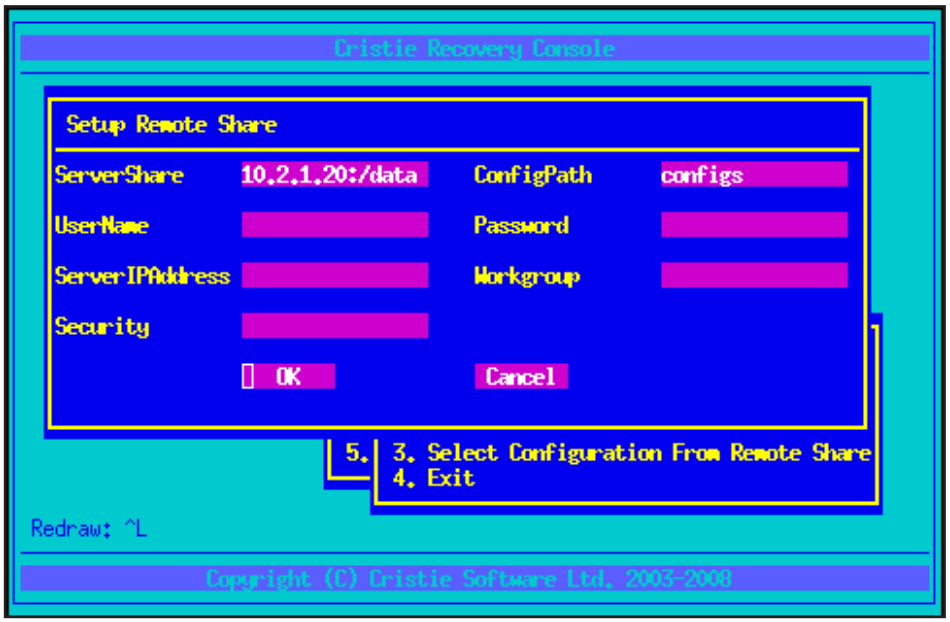


To set up the network using a static address, the network configuration information should be entered into the form.

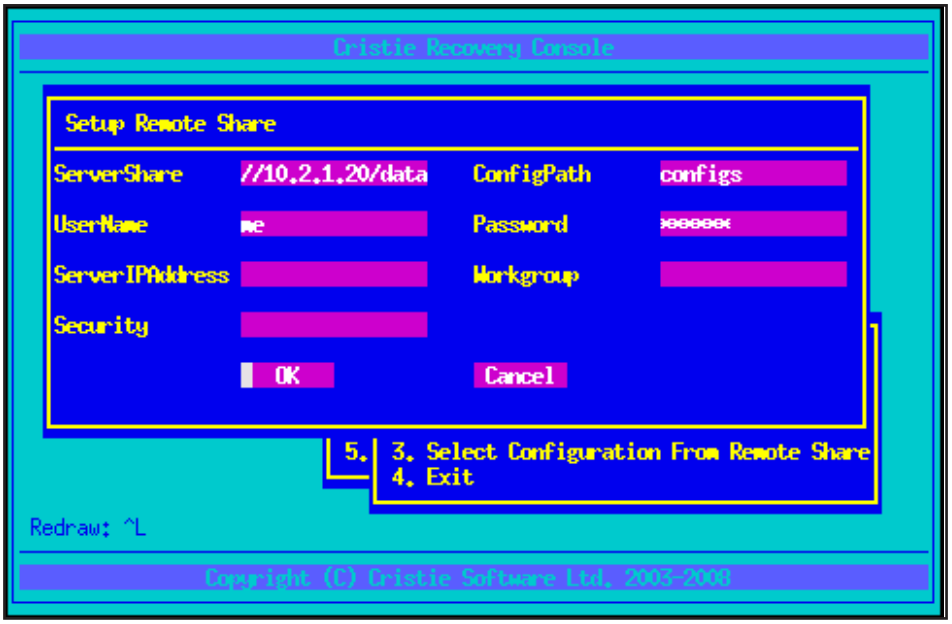


7.5 Setup Remote Share

The share details should be entered into this form to allow mounting of NFS or CIFS shares. The filesystem type is automatically determined by the format of the share name. To mount an NFS share `10.2.1.20:/data` containing configuration information in a subdirectory called `configs`:

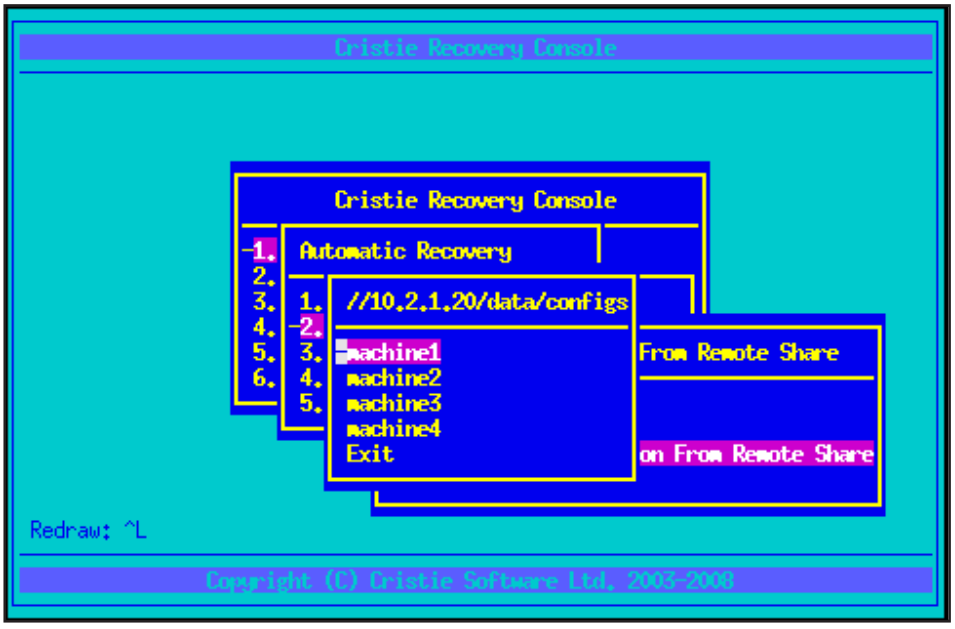


To mount a CIFS share `//10.2.1.20/data` containing configuration information in a subdirectory called `configs`:



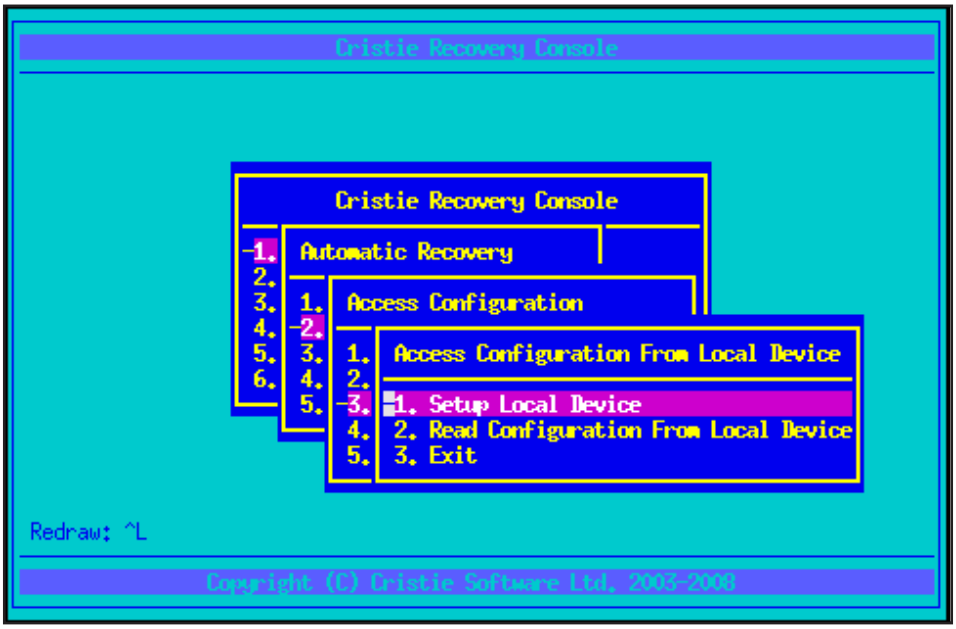
7.6 Select Configuration From Remote Share

The configuration for the machine should be selected from the list provided by the `Select Configuration From Remote Share` option.



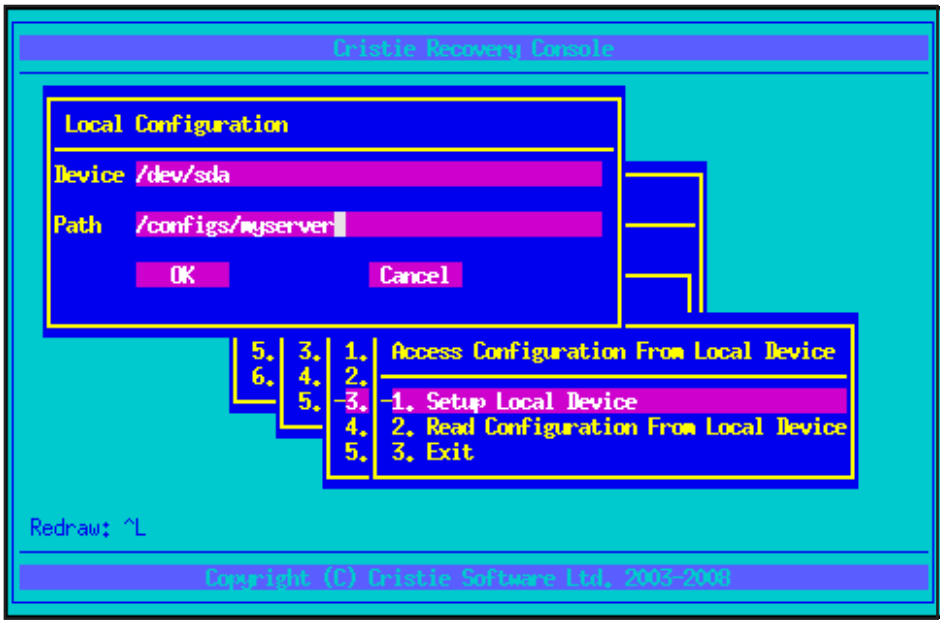
7.7 Access Configuration From Local Device

The configuration may be read from a local device eg floppy disk or memory key using this option.



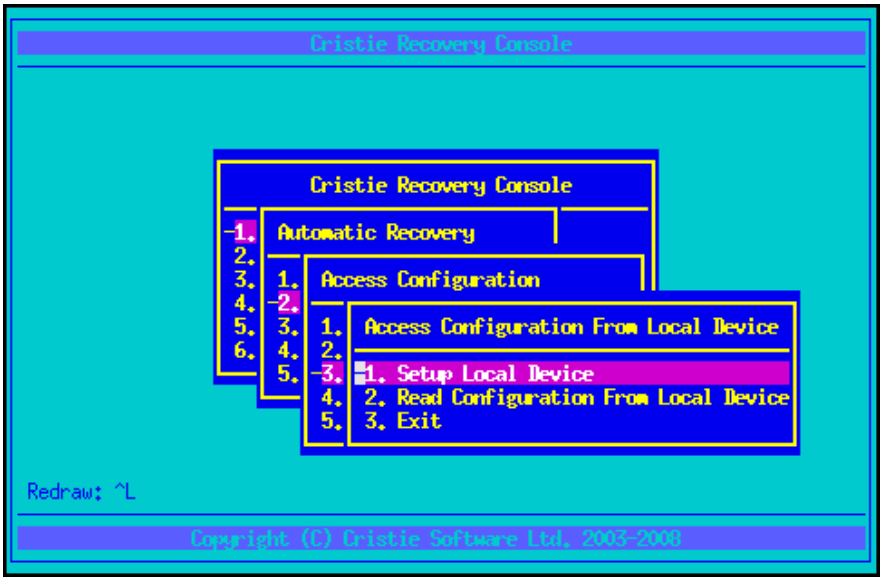
7.8 Setup Local Device

The form should be used to setup the local device containing configuration details. If the configuration is stored on a floppy disk, the Device should be `/dev/fd0`, for the first USB device, use `/dev/sda`. The *Path* field should be relative to the device.



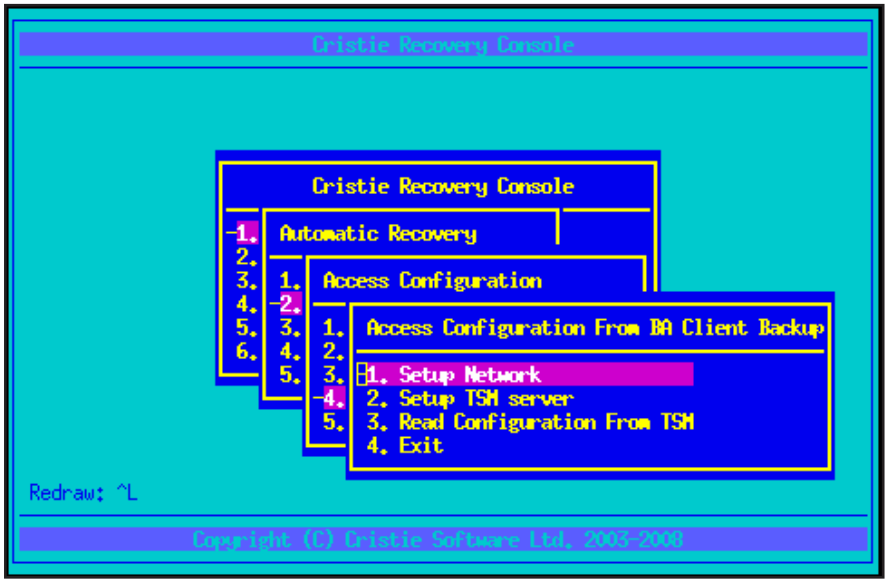
7.9 Read Configuration From Local Device

The configuration may be read from the local device by selecting this item in the menu below:



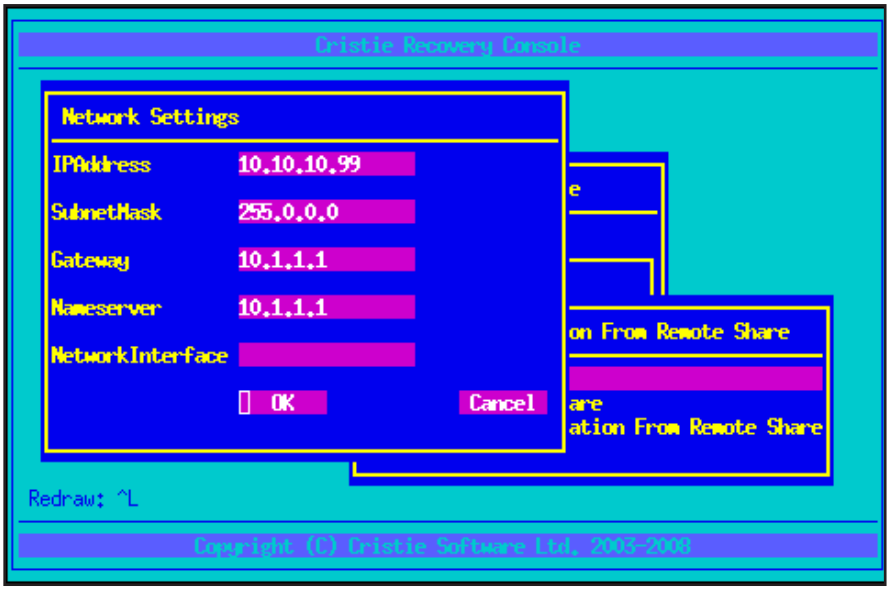
7.10 Access Configuration From TSM BA Client Backup

The configuration may be read from a TSM BA client backup using this option.



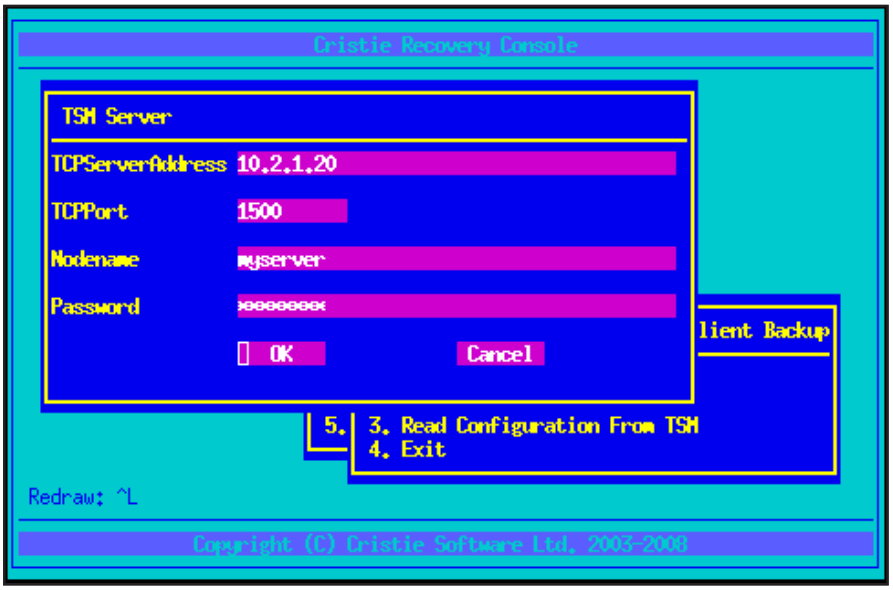
7.11 Setup Network

The network should be configured to allow access to the TSM server. To set up the network using DHCP, DHCP should be entered into the fields `IPAddress` and `SubnetMask`. To set up the network using a static address, the network configuration specific to your own setup should be entered into the form.



7.12 Setup TSM Server

The form should be used to enter details of the server where the configuration information is stored as part of the backup.



7.13 Read Configuration From TSM

This should be used to read the configuration information from the TSM BA Client backup.

7.14 Test Backup Location

This option should be used to ensure that the backup location may be accessed successfully. It is not required if the configuration information has already been retrieved from the backup location.

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