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for **disaster recovery**
and **data backup**

TBMR

Cristie Bare Machine Recovery

Quick Start Guide For Linux

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1 Description

Cristie TBMR for Linux can recover a Linux machine.

It is possible to recover to the same or dissimilar hardware. It only backs up to Tivoli Storage Manager (TSM). Backups can be taken periodically, along with configuration information, which includes details of hard disks, network interfaces, etc.

This Guide shows the user how to save configurations, backup and recover a Linux machine using TBMR. More detailed information is available from `man` pages for the TBMR components.

2 System Requirements

TBMR for Linux can be installed on a x86, x86_64 or PPC Linux machine.

At the time of release the TSM Client versions supported are 5.5.0.6 to 6.3.0.0 inclusive.

At the time of release the TSM Server versions supported are 5.5.x.x to 6.3.0.0 inclusive.

Please refer to the Cristie website for the latest client/server versions supported

A minimum memory of 1GB RAM is required for booting the recovery environment and running a recovery.

3 Installation

Installation files may be downloaded from the Cristie website at <http://www.cristie.com> or can be found in the `linux/install` directory on the TBMR CDROM. There are two 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`. There are `readme.txt` files in both directories explaining which common distributions are supported by which files.

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

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

To uninstall the RPM package, use:

```
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 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 Setting up a Backup Location

4.1 Setup TSM API Client

If the <%CP_PRODUCT_OTHER3%> backup is 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 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 filesystem 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 USB disk 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 -?
```

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
```

To save configuration information from a machine that boots using *grub* installed on `/dev/hda`, use:

```
tbmrcfg -d /dev/hda
```

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

5 Backing up TSM

5.1 TSM BA Client Backup

The backup may be performed using the command line TSM BA Client `dsmc` or the GUI interface. Please refer to your TSM User Manual for further instructions.

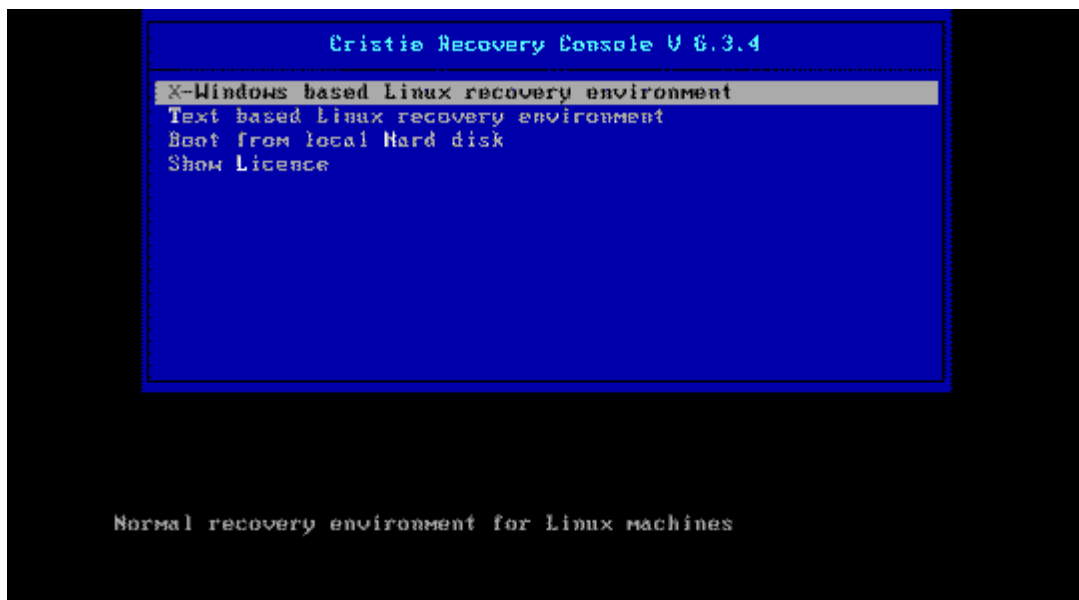
6 Performing a Recovery - Graphical Mode (Recommended)

When a machine has crashed, it can be recovered using the TBMR 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 encompasses the following stages:

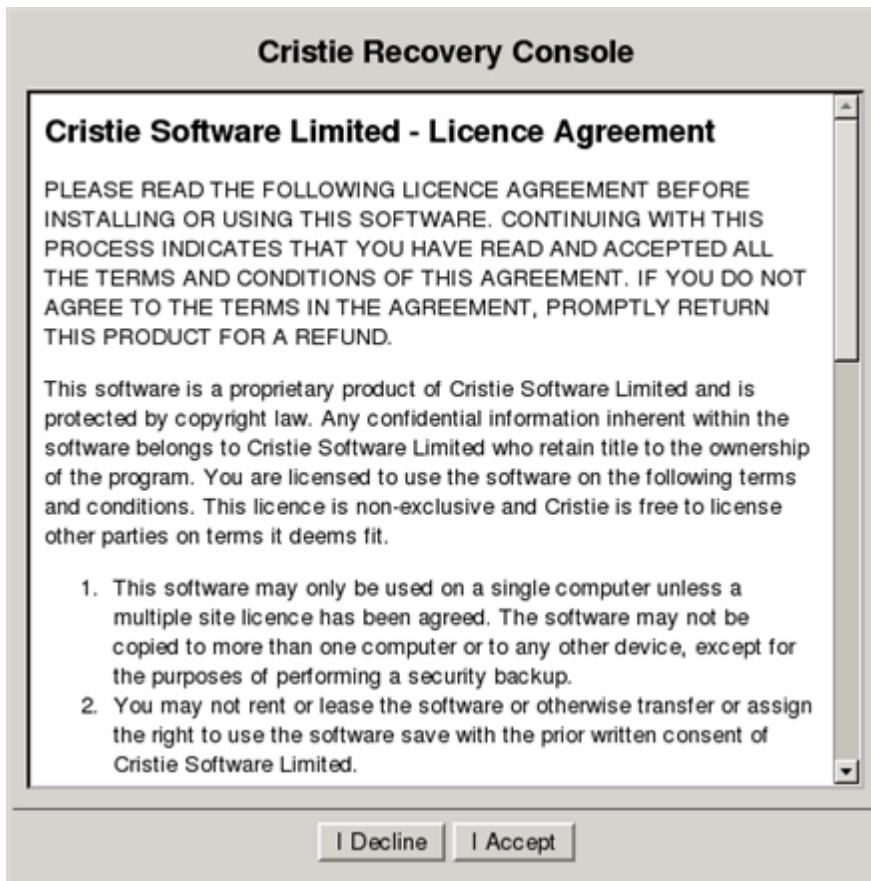
- **Boot** into Recovery OS
- **Read** Configuration Data
- **Restore** Files
- **Load** additional drivers (if necessary)
- **Reboot** into recovered OS

Boot the machine using the TBMR bootable CD ROM or ISO. You will be presented with the screen below:

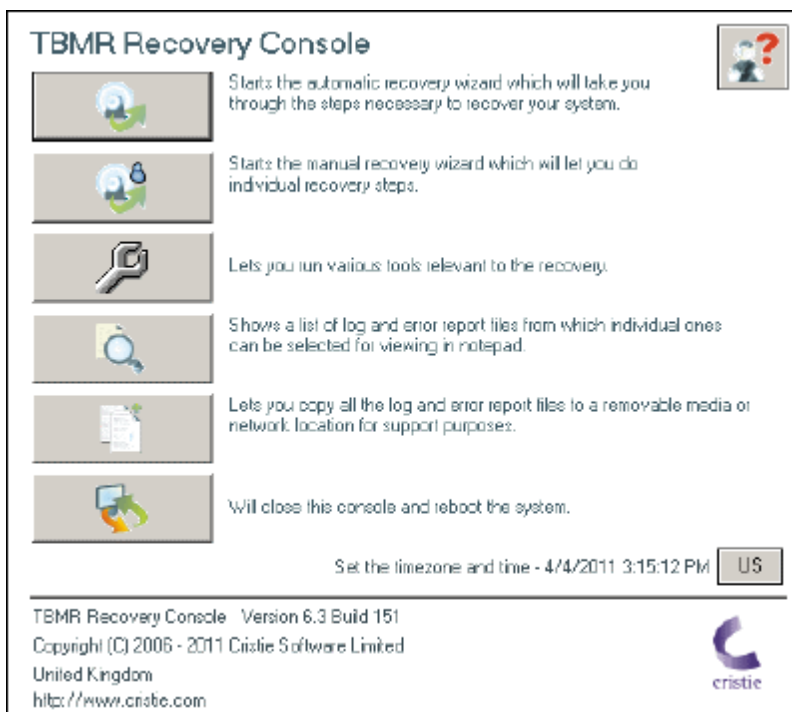


Cristie recommend that you choose the graphical X-Windows recovery environment mode which loads the **Cristie Recovery Console** (CRC).

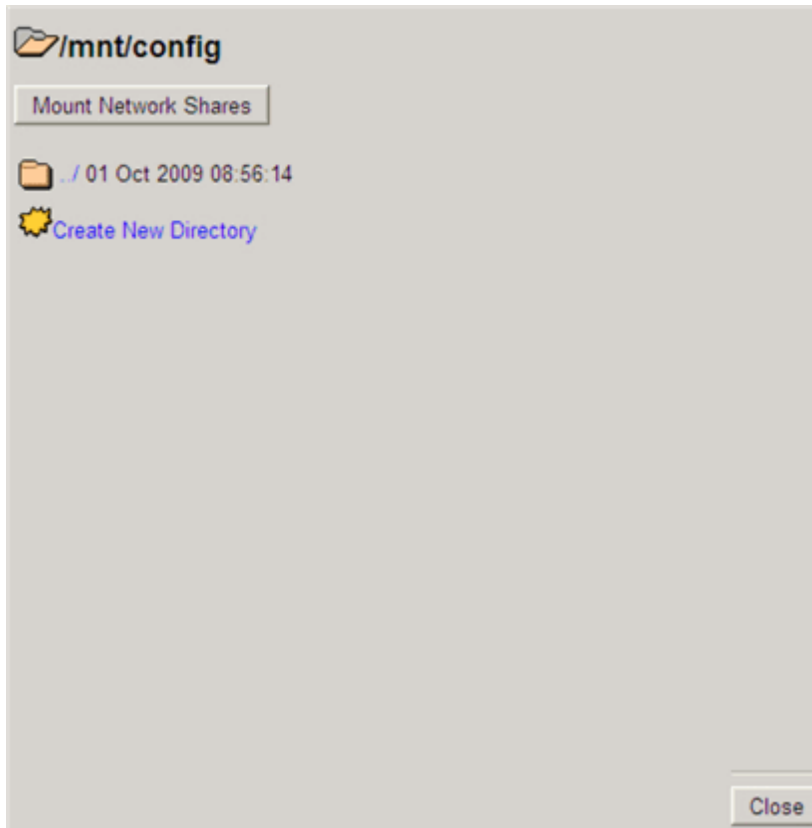
You will be presented with the **Licence** screen. Click **Accept** if you agree with the TBMR licencing terms.



You will then see the **Recovery Console** main menu:



The quickest way to begin the recovery is by selecting the **Auto Recovery Wizard** option from the **Recovery Console** main menu.

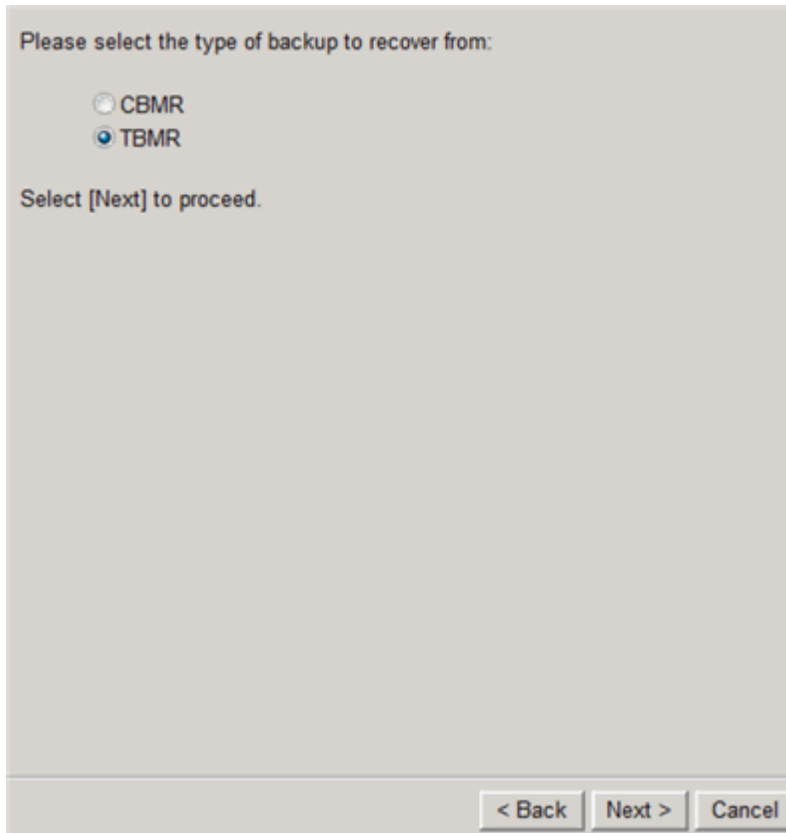


From the resulting dialogue box, you can browse any configuration files stored on a local device or on a network share. If necessary, any required network shares may be mounted by clicking **Mount Network Shares**, filling in the form and clicking **OK**.

A screenshot of a dialog box titled "Mount Network Shares". It contains five input fields: "Mountpoint:" with the value "/mnt/config", "Share:", "Username:", "Password:", and "IP Address:". At the bottom right, there are "OK" and "Cancel" buttons.

Make sure you enter the full network path in **Share**. Click **Next** when you have completed this task.

You will then be asked which type of backup that you wish to restore. Select the TBMR radio button as shown below, then click [Next](#).



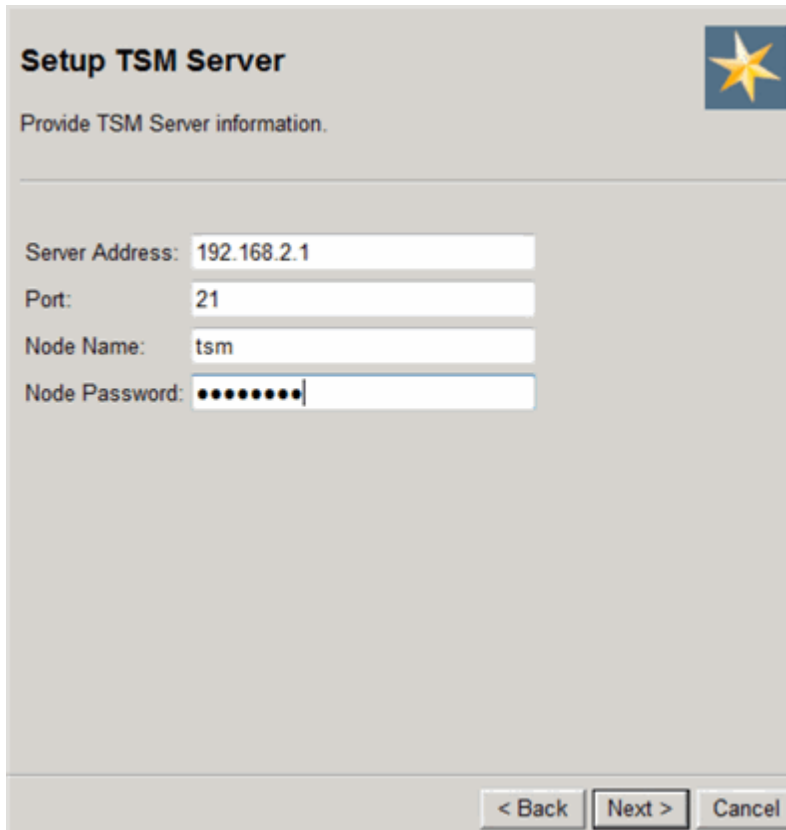
Please select the type of backup to recover from:

CBMR
 TBMR

Select [Next] to proceed.

< Back Next > Cancel

The **New Backup Location Wizard** dialog box will now show. At this point, you must tell TBMR where your backup file(s) are located. In this example, we will choose **File Location**. For all other options, a related dialog will open.



Setup TSM Server

Provide TSM Server information.

Server Address: 192.168.2.1

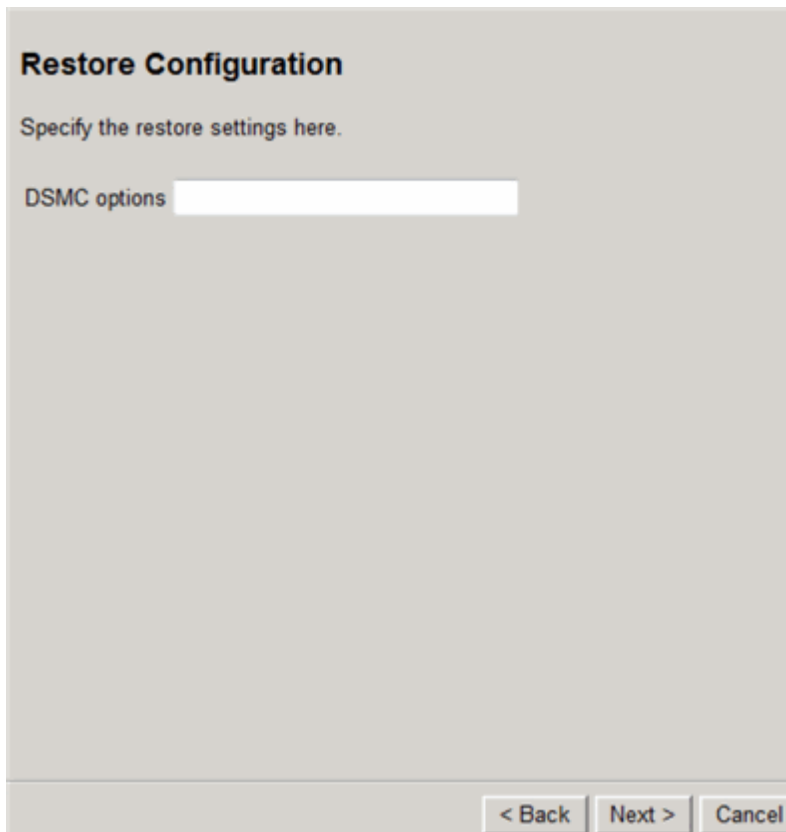
Port: 21

Node Name: tsm

Node Password: ●●●●●●●●

< Back Next > Cancel

Next the [Restore Configuration](#) dialogue will be shown.



Restore Configuration

Specify the restore settings here.

DSMC options

< Back Next > Cancel

Typically, nothing needs to be entered under DSMC options. If you do need to enter any parameters,

it will probably be the standard TSM options. Any parameters entered will be passed to DSMC. Please consult your TSM User Manual for details.

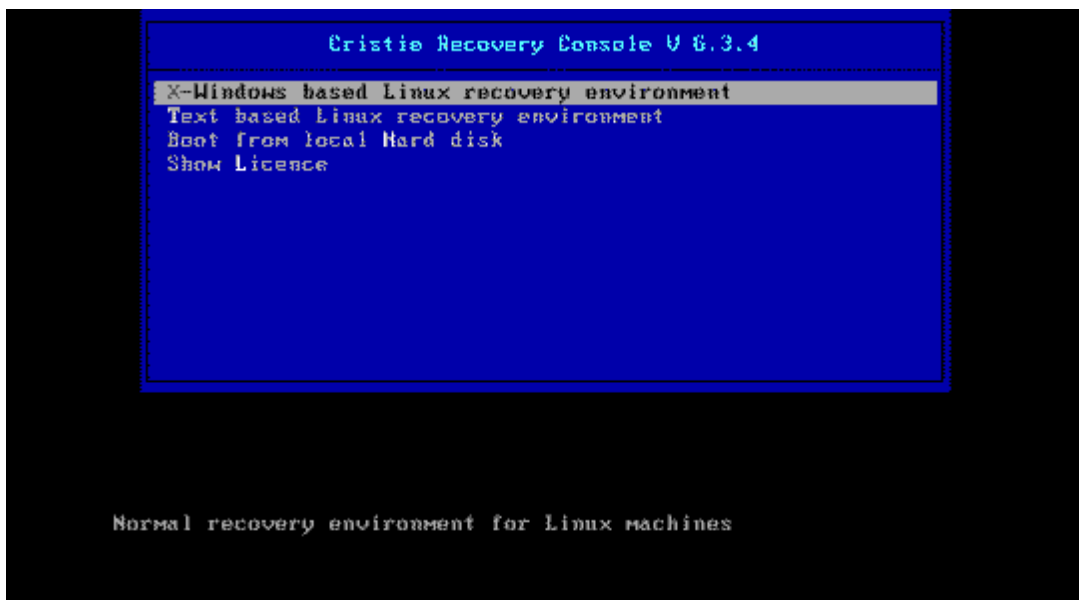
7 Performing a Recovery - Text Mode

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

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 TBMR bootable CDROM. You will be presented with the screen shown below:



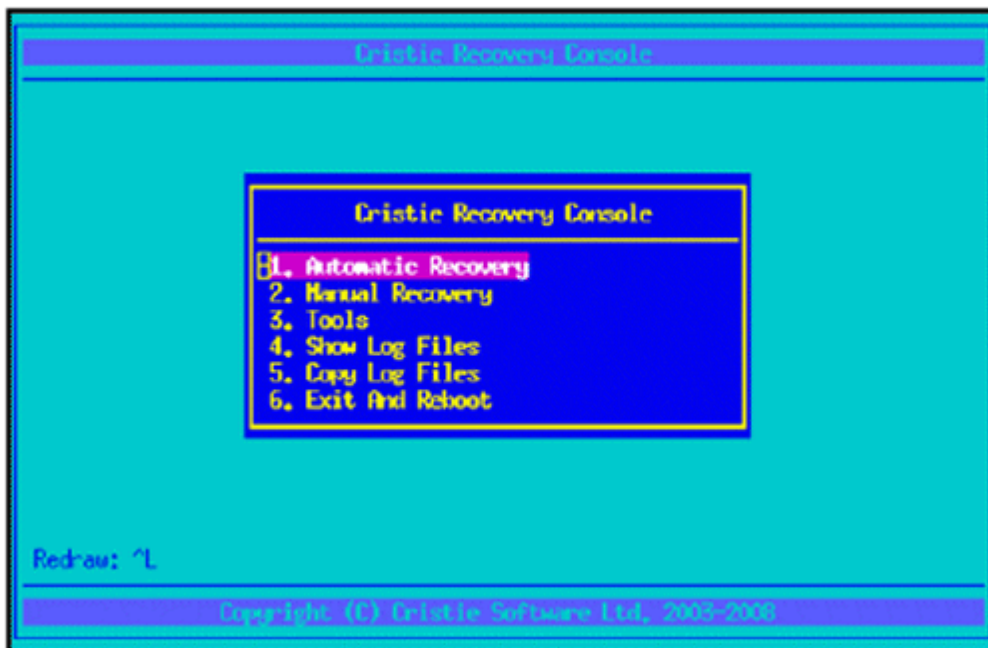
Cristie recommend that you choose the graphical mode ([Performing a Recovering - Graphical Mode \(Recommended\)](#)), which loads the **Cristie Recovery Console** (CRC). If, however, you wish to use the text menu-based mode as shown in this section, press **T** and then press **Enter**.

```
raid6: sse1x1      1863 MB/s
raid6: sse1x2      2496 MB/s
raid6: sse2x1      3593 MB/s
raid6: sse2x2      4613 MB/s
raid6: using algorithm sse2x2 (4613 MB/s)
md: raid6 personality registered for level 6
md: raid5 personality registered for level 5
md: raid4 personality registered for level 4
raid5: automatically using best checksumming function: pIII_sse
   pIII_sse : 4796.000 MB/sec
raid5: using function: pIII_sse (4796.000 MB/sec)
md: md driver 0.90.3 MAX_MD_DEVS=256, MD_SB_DISKS=27
md: bitmap version 4.39
device-mapper: ioctl: 4.11.0-ioctl (2006-09-14) initialised: dm-devel@redhat.com
TCP bic registered
NET: Registered protocol family 1
NET: Registered protocol family 17
802.1Q VLAN Support v1.8 Ben Greear <greearb@candelatech.com>
All bugs added by David S. Miller <davem@redhat.com>
Using IPI Shortcut mode
Freeing unused kernel memory: 228k freed
input: AT Translated Set 2 keyboard as /class/input/input0
Time: tsc clocksource has been installed.
input: IMPS/2 Generic Wheel Mouse as /class/input/input1
Do you wish to load the vmxnet driver (Y/N) ?
```

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

Note: 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

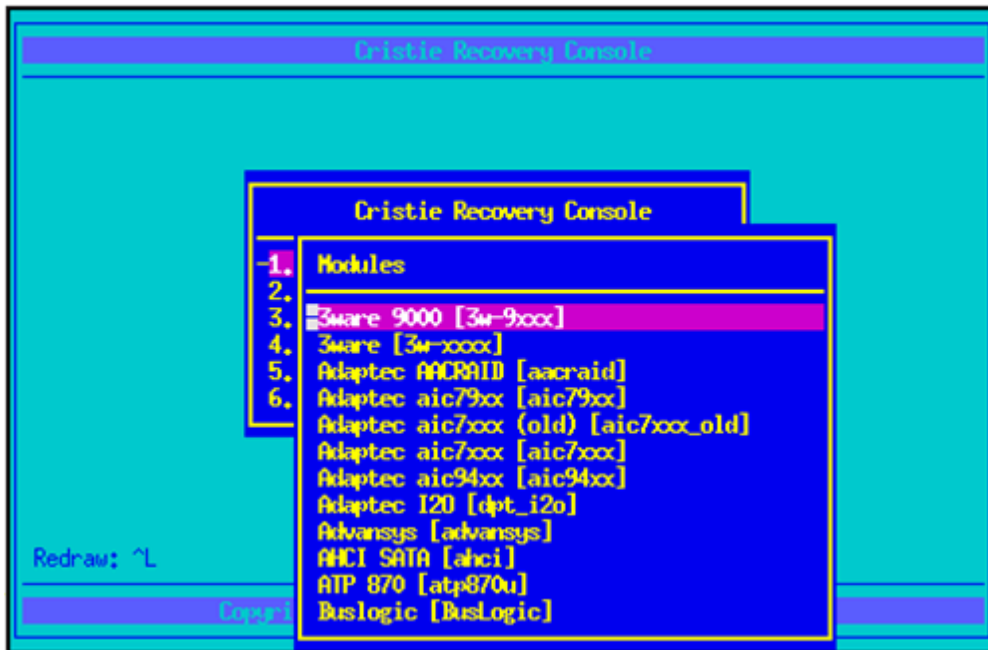
Some, but not all, device drivers are loaded automatically at boot time. If the disk controller and network drivers required for recovery were automatically detected and loaded, the **Load Hardware Drivers** option may be ignored.

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.

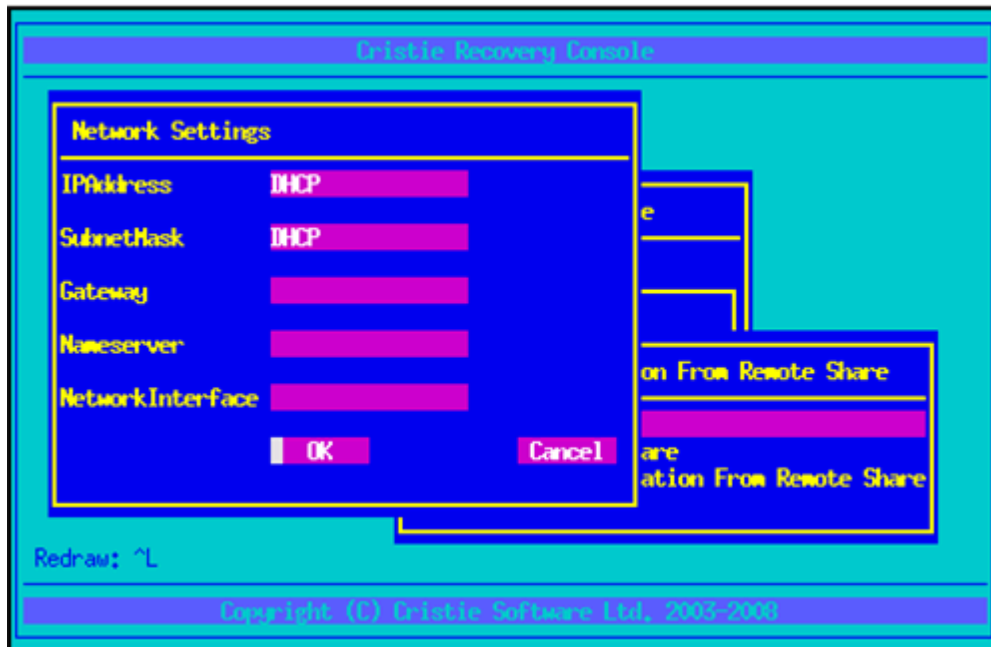
7.3 Access Configuration from Remote Share

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.

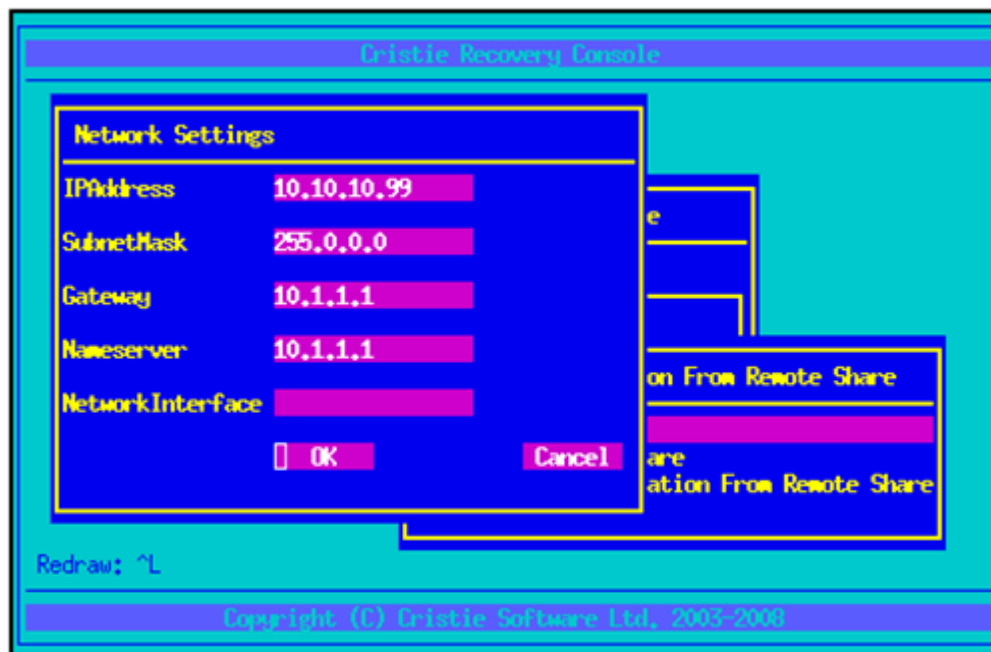


7.4 Setup Network

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`:

The screenshot shows a 'Public Recovery Console' window with a 'Setup Remote Share' dialog box. The dialog box has the following fields and values:

| | | | |
|-----------------|-----------------|------------|---------|
| ServerShare | 10.2.1.20:/data | ConfigPath | configs |
| UserName | | Password | |
| ServerIPAddress | | Workgroup | |
| Security | | | |

At the bottom of the dialog box are 'OK' and 'Cancel' buttons. A yellow box highlights the 'OK' button with the number '5'. To the right of the dialog box, a list of steps is shown:

3. Select Configuration From Remote Share
4. Exit

Below the dialog box, the text 'Redraw: ^L' is visible. At the bottom of the console window, the copyright notice 'Copyright (C) Cristie Software Ltd. 2003-2011' is displayed.

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

The screenshot shows a 'Public Recovery Console' window with a 'Setup Remote Share' dialog box. The dialog box has the following fields and values:

| | | | |
|-----------------|------------------|------------|---------|
| ServerShare | //10.2.1.20/data | ConfigPath | configs |
| UserName | me | Password | ***** |
| ServerIPAddress | | Workgroup | |
| Security | | | |

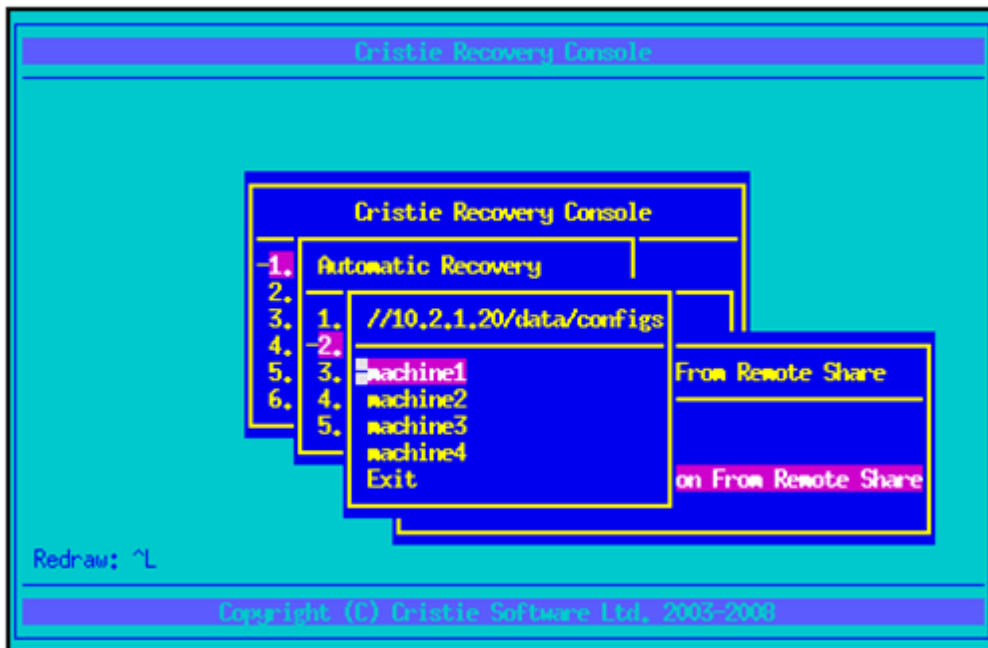
At the bottom of the dialog box are 'OK' and 'Cancel' buttons. A yellow box highlights the 'OK' button with the number '5'. To the right of the dialog box, a list of steps is shown:

3. Select Configuration From Remote Share
4. Exit

Below the dialog box, the text 'Redraw: ^L' is visible. At the bottom of the console window, the copyright notice 'Copyright (C) Cristie Software Ltd. 2003-2011' is displayed.

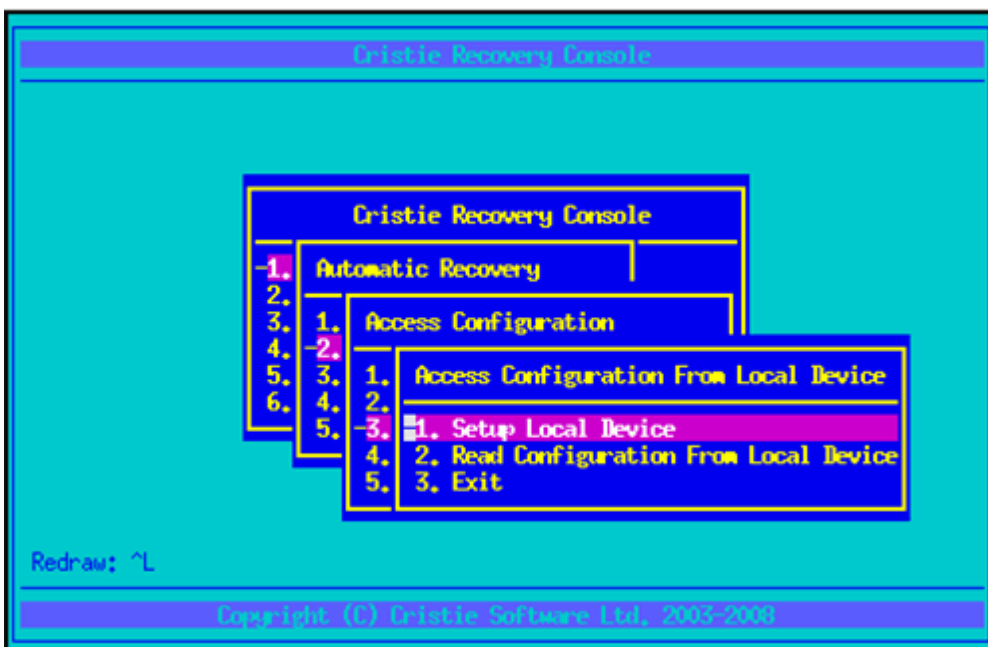
7.6 Select Configuration from Remote Share

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



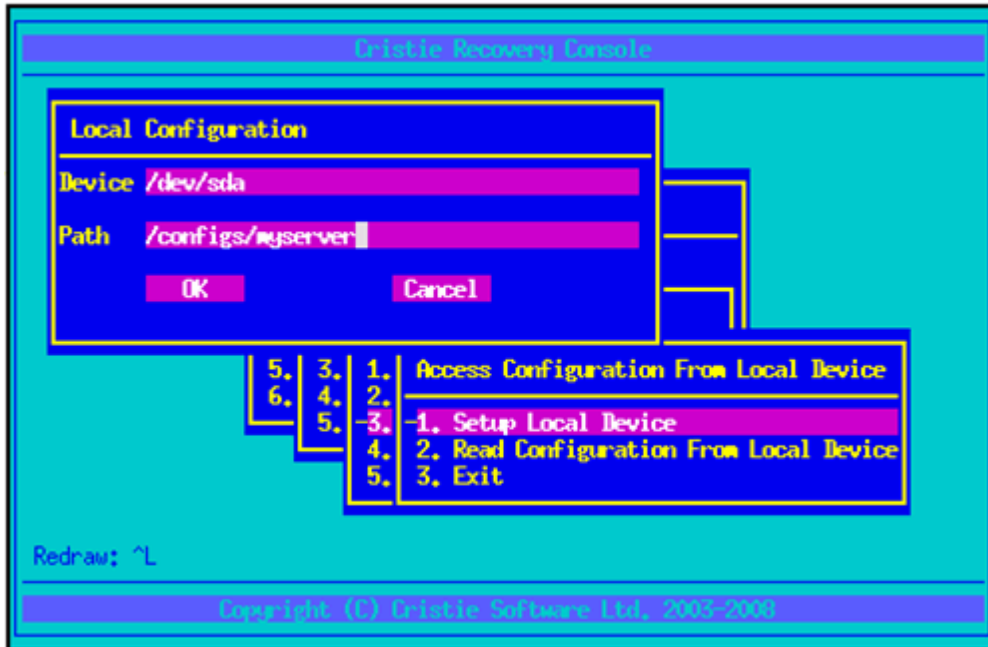
7.7 Access Configuration from Local Device

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



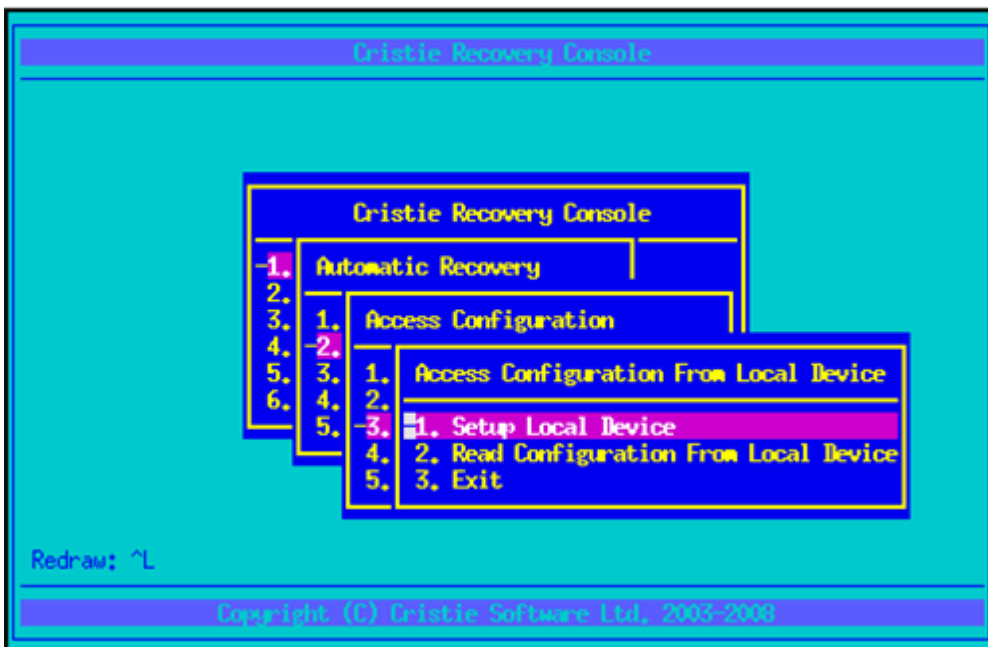
7.8 Setup Local Device

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.



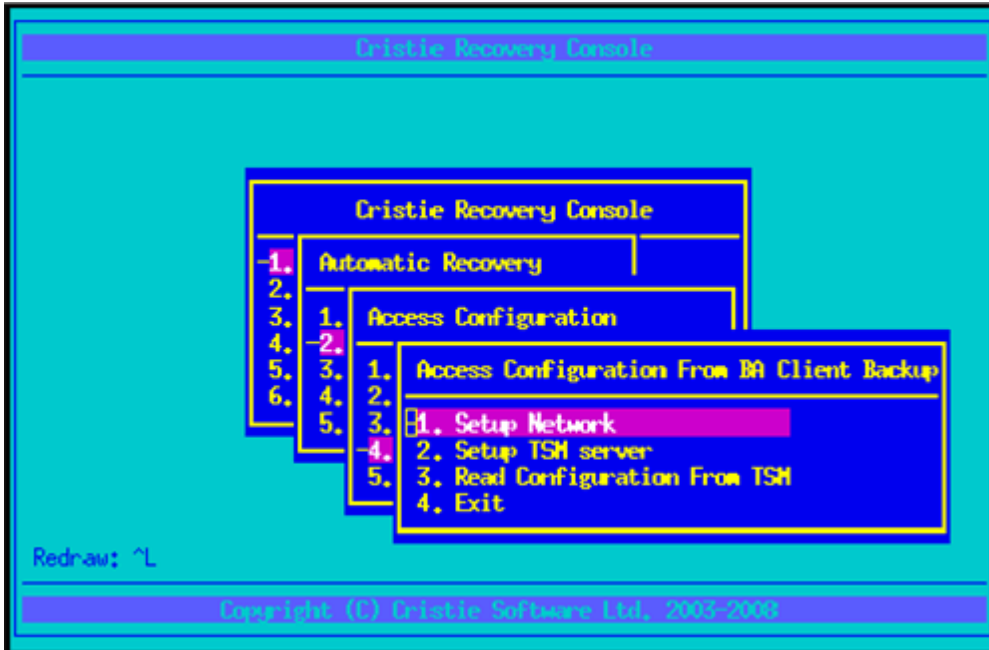
7.9 Read Configuration from Local Device

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

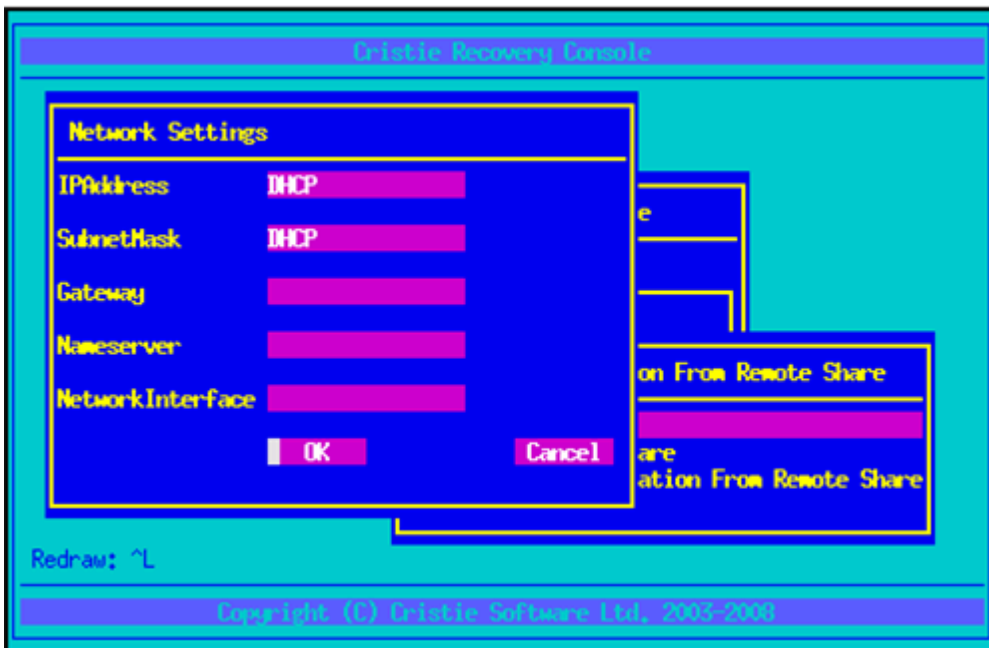
The configuration may be read from a TSM BA client backup using this option.



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.

The screenshot shows a text-based interface titled "Cristie Recovery Console". A central window titled "TSM Server" contains the following fields:

- TCPServerAddress: 10.2.1.20
- TCPPort: 1500
- NodeName: myserver
- Password: 88888888

Below the fields are "OK" and "Cancel" buttons. To the right of the "TSM Server" window is a "Client Backup" window with a list:

- 5. 3. Read Configuration From TSM
- 4. Exit

At the bottom left of the console, it says "Redraw: ^L". At the bottom center, there is a copyright notice: "Copyright © 2003-2011 Cristie Software Ltd."

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.