



Recovery Assurance

with Cristie Recovery Software



Cristie Bare Machine Recovery

User Guide

For Linux PPC

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Version 7.2.6

Cristie Software Ltd.
New Mill
Chestnut Lane
Stroud GL5 3EH
United Kingdom
Tel: +44(0)1453 847000
Fax: +44(0)1453 847001
support@cristie.com

Cristie Data Products GmbH
Nordring 53-55

63843 Niedernberg
Germany
Tel: +49 (0) 60 28/97 95-0
Fax: +49 (0) 60 28/97 95 7-99
cbmr@cristie.de

Cristie Nordic AB
Knarrarnäsgatan 7
164 40 Kista
Sweden
Tel: +46(0)8 718 43 30
cbmr@cristie.se

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Cristie Software Ltd
New Mill
Chestnut Lane
Stroud
GL5 3EH
UK

Tel: +44 (0) 1453 847000
Email: support@cristie.com
Website: <http://www.cristie.com>

Contents

1	Document Conventions	4
2	Introduction	5
	2.1 Limitations	5
	2.2 Further Information	5
3	System Requirements	6
4	Supported Filesystems	7
5	Using TBMР For Disaster Recovery	8
6	Tivoli Storage Manager Client Backup	9
	6.1 Setup TSM BA Client	9
	6.2 Saving the System Configuration	9
	6.3 TBMRCFG	10
	6.4 Housekeeping	10
7	Performing a Recovery	11
8	Performing a Manual Recovery	18
9	Post Recovery Options	19
	9.1 Copy Log Files	19
	9.2 View Log Files	21
10	Cristie Technical Support	22

1 Document Conventions

The following typographical conventions are used throughout this guide:

<code>/etc/passwd</code>	represents command-line commands, options, parameters, directory names and filenames
Next >	used to signify clickable buttons on a GUI dialogue
Note:	describes something of importance related to the current topic

2 Introduction

Cristie Bare Machine Recovery for TSM (TBMR) provides disaster recovery capability for Tivoli Storage Manager for Linux PPC.

It is possible to recover the original system to the same or dissimilar hardware. To protect a system, 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 system configuration information, backup and recover a Linux PPC machine using TBMR. More detailed information is available from `man` pages for the TBMR components. The `man` pages are available after installation of TBMR.

This guide is for TBMR for Linux PPC version 7.2.6 only.

Note: TBMR can only be used in conjunction with TSM.

This guide describes how to:

- Save Configuration data using `tbmrcfg`
- Configure and run your TSM Client backup
- Perform a Disaster Recovery

2.1 Limitations

TBMR for Linux PPC does NOT support:

- Intel
- Multi-boot operating systems
- Recovery of files that are being written to at the time of backup.

2.2 Further Information

Further information and advice on using TBMR may be found in the **Cristie Knowledge Base** at:

<http://kb.cristie.com>



See Also

About TBMR for Linux PPC

3 System Requirements

TBMR for Linux PPC can be installed only on Linux PPC machine.

TBMR requires that TSM BA client version 5.5 or later is already installed.

A minimum memory of 2GB RAM is required for booting the recovery environment and running a recovery.

TBMR Version 7.2.6 supports the following Linux PPC platforms:

- RedHat Enterprise 6.5 PPC

At the time of release the TSM Client versions supported are 5.5.0.6 to 7.1.3.0 inclusive.

At the time of release the TSM Server versions supported are 5.5.x.x to 7.1.3 inclusive.

Before TBMR can be used it must also be correctly licensed. Cristie provides a 30 day trial license with the product.

4 Supported Filesystems

TBMR Version 7.2.6 supports the following Linux PPC filesystems:-

- ext2
- ext3
- ext4
- ReiserFS
- JFS
- XFS

5 Using TBMR For Disaster Recovery

This section describes the steps involved in using Tivoli Storage Manager in conjunction with TBMR for disaster recovery.

This description assumes that the Tivoli Storage Manager client software has already been installed correctly.

To ensure your system is protected observe the following steps:

1. Install TBMR on the system you wish to protect.
2. Use the `tbmr cfg` program to capture and store the configuration of the system.
3. Use the TSM BA Client to backup the system to your TSM server.

6 Tivoli Storage Manager Client Backup

This section details how to setup a Backup Location.

Please see the following topics:

Setup TSM BA Client

Saving the System Configuration

TBMRCFG

6.1 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 BA client option file is:

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

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

```
Servename 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.

6.2 Saving the System Configuration

Configuration is now always saved to **/TBMRCFG** - it can't be saved anywhere else. This guarantees it is always stored in the backup.

When saving the configuration information to the backup location, this must be done **before** the backup is run.

To save the configuration information for each machine, the supplied command line program `tbmrcfg` is used. It is recommended that this is run prior to running each backup to ensure the configuration is up to date.

6.3 TBMRCFG

To use the command line configuration saving program, type `tbmrcfg` followed by the required options.

The available options of `tbmrcfg` can be shown using:

```
tbmrcfg --help
```

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

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

```
tbmrcfg -b grub -d /dev/hda
```

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

6.4 Housekeeping

In order to ensure that you can recover to the latest version of the operating system that was installed on your Linux PPC machine, you must ensure that a TSM incremental backup is performed every time the operating system files change.

This is not always possible, so [Cristie Software Ltd.](#) recommend that the TSM incremental backup be performed regularly. However, you should choose a period which reflects the rate of change in your own organisation. Although the configuration data will change less frequently than the operating system, it is a wise precaution to update this regularly. This can be achieved by creating a cron job for your schedule or using the TSM Scheduler.

7 Performing a Recovery

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 Environment and configure as required
- **Read** Configuration Data from your backup
- **Restore** Files from your backup
- **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:

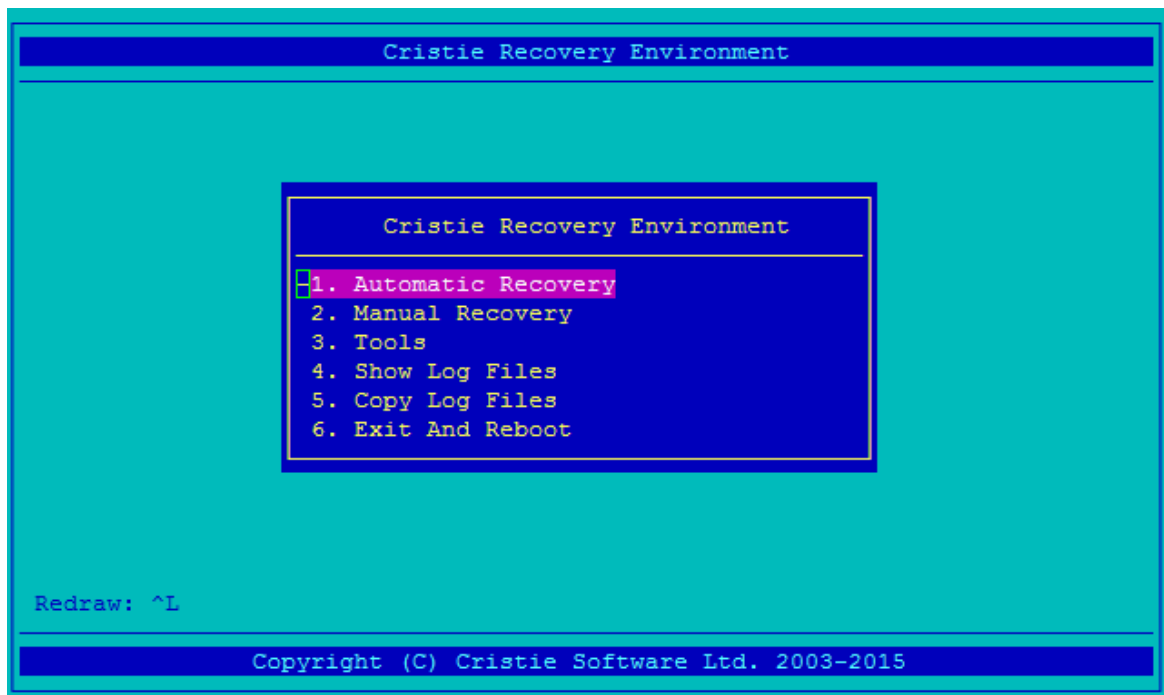
```
ibmvscsi 30000002: SRP_VERSION: 16.a
scsi0 : IBM POWER Virtual SCSI Adapter 1.5.8
ibmvscsi 30000002: partner initialization complete
ibmvscsi 30000002: host srp version: 16.a, host partition 65-35CBG (1), OS 3, ma
x io 262144
ibmvscsi 30000002: Client reserve enabled
ibmvscsi 30000002: sent SRP login
ibmvscsi 30000002: SRP_LOGIN succeeded
scsi 0:0:1:0: Direct-Access      AIX      VDASD          0001 PQ: 0 ANSI: 3
scsi 0:0:4:0: CD-ROM            AIX      VOPTA          PQ: 0 ANSI: 4
disrec (c) Cristie Software Ltd. 2004-2015
hostname: cristie
sd 0:0:1:0: [sda] Assuming drive cache: write through
sd 0:0:1:0: [sda] Assuming drive cache: write through
sd 0:0:1:0: [sda] Assuming drive cache: write through
Requesting DHCP address for eth0 ...
eth0 10.1.5.57 255.0.0.0
Network setup complete

Welcome to Cristie Recovery Environment
Using a web browser, connect to the IP address shown above
Alternatively, type 'dr' to start the recovery console

bash:~$
```

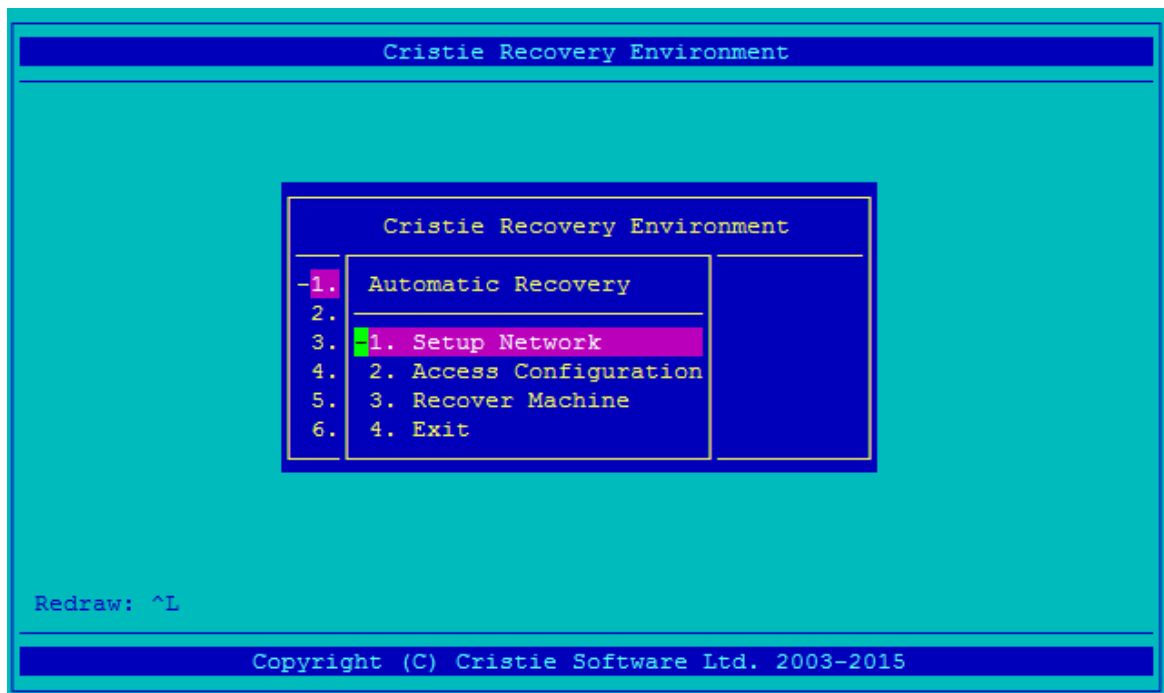
Cristie recommend that you choose the curses recovery environment by running dr.

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



Cristie recommends using the **Automatic Recovery Wizard** option from the **Recovery Environment** main menu.

This then displays **Setup Network** menu.

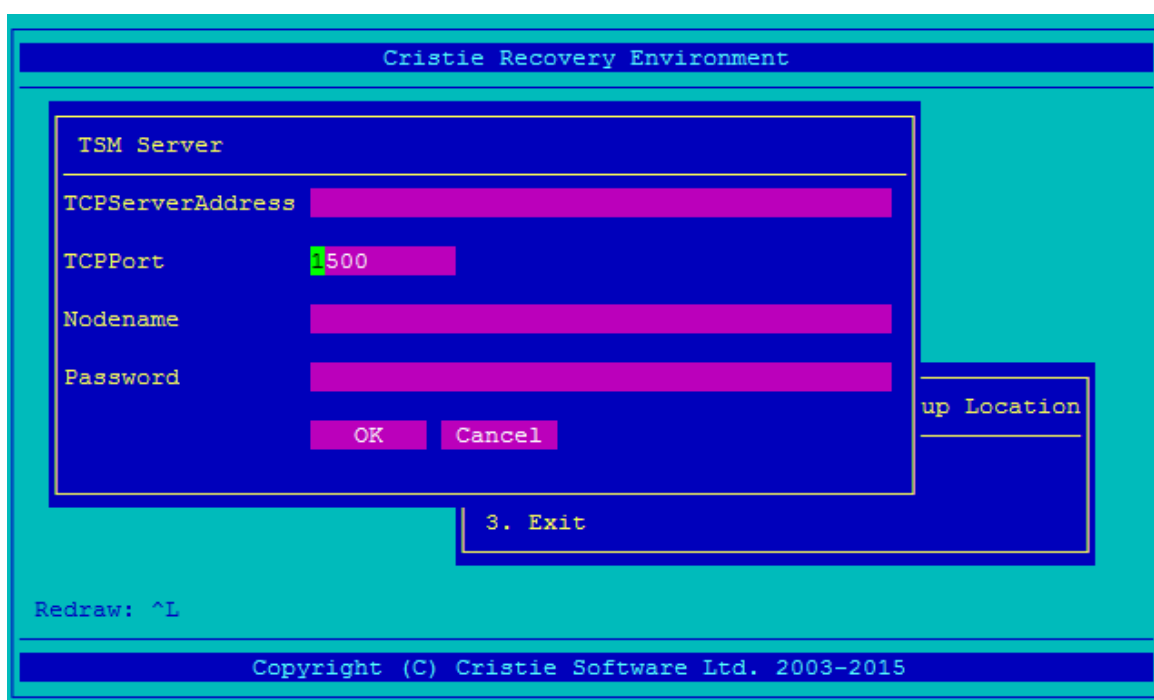
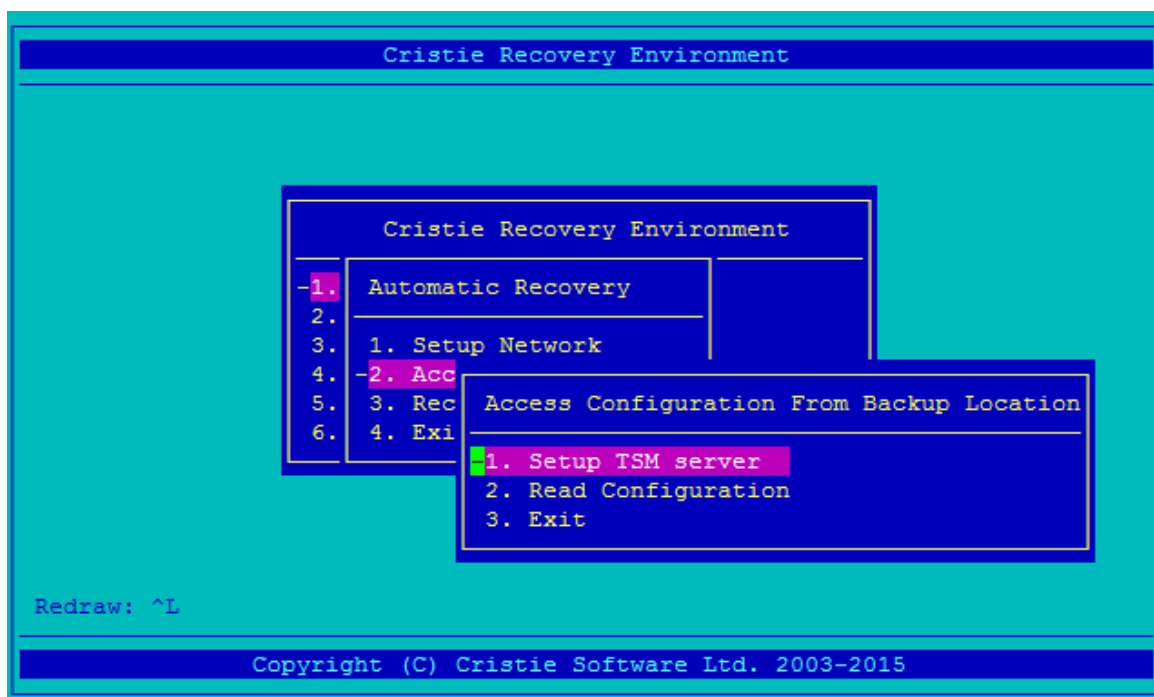


If DHCP is unavailable the **network settings** can be configured as required.

The screenshot shows the 'Cristie Recovery Environment' window. Inside, there is a 'Network Settings' box with the following fields: IPAddress (set to DHCP), SubnetMask, Hostname (set to cristie), Gateway, Nameserver, and NetworkInterface (set to eth0). At the bottom of the box are 'OK' and 'Cancel' buttons. Below the box, the text 'Redraw: ^L' is visible. The footer of the window reads 'Copyright (C) Cristie Software Ltd. 2003-2015'.

The **Access Configuration** menu permits the setup of the TSM server and read the configuration from the backup location.

The screenshot shows the 'Cristie Recovery Environment' window with a menu. The menu options are: 1. Automatic Recovery, 2. (blank), 3. 1. Setup Network, 4. -2. Access Configuration (highlighted), 5. 3. Recover Machine, and 6. 4. Exit. At the bottom left, the text 'Redraw: ^L' is visible. The footer of the window reads 'Copyright (C) Cristie Software Ltd. 2003-2015'.



This will then display the **Setup TMR Location** dialogue box, where you can specify the TSM Server information.

The screenshot shows a terminal window titled "Cristie Recovery Environment". Inside, there is a sub-dialogue box titled "TSM Server" with the following fields and values:

- TCPServerAddress: 10.10.11.98
- TCPPort: 1500
- Nodename: njkrhel65
- Password: *****

Below these fields are two buttons: "OK" and "Cancel". To the right of the "TSM Server" box is a label "up Location". Below the "TSM Server" box is a button labeled "3. Exit". At the bottom left of the main window is the text "Redraw: ^L". At the bottom right is the copyright notice "Copyright (C) Cristie Software Ltd. 2003-2015".

The screenshot shows the main menu of the "Cristie Recovery Environment". The menu is as follows:

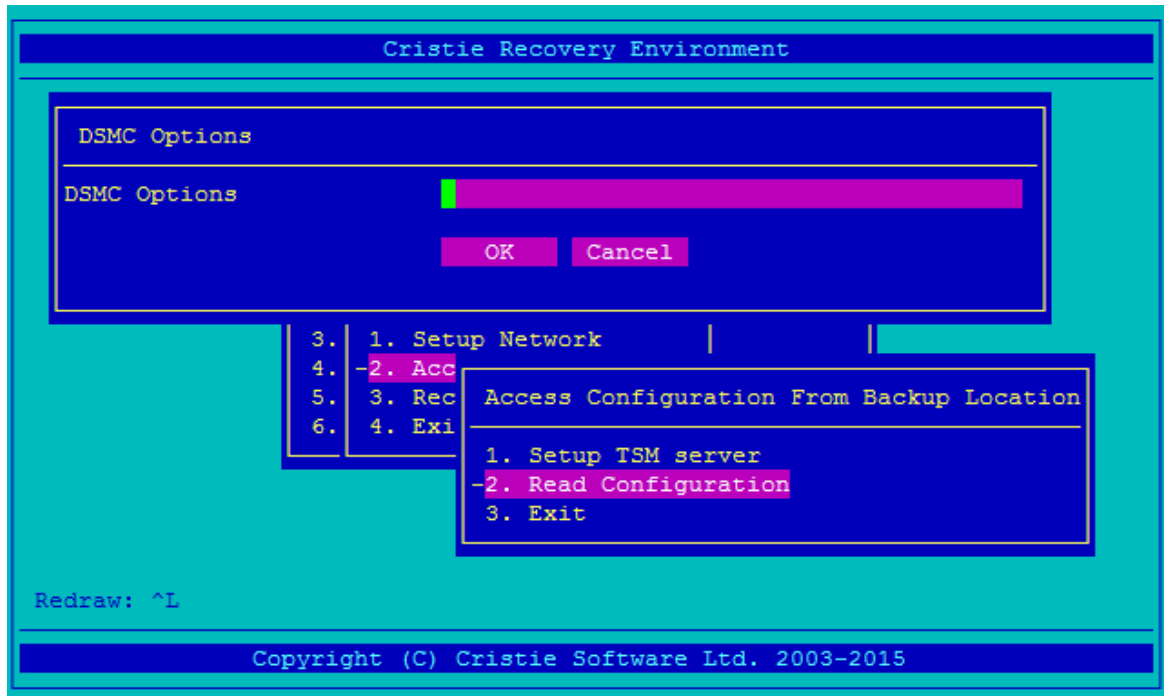
- 1. Automatic Recovery
- 2.
- 3. 1. Setup Network
- 4. -2. Acc
- 5. 3. Rec
- 6. 4. Exi

Below the menu is a sub-dialogue box titled "Access Configuration From Backup Location" with the following options:

- 1. Setup TSM server
- 2. Read Configuration
- 3. Exit

At the bottom left of the main window is the text "Redraw: ^L". At the bottom right is the copyright notice "Copyright (C) Cristie Software Ltd. 2003-2015".

DSMC options can be entered here, please refer to your TSM server administrator.



Selecting **OK** or **Cancel** initiates the configuration file to be loaded.

```

IBM Tivoli Storage Manager
Command Line Backup-Archive Client Interface
Client Version 7, Release 1, Level 0.0
Client date/time: 12/10/15 23:56:43
(c) Copyright by IBM Corporation and other(s) 1990, 2013. All Rights Reserved.

Node Name: NJKRHEL65
Session established with server CT-TSM63-SERVER: Windows
Server Version 6, Release 3, Level 1.0
Server date/time: 12/11/15 14:02:35 Last access: 12/11/15 13:54:05

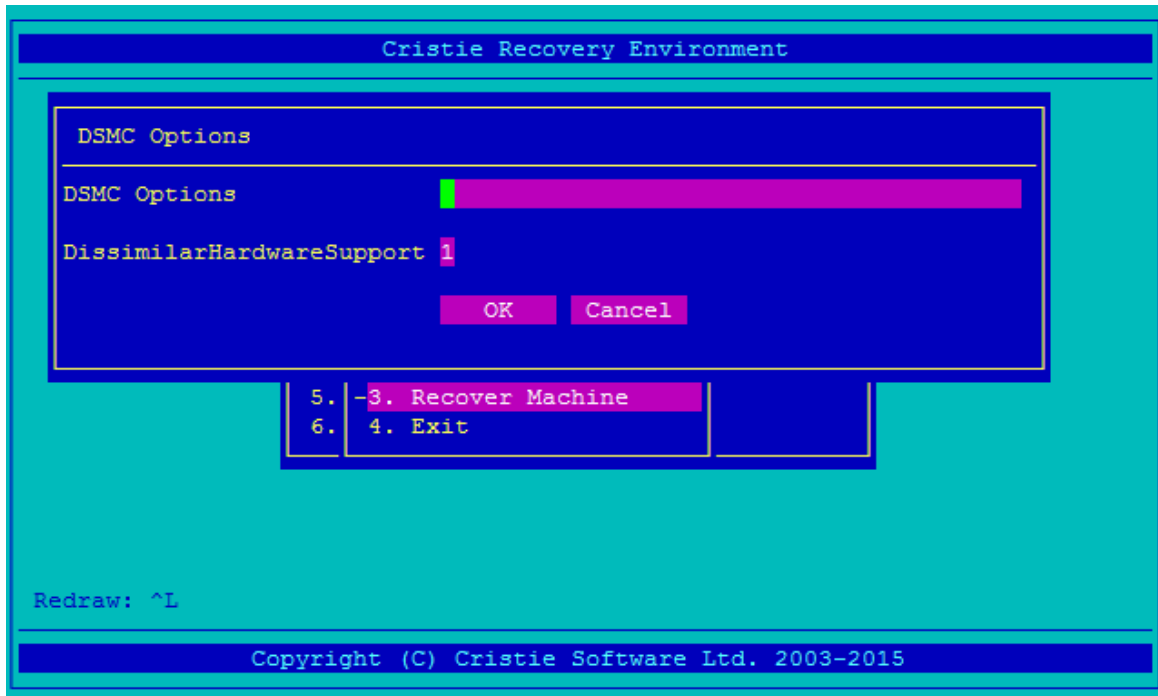
Restore function invoked.

Restoring          15,292 /TBMRCFG/disrec.ini --> /etc/cristie/disrec.ini [Done]

Total number of objects restored:          1
Total number of objects failed:            0
Total number of bytes transferred:        15.05 KB
Data transfer time:                        0.00 sec
Network data transfer rate:                17,404.26 KB/sec
Aggregate data transfer rate:              4.85 KB/sec
Elapsed processing time:                   00:00:03
Press any key to continue

```

Before starting **Recover Machine** further DSMC options can be configured. **Dissimilar Hardware Support** is enabled by default.



Selecting **OK** or **Cancel** initiates the machine recovery.

```
Editing /mnt/slash/etc/yaboot.conf
mkofboot: Installing primary bootstrap /usr/lib/yaboot/yaboot onto /dev/sda1...
mkofboot: Installation successful
mkofboot: Installation complete.
sda
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory
grep: /proc/self/mounts: No such file or directory

Files in the /tmp directory may be labeled incorrectly, this command
can remove all files in /tmp. If you choose to remove files from /tmp,
a reboot will be required after completion.

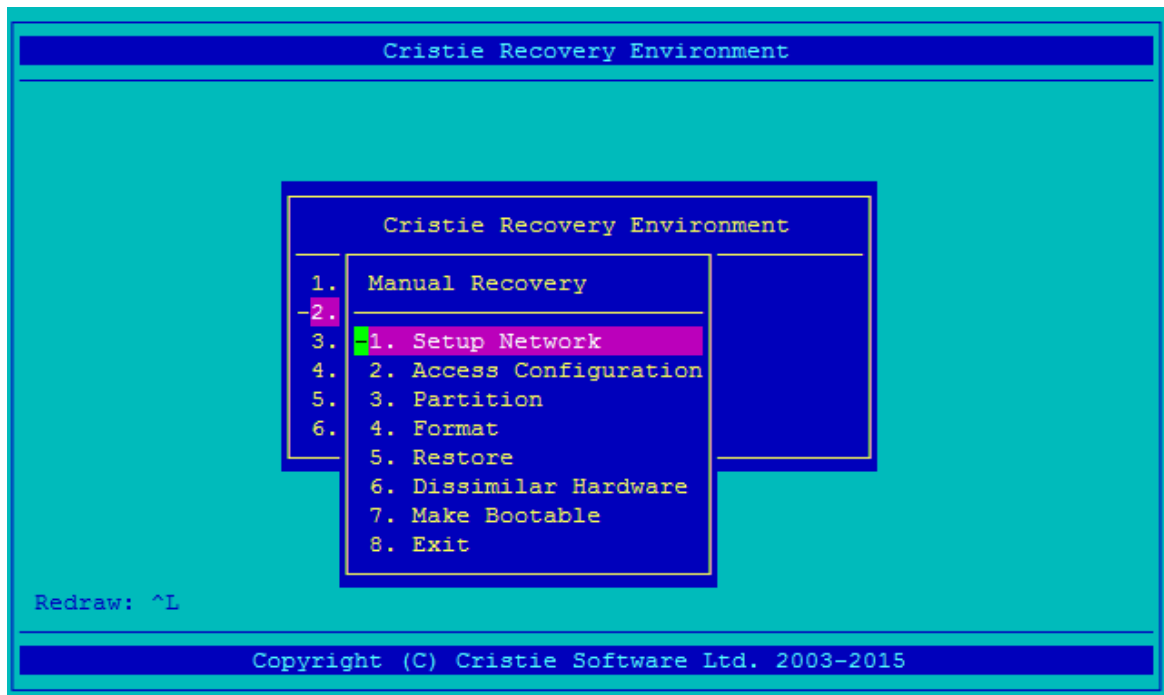
Do you wish to clean out the /tmp directory [N]?
/mnt/slash/boot unmounted
/mnt/slash unmounted
Recovery CompletePress any key to continue
```

8 Performing a Manual Recovery

An alternative to an **Automatic Recovery** is a **Manual Recovery**. This permits each stage of the configuration of the recovery Environment to be performed individually.

The process encompasses the following stages:-

- **Setup Network**
- **Access Configuration** and configure the TSM server settings.
- **Partition** prepares the target disk.
- **Format** lays down the filesystem.
- **Restore** recovers files from the backup.
- **Dissimilar Hardware** configures volume groups and logical volumes.
- **Make Bootable**



9 Post Recovery Options

After performing a recovery, it is possible to undertake the following actions:

- Copy Log Files (Cristie recommends that this action is always undertaken after a recovery)
- View Log Files

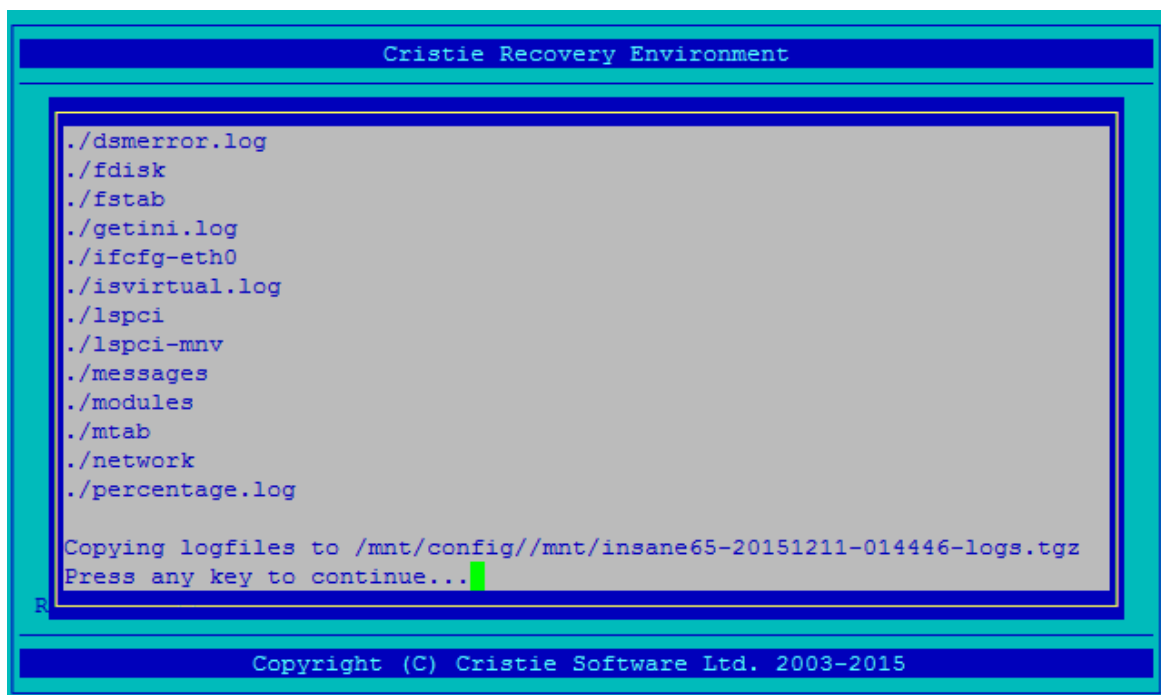
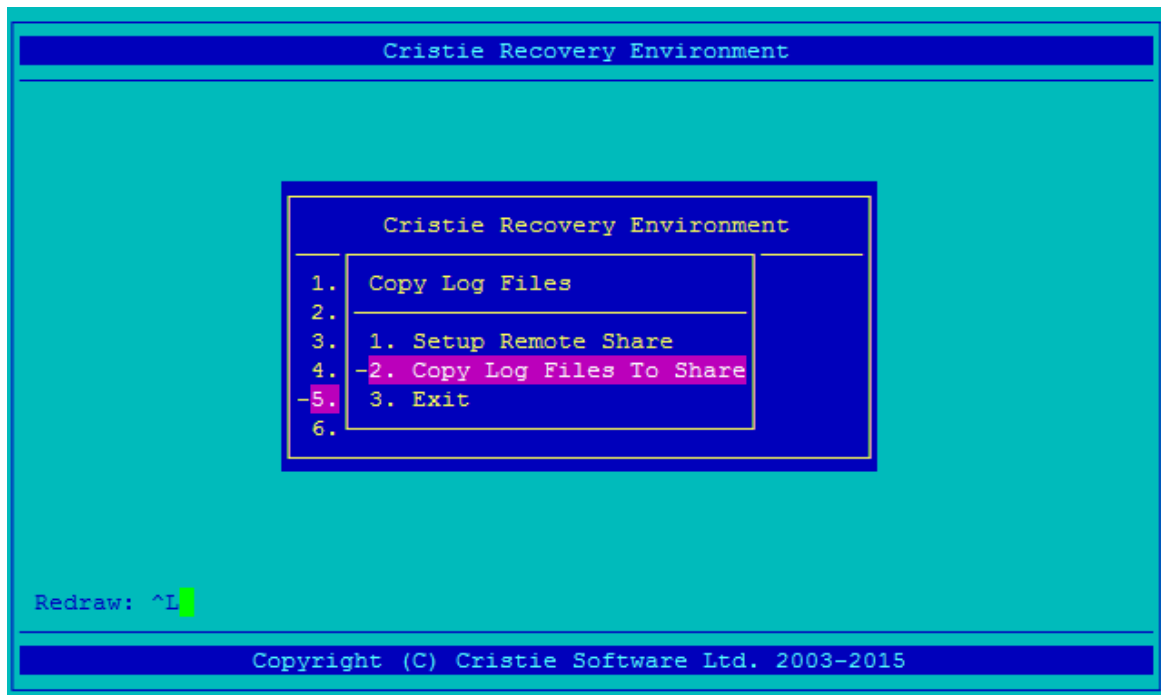
9.1 Copy Log Files

To copy logfiles a **remote share** must be configured.

The screenshot shows a terminal window titled "Cristie Recovery Environment". Inside, a "Setup Remote Share" dialog box is open. The dialog has a title bar and contains the following fields and buttons:

Setup Remote Share	
ServerShare	10.1.1.50:/mnt/s
ConfigPath	/mnt
UserName	stroud/nickk
Password	*****
ServerIPAddress	10.1.1.50
Workgroup	
Security	none
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

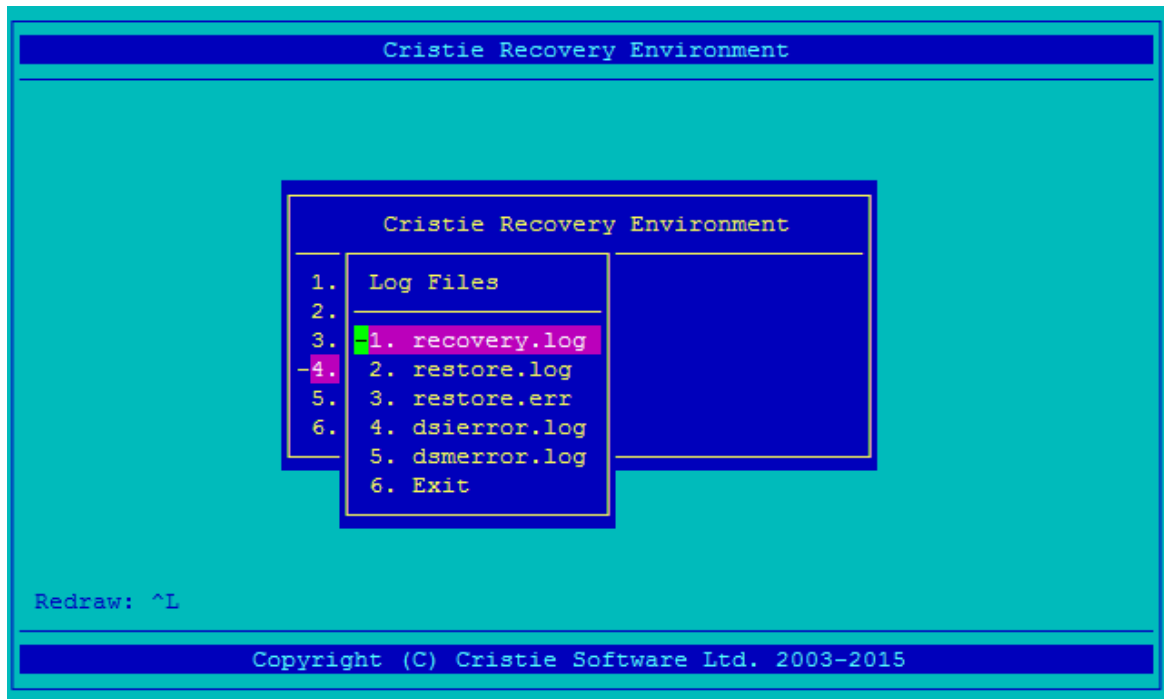
Below the dialog box, the text "Redraw: ^L" is visible. At the bottom of the terminal window, a copyright notice reads: "Copyright (C) Cristie Software Ltd. 2003-2015".



Note: 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

9.2 View Log Files

various logfiles can be viewed via the [Log Files](#) menu



10 Cristie Technical Support

If you have any queries or problems concerning your Cristie Bare Machine Recovery product, please contact **Cristie Technical Support**. To assist us in helping with your enquiry, make sure you have the following information available for the person dealing with your call:

- TBMR Version Number
- Installed OS type and version
- Any error message information (if appropriate)
- Description of when the error occurs
- All Cristie log files relating to the source or recovery machine. This is very important to help us provide a quick diagnosis of your problem

Contact Numbers - Cristie Software (UK) Limited

Technical Support	+44 (0) 1453 847 009
Toll-Free US Number	1-866-TEC-CBMR (1-866-832-2267)
Sales Enquiries	+44 (0) 1453 847 000
Email	support@cristie.com
Web	www.cristie.com

Support Hours

05:00 to 17:00 Eastern Standard Time (EST) Monday to Friday

Out-of-Hours support available to customers with a valid Support Agreement - Severity 1 issues* only

UK Bank Holidays** classed as Out-of-Hours - Severity 1 issues only.

**Severity 1 issues are defined as: a production server failure, cannot perform recovery or actual loss of data occurring.*

***For details on dates of UK Bank Holidays, please see www.cristie.com/support/*

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