



# ABMR For Linux

## Bare Machine Recovery for Dell EMC Avamar™

### User Guide

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# 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
<a href="#">Next &gt;</a>	used to signify clickable buttons on a GUI dialogue
<b>Note:</b>	describes something of importance related to the current topic



## 2 Introduction

**Bare Machine Recovery for Dell EMC Avamar™** (ABMR) provides disaster recovery capability for Dell EMC Avamar™ (for Linux).

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 machine using ABMR. More detailed information is available from `man` pages for the ABMR components. The `man` pages are available after installation of ABMR.

This guide relates to ABMR for Linux version 9.6.1 only.

**Note:** ABMR can only be used in conjunction with Dell EMC Avamar™.

This guide describes how to:

- *Save Configuration data using `abmrcfg`*
- *Configure and run your Dell EMC Avamar™ Client backup*
- *Perform a Disaster Recovery*

### 2.1 Limitations

There are limits to what this version of ABMR for Linux will support. It will NOT support:

- *Platforms other than 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 ABMR may be found in the **Cristie Knowledge Base** (<https://kb.cristie.com>) or the **Cristie Forum** (<https://forum.cristie.com>).



### 3 System Requirements

ABMR for Linux can only be installed on a x86\_64 Linux (i.e. 64-bit) machine.

*ABMR requires that EMC Avamar client version 19.1 or later is already installed.*

A minimum memory of **6 GB RAM** is required for booting the recovery environment and running a recovery.

Please refer to this web page <https://www.cristie.com/support/matrix/> to determine the latest OS and Dell EMC Avamar™ client/server support for ABMR Version 9.6.1.

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



## 4 Supported Filesystems

Please refer to this web page <https://www.cristie.com/support/matrix/> to determine the latest file system support for ABMR Version 9.6.1.



## 5 uEFI and MBR BIOS Support

*Note: recovery support is provided for conversion from uEFI to MBR BIOS. Conversion from legacy MBR BIOS to uEFI is not currently supported.*

The recovery ISO is configured for both MBR (legacy) and uEFI boot. It can therefore boot into either environment. There are no special considerations that need to be made by the customer for uEFI machines. If your machine boots with elilo, prior to performing a backup please run:-

```
abmrcfg -b elilo
```

All Cristie Bare Metal Recovery software handles the recreation of the uEFI partitions during the recovery of the machine, this is transparent to the user.

When recovering an uEFI enabled OS you must recover to uEFI capable hardware.

When recovery is to a different machine, you may need to manually configure the uEFI boot stanza in order to boot the recovered uEFI OS. Please refer to the Cristie Knowledgebase for further information on editing the boot stanza.

*Note: when recovering an uEFI enabled OS, it is recommended that the recovery environment is booted in uEFI mode.*





## 6 Using ABMR For Disaster Recovery

This section describes the steps involved in using Dell EMC Avamar™ in conjunction with ABMR for disaster recovery.

This description assumes that the Dell EMC Avamar™ client software has already been installed and configured.

To ensure your system is protected observe the following steps:

1. *Install ABMR on the system you wish to protect.*
2. *Use the `ABMRcfg` program to capture and store the configuration of the system.*
3. *Backup the system with the Dell EMC Avamar™ client to an Dell EMC Avamar™ server.*

### 6.1 Saving the System Configuration

Configuration is always saved to `/ABMRCFG` - 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 `abmrcfg` is used. It is recommended that this is run prior to running each backup to ensure the configuration is up to date.

### 6.2 ABMRcfg

To use the command line configuration saving program, type `abmrcfg`. The configuration will automatically detect the machine boot loader and boot partition, however, if either are incorrectly detected you may specify additional options.

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

```
abmrcfg --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:

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

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

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

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



This is a full list of options:

Option	Description
<b>-b&lt;name&gt;, --bootloader=&lt;name&gt;</b>	Set boot loader to <name> (default is grub)
<b>-d&lt;name&gt;, --bootdevice=&lt;name&gt;</b>	Set boot device name to <name>
<b>-l&lt;file&gt;, --logfile=&lt;file&gt;</b>	Set log file (default is cbmrcfg.log)
<b>-o&lt;file&gt;, --output=&lt;file&gt;</b>	Set output file (default is disrec.ini)
<b>-p&lt;permissions&gt;</b>	Set output file permissions (default 0600)
<b>-v, --verbose</b>	Verbose mode
<b>--autorelabel=&lt;n&gt;</b>	Automatically relabel SELinux if <n> != 0
<b>--cobmr_boot_backup</b>	CoBMR only. Intended to be used where the system is backed up using Cohesity's block based backup. Cohesity only snapshots LVM partitions and in most cases '/boot' will be on a standalone partition and be missed. This switch will perform a simple TAR based backup of '/boot' and put it in '/COBMRCFG' so it's included in the backup.
<b>--disk_pattern=&lt;pattern&gt;</b>	Note: It should never be on for standard file based backups Only include disks matching <pattern>
<b>--disk_regex=&lt;regex&gt;</b>	Only include disks matching <regex>
<b>--disk_skip=&lt;pattern&gt;</b>	Don't include disks matching <pattern>
<b>--disk_skip_regex=&lt;regex&gt;</b>	Don't include disks matching <regex>
<b>--disshw=&lt;n&gt;</b>	Use dissimilar hardware support if <n> != 0
<b>--filedev_mount_options=&lt;string&gt;</b>	Set file device mount options
<b>--filedev_mount_target=&lt;string&gt;</b>	Set file device mount target
<b>--format_pattern=&lt;pattern&gt;</b>	Only format devices matching <pattern>
<b>--format_regex=&lt;regex&gt;</b>	Only format devices matching <regex>
<b>--format_skip=&lt;pattern&gt;</b>	Don't format devices matching <pattern>
<b>--format_skip_regex=&lt;regex&gt;</b>	Don't format devices matching <regex>
<b>--mpath=&lt;n&gt;</b>	Don't scan for mpath devices if <n> = 0
<b>--partition_pattern=&lt;pattern&gt;</b>	Only partition devices matching <pattern>
<b>--partition_regex=&lt;regex&gt;</b>	Only partition devices matching <regex>
<b>--partition_skip=&lt;pattern&gt;</b>	Don't partition devices matching <pattern>
<b>--partition_skip_regex=&lt;regex&gt;</b>	Don't partition devices matching <regex>
<b>--local_fs</b>	Don't include remote filesystems
<b>--local_disks</b>	Don't include remote disks, e.g. iscsi
<b>--rc=&lt;n&gt;</b>	Set return code to <n>
<b>--rescale_pattern=&lt;pattern&gt;</b>	Only rescale devices matching <pattern>
<b>--rescale_regex=&lt;regex&gt;</b>	Only rescale devices matching <regex>
<b>--rescale_skip=&lt;pattern&gt;</b>	Don't rescale devices matching <pattern>
<b>--rescale_skip_regex=&lt;regex&gt;</b>	Don't rescale devices matching <regex>
<b>--save_mpath_list</b>	Save mpath details
<b>--vg_pattern=&lt;pattern&gt;</b>	Only create VGs matching <pattern>



<code>--vg_regex=&lt;regex&gt;</code>	Only create VGs matching <regex>
<code>--vg_skip=&lt;pattern&gt;</code>	Don't create VGs matching <pattern>
<code>--vg_skip_regex=&lt;regex&gt;</code>	Don't create VGs matching <regex>
<code>--help, --usage</code>	Print this message and exit
<code>--version</code>	Print the version and exit

## 6.3 Creating a ABMRcfg Pre-scheduled

The pre-schedule command is to run the ABMR configuration program (abmrcfg) on the source machine automatically when the EMC Avamar scheduled backup has triggered, this makes sure the config file used in the backup is up to date.

This works by adding a script to the source machine and modifying the Client Properties in the EMC Avamar administrator console to point to the script.

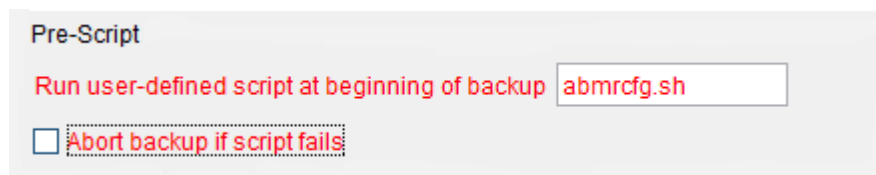
Once this is completed, EMC Avamar will run the script on the client that triggers abmrcfg, then the EMC Avamar backup starts.

There are certain conditions that must be met:

The script name must be a .sh extension.

The script must reside on the client in the '/usr/local/avamar/etc/scripts/' directory on the source machine.

All commands within the program file must complete successfully. Otherwise, the EMC Avamar server cannot complete the remaining instructions e.g. the actual backup. However a script failure can be ignored by un-ticking 'abort backup if script fails'.



Pre-Script

Run user-defined script at beginning of backup

☐ Abort backup if script fails

Create a .sh file and copy to /usr/local/avamar/etc/scripts/ with a script name e.g. abmrcfg.sh

Make sure the appropriate permissions are applied to the file:

```
permissions required - -rwxr-x-. 1 root nsr_nbmr.sh (chmod 750 /usr/local/avamar/etc/scripts/abmrcfg.sh)
```

A basic script would look like the below: Make sure to use the \$PATH variable from your system.



```
#!/bin/sh
SHELL=/bin/bash
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/root/bin:
abmrcfg
```

On the Avamar Administrator console add the script name to the appropriate dataset or backup advanced options plugin. e.g.

Pre-Script

Run user-defined script at beginning of backup ☒

☒ Abort backup if script fails

Post-Script

☒ Show Advanced Options

The script can also go into the plugin to be trigger on the schedule at: 'run-at-start=<script.name>'

Name: /ID2/test\_LABMR/DTS\_test\_LABMR

Type: Backup

Sort by: Plug-in

Source Data	Exclusions	Inclusions	Options
All local Linux filesystems			<ul style="list-style-type: none"> <li>default-traversal=true</li> <li>checkcache=false</li> <li>ddr-encrypt-strength=high</li> <li>ddr-index=1</li> <li>ddr=true</li> <li>debug=false</li> <li>filecachemax=-8</li> <li>force=false</li> <li>hashcachemax=-16</li> <li>informationals=2</li> <li>one-file-system=false</li> <li>repaircache=false</li> <li>run-at-end-exit=true</li> <li>run-at-start-exit=true</li> <li>run-at-start=pre.sh</li> <li>statistics=false</li> <li>verbose=0</li> </ul>

The script will then be triggered on backup schedule or one off backup.

## 7 Avamar Client Backup

If executed from the client, the backup can be performed using the Dell EMC Avamar™ command line tool **avtar** assuming the client is already registered and enabled on the server (use **avregister** to do this). For example:

```
cd /usr/local/avamar/bin
avtar -cv --account=/<Domain>/<Client> --id=<ID>
```

where **<Domain>** is the domain name you want the backup saved in (on the Dell EMC Avamar™ server where the backup is stored). The **<Client>** is the hostname of the client you wish to backup. Use the '-id' option to authenticate an account name. So for example:

```
avtar -cv --account=/nigel/np-rhel9 --id=MCUser
```

You will likely be prompted for the password associated with the account (MCUser in the above example).

The backup can also be run from the Avamar server - this is the preferred option.

Please refer to your **Dell EMC Avamar™** documentation for a full discussion of the backup options.

### 7.1 Housekeeping

In order to ensure that you can recover to the latest version of the operating system that was installed on your Linux machine, you must ensure that a Dell EMC Avamar™ backup is performed every time the operating system files change. In addition you should also configure a run of the ABMRCfg.exe program using a pre-script on the server (if supported) prior to the backup.

This is not always possible, so **Cristie Software Ltd.** recommends that the Dell EMC Avamar™ backup be performed regularly. However, you should choose a period which reflects the rate of change of data 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. For example, this can be achieved by creating a cron job for your schedule or by defining a scheduled backup for the required client machine on the Dell EMC Avamar™ server.



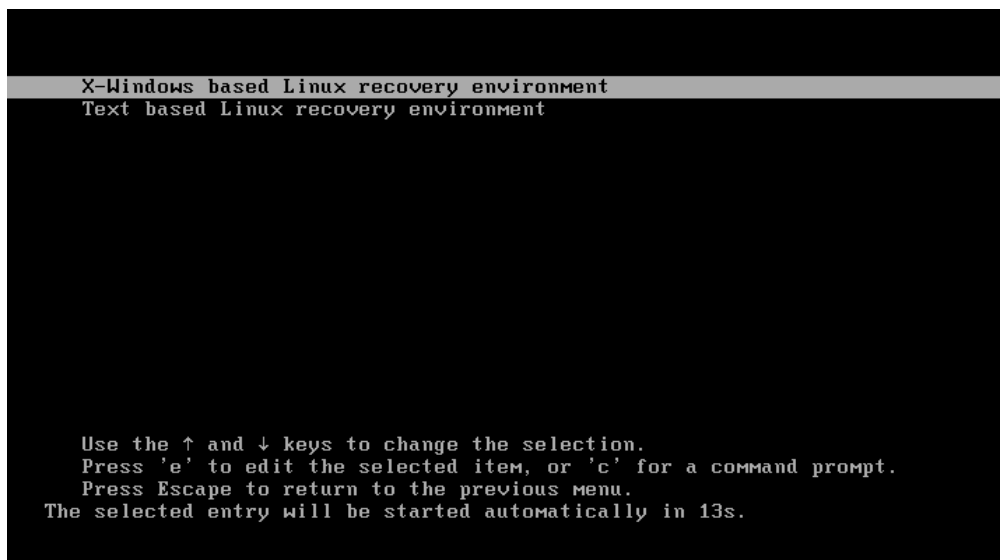
## 8 Performing a Recovery

When a machine has failed, it can be recovered using the XBMR bootable product CD/DVD-ROM or DR ISO (if your host supports this capability). This is the same CD/DVD from which you installed the software. You should ensure your machine's BIOS is set up to boot from CD/DVD-ROM or ISO.

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

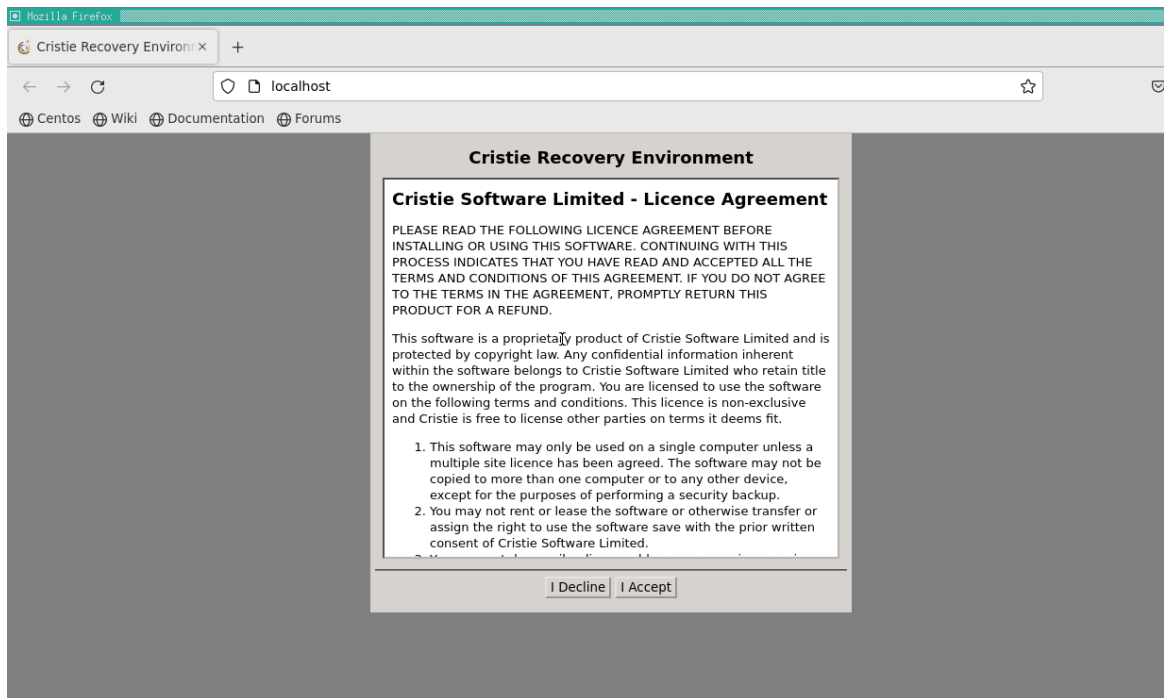
Boot the machine using the XBMR bootable CD/DVD ROM or ISO. You will be presented with the screen below:



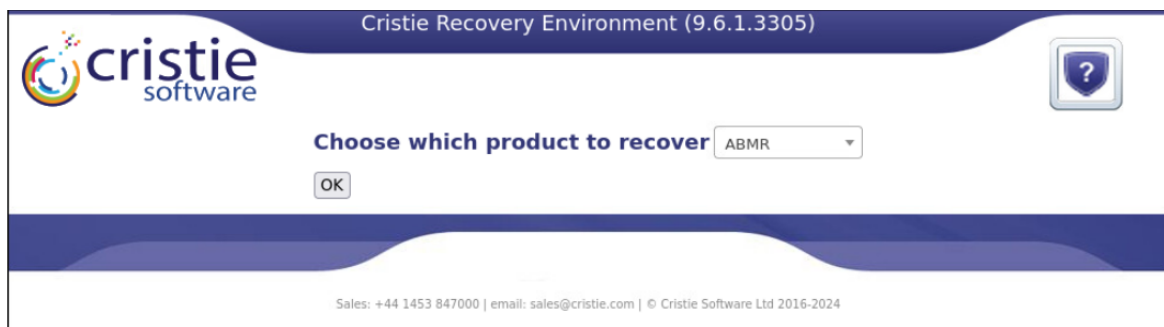
Cristie recommend that you choose the graphical X-Windows recovery environment mode which loads the **Cristie Recovery Environment**.

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



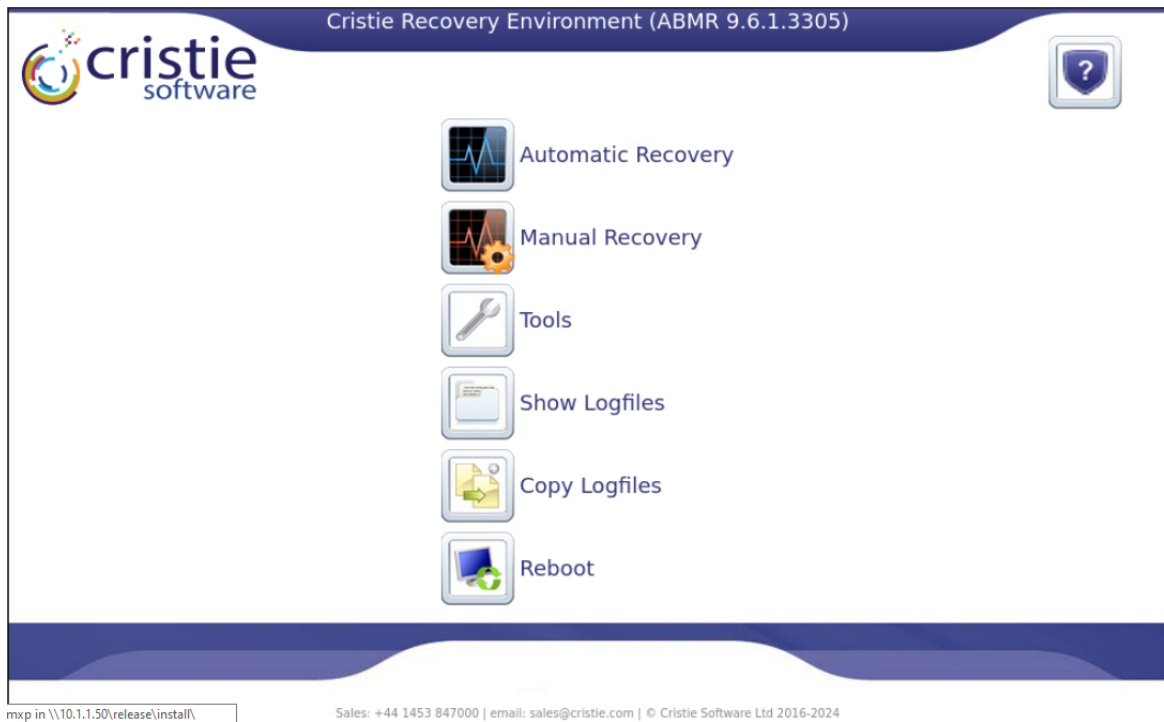


The Product Selection drop-down menu will then be shown. Now select the Cristie product used during the backup - ABMR in this case.



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



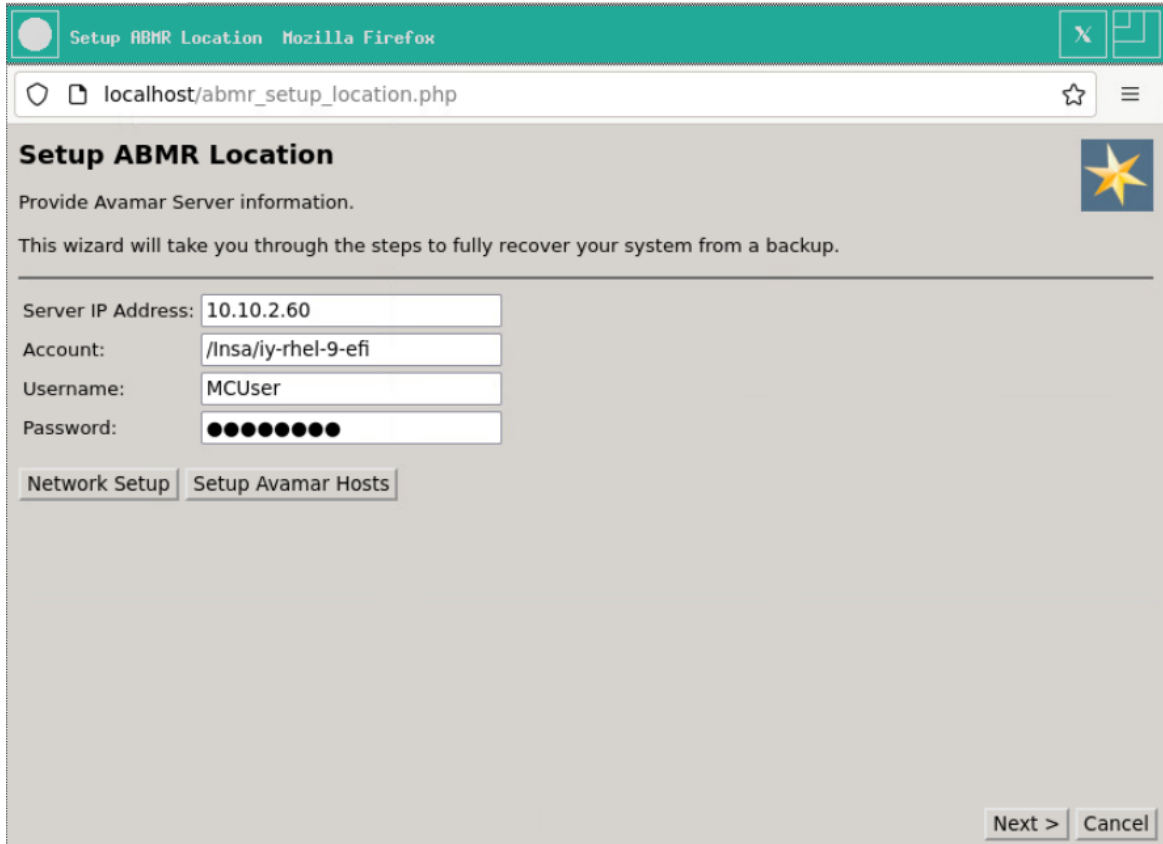


Cristie recommends using the **Automatic Recovery Wizard** option from the **Recovery Environment** main menu.





This will then display the **Setup ABMR Location** dialogue box, where you can specify the Dell EMC Avamar™ Server information.



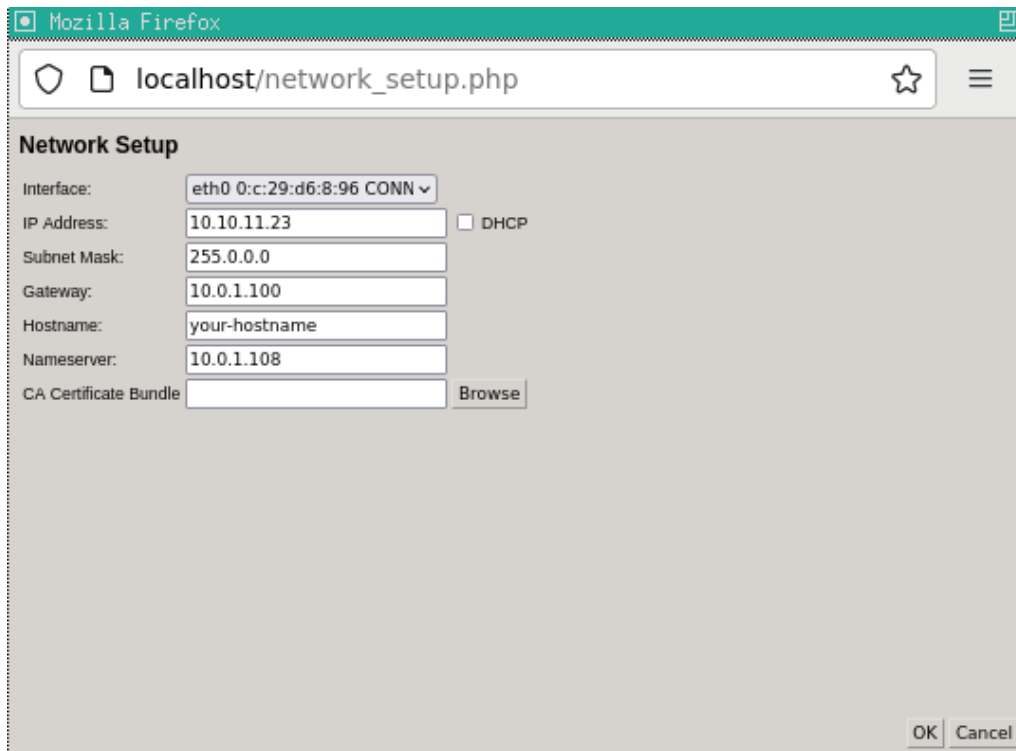
The screenshot shows a web browser window titled "Setup ABMR Location Mozilla Firefox". The address bar shows "localhost/abmr\_setup\_location.php". The main content area is titled "Setup ABMR Location" and includes the text "Provide Avamar Server information." and "This wizard will take you through the steps to fully recover your system from a backup." Below this, there are four input fields: "Server IP Address:" with the value "10.10.2.60", "Account:" with the value "/Insa/iy-rhel-9-efi", "Username:" with the value "MCUser", and "Password:" with a masked password represented by dots. At the bottom left, there are two buttons: "Network Setup" and "Setup Avamar Hosts". At the bottom right, there are two buttons: "Next >" and "Cancel".

Enter the Server IP (of the EMC Avamar Server where the backup resides).

Enter the Account (in the format /DomainName/ClientName). (Contact your Dell EMC Avamar™ administrator if you are unsure of any of the settings)

Enter the Username and Password (of the EMC Avamar Server where the backup resides). If it is required to configure the network settings, click the [Network Settings](#) button. Enter your desired network settings.

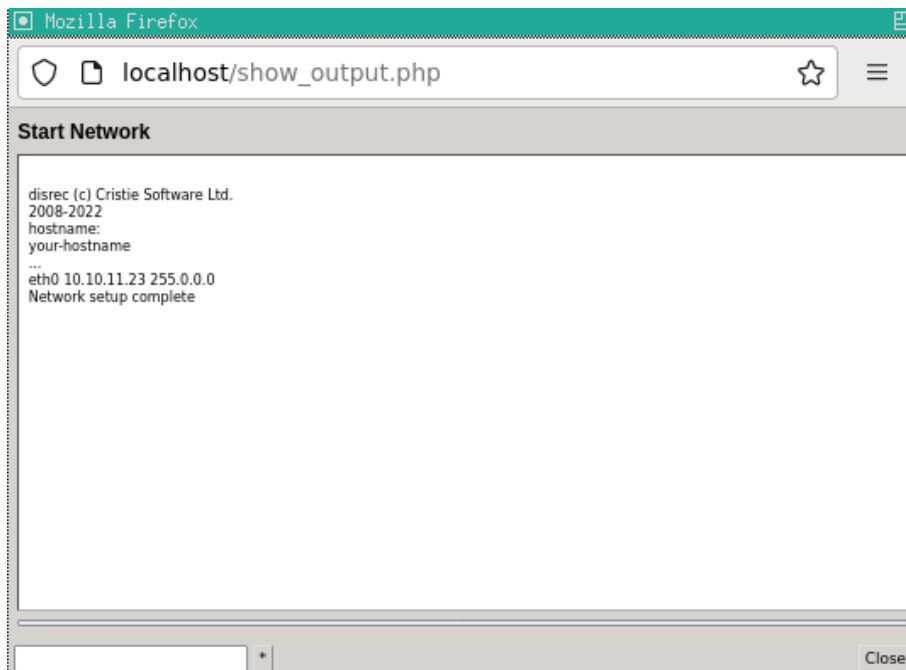




The screenshot shows a Mozilla Firefox browser window with the address bar displaying `localhost/network_setup.php`. The page title is "Network Setup". The form contains the following fields and controls:

- Interface: `eth0 0:c:29:d6:8:96 CONN` (dropdown menu)
- IP Address: `10.10.11.23` (text input)
- Subnet Mask: `255.0.0.0` (text input)
- Gateway: `10.0.1.100` (text input)
- Hostname: `your-hostname` (text input)
- Nameserver: `10.0.1.108` (text input)
- CA Certificate Bundle: (text input) with a `Browse` button
- A `DHCP` checkbox is located to the right of the IP Address field.
- At the bottom right are `OK` and `Cancel` buttons.

Select **OK** to save your changes. The Start Network screen will then display the network changes being implemented.



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `localhost/show_output.php`. The page title is "Start Network". The main content area displays the following text:

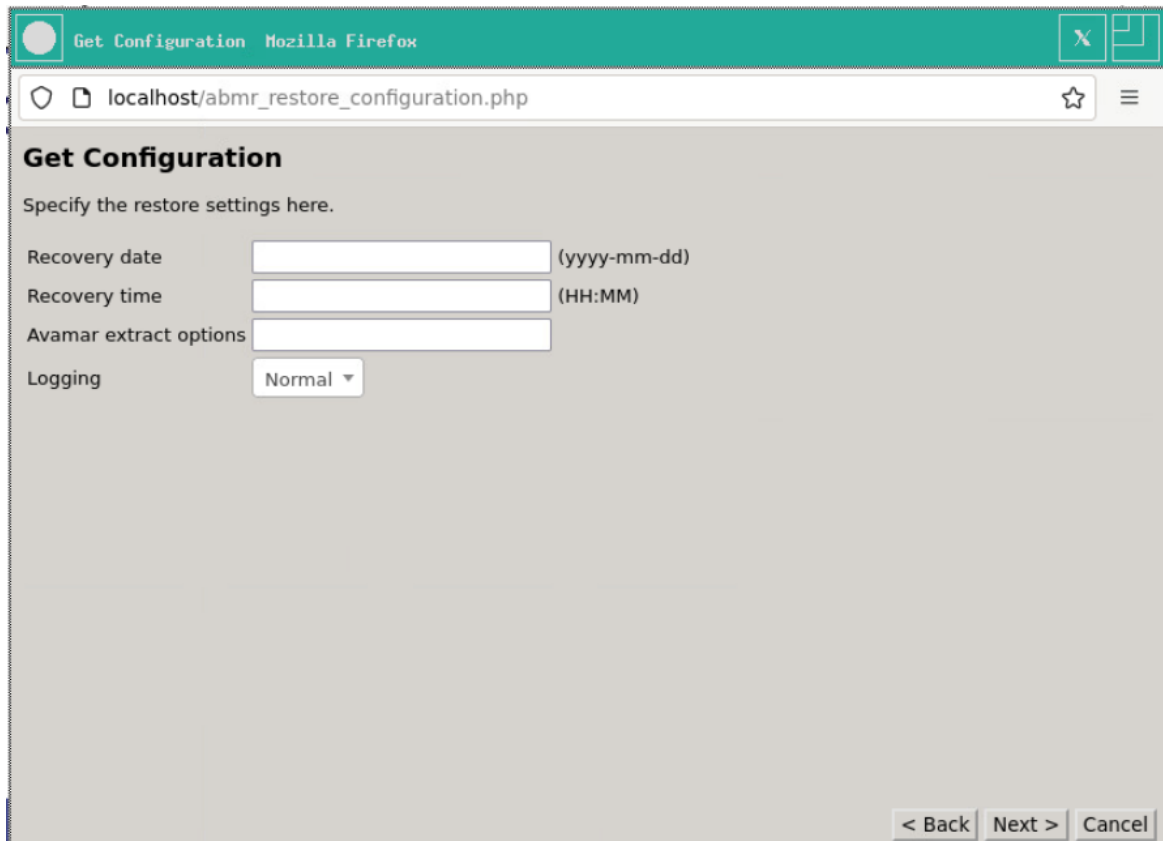
```
disrec (c) Cristie Software Ltd.  
2008-2022  
hostname:  
your-hostname  
...  
eth0 10.10.11.23 255.0.0.0  
Network setup complete
```

At the bottom right of the window is a `Close` button.

Click **Close** to return to the **Setup ABMR Location Wizard**. Upon returning to the **Setup ABMR Location** Wizard, click the **Next >** button to proceed with the recovery.

Next the **Get Configuration** dialogue will be shown. Entering a recovery date and time will use an available backup before the specified date/time.

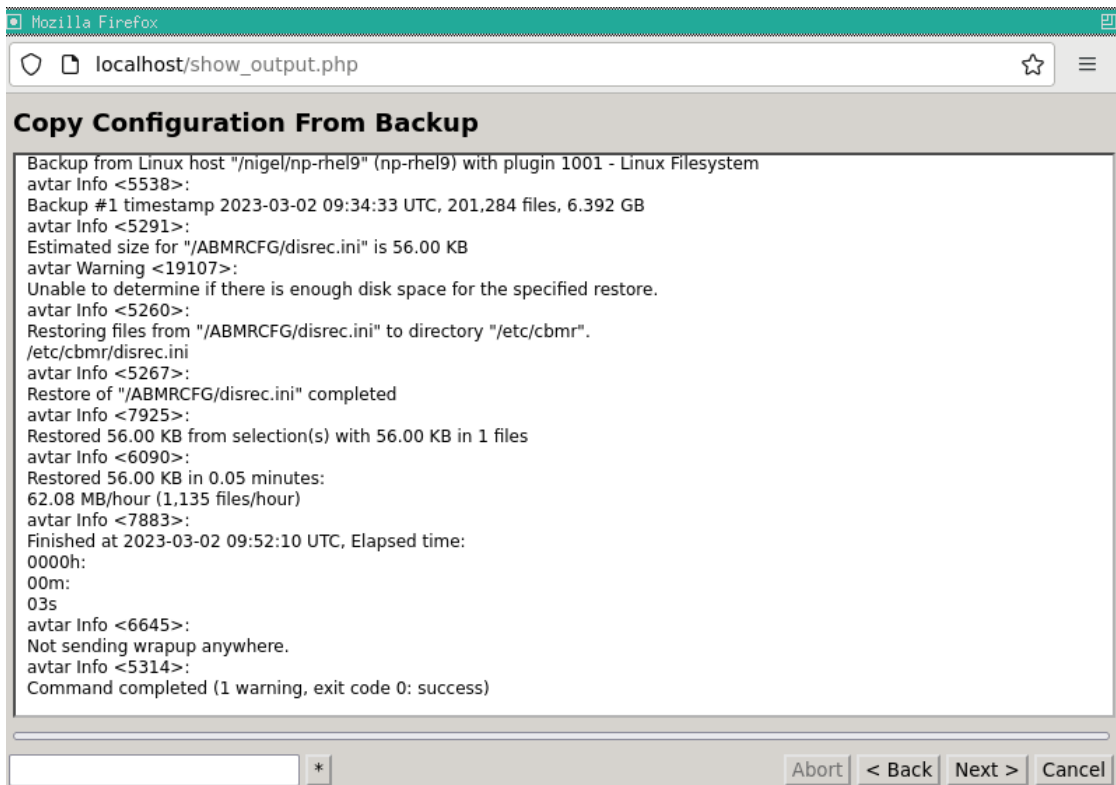




The screenshot shows a web browser window titled 'Get Configuration Mozilla Firefox'. The address bar shows 'localhost/abmr\_restore\_configuration.php'. The page title is 'Get Configuration'. Below the title, it says 'Specify the restore settings here.' There are four input fields: 'Recovery date' (with a placeholder '(yyyy-mm-dd)'), 'Recovery time' (with a placeholder '(HH:MM)'), 'Avamar extract options', and 'Logging' (with a dropdown menu set to 'Normal'). At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

*Note: for a list of these parameters and how to use them you should consult the relevant Dell EMC Avamar™ User Guide.*

Click [Next>](#) to continue. This will then restore the configuration from the backup.



The screenshot shows a web browser window titled 'Copy Configuration From Backup Mozilla Firefox'. The address bar shows 'localhost/show\_output.php'. The page title is 'Copy Configuration From Backup'. Below the title, there is a large text area containing the following output:

```
Backup from Linux host "/nigel/np-rhel9" (np-rhel9) with plugin 1001 - Linux Filesystem
avtar Info <5538>:
Backup #1 timestamp 2023-03-02 09:34:33 UTC, 201,284 files, 6.392 GB
avtar Info <5291>:
Estimated size for "/ABMRCFG/disrec.ini" is 56.00 KB
avtar Warning <19107>:
Unable to determine if there is enough disk space for the specified restore.
avtar Info <5260>:
Restoring files from "/ABMRCFG/disrec.ini" to directory "/etc/cbmr".
/etc/cbmr/disrec.ini
avtar Info <5267>:
Restore of "/ABMRCFG/disrec.ini" completed
avtar Info <7925>:
Restored 56.00 KB from selection(s) with 56.00 KB in 1 files
avtar Info <6090>:
Restored 56.00 KB in 0.05 minutes:
62.08 MB/hour (1,135 files/hour)
avtar Info <7883>:
Finished at 2023-03-02 09:52:10 UTC, Elapsed time:
0000h:
00m:
03s
avtar Info <6645>:
Not sending wrapup anywhere.
avtar Info <5314>:
Command completed (1 warning, exit code 0: success)
```

At the bottom, there is a search bar with an asterisk icon and four buttons: 'Abort', '< Back', 'Next >', and 'Cancel'.



Click [Next>](#) to continue to the **Start Recovery** phase. You will then be presented with the **Start Recovery** options. Here you can change the configuration of the system being restored.

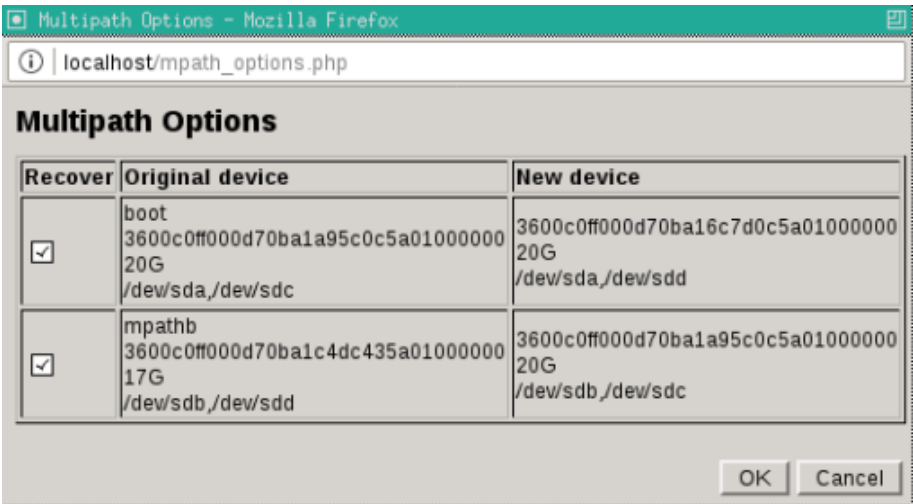
If you are **not** recovering to dissimilar hardware, you should **un-check** the box for **Dissimilar Hardware Support**. Not doing so can cause problems when restoring to similar hardware.

Ensure that you un-tick the **SELinux Relabel** option, to ensure that your original SELinux settings are maintained. Only leave this box ticked, if you know that your SELinux settings need to be reset.

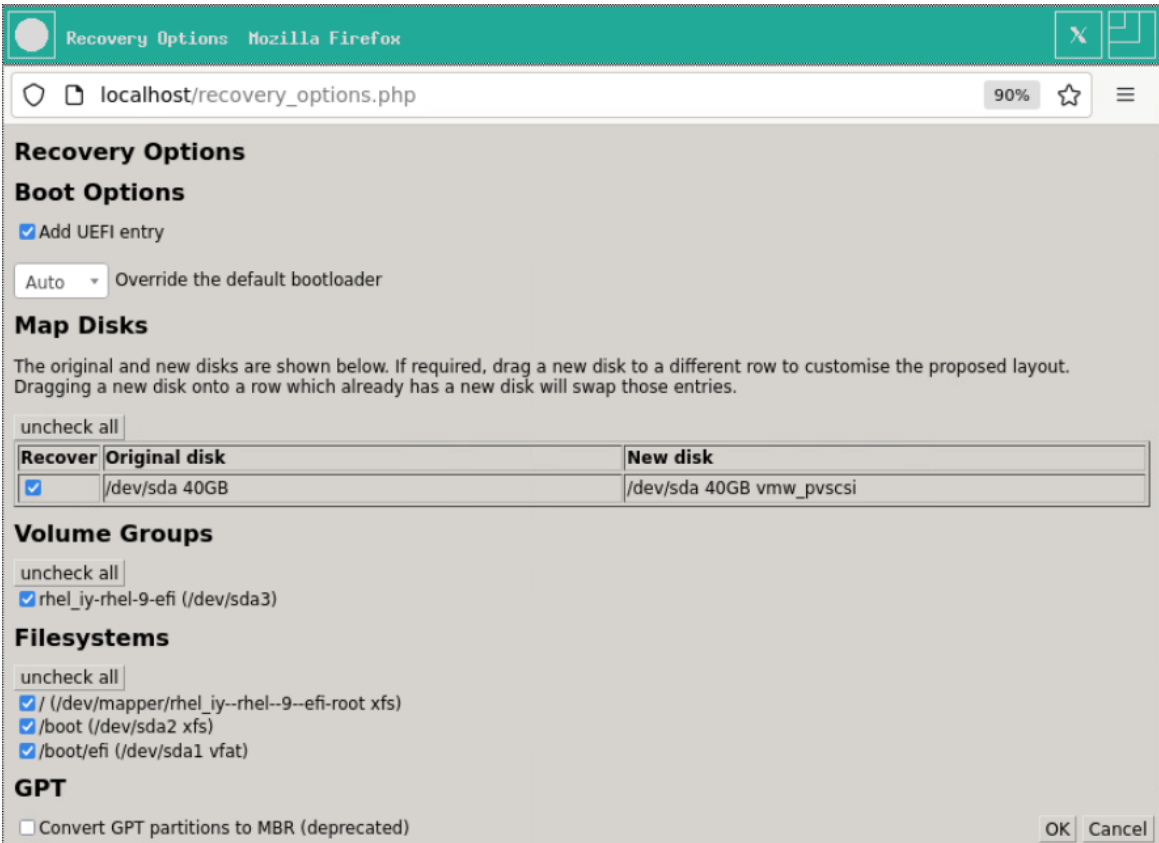
**New boot stanza** means a new initial ramdisk is created rather than overwriting the existing one and also create **Cristie Recovered System** as a new boot menu item.

Select the **Sync** tick-box if you wish to sync existing files. This option will then run a recovery sequence of everything from the restore phase onwards - so a file restore, then a dissimilar hardware step and finally a make bootable step. If the client supports incremental restores, this will save a lot of time.

If you are recovering Multipath or PowerPath disks, you must **check** the tick-box for **Multipath/PowerPath Support**. Not doing so will cause the disks to be treated as non-Multipath/PowerPath disks. You can then select and customise your Multipath/PowerPath disk layout by clicking on the [Multipath Options](#) or [PowerPath Options](#) buttons as appropriate. Note the tick-box and buttons will only become active if such disks are actually present and recorded in the DR configuration.



If you wish, you may customise your disk layout, volume group or filesystem selection by clicking on the [Recovery Options](#) button.

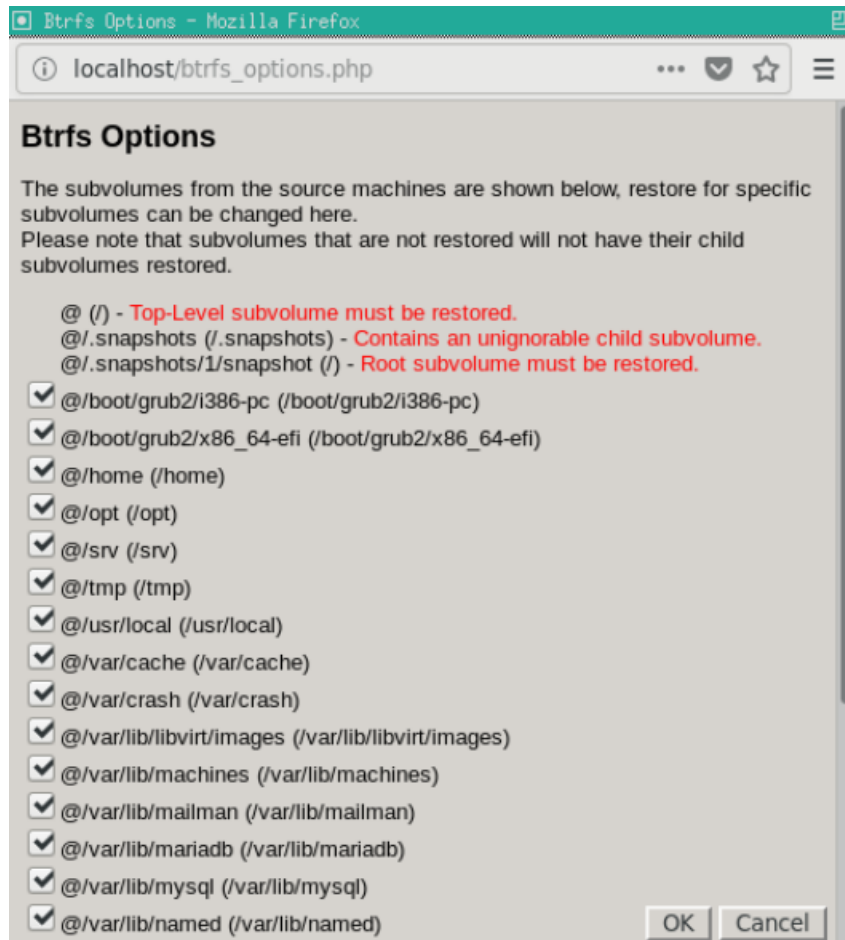


*Note: disks that have been configured in the Multipath/PowerPath Options menu will not be visible on the Recovery Options menu.*

*Note 2: de-selecting a filesystem will disable filesystem creation and file restore.*



If the system to be recovered contains BTRFS subvolumes you may configure whether they are recreated during recovery. Click the [Btrfs Options](#) button to bring up the menu.



De-selecting a checkbox will prevent the recovery from recreating the subvolume. Click [OK](#) to save and continue.

*Note: Some subvolumes can not be de-selected due to a child subvolume dependency or if it is a root subvolume.*

If you wish to change the Network Settings in advance of recovery, select **Post Recovery Network**: This option is only available for SLES 11 or later, and Red Hat 6 or later.



**Post Recovery Network**

This dialog allows the post recovery network settings to be changed. Each interface may be given a static IP address and subnet mask, or allocated a DHCP address. The hostname, default gateway and nameserver may also be changed. Empty fields will be left unchanged on the recovered system. If network information is tied to the original hardware addresses, details should be added here for each interface required after recovery, even if the network details are not to be changed.

Enabled Interface	MAC Address	IP Address	Subnet Mask	DHCP
<input checked="" type="checkbox"/> eth0	00:0c:29:d6:08:9f			<input checked="" type="checkbox"/>

Post Recovery Script

Hostname

Gateway

Nameserver (1)  +

OK Cancel

When you are satisfied that all options are correct, click **OK** to confirm.

**Note:** The **Post Recovery Network** button will only be displayed if the functionality of this feature can actually be performed on the restored system.

When you are satisfied that all options are correct, click **OK** to confirm and return to the **Start Recovery** dialogue.

Finally select **Next>** to start the recovery, which will begin with a dialog like this:

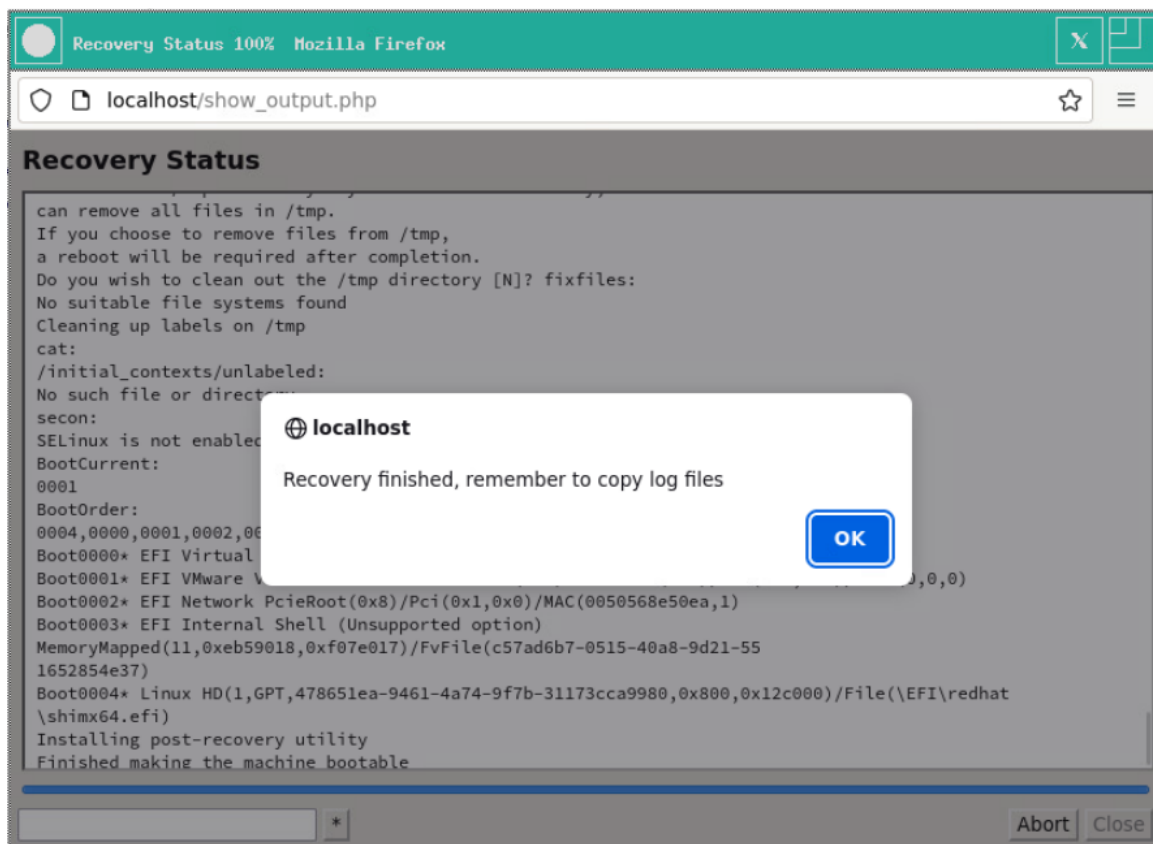
**Recovery Status**

```
disrec (c) Cristie Software Ltd.
2008-2024
File descriptor 4 (/var/log/cbmr/recovery.log) leaked on vgremove invocation.
Parent PID 1244: sh
Logical volume "swap" successfully removed
Logical volume "root" successfully removed
Volume group "rhel" successfully removed
File descriptor 4 (/var/log/cbmr/recovery.log) leaked on pvremove invocation.
Parent PID 1247: sh
Labels on physical volume "/dev/sdc2" successfully wiped.
size_multiplier=1.00x
Syncing disk "/dev/sda"...
The operation has completed successfully.
The operation has completed successfully.
sda1 :
0 20967424 /dev/sda 2048
size_multiplier=1.00x
Syncing disk "/dev/sdb"...
The operation has completed successfully.
The operation has completed successfully.
sdb1 :
0 20967424 /dev/sdb 2048
size_multiplier=1.00x
```

Abort Close



The completion of the recovery is signified with a pop-up box like this:



Cristie recommends that the log files are always saved. If the machine fails to boot after the restore Cristie Support will require copies of the log files to diagnose any problems. Details on how to save log files are described in the section Copy Log Files.

*Note: if you are recovering to dissimilar hardware: ABMR will find the required module(s) automatically. Normally this will happen with no further user intervention.*

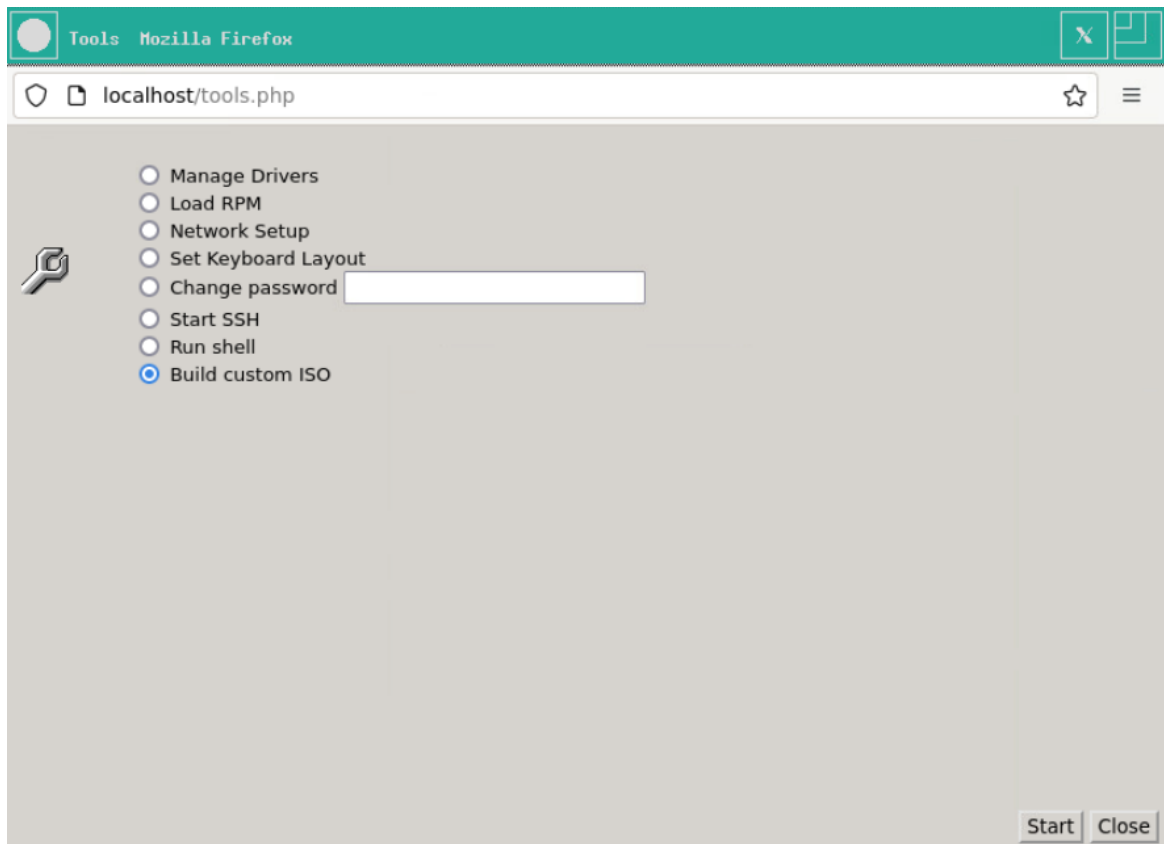
Click **OK** to close the pop-up box, followed by the **Close** button to return to the Main Menu.

Finally select **Reboot** from the Main Menu to boot the restored machine, if post recovery options are not required.



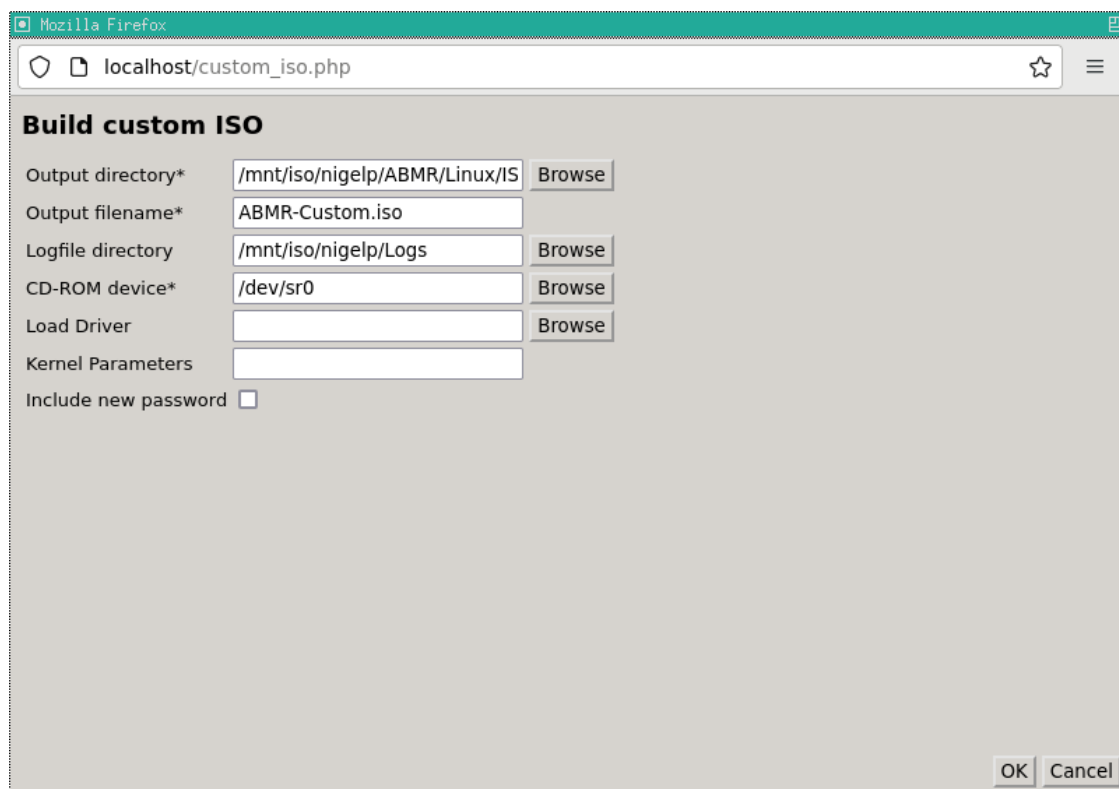
## 8.1 Build Custom ISO

To create a custom recovery ISO, firstly boot the supplied XBMR DR ISO on a suitable host system and select the appropriate XBMR product. Then select the **Tools** menu.



Now select **Build custom ISO** and click **Start**. The main build ISO dialogue is shown:





The screenshot shows a web browser window titled 'Mozilla Firefox' with the address bar displaying 'localhost/custom\_iso.php'. The main content area is titled 'Build custom ISO' and contains several input fields and buttons:

- Output directory\***: Text input field containing '/mnt/iso/nigelp/ABMR/Linux/IS', followed by a 'Browse' button.
- Output filename\***: Text input field containing 'ABMR-Custom.iso'.
- Logfile directory**: Text input field containing '/mnt/iso/nigelp/Logs', followed by a 'Browse' button.
- CD-ROM device\***: Text input field containing '/dev/sr0', followed by a 'Browse' button.
- Load Driver**: Text input field, followed by a 'Browse' button.
- Kernel Parameters**: Text input field.
- Include new password**: A checkbox that is currently unchecked.

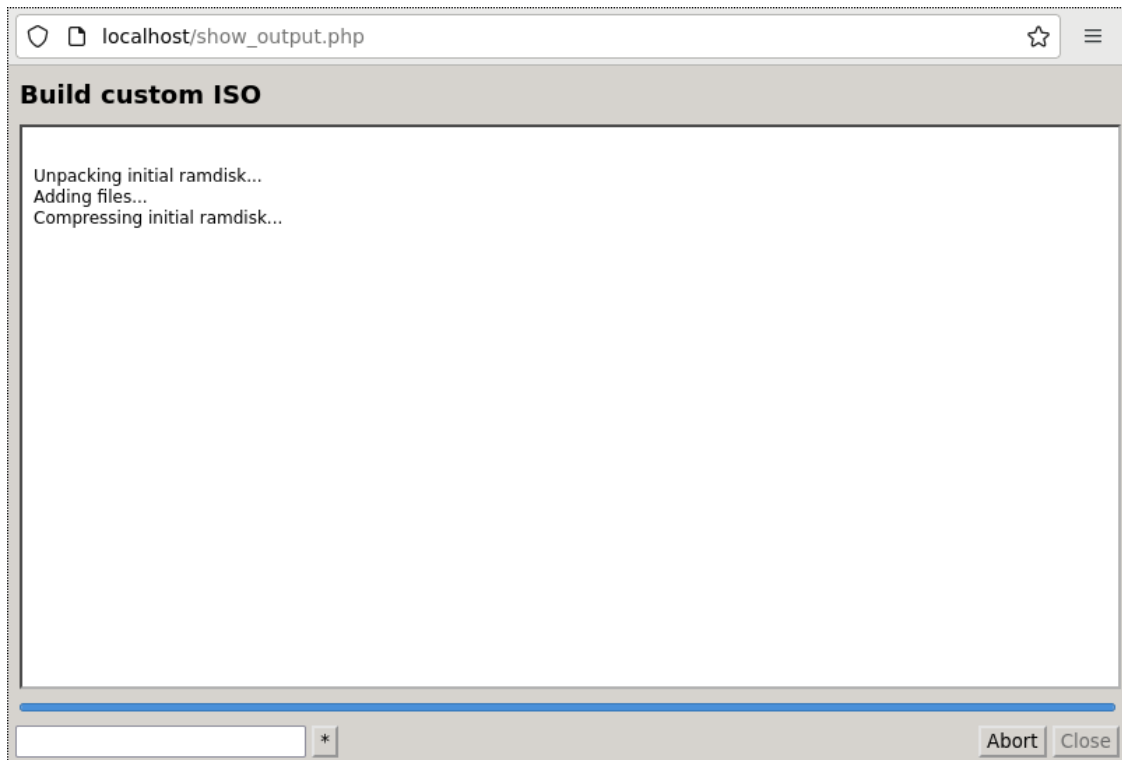
At the bottom right of the form, there are 'OK' and 'Cancel' buttons.

You will need to configure the following fields:

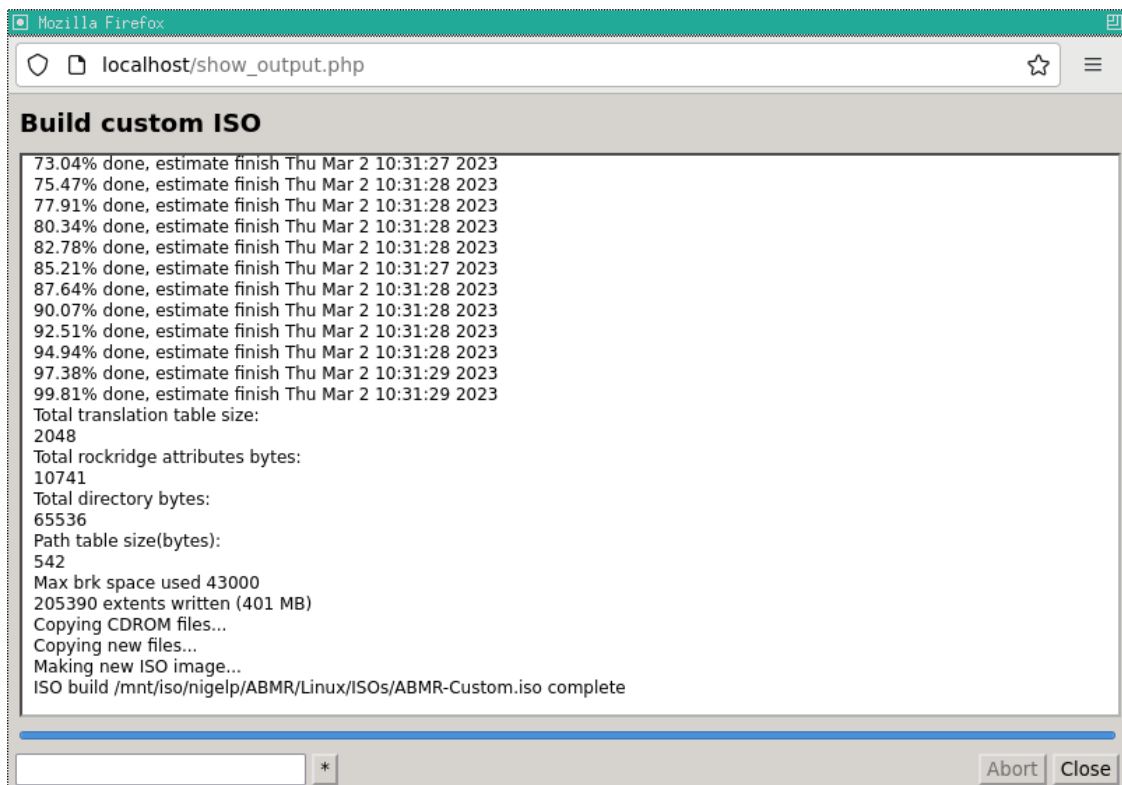
- **Output directory** is a network share (use [Browse](#) to select and mount a share).
- **Output filename** must include the .iso extension.
- **Logfile directory** is a network share (use [Browse](#) to select and mount a share).
- **CD-ROM device** (use [Browse](#) to select a CD/DVD-ROM device from /dev).
- **Load Driver** select the path to an optional driver file. Ensure this is compatible with the system being recovered.
- **Kernel Parameters** specify any extra parameters to be passed to the kernel at boot time. Be careful - this is not syntax checked.
- **Include new password** option will include your new ssh/http password if you have changed it in the tools menu prior to building the custom ISO.

Populate the fields as required, for example. Then click [OK](#) to begin the ISO creation.





The following progress screen will show when the ISO is successfully built.



Click **Close** to complete the operation. At this point you may either cancel the recovery operation or continue as required.

The created ISO may now be used to directly recover the host from the backup. However operator intervention will be required to specify the backup location details.



## 8.2 Command Line Recoveries

XBMR also has the ability to control all aspects of a DR sequence without using the web or curses based GUIs. To do this it uses a script based command line manually run from the built-in bash prompt. This is an advanced feature and should not be used until the User becomes familiar with ABMR DR principles and procedures.

The command line parameters supplied to the script are divided into 4 groups, **Network**, **Mount**, **Avamar** and **General**, as follows:

### Network options:

<code>--network_number=&lt;number&gt;</code>	Set network number (default is 0)
<code>--route_number=&lt;number&gt;</code>	Set route number (default is 0)
<code>--ip_address=&lt;ip_address&gt;</code>	Set recovery environment IP address
<code>--netmask=&lt;ip_address&gt;</code>	Set recovery environment network mask
<code>--hostname=&lt;string&gt;</code>	Set recovery environment hostname
<code>--gateway=&lt;ip_address&gt;</code>	Set recovery environment default gateway
<code>--ethtool=&lt;command&gt;</code>	Pass options to ethtool

### Mount options:

<code>mount_number=&lt;number&gt;</code>	Set mount number (default is 0)
<code>mount_path=&lt;path&gt;</code>	Set mountpoint
<code>mount_share&lt;device&gt;</code>	Set mount device
<code>mount_username=&lt;name&gt;</code>	Set mount username
<code>mount_passwd=&lt;passwd&gt;</code>	Set mount password
<code>mount_ip_address&lt;ip_address&gt;</code>	Set mount IP address

### Avamar options:

<code>--avamar_server=&lt;ip_address&gt;</code>	Set Avamar server IP address
<code>--avamar_account=&lt;string&gt;</code>	Set Avamar client account
<code>--avamar_username=&lt;string&gt;</code>	Set Avamar username
<code>--avamar_password=&lt;string&gt;</code>	Set Avamar password

forces a tar backup of /boot - this is needed for block based backups to work

### General options:

<code>--help</code>	Show help message and exit
<code>--sshd=&lt;1 0&gt;</code>	Start ssh daemon if value=1
<code>--reload=&lt;string&gt;</code>	Reload module with options
<code>--passwd=&lt;string&gt;</code>	Set password for SSH and HTTP
<code>--find_multipaths=&lt;yes no&gt;</code>	Set find_multipaths option in multipath.conf
<code>--disshw=&lt;1 0&gt;</code>	Turn on dissimilar hardware support if value=1



<code>--mpath=&lt;1/0&gt;</code>	Turn on multipath support if value=1
<code>--sleep=&lt;number&gt;</code>	Sleep for <number> seconds
<code>--log_dir=&lt;path&gt;</code>	Copy logs to mounted <path>
<code>--bootloader=&lt;name&gt;</code>	Set bootloader to <name>
<code>--autorelabel=&lt;1/0&gt;</code>	Turn on SELinux autorelabel if value=1
<code>--convert_to_mbr</code>	Supply when recovering an EFI system to an MBR target
<code>--product=&lt;type&gt;</code>	One of abmr, cbmr, cobmr, nbmr, rbmr or tbmr

### Example (a TBMR recovery)

```
restore --product=tbmr --reload="ibmveth old_large_send=1" --ethtool="-K
eth0 tso on"
    --ip_address="10.10.10.186" --netmask="255.0.0.0" --
hostname="cristiel"
    --gateway="10.0.1.100" --tsm_ip_address="10.10.11.98" --
convert_to_mbr
    --tsm_node="chrisw-sles11-hyperv-mpath" --tsm_passwd="chrisw"
    --find_multipaths="no" --mpath="1" --disshw="1" --sshd="1"
    --log_dir="/mnt/log/log" --bootloader="yaboot" --autorelabel="0"
    --mount_path="/mnt/log" --mount_share="//10.1.1.26/chris$"
    --mount_username="chris" --mount_passwd="mypassword"
```

Since this is a complex command line, and easy to get wrong during data entry, we advise preparing the command line in an editor elsewhere and pasting it into the bash prompt.



## 9 Post Recovery Options

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

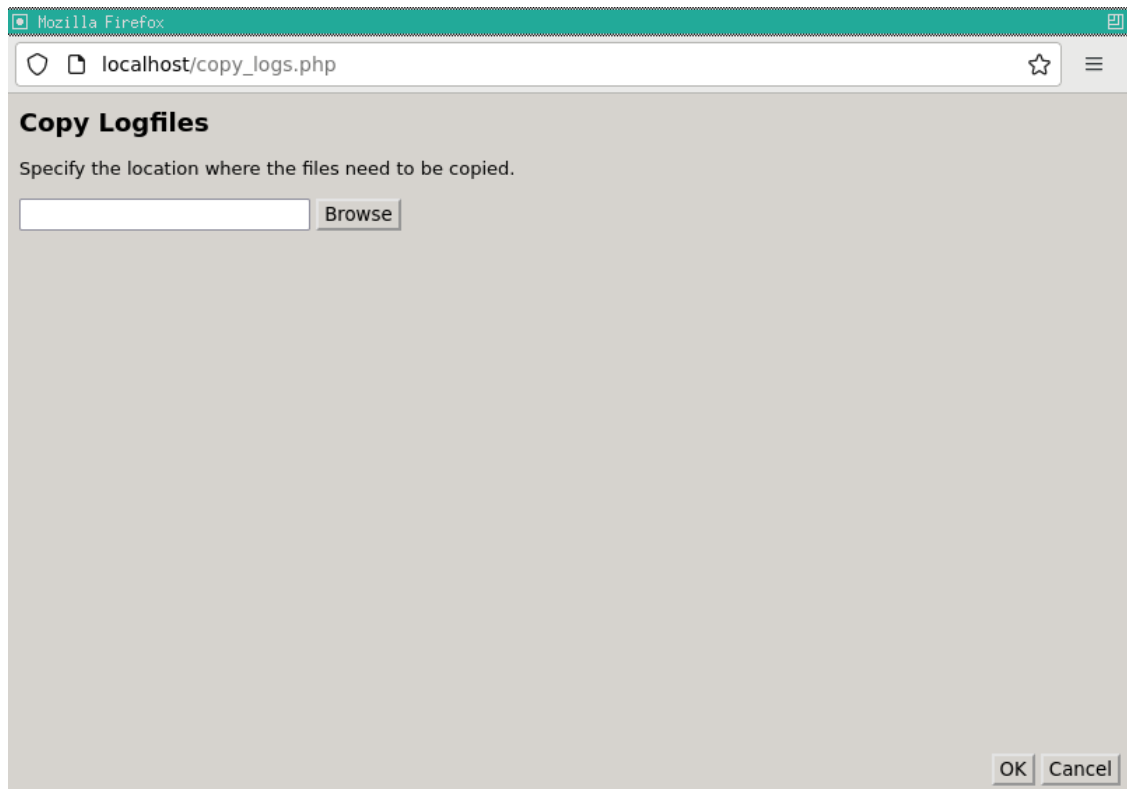
- *Copy Log Files* (Cristie recommends that this action is always undertaken after a recovery)
- *View Log Files*

### 9.1 Copy Log Files



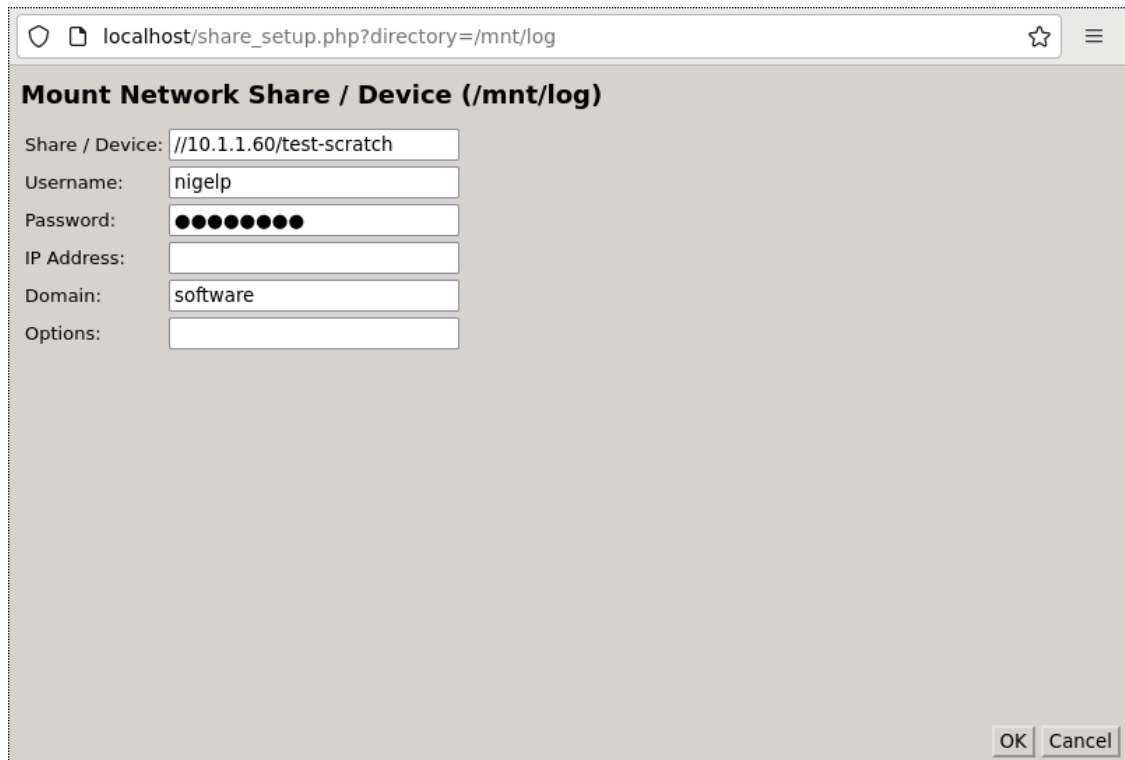
Select the  icon from the **Cristie Recovery Environment** main menu.

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



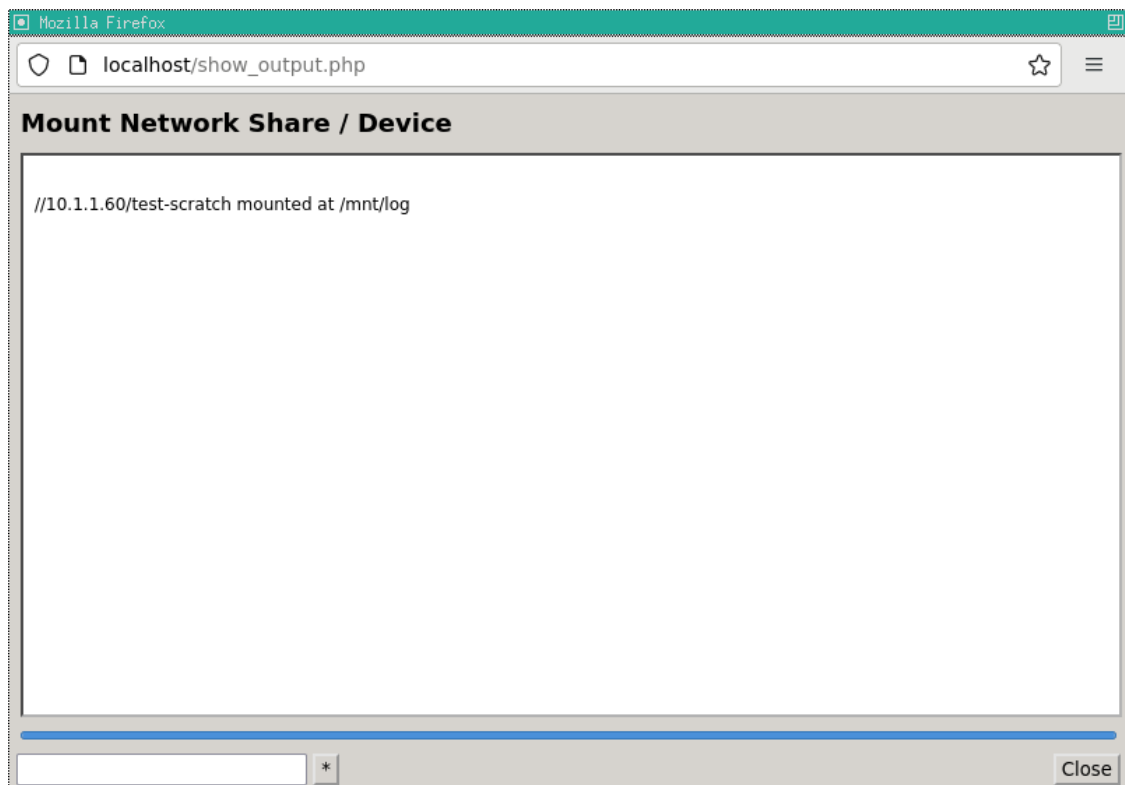
Select **Browse** to mount a network drive.





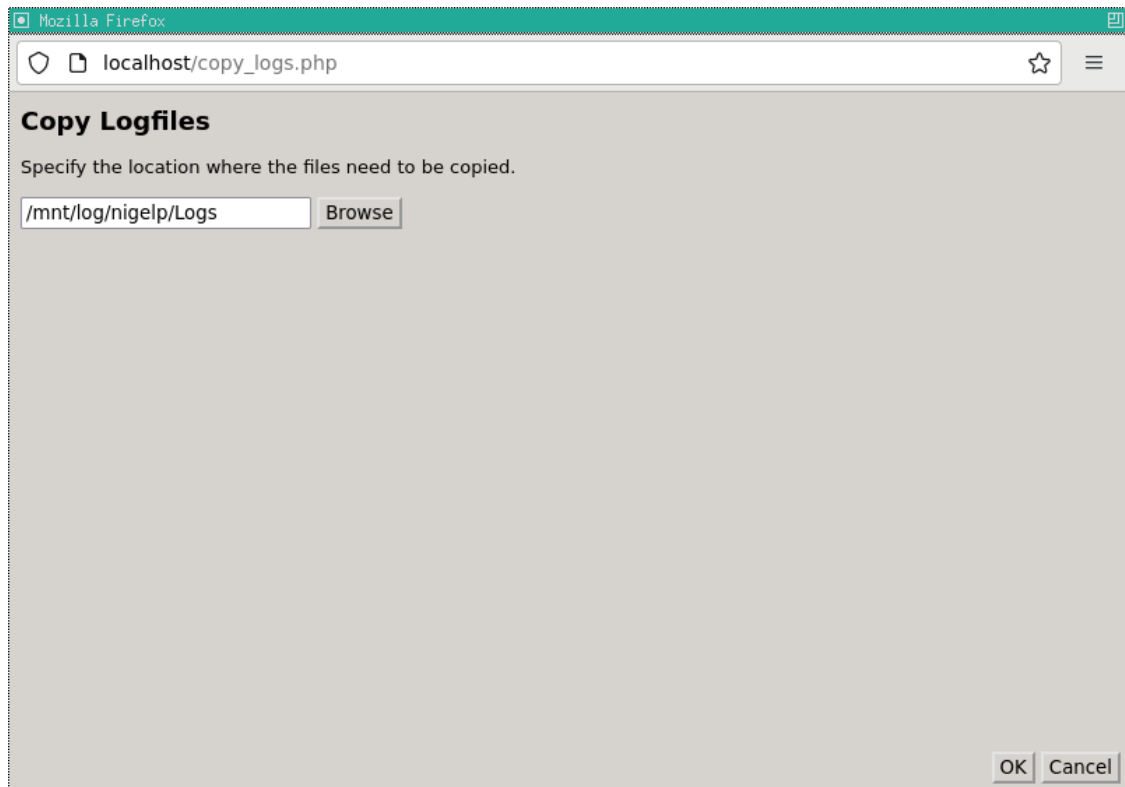
A screenshot of a web browser window showing a form titled "Mount Network Share / Device (/mnt/log)". The form has several input fields: "Share / Device" with the value "///10.1.1.60/test-scratch", "Username" with "nigelp", "Password" with masked characters, "IP Address" (empty), "Domain" with "software", and "Options" (empty). At the bottom right of the form are "OK" and "Cancel" buttons.

A successful mount is signified by:

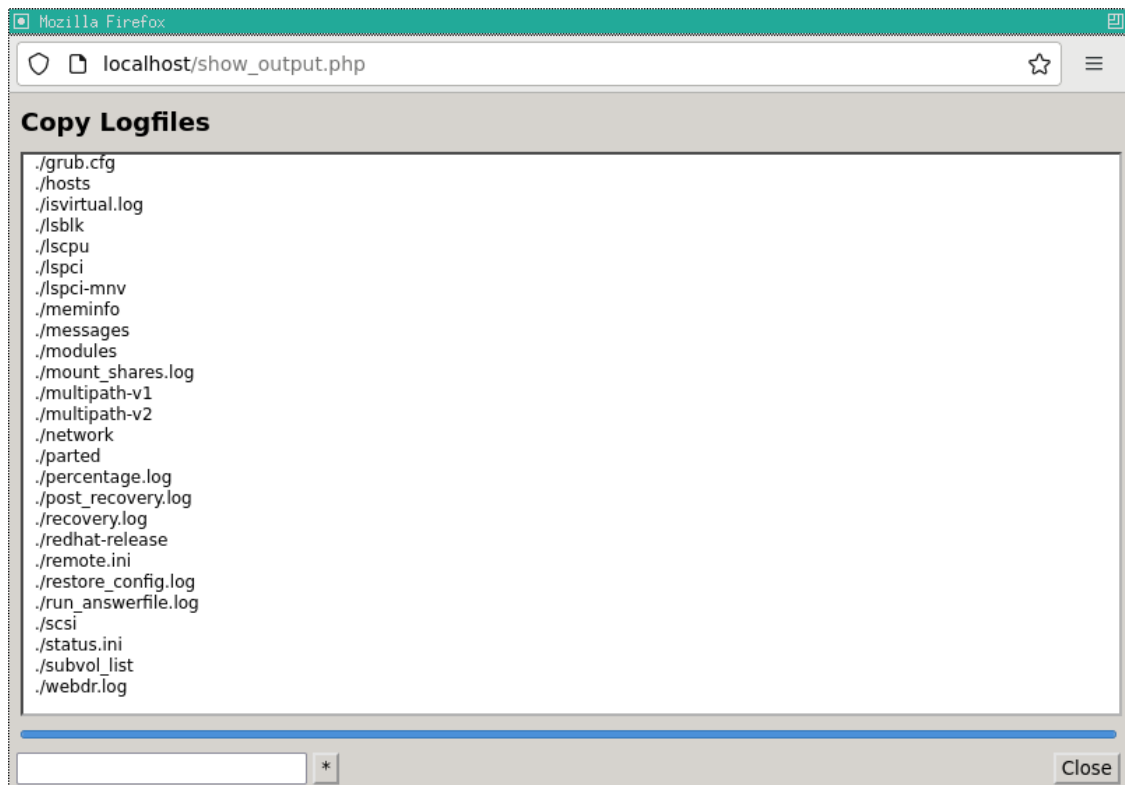


Select a directory on the mounted share:





Click **OK** to copy the logfiles.



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

Click **Close** to return to the **Recovery Environment** Main Menu.




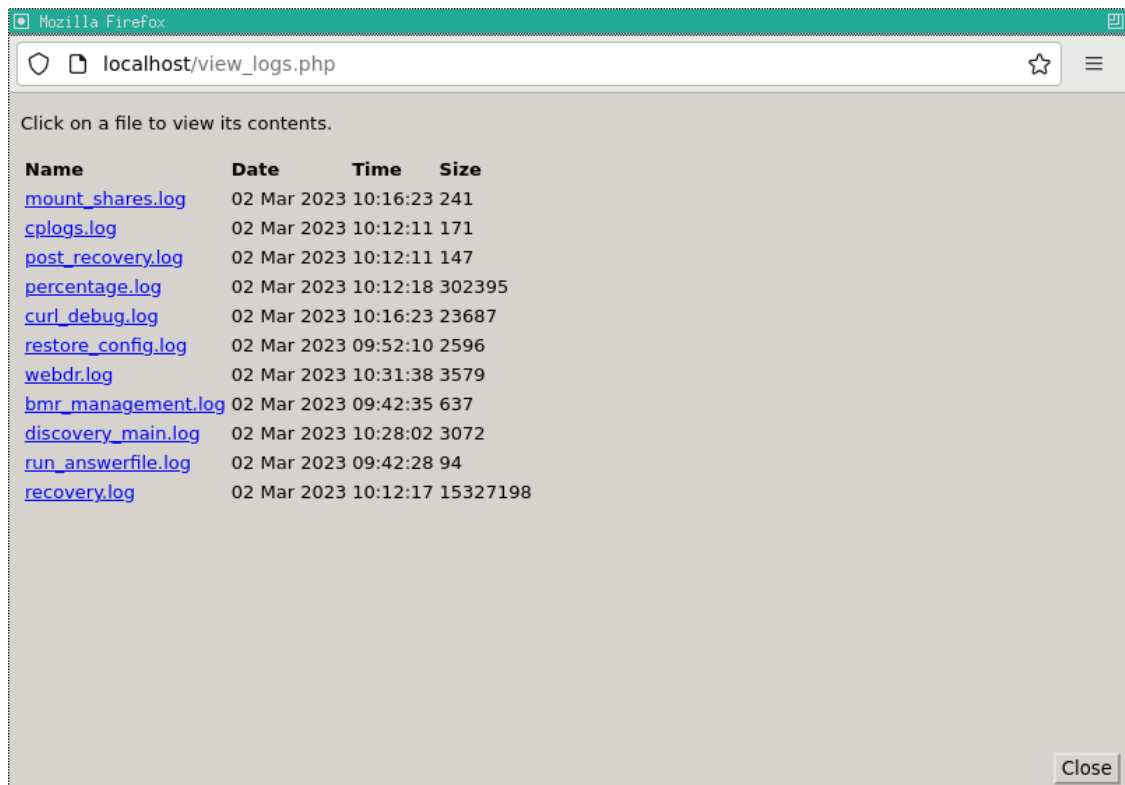


*Note: log files are essential if you require support from Cristie. They detail exactly what has happened during the recovery on your system. Without them, it is very difficult for Cristie to offer meaningful support.*

## 9.2 Show Log Files



To view log files, select the  icon from the Main Menu. This will display the list of available logfiles:



Click on the log you wish to view. Check the summary information at the bottom of the recovery status report for any errors.

Click [Close](#) to finish.



## 10 Cristie Technical Support

If you have any queries or problems concerning your Bare Machine Recovery for Dell EMC Avamar™ 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:

- ABMR 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**

<b>Technical Support</b>	+44 (0) 1453 847 009
<b>Toll-Free US Number</b>	1-866-TEC-CBMR (1-866-832-2267)
<b>Knowledgebase</b>	kb.cristie.com
<b>Forum</b>	forum.cristie.com
<b>Sales Enquiries</b>	sales@cristie.com
<b>Email</b>	support@cristie.com
<b>Web</b>	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/](http://www.cristie.com/support/)

Cristie Software Ltd. are continually expanding their product range in line with the latest technologies. Please contact the Cristie Sales Office for the latest product range.

