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CRISP

Cristie Recovery ISO Producer

User Guide For Windows

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Version 7.1

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1 Introduction

The Cristie Recovery ISO Producer (CRISP) tool enables a customer to create a customised bootable disaster recovery environment suitable for use in conjunction with Cristie's bare machine recovery (BMR) and CloneManager products for Microsoft Windows.

This document describes the steps required to install, configure and use the Cristie Recovery ISO Producer (CRISP).

At the time of writing the Cristie products compatible with CRISP are CBMR, TBMR, NBMR and ABMR all version 6.4.1 and later together with CloneManager 1.3 or later. Refer to Cristie's website for a full description of these products.

Note: Throughout this document the Cristie BMR and CloneManager products are referred to collectively as 'xBMR'.

The output from CRISP is an ISO file which contains a standalone bootable recovery environment. This environment is based upon a customised version of Microsoft's WinPE2 or WinPE4 OS. This ISO file can be burnt to physical media (such as CD or DVD) or used directly in a virtual environment to boot a recovering machine ready for recovery.

Note: The bootable ISO created by CRISP can only be used in conjunction with Cristie xBMR or CloneManager products.

A copy of CRISP is distributed with each Cristie xBMR/CloneManager product (from version 6.4.1 or 1.3 onwards respectively) or it can be downloaded separately from Cristie's website.

For WinPE 2 ISO builds CRISP requires that the Microsoft Windows Automated Installation Kit (WAIK) version 1.1.0.0 for Vista/Win2008 (WAIK) be installed on the same host machine as CRISP. The WAIK provides various tools used internally by CRISP during the creation of the WinPE 2 DR boot ISO.

For WinPE 4 ISO builds CRISP requires that the Microsoft Windows Assessment and Deployment Kit (WADK) version 8 for Win7/Win2012 (WADK) be installed on the same host machine as CRISP. The WADK provides various tools used internally by CRISP during the creation of the WinPE 4 DR boot ISO.

The above step is important. It is not possible to install CRISP and therefore create the DR boot ISO without the WAIK or WADK.

The supplied (CRISP) setup program must be installed on a Windows host machine. Most desktops or servers are suitable for this purpose subject to the installation requirements of **CRISP** and the **WAIK** or **WADK**.

Note: The CRISP works independently of any xBMR/CloneManager product and can therefore be installed on any host machine.

When this process is complete you will be able to recover servers backed up with Cristie xBMR or CloneManager products using the generated DR boot environment.

Refer to the product **Readme** for late breaking information associated with this release.

2 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

3 Install and configure the software

A typical CRISP setup sequence consists of the following steps.

1. Download and install the Microsoft Windows Automated Installation Kit (WAIK) version 1.1.0.0 for Vista/Win2008 for WinPE 2 ISO builds. Download and install the Microsoft Windows Assessment and Deployment Kit (WADK) version 8 for Win7/Win2012 for WinPE 4 ISO builds. You may build WinPE 2 and/or WinPE 4 ISOs with the supplied CRISP tool. However it is not possible to install both the WAIK and the WADK on the same host system This is a restriction of those products not CRISP.
2. Download, install (if not already installed as part of a Cristie xBMR or CloneManager product) the CRISP program and the corresponding product WinPE2 or WinPE4 fileset fileset.
3. Run CRISP to create the WinPE2 or WinPE4 recovery or CloneManager ISO.
4. Optionally burn the ISO file to physical boot media (CD or DVD).

Cristie Software Ltd. recommends using the WinPE 4 DR environment for recent hardware particularly where the WinPE 2 version does not boot on the target hardware. Use the WinPE 2 version for legacy hardware support.

In the following discussion the host computer used for the installation of the WAIK/WADK, CRISP and the fileset is referred to as the **technician computer**.

Note: Both the WAIK and WADK are free downloads from Microsoft.

3.1 Install the Microsoft WAIK

The WinPE 2 32-bit ISO file is created from a base **WinPE 2** file supplied in the Microsoft Windows Automated Installation Kit (WAIK) version 1.1.0.0 for Vista/Win2008 (**WAIK**). This file is in Windows Image (WIM) file format and requires tools provided in the WAIK to modify.

*Note: For compatibility with the supplied product WinPE 2 filesets, the WAIK must be installed on a **32-bit** Windows OS.*

Download the WAIK from the **Microsoft Download** centre <http://www.microsoft.com/download/en/default.aspx>.

Use the search string **Automated Installation Kit for Windows Vista SP1** in the download centre search bar to select the correct WinPE 2 version of the WAIK. The download filename in this case is **6001.18000.080118-1840-kb3a1k1_en.iso**.

Note: Only the English version of the WAIK is fully supported at the moment.

Normally you will need to burn this ISO file to physical media (use a blank DVD - it is too large for a CD) to enable the WAIK to be installed. If installing to a VM you can use the ISO file directly. In the following example an installation of the WinPE 2 WAIK is illustrated.

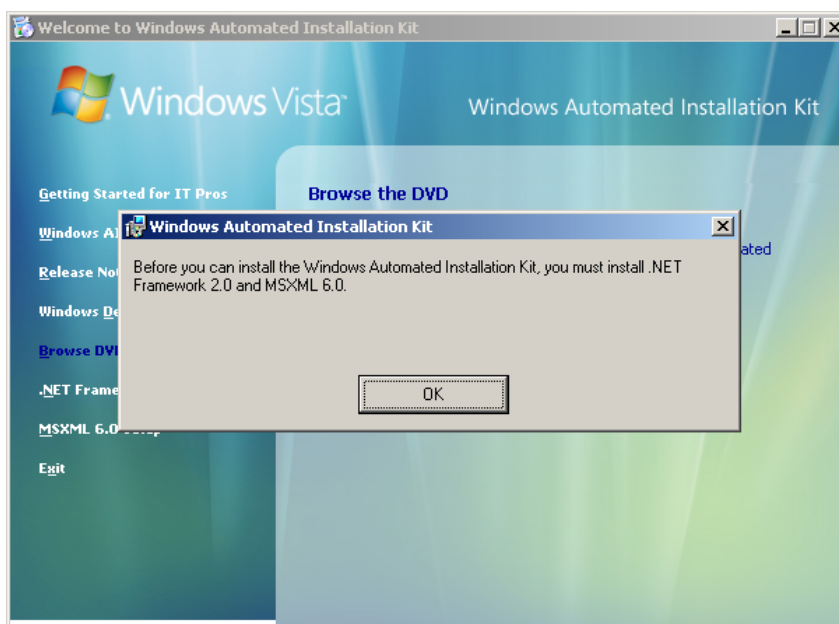
Note: It is recommended that the WAIK is installed for "All Users" when prompted.

Run the installation setup from the DVD (**StartCD.exe**) or let the installation autorun.



It is suggested that first time users consult the [Getting Started for IT Pros](#) documentation. Click on the menu in the left hand column of the main dialogue to select this option.

Click on [Windows AIK Setup](#) to start the WAIK installation. **MSXML** and **.NET** may be required dependent upon the host OS. This generally occurs on older Windows XP or 2003 systems.



In this case cancel the WAIK installation and manually run [.NET Framework](#) and [MSXML 6.0](#) setups. It is recommended you run Windows Update afterwards to ensure these components are up to date. Then re-run the WAIK setup.

Select [Exit](#) when the installation is complete.

Note: Although the WAIK appears to install successfully on Windows 8 or Windows 2012 it can result in a system crash (a "Blue Screen Of Death") when running in conjunction with CRISP. Therefore these OS's are not supported by CRISP when used in conjunction with the WAIK.

3.2 Install the Microsoft WADK

The WinPE 4 64-bit ISO file is created from a base **WinPE 4** file supplied in the Microsoft Windows Assessment and Deployment Kit (WADK) version 8 for Win7/Win2012 (**WADK**). This file is in Windows Image (WIM) file format and requires tools provided in the WADK to modify.

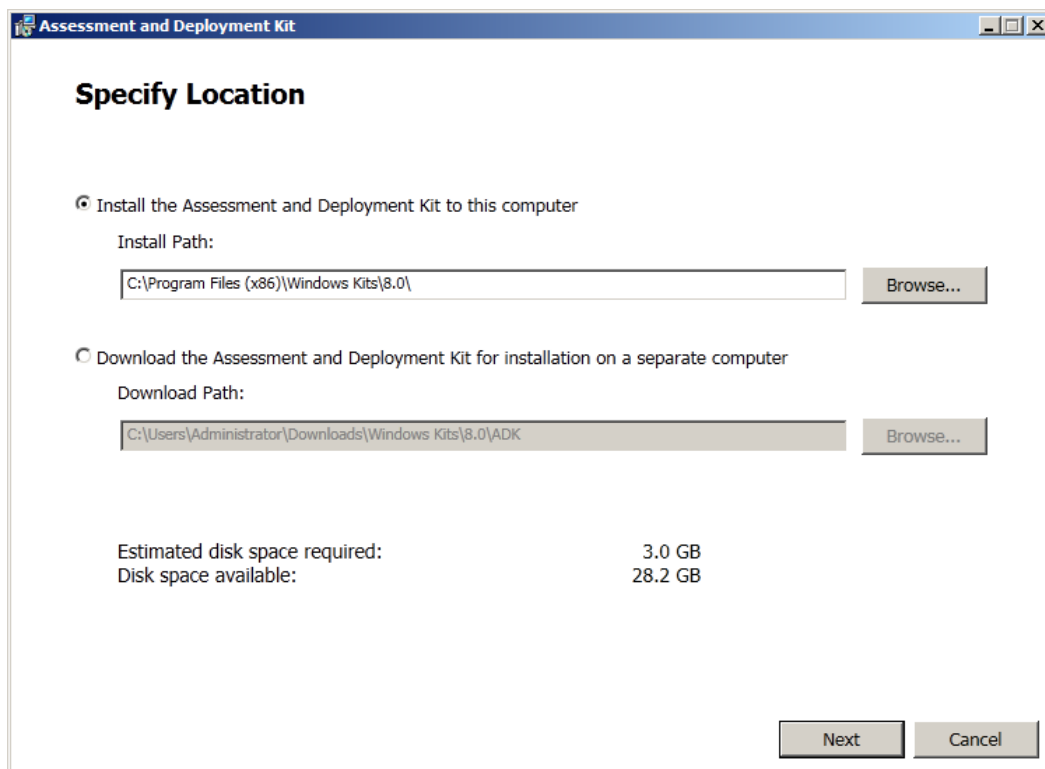
Note: For compatibility with the supplied product WinPE 4 filesets, the WADK must be installed on a 64-bit Windows OS Vista or later.

Download the WADK from the **Microsoft Download** centre <http://www.microsoft.com/download/en/default.aspx>.

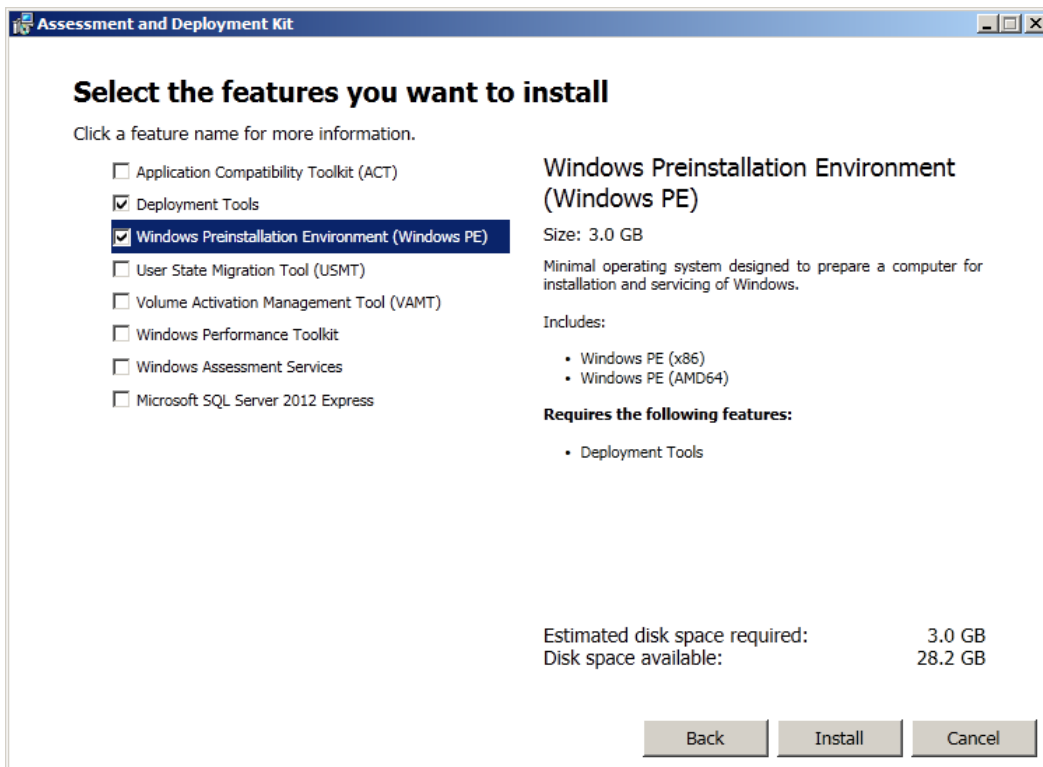
Use the search string **Microsoft Windows Assessment and Deployment Kit (WADK) version 8** in the download centre search bar to select the correct WinPE 4 version of the WADK dated 31 July 2012. Next, download the adksetup.exe program. Note this is not the WADK itself but a downloader program which allows you to download and install just the features you need.

Once downloaded run these steps:

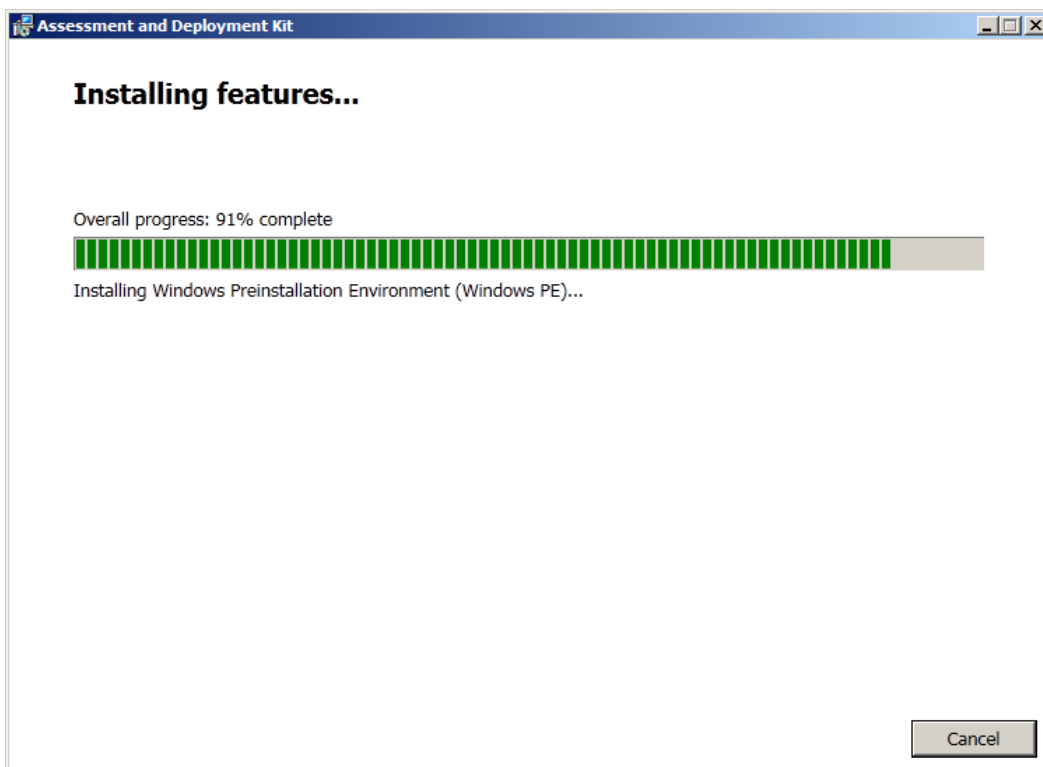
1. Run the downloaded ADKSetup.exe. You may need to install .NET 4 as part of the installation sequence first. If so, click the "I accept the Microsoft .NET Framework license terms" and click on **Accept & Install**. Microsoft .NET framework will be installed.
2. Click **Install**, specify the location where you want to install the Windows ADK features, and then click **Next**.



3. Select the Windows ADK features that you want to install. For use in conjunction with CRISP you only need to select the **Deployment Tools** and **Windows Preinstallation Environment** features.



Finally click [Install](#) to commence the download and installation of the selected components.



Note: Only the English version of the WADK is fully supported at the moment.

Select [Exit](#) when the installation is complete.

3.3 Install the CRISP and WinPE2 or WinPE4 fileset

CRISP can create product DR ISOs in both 32 and 64-bit form. The WAIK is used for 32-bit (WinPE 2) ISOs only and the WADK is used to create 64-bit (WinPE 4) ISOs only.

Note: The WAIK and WADK cannot be hosted on the same system. This is a Microsoft restriction and therefore requires 2 different CRISP host systems if both WinPE2 or WinPE4 DR ISOs are required.

Please consult the WAIK or WADK documentation for a list of supported OS's.

Normally CRISP and the appropriate fileset are installed as part of a product suite install. Alternatively they may also be installed from stand-alone setup programs. In this case make sure you have the correct CRISP x86 or x64 version and the correct WinPE2 or WinPE4 fileset. You may want to do this for example when a new release is made available. All setups are available for download from the Cristie website.

You may install as many product filesets on the same technician machine as you wish as long as they are all the same WinPE2 or WinPE4 version.

3.3.1 Install the CRISP tool

Normally CRISP is installed automatically (if selected) as part of a Cristie CloneManager or xBMR product suite setup. If this is the case follow the instructions in the suite installation guide. However if you have downloaded the stand-alone CRISP setup program follow the instructions outlined here to install.

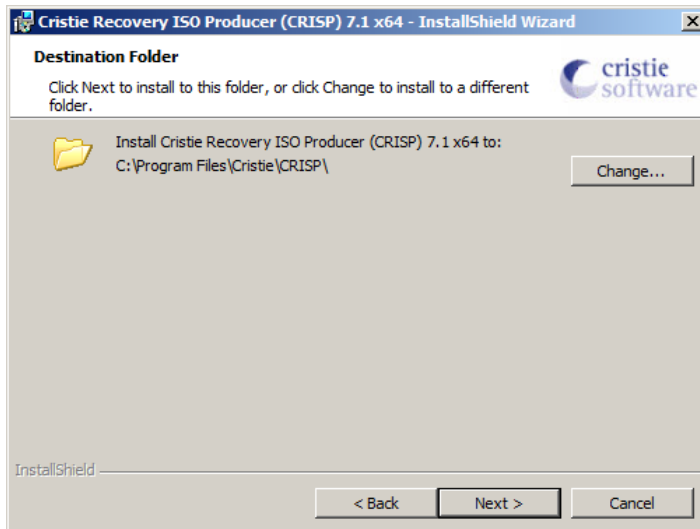
Note: CRISP installation requires at least one Cristie fileset to be installed first.

Run the setup program `SetupCRISP7-x86.exe` from the command line or click on the setup program from within Windows Explorer. This will then display the opening dialogue of the installation sequence.

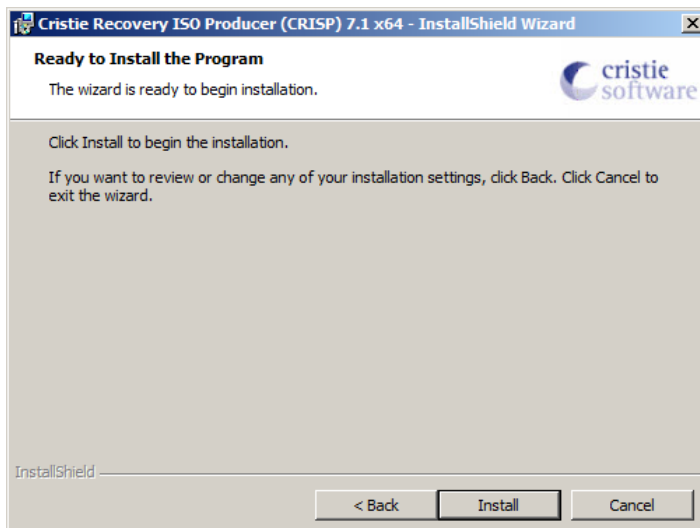
Note: The CRISP installation requires that the User login account running the installation has Administrator privilege.



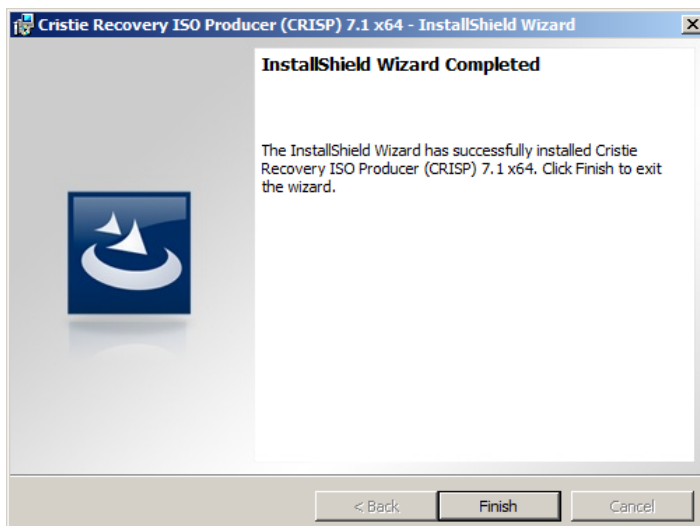
Click on the **Next >** to commence product installation. A **select install folder** dialogue will then be displayed.



Select [Change...](#) to choose a different install folder from the default location. However, Cristie strongly recommends you accept the default location. Click [Next >](#) to show the **Ready To Install** dialogue.



Click [Install](#) to commence the CRISP installation.



Click **Finish** to close the installer. This completes the installation of the CRISP program itself. Now continue to install the required WinPE2 or WinPE4 filesets.

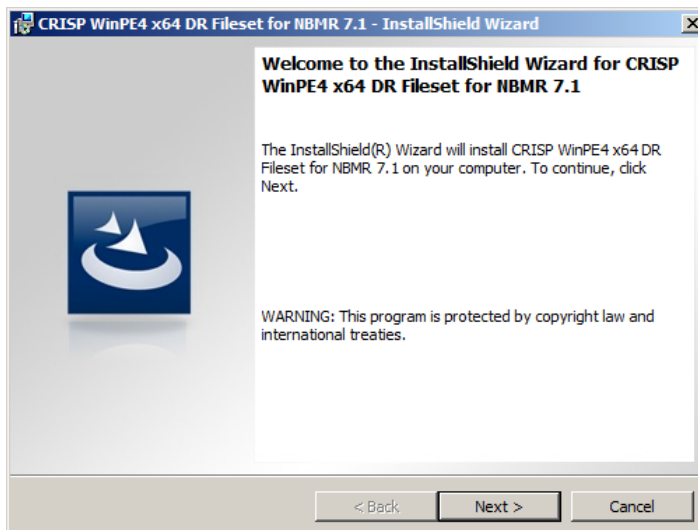
3.3.2 Install the WinPE2 or WinPE4 product fileset

Like CRISP itself a WinPE2 or WinPE4 product fileset is normally installed automatically (if selected) as part of a Cristie CloneManager or xBMR product suite setup. However if you have downloaded the stand-alone WinPE fileset setup program follow the instructions outlined here.

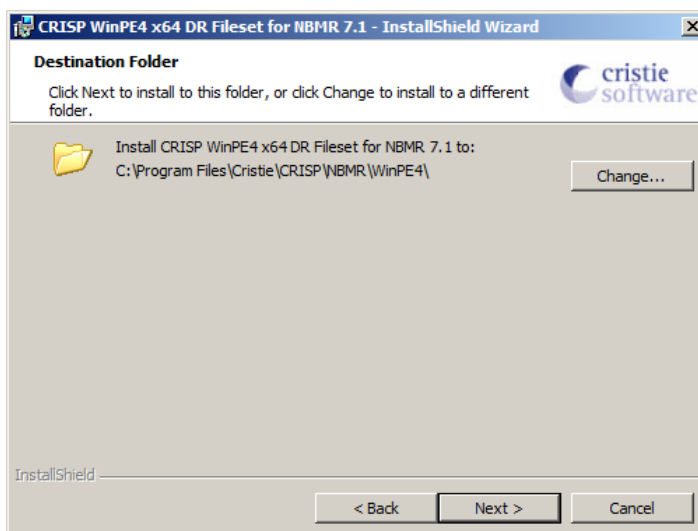
This example shows a fileset installation for Cristie NBMR using WinPE 4, but all product fileset installs are similar. This example therefore requires a 64-bit host OS with the WADK installed.

Run the setup program `SetupNBMR711PE4Fileset.exe` from the command line or click on the setup program from within Windows Explorer. This will then display the opening dialogue of the installation sequence.

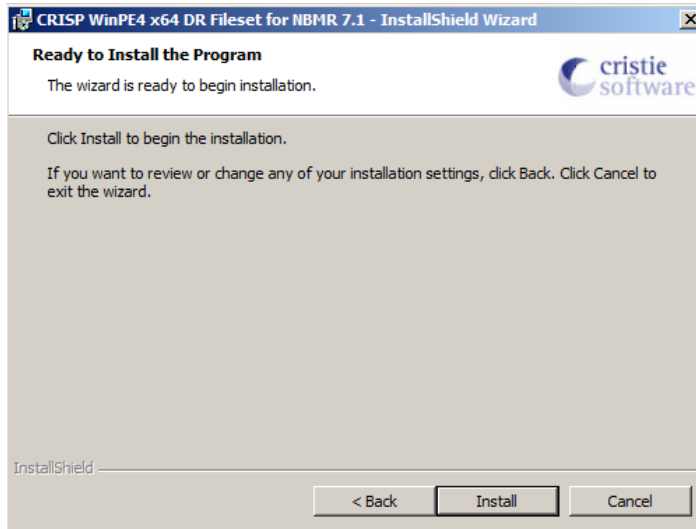
Note: Fileset installation does not require Administrator privilege.



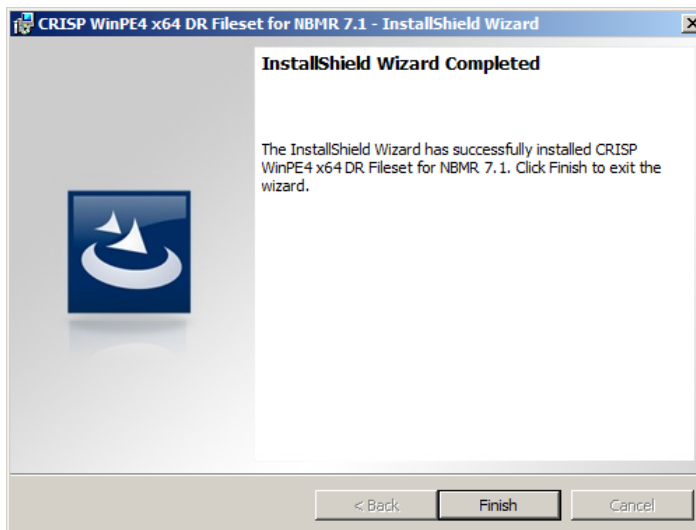
Click on the **Next >** to commence product installation. A **select install folder** dialogue will then be displayed.



Select [Change...](#) to choose a different install folder from the default location. However, Cristie strongly recommends you accept the default location. The install location could be on a network share for example. Note that the space required for the fileset installation can be quite large (up to about 200MB depending upon the product). Click [Next >](#) to show the **Ready To Install** dialogue.



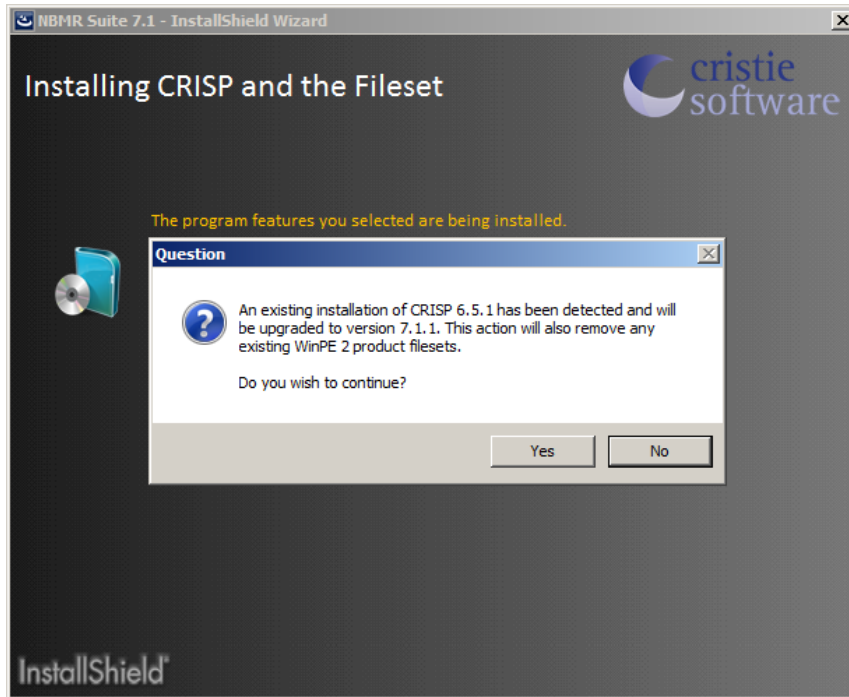
Click [Install](#) to commence the WinPE2 or WinPE4 fileset installation.



Click [Finish](#) to close the installer. This completes the installation of the WinPE2 or WinPE4 fileset. Repeat the above process for as many product filesets as required.

3.3.3 Upgrades from earlier versions

If a previous version of CRISP is detected during the install process an upgrade prompt will be displayed:



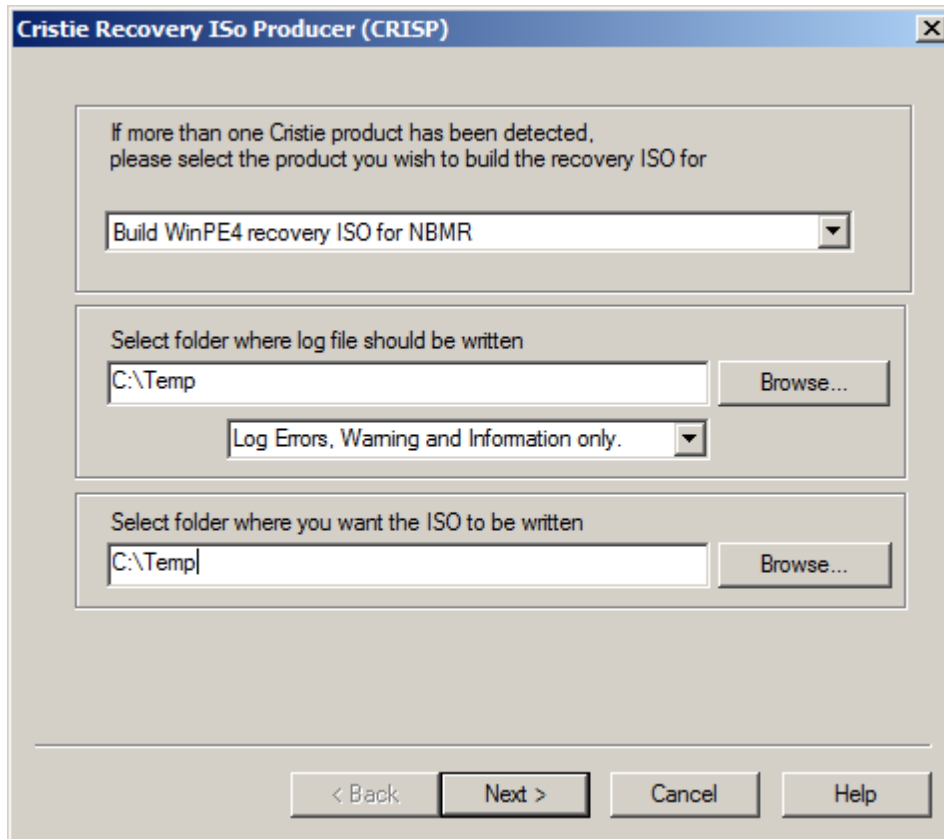
The example above also illustrates that CRISP version 6.x.x upgrades on a 64-bit OS will also require all existing WinPE 2 product filesets to be removed. These are not compatible with this new version 7.1 of CRISP.

Upgrades of CRISP installed on a 32-bit OS do not require existing product filesets to be removed. They remain compatible with this 7.1 version of CRISP.

Click **Yes** to continue the upgrade sequence or **No** to abandon the upgrade.

4 Create Recovery ISO

Once the CRISP tool has installed successfully it may be started by clicking the **Start\Cristie\Start CRISP** shortcut on the Start menu. The following initial dialogue is displayed.



From the drop-down box select the ISO fileset corresponding to the product for which you wish to build the WinPE2 or WinPE4 DR environment. Normally this will offer a single choice, but is provided in case you have multiple product filesets installed. Click **OK** to display the next dialog (or if only one fileset is detected).

Note: ISO creation requires Administrator privilege.

You may specify a folder path to define a location for the build log files. This can be a network share if you wish. Also select the level of logging detail from the drop-down box as required.

You should also specify or browse to the location of where the target ISO file is to be created. This can also be a network share if you wish).

Note: When the CRISP program starts it will confirm that the WAIK or WADK is installed on the technician machine. An error message will be displayed if the WAIK/WADK is not found. It will not be possible to create an ISO in this case.

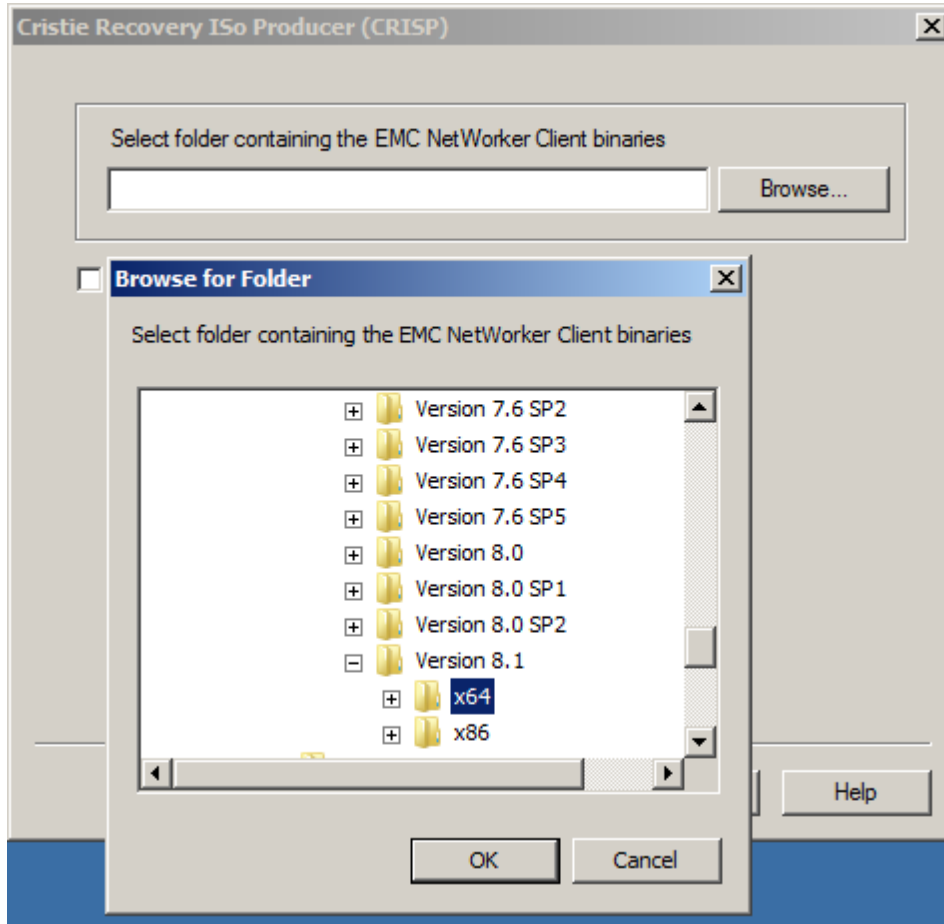
For NBMR or ABMR filesets only: When creating the ISO, you will be prompted for the location of the EMC NetWorker or Avamar client setup binaries. An ISO needs to be created that corresponds to the version of the EMC NetWorker or Avamar client used to create the backup.

Make sure you select the correct 32-bit version (for WinPE 2 builds) or 64-bit version (for WinPE 4 builds) of the EMC NetWorker or Avamar client setup binaries.

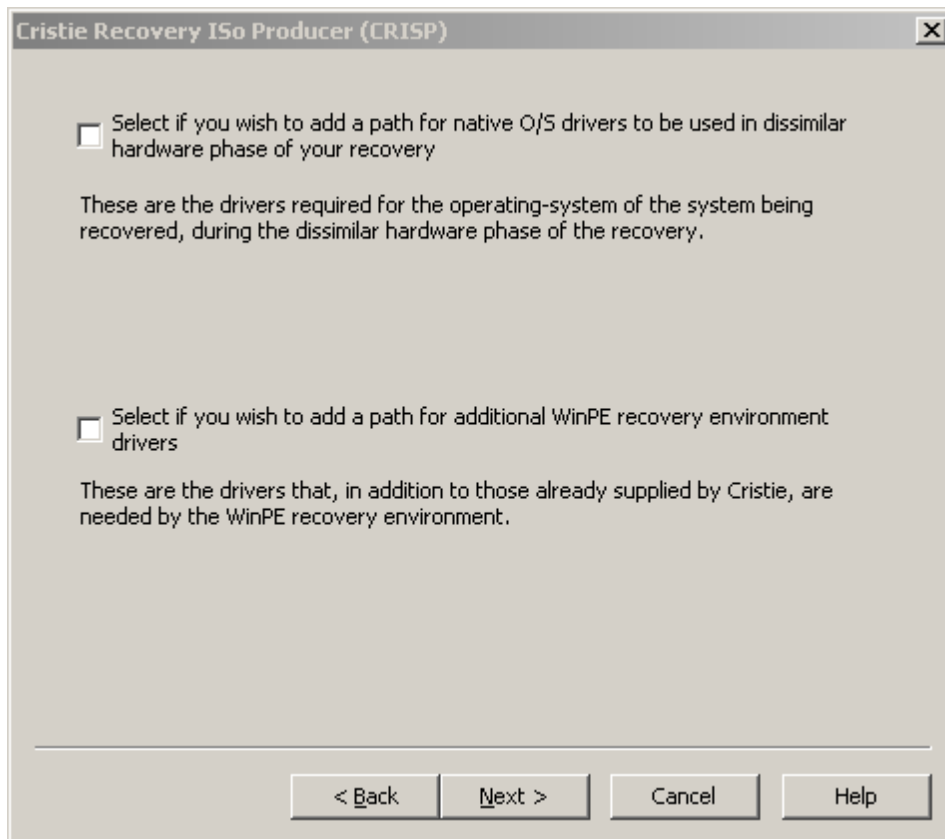
For example, the 64-bit NetWorker client can be installed on the technician machine (if it is a 64-bit

host OS) and the binaries pointed to here **C:\Program Files\Legato\Insr\bin**. However, it may be more convenient to extract the required version of the Networker client download to a network share, as in the example below. The CRISP is designed to locate the binaries within the extracted files.

Select **Browse** and navigate to the location of the binaries.

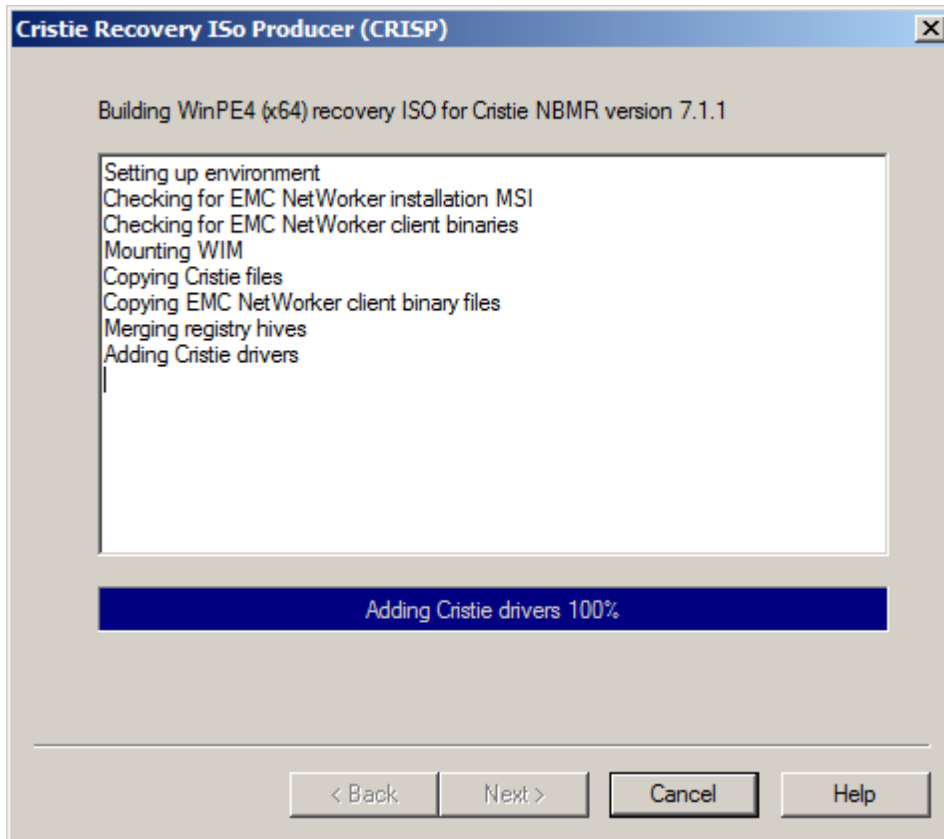


Click **OK** to continue. The next dialogue allows User specified drivers to be added to the ISO.

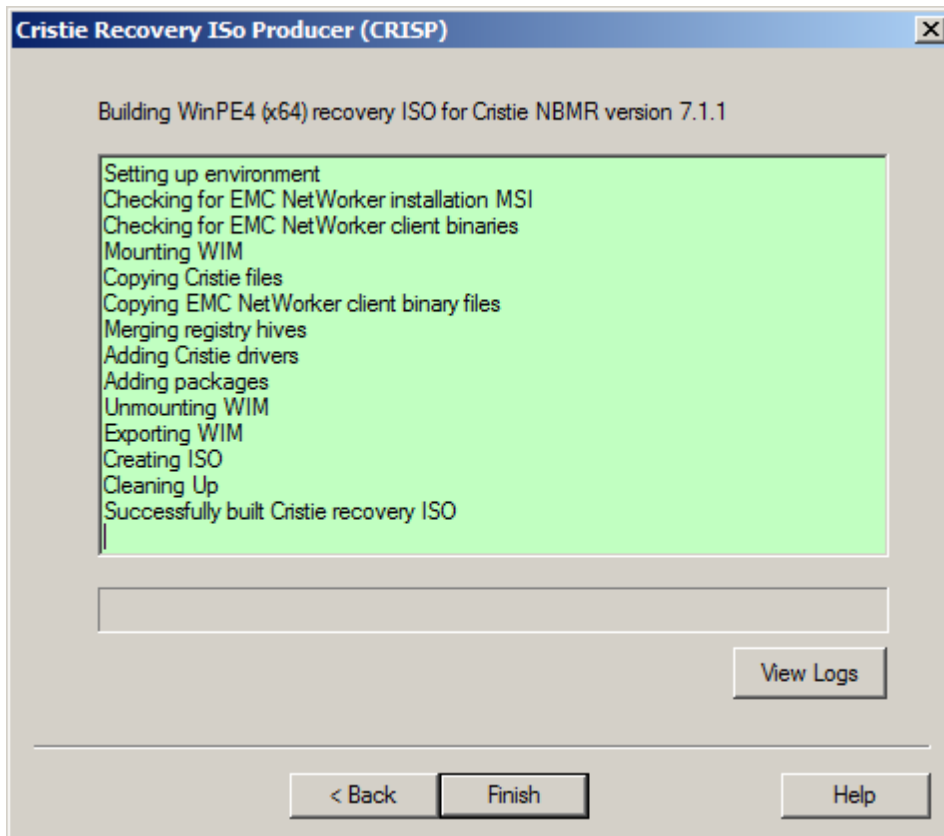


Normally you will not need to add further drivers to the build. However, if this is required, refer to the next section where adding drivers is discussed in more detail.





Click [Next>](#) to start the ISO creation process. Each step of the ISO creation process is recorded on-screen and in the logs. Any errors detected during the creation process will also be recorded on-screen and in the logs.



Click on **Cancel** to abort the creation process. These buttons are active throughout the creation process. When the creation process is complete the following dialog is displayed.



Click [View Logs](#) to examine a record of the ISO generation process. Click [Back](#) to repeat the ISO generation process from the beginning. Finally click [Finish](#) to exit the program. The output folder contains the ISO and the log file. For example:

Name ^	Date modified	Type	Size
 adksetup	14/10/2013 10:22	Application	1,191 KB
 CRISP_trace	14/10/2013 16:22	Text Document	51 KB
 CRO_trace	14/10/2013 16:14	Text Document	54 KB
 NBMR.7.1.1_for_NetWorker8.1.0-pe4.iso	14/10/2013 16:17	ISO File	356,166 KB

If required, you may now burn the output ISO file to physical media (CD or DVD). Examine the **Crisp_Trace.log** in the specified logfile folder file for errors. The physical media or ISO file can then be used to perform CloneManager operations (in this example).

Note: If the ISO creation process fails, please keep the CRISP_trace and CRO_trace logfiles ready for emailing to Cristie Software Ltd. Support.

Note: Click [Help](#) at any stage to display the full CRISP User Guide.

5 Add drivers

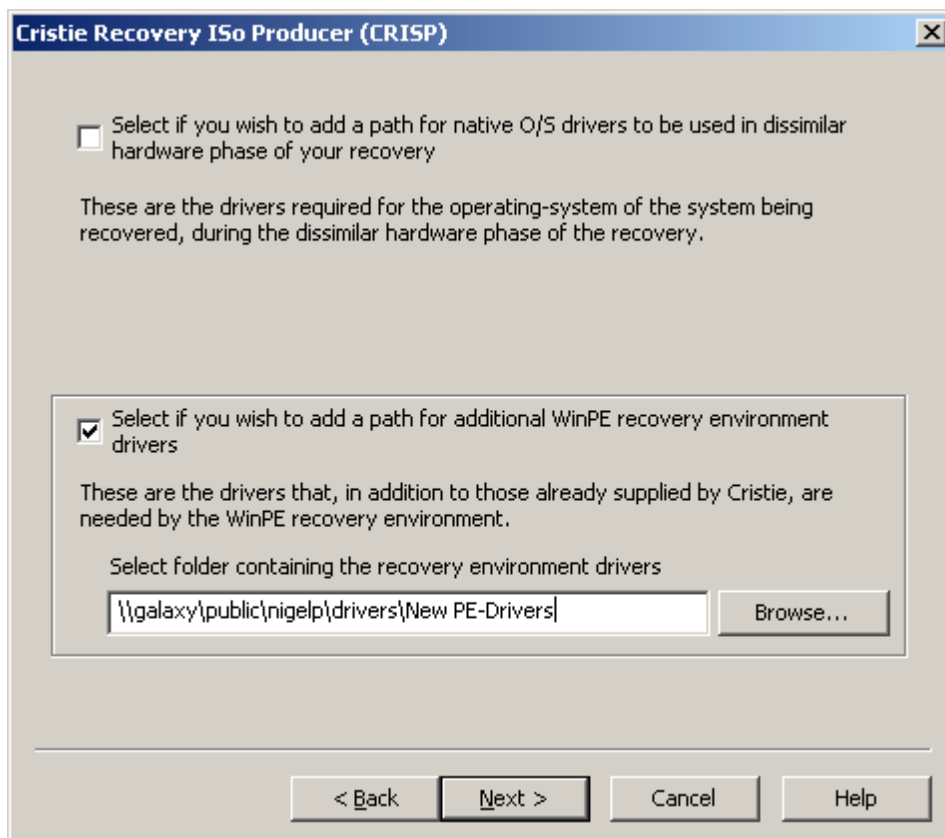
This release of CRISP allows customers to integrate their own drivers into the WinPE2 or WinPE4 ISO image.

It is important to realise there are 2 types of driver used in the WinPE2 or WinPE4 environment. The first type are the drivers used by WinPE itself to boot and recognise the underlying mass storage and network devices in the host machine or VM. The second type are drivers used by Cristie's dissimilar hardware support.

WinPE2 or WinPE4 Drivers

These consist of mass storage and network (NIC) drivers in 32 or 64-bit format. The WinPE 2 environment used by Cristie is based upon Windows Vista/2008 x86, so any drivers added to the ISO must support this 32-bit OS environment only. Similarly, the WinPE 4 environment is based upon Windows 8/2012 x64 and therefore any added drivers must support this 64-bit OS environment.

To add new WinPE2 or WinPE4 drivers click the lower tick-box during the dialogue sequence:



Then enter the *root* path to your driver folders. CRISP will search for all driver files found from this root folder and will add them to the ISO during the next step.

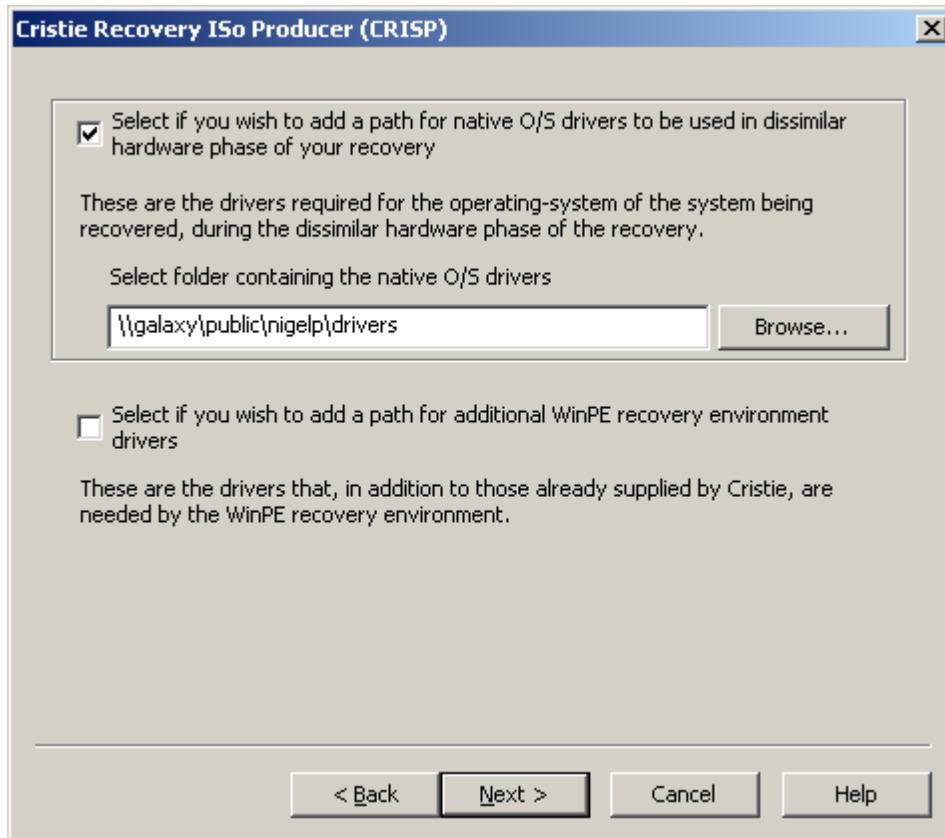
Note: As discussed please ensure all the drivers used are compatible with either Windows 2003 32-bit (WinPE 2) or Windows 8/2012 (WinPE 4). No checking is done to ensure this.

Dissimilar Hardware Drivers

These also consist of mass storage and network (NIC) drivers. They are injected by the Dissimilar Hardware (DHW) tool into the recovered system. This allows a machine recovered or cloned to a system with different underlying hardware to recognise the new hardware at boot time. Without these

drivers the machine is likely to blue screen at boot with a 0x7B error (unrecognised boot device). Note the drivers added by CRISP must reflect the platform type of the OS being recovered - i.e. OS type (e.g. Windows 2003, 2008 etc.) and architecture (32 or 64-bit).

To add new DHW drivers click the upper tick-box during the dialogue sequence:



Then enter the *root* path to your driver folders. CRISP will search for all driver files found from this root folder and will add them to the ISO during the next step.

Note: Please ensure all the drivers used are compatible with the version of Windows being recovered (particularly the architecture; 32 or 64-bit). No checking is done to ensure this. So for example you can add both 32 and 64-bit DHW drivers to either WinPE2 or WinPE4 ISO builds. You can also add multiple drivers.

Note: During the DHW sequence of a restore or clone sequence you will need to manually add the root folder of the injected drivers 'X:\UserSuppliedDrivers' when requested.

Of course, it is possible to add both WinPE2 or WinPE4 and DHW drivers at the same time if you wish. Simply select both options in this case.

6 Cristie Support

If you have any queries or problems concerning your Cristie Recovery ISO Producer 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 enquiry:

- CRISP Version Number
- Installed OS type and version
- Any error message information (if appropriate)
- Description of when the error occurs
- Log Files

Contact Numbers - Cristie Software (UK) Limited

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Toll-Free US Number 1-866-TEC-CBMR (1-866-832-2267)

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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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