



Recovery Assurance

with Cristie Recovery Software



Bare Machine Recovery for TSM

Automated Disaster Recovery User Guide

For Windows

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1 Introduction

This document describes how to configure and run automated disaster recoveries in conjunction with one of the Cristie range of bare machine disaster recovery products; TBMR in this case.

The steps required to *prepare* for automated Disaster Recovery (DR) are as follows:

1. Install the TBMR product
2. Create the system configuration
3. Create a system backup
4. Create an automated DR answer file
5. Optionally inject the answer file into the DR recovery environment or copy to a Windows compatible removable device (e.g. USB disk)

The steps required to *run* an automated DR are as follows:

1. If the DR answer file is located on a removable device, ensure it is connected to the recovery machine
2. Boot the customised DR recovery environment

Each step is explained in the following chapters of this document.

1.1 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 Preparation

To enable successful automated DR, the following steps should be taken.

2.1 Install TBMR

Run a normal installation of the Cristie TBMR product. Refer to the separate product [Installation and Licensing Guide](#) for instructions on how to do this.

The Cristie [Answer File Creator](#) (AFC) program will be installed along with the main product.

Note: The AFC should be installed on Windows Vista/2008 or later. Earlier Windows OS's are not supported.

2.2 Create System Configuration

With TBMR, a system configuration will be captured to the system during the installation. If this isn't run automatically for some reason (e.g. the license is invalid or it times out etc.), run the supplied [TBMRCfg.exe](#) program manually from the script [RunTBMR.cmd](#) using the installed Start menu shortcut or ensure the TSM backup is configured to create the configuration as part of a TSM Pre-Sched operation.

Refer to the separate [TBMR User Guide](#) for further details on this.

2.3 Create System Backup

Use the TSM backup client to create a full backup as described in the separate [TBMR User Guide](#) document.

2.4 Create Answer File For Automated DR

During an interactive DR session, the user would normally specify recovery parameters. Such parameters would typically include:

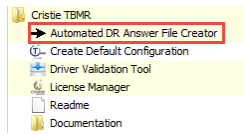
- setup network details (DHCP/static IP, gateway IP etc)
- network details of the TSM server (hostname/IP address, port no.)
- define disk partition layout for recovery
- select partitions to recover
- commence SystemState/file restore
- view/copy log files
- re-boot after DR
- driver location for dissimilar recovery where applicable

During an unattended DR, this same information must be prepared in advance - captured to an answer file and made available to the DR environment as part of the DR start-up process.

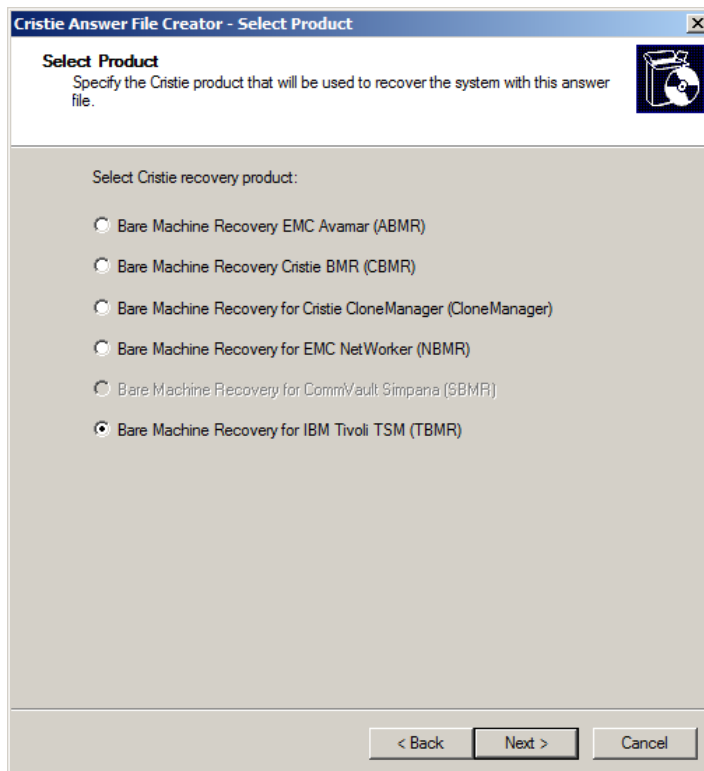
Cristie supply an [Answer File Creator](#) (AFC) tool with their BMR products to help you create the answer file. The format of the file is in the form of a structured INI file and may be edited by any Windows editor such as Notepad or Wordpad. However, it is strongly recommended that the AFC tool is used to initially create the answer file.

2.4.1 Running the Cristie Answer File Creator Tool

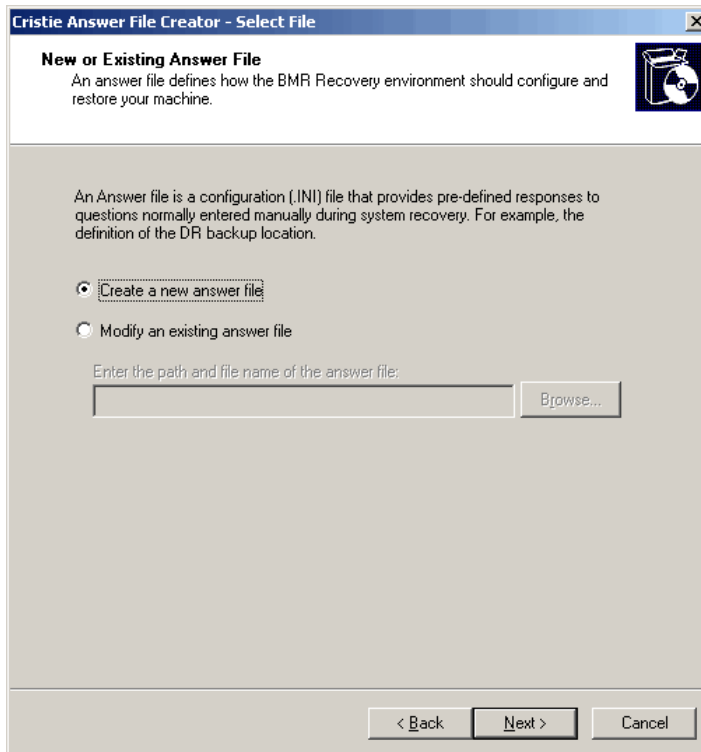
Run the **AFC** tool from the **Windows Start** menu:



This will invoke the AFC Welcome dialogue:

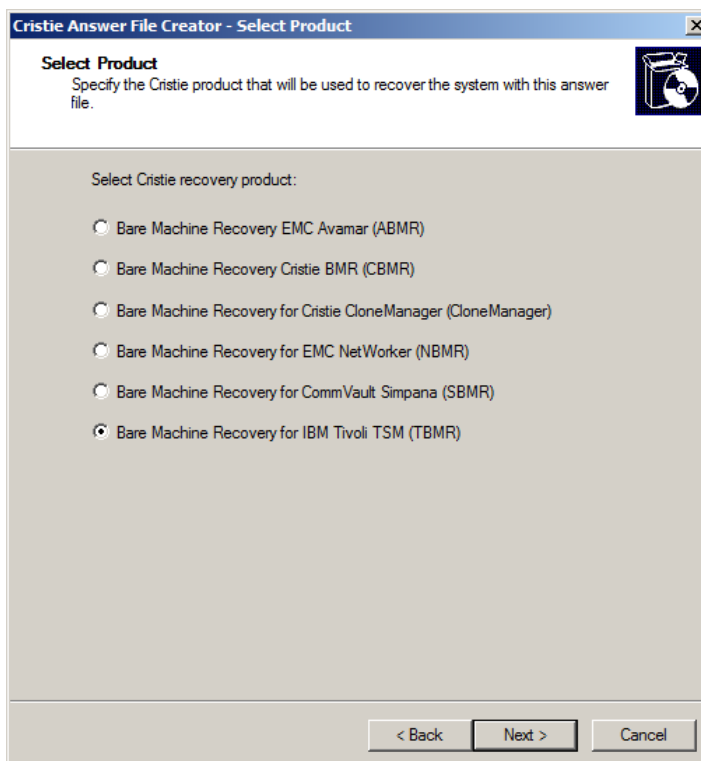


Select **Next>** to continue to the following dialogue where you can choose to modify an existing file or create a new one.



Select **Create a new answer file** and click the **Next>** button. You can then select the Cristie BMR product that the answer file is being created for.

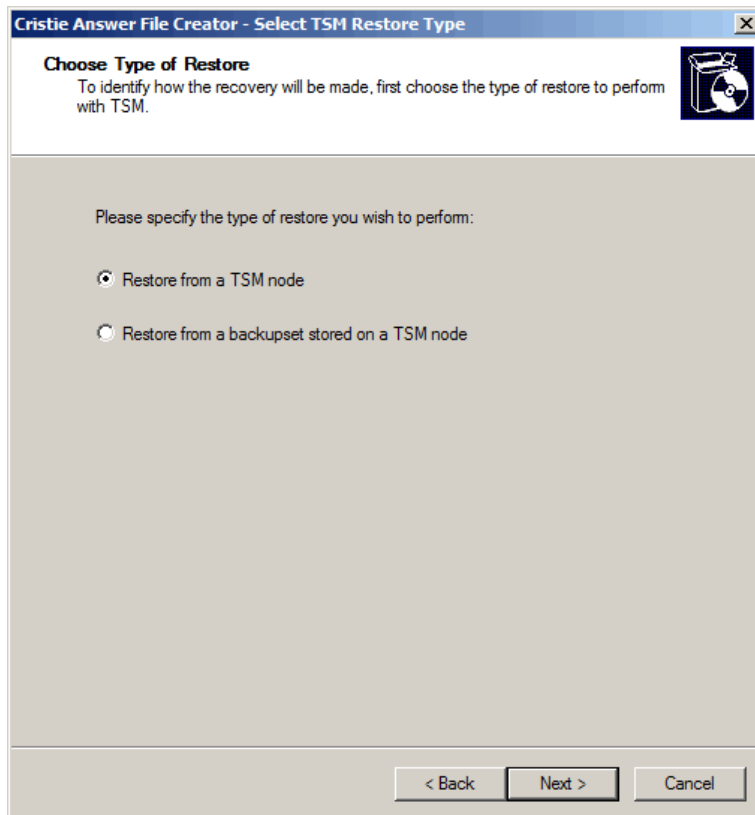
*Note: you may use the **Next>** and **<Back** buttons at any time to change information you have already entered before creating the answer file. Select **Cancel** at any time to abandon the answer file creation process and exit the program.*



Choose the TBMR product and select **Next>**.

TBMR has the capability of restoring from either TSM Nodes or from TSM online backupsets.

Note: Offline backupsets are not currently supported.

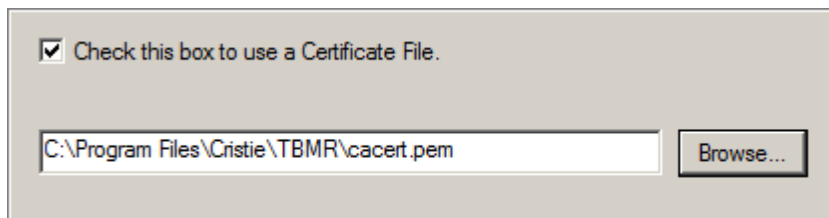


2.4.1.1 Restore From A TSM Node

You may optionally include a Certificate file to provide a Secure Sockets Layer (SSL) or Transport Layer Security (TLS) protocol secured connection for the TSM server.



If you click the tick box a file browse button will be displayed. Please enter the full path to the certificate file. This will be used during recovery so the path must be accessible during the unattended recovery sequence.



Specify the **TSM Server and Client** details:

Cristie Answer File Creator - Specify TSM Details

TSM Details
Specify the TSM server and client details, and restore date/time.

TSM Server Details

Server Address : 10.10.11.98 Port : 1500

Backupset Location :

TSM Client Details

Node Name : NIGELPTBMR

User Id* :

* Leave blank if you wish to use the default (i.e. same as the Node Name)

Password :

Point-in-time (PIT) restore

09 December 2013 16:30:28

< Back **Next >** Cancel

Note: You may enter the server IP address in IPv4 or IPv6 form.

You may specify a different username/password (e.g. the Administrator) as an alternative to the Node password.

It may be that you want to restore the system to a specific **Point-in-Time** (PIT). If this is the case, select the restore date and time by ticking the PIT tick box. This will open up the date/time dialogue:

Cristie Answer File Creator - Specify TSM Details

TSM Details
Specify the TSM server and client details, and restore date/time.

TSM Server Details

Server Address : 10.10.11.98 Port : 1500

Backupset Location :

TSM Client Details

Node Name : NIGELPTBMR

User Id* :

* Leave blank if you wish to use the default (i.e. same as the Node Name)

Password :

Point-in-time (PIT) restore

18 January 2016 14:32:37

January 2016

Mon	Tue	Wed	Thu	Fri	Sat	Sun
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Today: 18/01/2016

< Back **Next >** Cancel

If the selected TSM Node contains backups for more than one system, then select the system hostname to be restored in the next dialogue.

Note: neither IBM nor Cristie recommend this practice.

Cristie Answer File Creator - TSM Backupset and Machine Name

TSM Backupset and Machine Name

By default, the first backupset and machine name will be recovered if more than one backupset or machines are found in the same TSM node. If you wish to restore from a non-default backupset or machine, specify the correct details below.

Backupset

Enter backupset:

Machine Name

WARNING :

If backups belonging to multiple machines are stored under a single node identify the required machine name here.

You may enter a machine name. There is no guarantee that the correct system state will be restored for the specified machine.

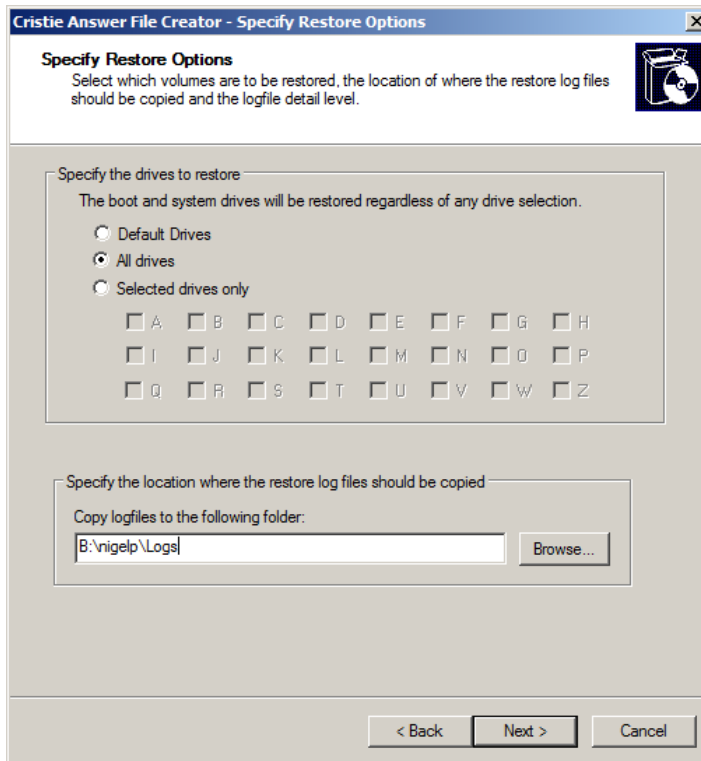
Enter machine name:

< Back Next > Cancel

Press **Next>** to continue to the **Specify Restore Options** dialogue. Here you may specify whether just the default system drive (partition or volume) will be restored, or **All drives** or **Selected drives**. Select individual disks as **A, B, C ...** etc.

Specify where you want the restore log files to be copied at the end of DR process.

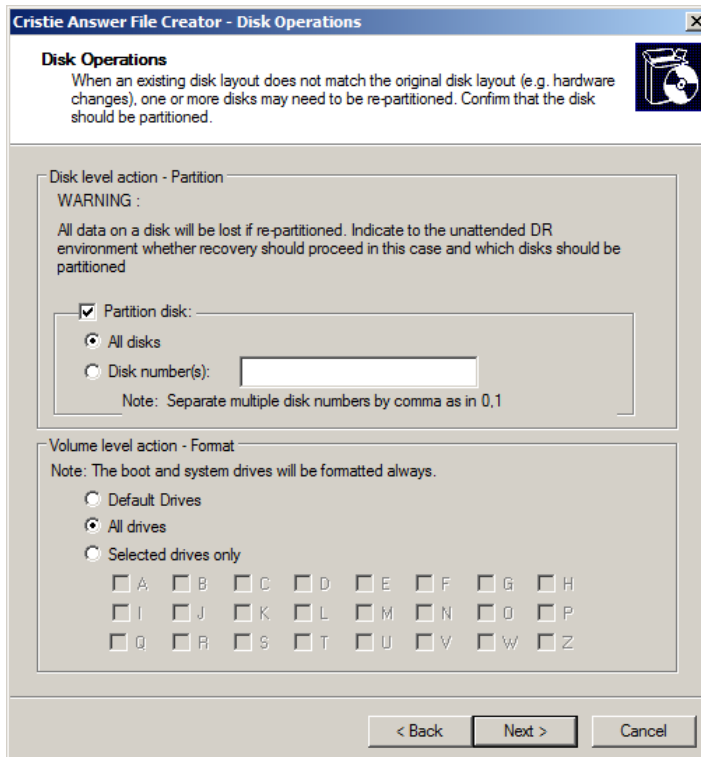
Note: the facility to specify the detail level is not available within TBMR.



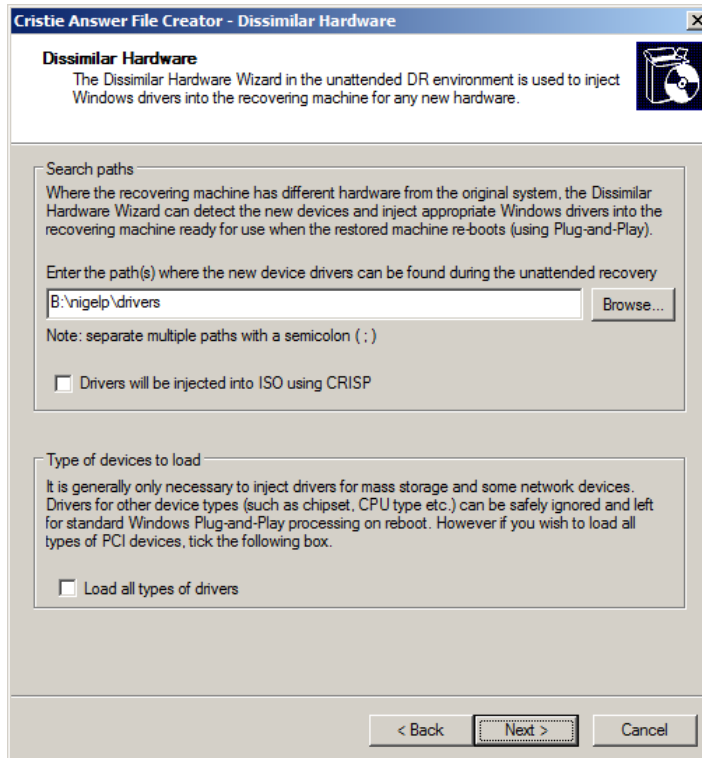
Press **Next>** to continue to the **Disk Operations** dialogue.

Here you may select either **All disks** or specific **Disk number(s)** to be partitioned. Disks are identified by number **0, 1, 2** etc. Commas are required.

You may also select **Default Drives**, **All drives** or **Selected drives only** to be formatted on restore. Select individual disks as **A, B, C ...** etc.



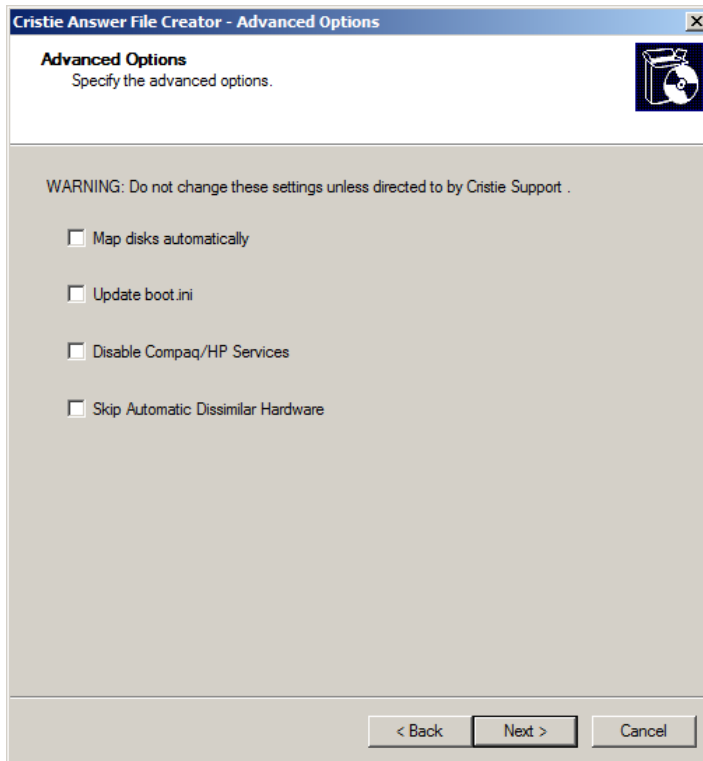
If the DR is to dissimilar hardware (ie. not the original system), then the recovered system may require new drivers to support different mass storage or network controllers. These new drivers are supplied by the customer and must be accessible to the **Dissimilar Hardware Wizard (DHW)** during the recovery process. Specify the location of a folder (or folders) where the DHW will retrieve these drivers from. For example, this could be a locally attached device like a USB disk or a network share, or both.



Tick **Drivers will be injected into ISO using CRISP** if you intend to manually add extra DHW drivers to your customised boot ISO during the CRISP ISO generation phase. This can be in addition to any drivers contained on the driver path specified above.

Normally only mass storage and network controllers need to be considered. However, if all driver classes need to be examined, select the **Load all types of drivers** tick box. Select **Next>** to continue to the **Advanced Options** dialogue.

Unless **Cristie Support** direct you to change these settings, leave them at their default settings.



Press **Next>** to continue to the **Network Connection** dialogue. Here you can define a list of network connection credentials that will be used by automated DR to access any network shares identified in earlier dialogues (eg. copy log files, DHW drivers etc.).



Press the **Add to->** button to add a new definition to the Connection list. Use the **Delete** button to remove an existing Connection definition. Press **Next>** to continue to the **Cloning Options** dialogue. This allows you to automatically change the hostname and/or the IP address of the recovered system.

Add a new name for the recovered system in the **Computer** field. Change the hostname if required in the **Hostname** field.

The IP address can be changed for each adapter on the system. Note the adapter is identified by MAC address. This can be extracted from the current system or new adapters on a dissimilar target system. In the latter case identify the new adapters by MAC address (i.e. enter a new address in the **Adapter** field).

Note: The address can be supplied in either IPv4 or IPv6 form.

Cristie Answer File Creator - Cloning Related Settings

Cloning Options
Change the hostname and network parameters on the recovered machine.

Computer:

Hostname:

Specify the network adapter settings

Enter the hardware address or select one on this

Adapter:

Obtain an IP address automatically
 Use the following IP address

IP Address:

Subnet prefix length:

Default Gateway:

Use static gateway

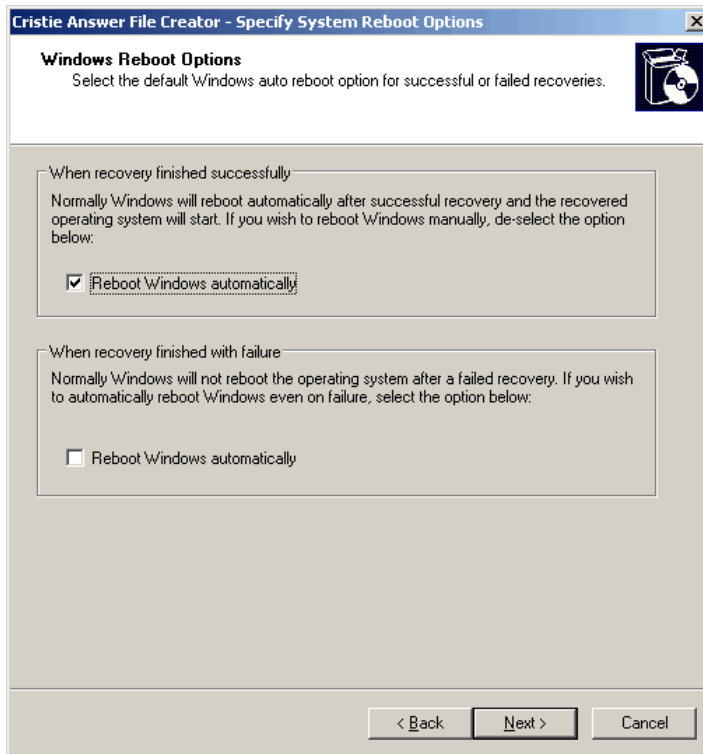
Obtain DNS Server address automatically
 Use the following DNS Server address

DNS Server:

Network Adapter List

These settings apply to the recovery environment only - not the restored machine.

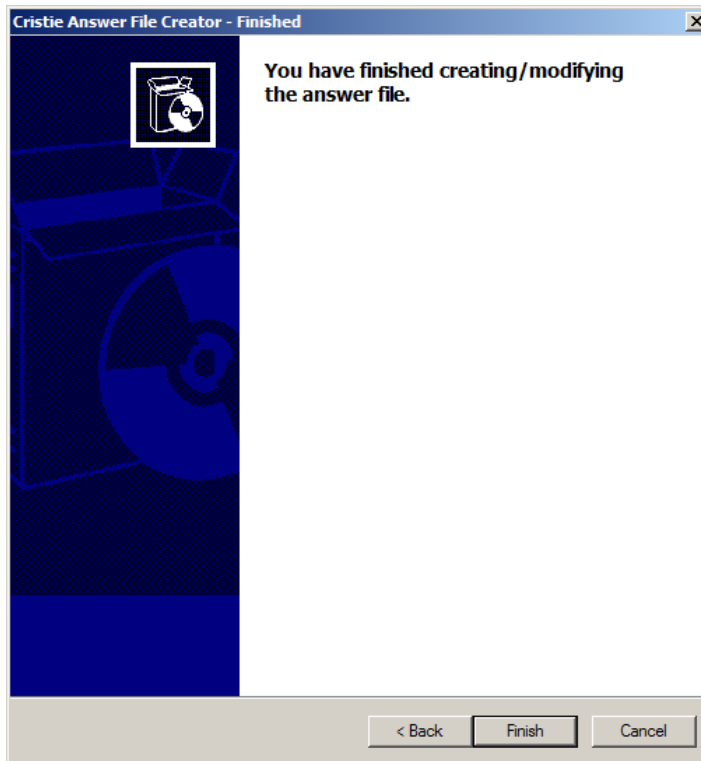
Press the **Add to->** button to add a new definition to the Adapter list. Use the **Delete** button to remove an existing Adapter definition. Press **Next>** to continue to the **Reboot Options** dialogue.



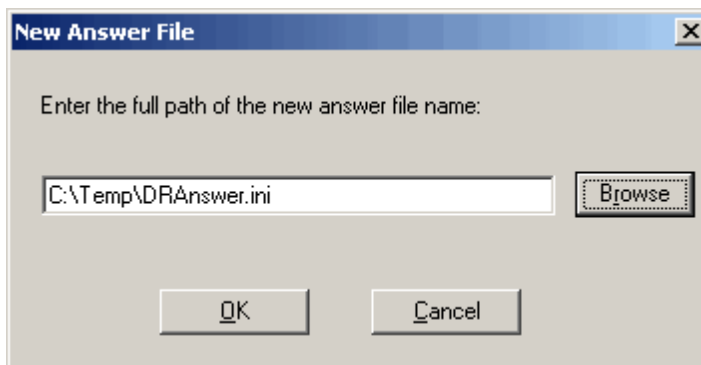
Specify how the automated DR should handle the post recovery reboot when the DR finishes with success or failure. If the DR is successful, select the "When recovery finished successfully" **Reboot Windows Automatically** option. If the DR fails, it is unlikely that the reboot will succeed, so there is little point in proceeding with the reboot. However if a reboot should still be attempted, even in a failure scenario, tick the "When recovery finished with failure" **Reboot Windows Automatically** option.

The **Prompt for final recovery confirmation** reboot option allows the automated recovery process to display a last chance option to cancel an automated recovery. Normally the automated recovery runs completely unattended unless this option is ticked.

The completion of the Answer File definition is confirmed with the following dialogue:



Select **Finish** to generate the answer file. A pop-up will be displayed prompting for the name and location of where the AFC should create the answer file.



Select a path and press **OK**. This will create a file called `DRAnswerFile.ini` in the `C:\Temp` folder.

Note: the answer file MUST be called `DRAnswer.ini` when transferred to the ISO.

Answer File Content Example:

```
[ProductType]
Product = "TBMR"

[TbmrBackupLocation]
StorageType=Normal
ServerName=10.10.11.98
ServerPort=1500
NodeName=NIGELPTBMR
NodePassword=Encrypted: 828211CF2AC6B2
MachineName=
UserName=
UseTsmAsrCfg=0
PointInTime=

[RestoreData]
Drives = "All"

[LogFiles]
LogfileCopyPath = "B:\nigelp\Logs"

[NetLogin]
Connection1 = "params.Connection1"

[params.Connection1]
NetworkPath = "\\cristienas2\scratch"
Domain = "stroud"
Username = "nigelp"
Password = "Encrypted: 95860a8f6b9fbelf"
MapToDrive = "B:"

[System]
RebootOnSuccess = "True"
RebootOnFailure = "False"
PauseForConfirmation = "False"

[DiskOperation]
PartitionDisk="All"
FormatVolume = "All"

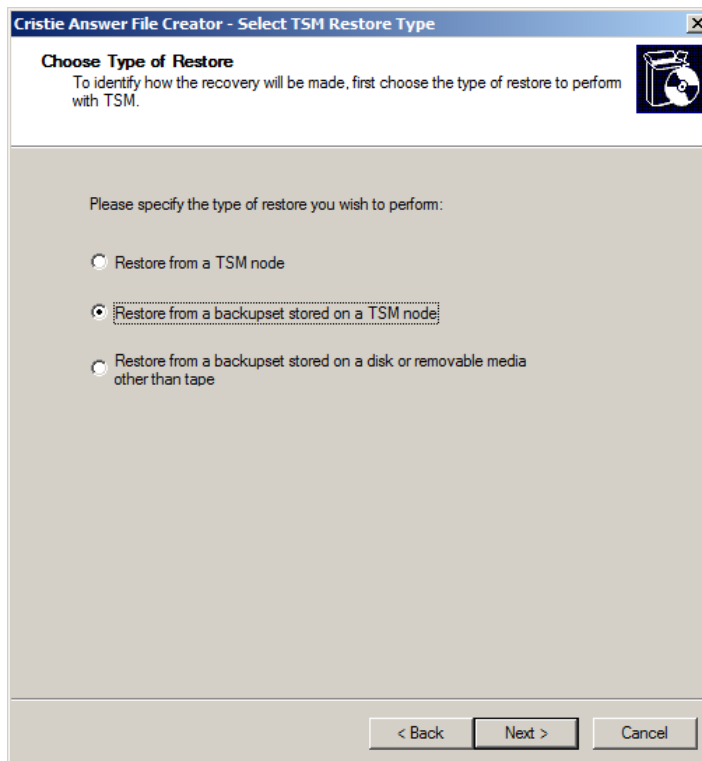
[DissimilarHardware]
DriverPaths = "B:\nigelp\drivers"

[Cloning]
ChangeComputerName="CristieTest"
ChangeHostName="CristieTest"
ChangeNetworkSettings1 = "params.cloning.nic1"
[params.cloning.nic1]
AdapterName = "Intel(R) PRO/1000 MT Network Connection"
HardwareAddress = "00-0C-29-E1-0F-15"
SubnetMask = "255.0.0.0"
IPAddress = "10.10.11.125"
SubnetPrefixLength = 8
Gateway = "10.0.1.100"
```

```
DnsServer = "10.1.1.1"
```

2.4.1.2 Restore From A BackupSet Stored On A TSM Node

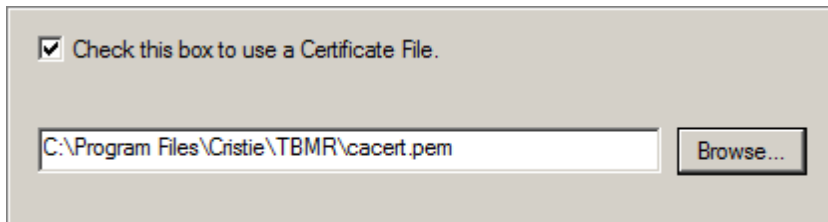
Select 'Restore from a backupset stored on a TSM node' and press [Next>](#).



You may optionally include a Certificate file to provide a Secure Sockets Layer (SSL) or Transport Layer Security (TLS) protocol secured connection for the TSM server.

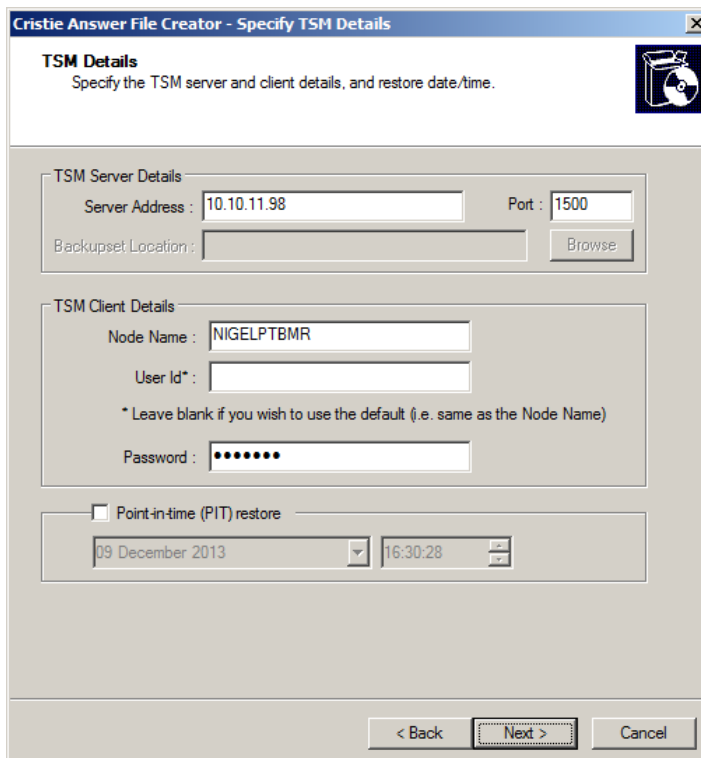


If you click the tick box a file browse button will be displayed. Please enter the full path to the certificate file. This will be used during recovery so the path must be accessible during the unattended recovery sequence.



A dialog box with a checked checkbox labeled "Check this box to use a Certificate File." Below the checkbox is a text input field containing the path "C:\Program Files\Cristie\TBMR\cacert.pem" and a "Browse..." button to its right.

Now specify the **TSM Server and Client** details.



The "Cristie Answer File Creator - Specify TSM Details" dialog box. It has a title bar with a close button. The main area is titled "TSM Details" and contains the instruction "Specify the TSM server and client details, and restore date/time." There are two sections: "TSM Server Details" and "TSM Client Details".

TSM Server Details:

- Server Address: 10.10.11.98
- Port: 1500
- Backupset Location: (empty field) with a "Browse" button.

TSM Client Details:

- Node Name: NIGELPTBMR
- User Id*: (empty field)
- * Leave blank if you wish to use the default (i.e. same as the Node Name)
- Password: (masked with dots)

Point-in-time (PIT) restore:

- Checkbox: unchecked
- Date: 09 December 2013
- Time: 16:30:28

At the bottom are buttons for "< Back", "Next >" (highlighted), and "Cancel".

Note: You may enter the server IP address in IPv4 or IPv6 form.

You may specify a different username/password (e.g. the Administrator) as an alternative to the Node password.

It may be that you want to restore the system to a specific **Point-in-Time** (PIT). If this is the case select the restore date and time by ticking the PIT tick box. This will open up the date/time dialogue:

Cristie Answer File Creator - Specify TSM Details

TSM Details
Specify the TSM server and client details, and restore date/time.

TSM Server Details
Server Address : 10.10.11.98 Port : 1500
Backupset Location :

TSM Client Details
Node Name : NIGELPTBMR
User Id* :
* Leave blank if you wish to use the default (i.e. same as the Node Name)
Password :

Point-in-time (PIT) restore
18 January 2016 14:32:37

January 2016
Mon Tue Wed Thu Fri Sat Sun
28 29 30 31 1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
1 2 3 4 5 6 7
Today: 18/01/2016

< Back Next > Cancel

Select **Next>** to display the TSM Backupset and Machine Name dialogue:

'. At the bottom are '< Back', 'Next >', and 'Cancel' buttons."/>

Cristie Answer File Creator - TSM Backupset and Machine Name

TSM Backupset and Machine Name
By default, the first backupset and machine name will be recovered if more than one backupset or machines are found in the same TSM node. If you wish to restore from a non-default backupset or machine, specify the correct details below.

Backupset
Enter backupset : TEST.26463456

Machine Name
WARNING :
If backups belonging to multiple machines are stored under a single node identify the required machine name here:
You may enter a machine name. There is no guarantee that the correct system state will be restored for the specified machine.
Enter machine name:

< Back Next > Cancel

Enter the name of the backupset. This name consists of two parts - a prefix specified when the backupset is first created, and an ID auto generated by TSM. For example, a typical name would be **TEST.26463456** where **TEST** is supplied by the User and the ID **26463456** is supplied by TSM. The full name is returned by TSM to the BA Client after creating the backupset, so please make a note of it. Alternatively, query the Node in the TSM database to get the full name (eg. **QUERY**

BACKUPSET NIGELPTBMR which will list all the backupsets for the Node **NIGELPTBMR**).

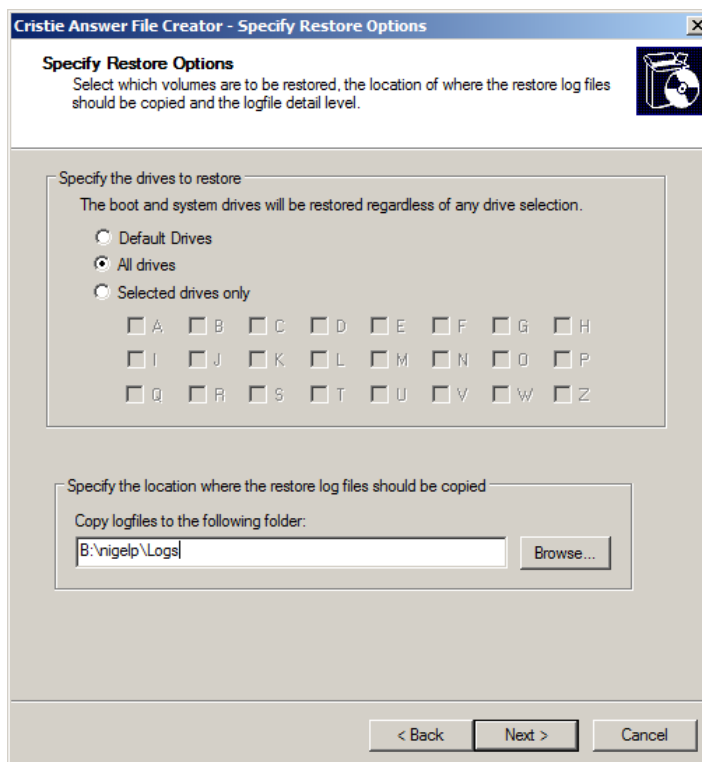
If the selected TSM Node contains backups for more than one system, then also select the system hostname to be restored in the next dialogue.

Note: neither IBM nor Cristie recommend this practice.

Press **Next>** to continue to the **Specify Restore Options** dialogue. Here you may specify whether just the default system drive (partition or volume) will be restored, or **All drives** or **Selected drives**. Select individual disks as **A, B, C ...** etc.

Specify where you want the restore log files to be copied at the end of DR process.

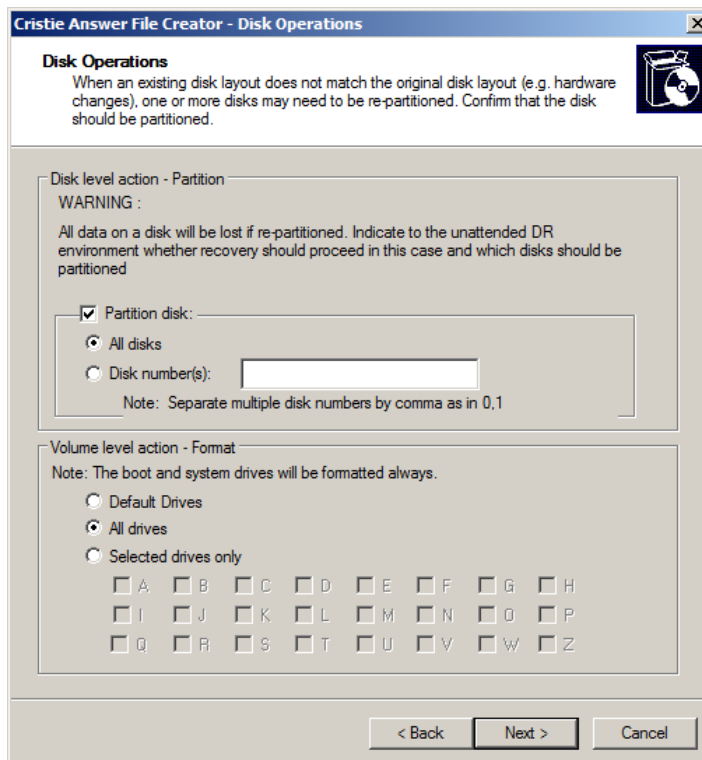
Note: the facility to specify the detail level is not available within TBMR.



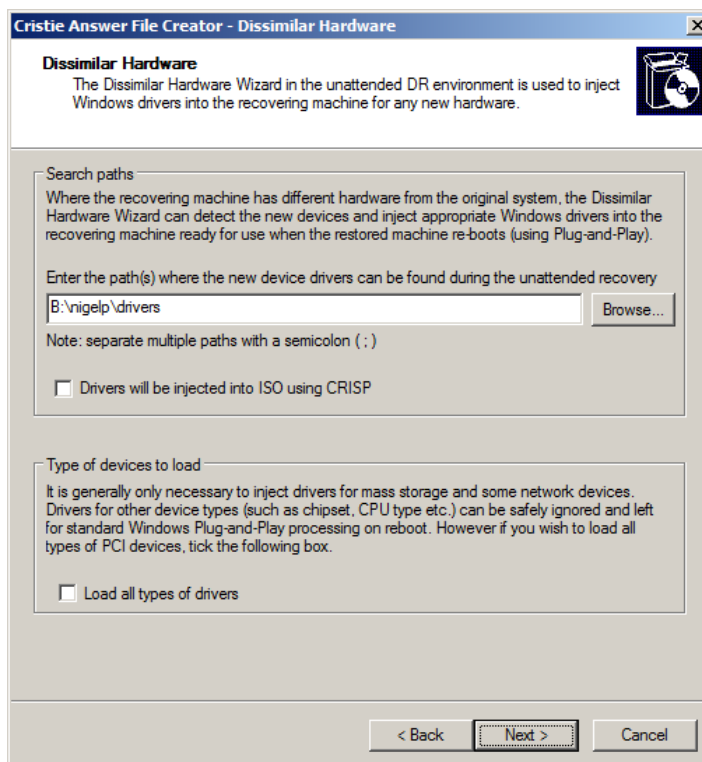
Press **Next>** to continue to the **Disk Operations** dialogue.

Here you may select either **All disks** or specific **Disk number(s)** to be partitioned. Disks are identified by number **0, 1, 2** etc. Commas are required.

You may also select **Default Drives**, **All drives** or **Selected drives only** to be formatted on restore. Select individual disks as **A, B, C ...** etc.



If the DR is to dissimilar hardware (ie. not the original system), then the recovered system may require new drivers to support different mass storage or network controllers. These new drivers are supplied by the customer and must be accessible to the **Dissimilar Hardware Wizard (DHW)** during the recovery process. Specify the location of a folder (or folders) where the DHW will retrieve these drivers from. For example, this could be a locally attached device like a USB disk or a network share or both.

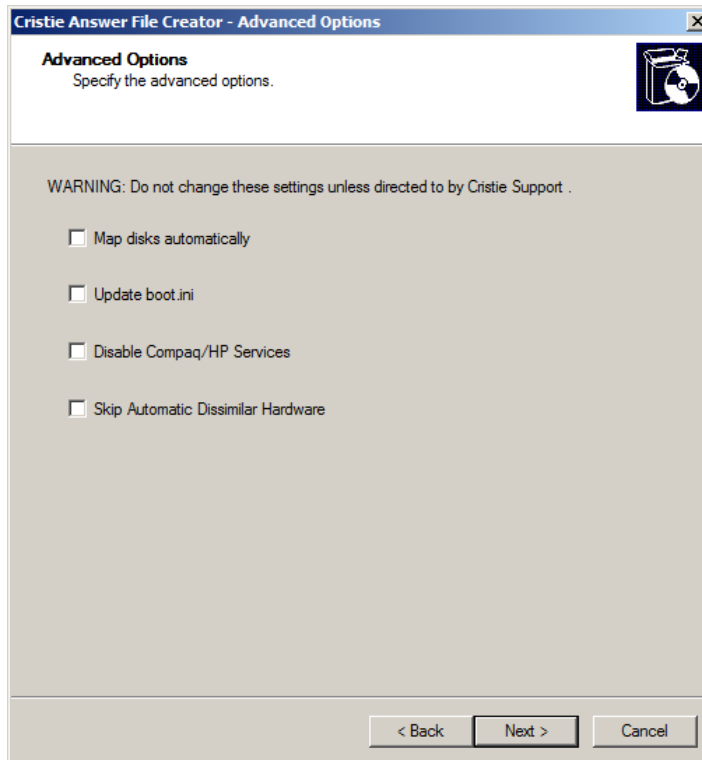


Tick **Drivers will be injected into ISO using CRISP** if you intend to manually add extra DHW

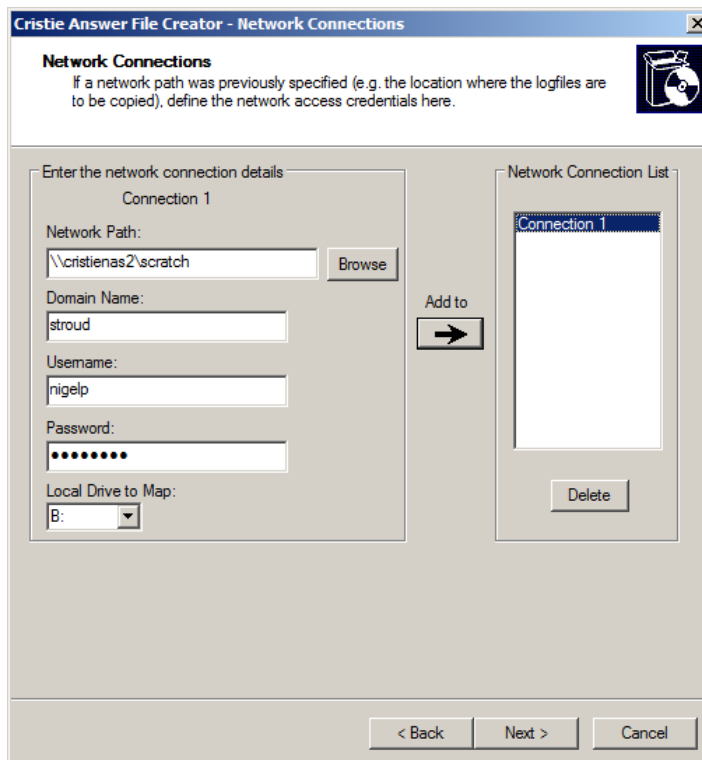
drivers to your customised boot ISO during the CRISP ISO generation phase. This can be in addition to any drivers contained on the driver path specified above.

Normally only mass storage and network controllers need to be considered. However, if all driver classes need to be examined, select the **Load all types of drivers** tick box. Select **Next>** to continue to the **Advanced Options** dialogue.

Unless **Cristie Support** direct you to change these settings, leave them at their default settings.



Press **Next>** to continue to the **Network Connection** dialogue. Here you can define a list of network connection credentials that will be used by automated DR to access any network shares identified in earlier dialogues (eg. copy log files, DHW drivers etc).



Press the **Add to->** button to add a new definition to the Connection list. Use the **Delete** button to remove an existing Connection definition. Press **Next>** to continue to the **Cloning Options** dialogue. This allows you to automatically change the hostname and/or the IP address of the recovered system.

Add a new name for the recovered system in the **Computer** field. Change the hostname if required in the **Hostname** field.

The IP address can be changed for each adapter on the system. Note the adapter is identified by MAC address. This can be extracted from the current system or new adapters on a dissimilar target system. In the latter case identify the new adapters by MAC address (i.e. enter a new address in the **Adapter** field).

Note: The address can be supplied in either IPv4 or IPv6 form.

Cristie Answer File Creator - Cloning Related Settings

Cloning Options
Change the hostname and network parameters on the recovered machine.

Computer:

Hostname:

Specify the network adapter settings
Enter the hardware address or select one on this

Adapter:

Obtain an IP address automatically
 Use the following IP address

IP Address:

Subnet prefix length:

Default Gateway:

Use static gateway

Obtain DNS Server address automatically
 Use the following DNS Server address

DNS Server:

Network Adapter List

Add Delete

< Back Next > Cancel

These settings apply to the recovery environment only - not the restored machine.

Press the **Add to->** button to add a new definition to the Adapter list. Use the **Delete** button to remove an existing Adapter definition. Press **Next>** to continue to the **Reboot Options** dialogue.

Cristie Answer File Creator - Specify System Reboot Options

Windows Reboot Options
Select the default Windows auto reboot option for successful or failed recoveries.

When recovery finished successfully
Normally Windows will reboot automatically after successful recovery and the recovered operating system will start. If you wish to reboot Windows manually, de-select the option below:

Reboot Windows automatically

When recovery finished with failure
Normally Windows will not reboot the operating system after a failed recovery. If you wish to automatically reboot Windows even on failure, select the option below:

Reboot Windows automatically

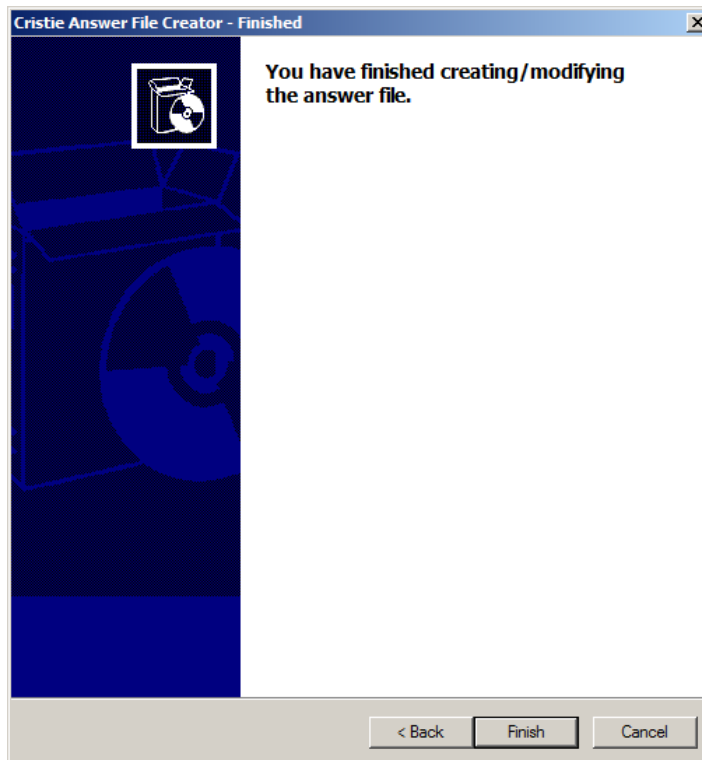
< Back Next > Cancel

Specify how the automated DR should handle the post recovery reboot when the DR finishes with success or failure. If the DR is successful, select the "When recovery finished successfully" **Reboot**

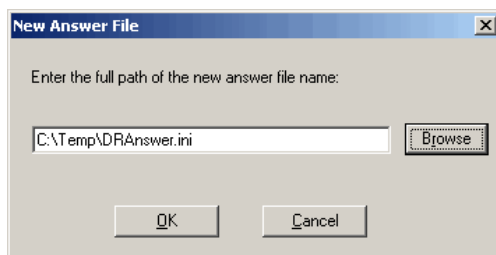
Windows Automatically option. If the DR fails, it is unlikely that the reboot will succeed, so there is little point in proceeding with the reboot. However if a reboot should still be attempted, even in a failure scenario, tick the "When recovery finished with failure" **Reboot Windows Automatically** option.

The **Prompt for final recovery confirmation** reboot option allows the automated recovery process to display a last chance option to cancel an automated recovery. Normally the automated recovery runs completely unattended unless this option is ticked.

The completion of the Answer File definition is confirmed with the following dialogue:



Select **Finish** to generate the answer file. A pop-up will be displayed prompting for the name and location of where the AFC should create the answer file.



Select a path and press **OK**. This will create a file called `DRAnswer.ini` in the `C:\Temp` folder.

Note: the answer file MUST be called `DRAnswer.ini` when transferred to the ISO.

Answer File Content Example:

```
[ProductType]
Product = "TBMR"

[TbmrBackupLocation]
StorageType=BackupSetTsm
ServerName=10.10.11.98
ServerPort=1500
NodeName=NIGELPTBMR
NodePassword=Encrypted: 828211CF2AC6B2
MachineName=
UserName=
UseTsmAsrCfg=0
PointInTime=
BackupSetName=TEST.26463456

[RestoreData]
Drives = "All"

[LogFiles]
LogfileCopyPath = "B:\nigelp\Logs"

[NetLogin]
Connection1 = "params.Connection1"
[params.Connection1]
NetworkPath = "\\cristienas2\scratch"
Domain = "stroud"
Username = "nigelp"
Password = "Encrypted: 95860a8f6b9fbelf"
MapToDrive = "B:"

[System]
RebootOnSuccess = "True"
RebootOnFailure = "False"
PauseForConfirmation = "False"

[DiskOperation]
FormatVolume = "Default"
PartitionDisk="All"

[DissimilarHardware]
DriverPaths = "B:\nigelp\drivers"

[Cloning]
ChangeComputerName="CristieTest"
ChangeHostName="CristieTest"
ChangeNetworkSettings1 = "params.cloning.nic1"
[params.cloning.nic1]
AdapterName = "Intel(R) PRO/1000 MT Network Connection"
HardwareAddress = "00-0C-29-E1-0F-15"
SubnetMask = "255.0.0.0"
IPAddress = "10.10.11.125"
SubnetPrefixLength = 8
Gateway = "10.0.1.100"
DnsServer = "10.1.1.1"
```

2.4.2 Run Program/Batch Files Post DR

It is possible to configure the automated DR process to run User defined program or batch files when the restore system boots.

To do this you must manually edit the created DRAnswer.ini file and add a **[UserRunOnceCmd]** section to the end of the file. For example (the programs and batch files shown are examples):

```
[UserRunOnceCmd]
Command1 = "C:\Scripts\script1.cmd"
Command2="D:\MyApplication\VerifyFunction.exe"
```

The programs or batch files must exist and be accessible on the full path specified. They are run as the system boots and before login is enabled.

2.5 Prepare Boot Media For Automated Recovery

The product boot media (i.e. the DR console ISO file) is prepared by the CRISP (Cristie ISO Producer) tool. Please refer to the separate CRISP User Guide documentation for details on how to do this.

To prepare boot media for automated recovery, the boot image must be customised to both auto boot and to add the answer file to an expected location. The auto boot modification is required because normally the Windows PE2 or PE5 distribution media is designed to prompt for DR boot. By default, it will not boot into DR unless a key is pressed. If no key is pressed, any installed OS is booted instead. This behaviour needs to be suppressed for automated recoveries.

Options in CRISP allow both the boot prompt to be removed and the answerfile to be added.

During an automated DR sequence, the Windows PE2 or PE5 environment will search for the answer file in one of these locations and in this order of precedence:

1. The root folder of the Windows PE2 or PE5 boot environment (always drive X: when booted)
2. The root folder of the CD/DVD containing the TBMR distribution media
3. The root folder of any locally attached removable storage

As soon as a suitable answer file is found in one of these locations, the search stops and that answer file is used to control the automated DR process. If no answer file is found, the normal interactive DR GUI is started.

The boot image created for option 1 is suitable for network boot, but requires the standard TBMR boot image or WIM file to be customised using CRISP.

Use Option 3 above when customising the boot image is not required. In this case, simply copy the generated answer file to the root folder on suitable removable storage (eg. USB disk).

Note: the answer file will only be detected during boot if the file is located in one of the three locations specified above.

2.5.1 Customise Boot Media For Auto Boot

By default, the Windows PE2 or PE5 distribution media will display a prompt to boot into the DR environment when auto-run. If no key is pressed, any alternative installed OS is booted instead. For automated DR, this behaviour needs to be suppressed.

Please use the option in CRISP to suppress this prompt in the ISO image.

2.5.2 Add Answer File To Boot Image Root Folder

The Windows PE2 or PE5 boot image is in Microsoft WIM file format. Use the option in CRISP to add the answer file into this image.

3 Recovery

An automated recovery can be initiated either by a network or CD/DVD boot of the customised TBMR boot image as described in Prepare Boot Media For Automated Recovery.

Starting the boot process is the only part of the restore process that requires manual intervention. Even this can be avoided if a suitable Lights-Out system is in place or remote boot is possible.

Note: the system BIOS should be set to boot from the prepared Windows PE2 or PE5 boot ISO whether this is in the form of a physical CD/DVD or ISO image. It is also possible to network boot the Windows PE2 or PE5 image.

3.1 Boot Recovery Environment

Once the customised boot image is booted, the normal plug and play sequence will run. The automated DR will then proceed if the DR answer file is found in one of the prescribed locations. If the file is not found, the standard interactive GUI will be displayed.

Also if the DR answerfile has been configured with **prompt for final recovery confirmation** enabled, a confirmation message will be displayed before the DR proceeds. If the response to proceed is not given within 30 seconds then the automatic sequence will be halted. If this occurs then the main Recovery Environment menu will be displayed instead.

3.1.1 Answer File In CD/DVD Image

If the DR answer file is detected within the CD/DVD image, then the automated DR will proceed with no user intervention. Each step in the disaster recovery process will be displayed on the system console and recorded to a log file. This log file will be transferred to the location specified in the DR answer file at the end of the recovery.

At the end of the DR sequence, the logs will be copied to the location specified in the answer file. At this point the recovered system will be automatically booted if configured as such in the DR answer file. Otherwise manual intervention will be required to boot the system (by pressing the <ESC> key).

If errors are detected during the restore process, the recovery will halt or re-boot the system depending upon the setting in the answer file.

Note: if the boot media is configured to boot directly into the Windows PE2 or PE5 boot environment after recovery, manual intervention will be required to reset the boot sequence on the system. This must be done in order to prevent the Windows PE2 or PE5 boot environment being booted once more. Normally the system BIOS should be reset to boot from the OS disk as required.

3.1.2 Answer File On Removable Device

If the DR answer file is detected on any attached removable media, then the automated DR will proceed with no user intervention. Each step in the disaster recovery process will be displayed on the system console and recorded to a log file. This log file will be transferred to the location specified in the DR answer file at the end of the recovery.

At the end of the DR sequence, the logs will be copied to the location specified in the answer file. At this point the recovered system will be automatically booted if configured as such in the DR answer file. Otherwise manual intervention will be required to boot the system (by pressing the <ESC> key).

If errors are detected during the restore process, the recovery will halt or re-boot the system depending upon the setting in the answer file.

Note: if the boot media is configured to boot directly into the Windows PE2 or PE5 boot environment after recovery, manual intervention will be required to reset the boot sequence on the system. This must be done in order to prevent the Windows PE2 or PE5 boot environment being booted once more. Normally the system BIOS should be reset to boot from the OS disk as required.

3.2 Check Result Of Recovery

It is recommended that after the recovery has completed, the saved log files are inspected to ensure that the DR ran with no reported errors.

4 Cristie Technical Support

If you have any queries or problems concerning your Bare Machine Recovery for TSM 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)
Knowledgebase	kb.cristie.com
Sales Enquiries	sales@cristie.com
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/

Cristie Software Limited are continually expanding their product range in line with the latest technologies. Please contact the Cristie Sales Office for the latest product range. Should you have specific requirements for data storage and backup devices, then Cristie's product specialists can provide expert advice for a solution to suit your needs.