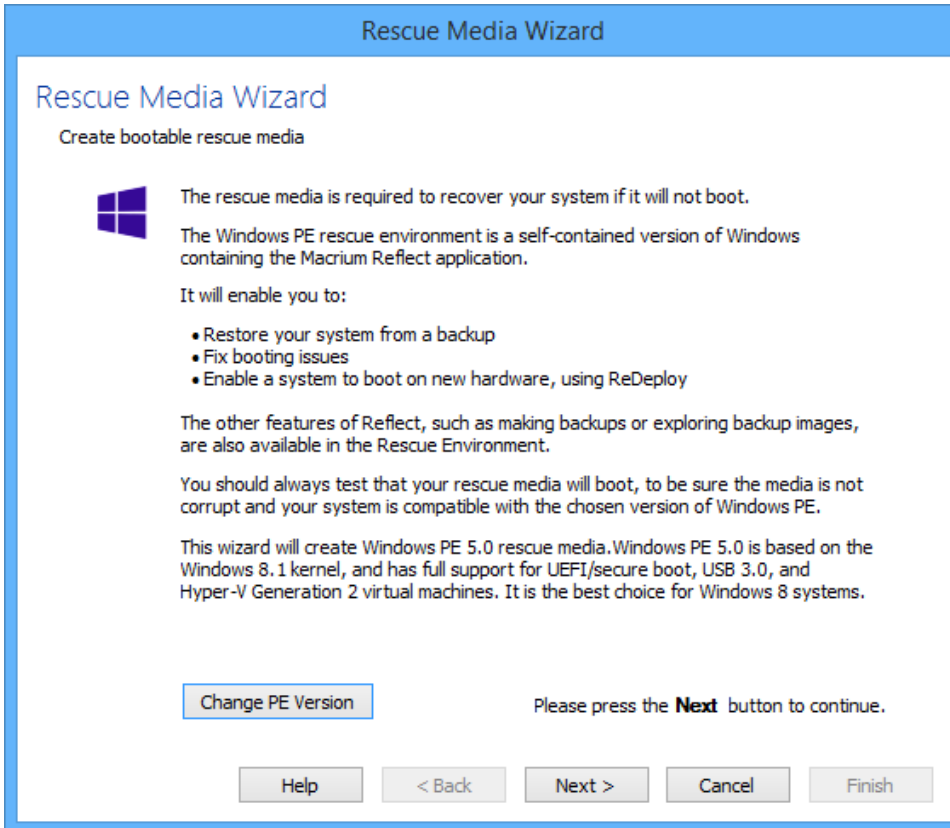


Creating rescue media

- [The Rescue Media Wizard](#)
- [Once I have created rescue media, will it work on all my computers?](#)
- [If my rescue media refuses to boot, what should I do?](#)

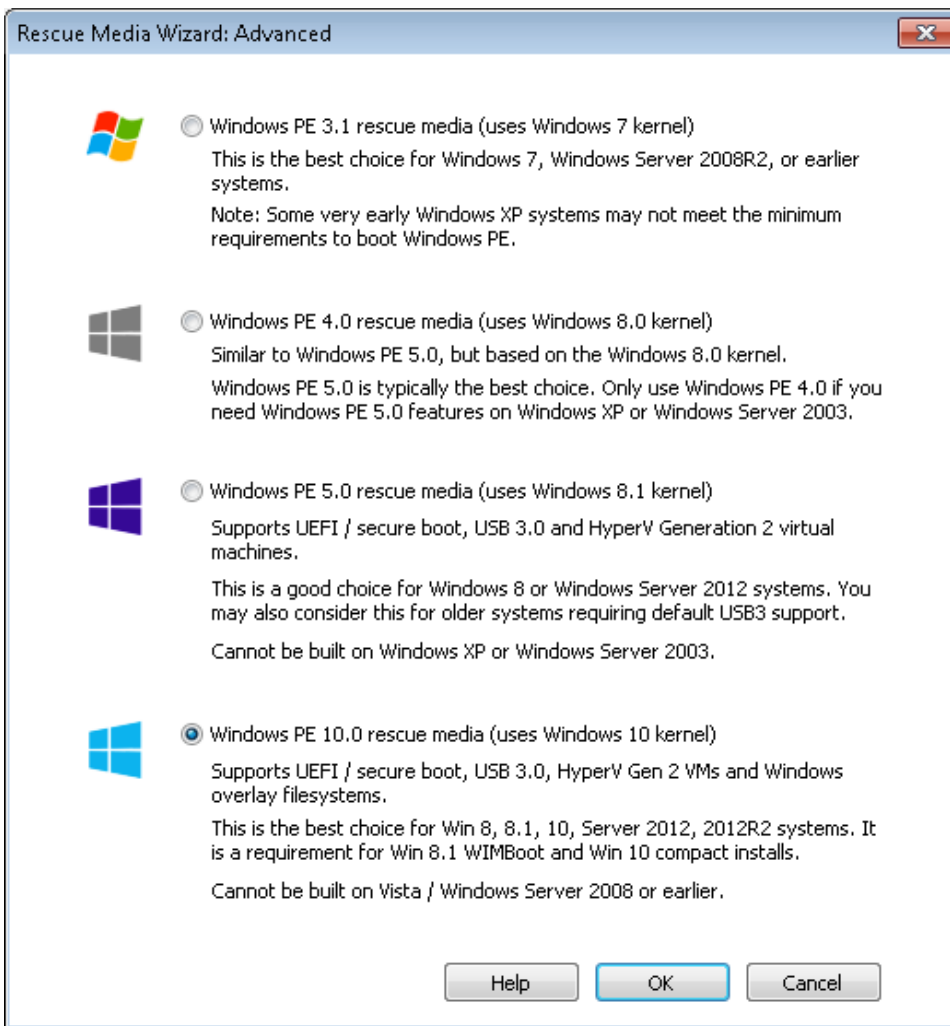
The Rescue Media Wizard

1. Insert your blank CD, DVD or USB stick.
2. From the Backup tab of the task pane, below **Other Tasks**, click **Create bootable Rescue media**.



Accept the default Windows PE environment selected by Macrium Reflect or **Click 'Change PE Version'** to use a different version of Windows PE for your rescue media:

You can change the version of Windows PE by choosing from the options in this dialog



What version of Windows PE should I choose?

You should choose a version of Windows PE that can access your System drive and also your backup location. The default option selects the Windows PE version that is the best match for your Windows operating system. This enables the rescue media wizard to automatically copy any required drivers for Network, USB or SATA controllers. However, versions of Windows PE that are more recent than your Windows OS may already contain compatible drivers and also offer additional support for USB 3.0.

PE version	Description
Windows PE 3.1	Based on Windows 7. This is the best option for Windows XP, Vista, Windows 7, Server 2003, Server 2008, 2008R2 operating systems. USB 3.0 support is not included. Note: Some very early Windows XP systems may not meet the minimum requirements to boot Windows PE.
Windows PE 4.0	Based on Windows 8. Similar to Windows PE 5.0, but based on the Windows 8.0 kernel. This is a legacy option that is provided if you have used previous versions of Macrium Reflect before PE 5.0 was included. Includes support for USB 3.0. We recommend that you use PE 5.0/10 unless you require PE 5.0 features on Windows XP or Server 2003.
Windows PE 5.0	Based on Windows 8.1. Supports UEFI / secure boot, USB 3.0 and HyperV Generation 2 virtual machines. This is a good choice for Windows 8/8.1 or Windows Server 2012 systems. You may also consider this for older systems requiring default USB3 support. Note: The Windows PE 5.0 download option is not available if you are running Windows XP or Server 2003.

Windows PE 10.0	<p>Based on Windows 10. Supports UEFI / secure boot, USB 3.0, HyperV Gen 2 VMs and Windows overlay file systems.</p> <p>This is the best choice for Win 8, 8.1, 10, Server 2012, 2012R2 systems. Windows PE 10 is a requirement if your system uses Windows 8.1 WIMBoot technology or if your system is a Windows 10 'Compact Install'. Both of these installation types are rare but may be used on Windows Tablet PCs with limited disk space.</p> <p>Note: The Windows PE 10.0 download option is not available if you are running Windows XP, Vista or Server 2003/2008</p>
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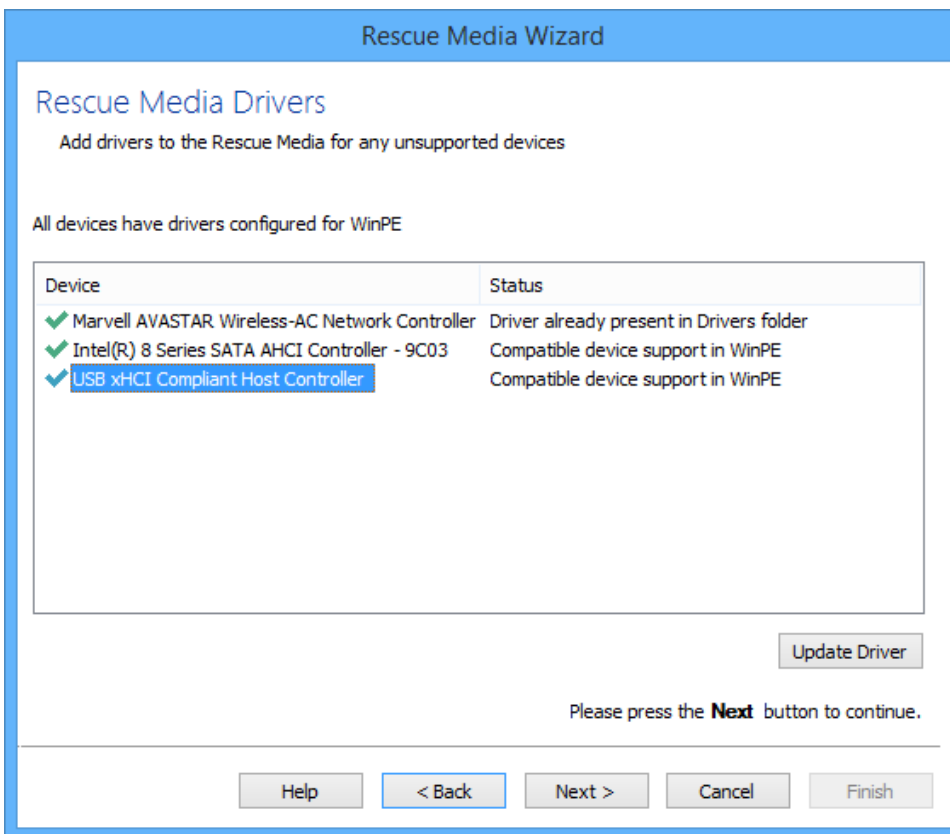
3. Click **Next** and add device drivers if required.

This dialog enables you to add drivers for any Network and Disk controllers that are unsupported in Windows PE.

A device driver is a collection of files (also referred to as a driver package) and generally comprises of:



- The driver software, these files have a .SYS extension.
- The driver information, or INF, file which contains the installation instructions for the drivers, these files have a .INF extension.
- An optional security catalog that signs those drivers for operating systems that require signed drivers, commonly used on x64 operating systems, these files have a .CAT extension.
- One or more optional supporting software library files (Dynamic Link Library) that contain further code to support the driver software, these files have a .DLL extension.

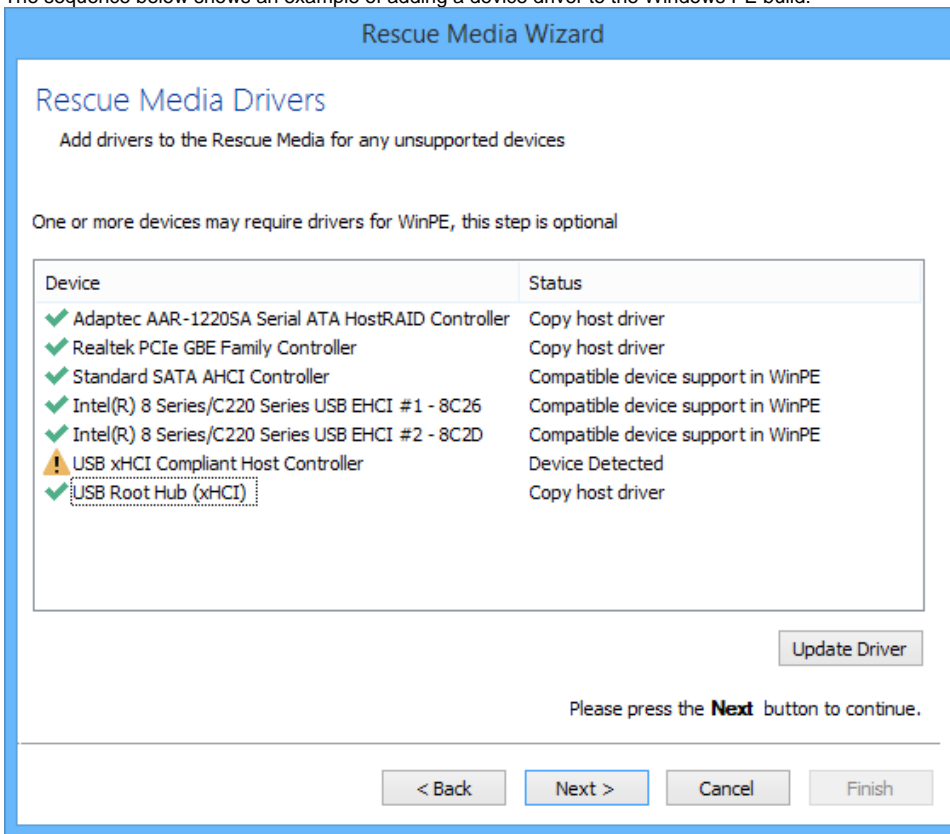


Windows PE (WinPE) is packaged with a large collection of drivers but there are many devices that are not part of the WinPE driver package. If your device is not compatible then you must add its driver so WinPE recognizes it and communicates with your device.

The wizard checks whether your device requires drivers adding to WinPE. It builds a list of devices in your computer that are either Hard Drive /RAID controllers, Network Interface Cards, USB controllers or USB hubs. For each of these devices it checks if:

- The device is supported by default in WinPE
- There is a compatible driver in the host operating system
- There is a compatible driver already present in the collection of drivers on previously created rescue media

The sequence below shows an example of adding a device driver to the Windows PE build:



In the above example a driver is missing for a USB Controller. This is indicated by the ⚠ icon next to the device description.

Note: You do not need to install missing drivers for devices that you do not intend using from WinPE.

Supported devices have a status of either:

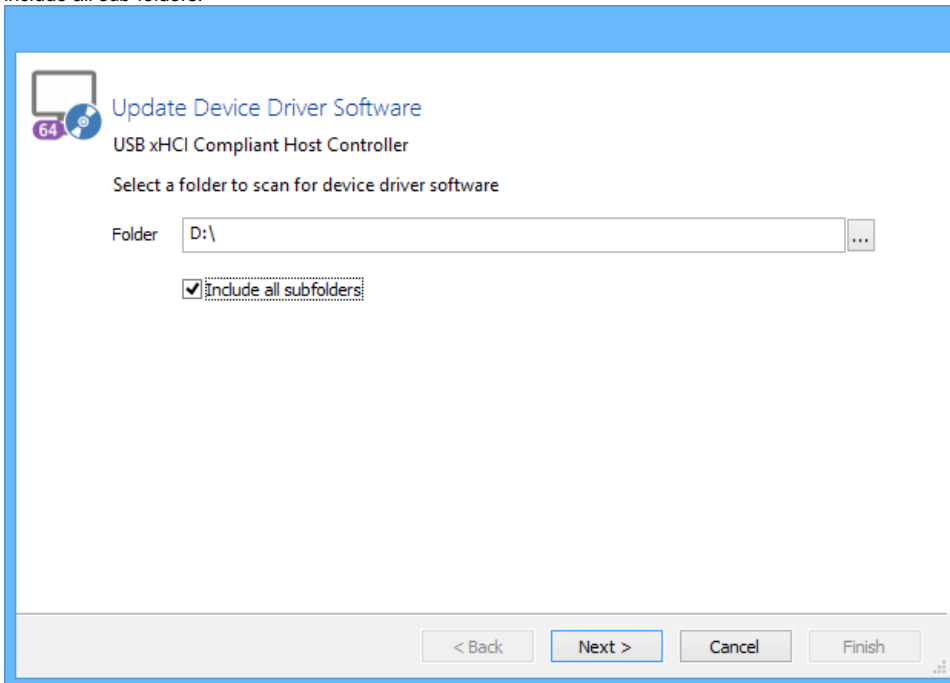
- Device Support in WinPE
- Compatible Device Support in WinPE
- Copy Host Driver
- Driver already present in Drivers folder

Even if a device is supported you can choose to update it and use a different driver, you do not need to use the driver provided by WinPE. Being able to update drivers in this way is useful if you experiencing issues with performing backups or restores in WinPE, for example, if restoring runs slowly from a USB device.

You can find driver install packages in several places. Most manufacturers create a driver folder on the hard drive of a new PC, often named after the manufacturer. If this is not present, you can download drivers from the device or PC vendor's website. For older PCs, manufacturers of devices and motherboards included driver CDs in the packaging, however, these may not be the latest.

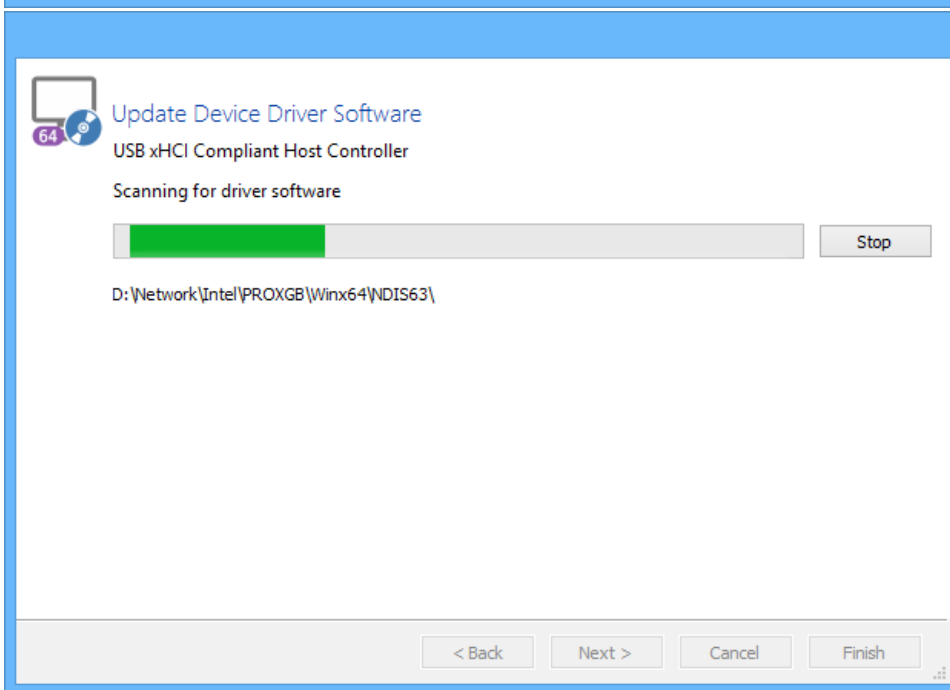
Click the '**Update Driver**' button to search for a compatible driver.

This presents a wizard. This wizard is straightforward to use, the first page prompts you for a folder to scan for drivers and whether you want to include all sub-folders.



The screenshot shows the first step of the 'Update Device Driver Software' wizard. The title bar is blue. The main area has a white background. At the top left is a 64-bit icon. The title 'Update Device Driver Software' is in blue. Below it, 'USB xHCI Compliant Host Controller' is in black. The instruction 'Select a folder to scan for device driver software' is in black. A text box labeled 'Folder' contains 'D:\'. To the right of the text box is a button with three dots. Below the text box is a checkbox labeled 'Include all subfolders' which is checked. At the bottom are four buttons: '< Back', 'Next >', 'Cancel', and 'Finish'. The 'Next >' button is highlighted with a blue border.

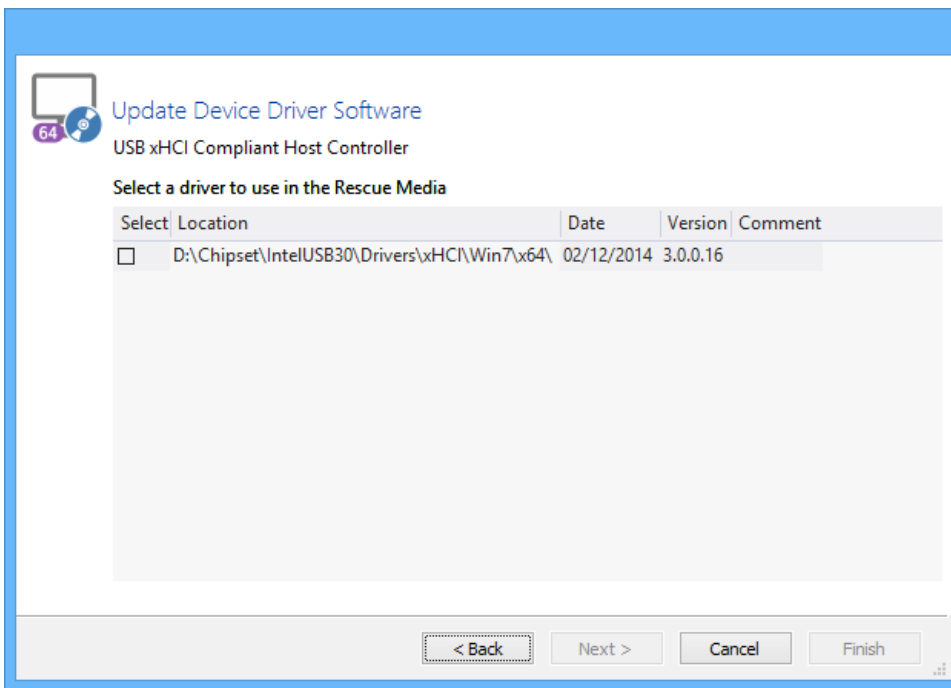
Update Device Driver Software
USB xHCI Compliant Host Controller
Select a folder to scan for device driver software
Folder D:\
☒ Include all subfolders
< Back Next > Cancel Finish



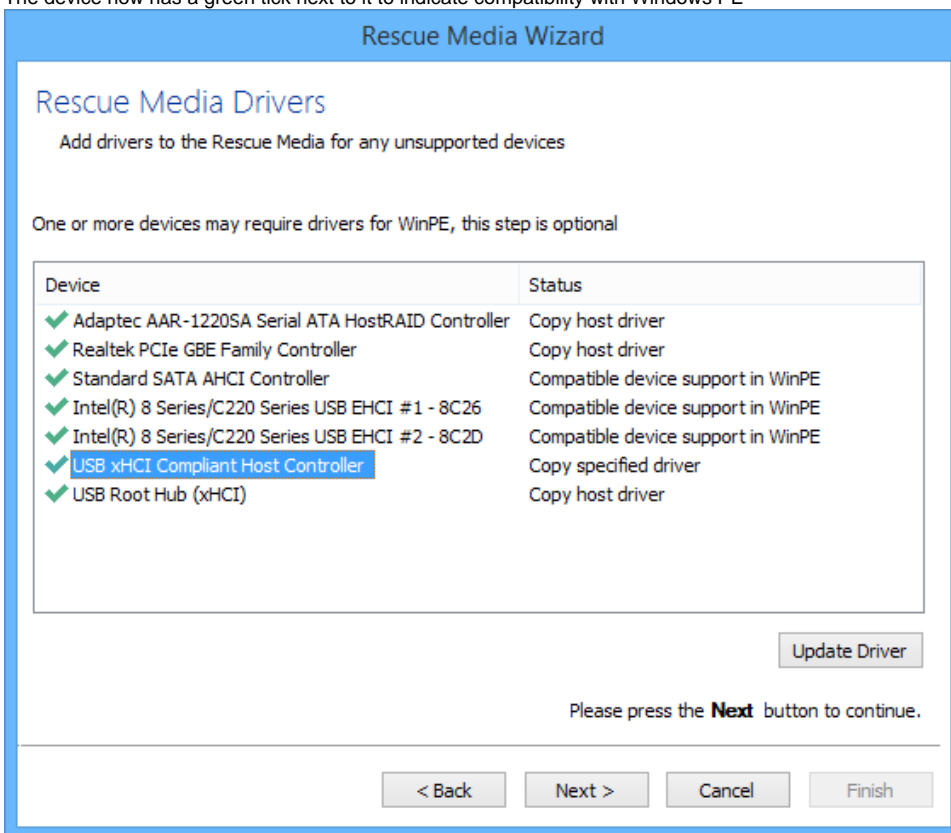
The screenshot shows the second step of the 'Update Device Driver Software' wizard. The title bar is blue. The main area has a white background. At the top left is a 64-bit icon. The title 'Update Device Driver Software' is in blue. Below it, 'USB xHCI Compliant Host Controller' is in black. The instruction 'Scanning for driver software' is in black. Below the instruction is a progress bar that is partially filled with green. To the right of the progress bar is a 'Stop' button. Below the progress bar is the text 'D:\Network\Intel\PROXGB\Winx64\NDIS63\'. At the bottom are four buttons: '< Back', 'Next >', 'Cancel', and 'Finish'. The 'Next >' button is highlighted with a blue border.

Update Device Driver Software
USB xHCI Compliant Host Controller
Scanning for driver software
D:\Network\Intel\PROXGB\Winx64\NDIS63\
Stop
< Back Next > Cancel Finish

A compatible driver is found. Select it and **click Next**



The device now has a green tick next to it to indicate compatibility with Windows PE



4. Click **Next**. to prepare and build the Windows PE image

Note: If you have already built the Windows PE image for this rescue media then the wizard will skip this step and advance to the [Burn page](#)


Rescue Media Wizard

Prepare Windows PE Image

Select your architecture and WIM Type, then press next

Use the Windows Assessment and Deployment Kit to prepare the Reflect PE image

Build the PE Environment

 PE Architecture: 64 Bit

☒ Include optional components - required for iSCSI and BitLocker support

☐ Automatically unlock BitLocker encrypted drives

☒ Default base WIM C:\ProgramData\Macrium\Reflect\Windows Kits\10\A...winpe.wim (Recommended)

☐ Custom base WIM ...

For advanced users, a custom WIM enables you to prepare your own Windows PE environment.

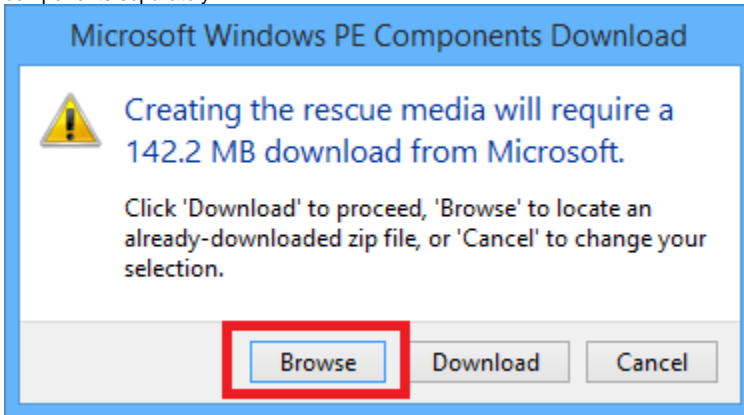
Please press the **Next** button to continue.

Help < Back Next > Cancel Finish

Option	Description
PE Architecture	Either 32 bit or 64 Bit. The default option is selected to match the architecture of the host Windows OS.
Include optional components	Select this option to add BitLocker Encryption and iSCSI support to the rescue media. Please note that adding these components may several minutes to the creation process. See Adding iSCSI support to Windows PE for more information on using iSCSI in Windows PE
Automatically unlock BitLocker encrypted drives	Select this option to automatically unlock all BitLocker encrypted drives when Windows PE starts. See Adding BitLocker support to Windows PE for more information on using Windows PE to access BitLocker encrypted drives.
Default base WIM	Use the standard Microsoft Windows PE base installation. Macrium Reflect executables will be added to this to crate the rescue media,
Custom Base WIM	Use your own customized WIM for the rescue media. This is an advanced topic not covered in this help.

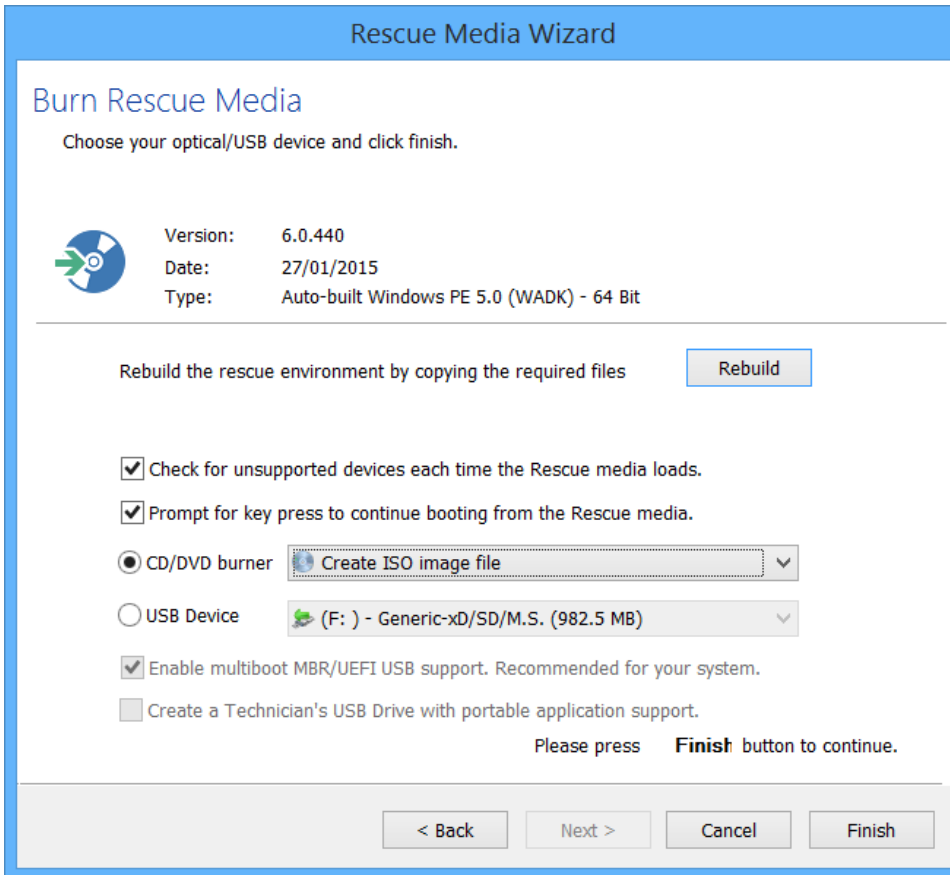
Click **Next** to begin the WIM build process. If necessary, files will **automatically be downloaded from Microsoft** to complete the build process.

You can also select the PE Components .zip file by clicking the '**Browse**' button in the download dialog. The PE .zip file can be downloaded by using the Reflect download agent 'ReflectDL.exe'.
See [Installing and updating Macrium Reflect offline](#) for more information on downloading the PE components separately.



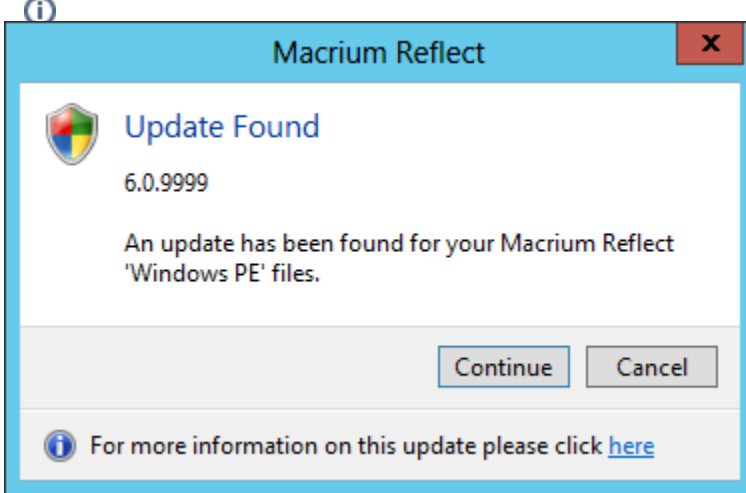
A detailed log of the build process is saved to: 'C:\ProgramData\Macrium\waik\waiklog.txt'

5. Once complete you can choose where to burn the media



Option	Description
Rebuild	Click this button to advance to the ' Prepare Windows PE image ' wizard page to rebuild the Windows Image (WIM).

Note: If updates are available for your rescue media then you will receive a message box prompting you to rebuild.



Check for unsupported devices	Select this option and Windows PE will prompt to add drivers for unsupported Network Interface and Disk controllers when started.
Prompt for key press	Select this option to enable the ' Press any key to boot from CD or DVD... ' prompt when your PC starts. This is useful if you want to bypass Windows PE and boot into your host Windows OS.
CD/DVD burner	Select this option to choose a CD/DVD device that you are using to create your rescue media.

To save the rescue media to an .ISO image file for burning with any burning software. Click the drop-down list of burners and select 'Create an ISO image file':

☐ Check for unsupported devices each time the Rescue media loads.

☒ Prompt for key press to continue booting from the Rescue media.

☒ CD/DVD burner Create ISO image file

☐ USB Device

USB Device	Select this option to save your rescue media to a bootable USB stick or external hard drive.
Enable multiboot MBR/UEFI	Only applies if you are saving your rescue media to a USB device. This option enables the USB device to boot both legacy MBR and GPT/UEFI for modern motherboards. Please consult your motherboard user manual for information on choosing these boot options at PC startup. Note: CD/DVD media is always created multi-boot MBR/UEFI
Technicians USB	Applies to Macrium Reflect Technicians license keys only. See Technicians portable application support for more information

6. Click **Finish**.to create your rescue media

To complete the process, boot from your Rescue media to ensure it works correctly.

After Windows PE loads, Macrium Reflect runs. The Windows PE user interface for Macrium Reflect is identical to that of the main application and offers the same core functions.

If you are using USB media, you can make the Macrium Rescue Environment compatible with multiple computers:

1. Use the Rescue media wizard to create a bootable USB rescue device on one computer.
2. Repeat the process with each other computer in turn using the same USB device.

Once I have created rescue media, will it work on all my computers?

If the hardware for all your computers is supported by the default Windows PE driver set, then the answer is a simple yes. You can confirm this on the Rescue Media Wizard drivers page. If all the drivers listed have the status **Device support in WinPE** or **Compatible device support in WinPE** for each of your machines then you only need one rescue media.

If any of your machines require extra drivers, then you have three options:

- Create one piece of rescue media for each machine.
- Invoke the **Create Rescue Media Wizard** on each of your machines.
 1. Locate all the necessary drivers and progress to the **Rescue Media Burn** page before canceling.
 2. Copy the contents of folder 'C:\boot\macrium\drivers' from each machine to one machine.
 3. Burn a Rescue CD on that machine.
- Using the Rescue media wizard, create a bootable USB stick, inserting the same device on each machine in turn.

Note: Options 2 and 3 only work if all your machines are configured to use the same version of PE with the same architecture (i.e. they are all 32-bit or all 64-bit).

If my rescue media refuses to boot, what should I do?

The causes of non-booting rescue CD fall into one of two broad categories, either it is an issue with your CD or with your PC.

Verify your CD

Try as many of the following steps as possible:

1. **Try booting the CD on a 2nd PC.**
If it boots, this indicates a configuration or hardware issue with your PC. Please see Verifying your PC later in this article.
2. **Try a different brand of CD media.**
We have found that CD recordable media is of variable quality. Often, using different media will resolve your issue.
3. **Try creating the rescue media on a 2nd PC.**
If Reflect is installed on the 2nd PC, please try creating rescue media there.
Alternatively, following the same CD creation steps as before, select *Create ISO image file* on the last page of the wizard. Transfer this to the 2nd PC and use a third party utility such as [ImgBurn](#) to burn the CD.
In each case, try booting the 1st PC with the new CD.

Note: Booting from DVD and CD can take a while due to the time to load the large boot image, CD in particular can take up to 5 minutes. Unfortunately, on some hardware PE 4 does not show a progress bar during the loading period. Therefore, with a PE4 CD, please give the media chance to finish loading before concluding that it is not bootable.

Verify your PC.

To boot rescue media from CD, your BIOS or UEFI firmware must be correctly configured and have hardware suitable for booting. Please try as many of the following steps as possible to diagnose this.

Note that there is no standard for motherboard firmware configuration, so our instructions are necessarily non-specific. Please consult your motherboard manual for details relevant to your PC.

1. **Try booting a Microsoft Windows install CD.**
If the boot fails, this is indicative the your hardware is incorrectly configured. Please continue through this list for further diagnosis.
2. **Invoke your BIOS/UEFI boot menu.**

Boot menus vary in appearance and are invoked in different ways. You may need to refer to your motherboard manual to find the key combination to access this. Sometimes, this is displayed on the screen and is usually a key such as DEL, F8, F11, F12, F2 etc.

Please note that on UEFI/BIOS dual systems, you may be given the option to boot UEFI or not for each device. Please boot the type matching your installed OS. There are a few possible outcomes:

- a. You are able to boot your rescue media in this manner, but not without performing this step. In this case, please see the next step in this section.
- b. You are unable to boot your rescue media having seen the hardware in the menu. In this case, you may wish to try the *Verify CD* steps above. If these do not rectify the issue, your hardware may not support booting Windows PE (you can also try this with the Windows

Install CD to verify). In this case, please try an alternative rescue media format such as USB, or attach a different CD/DVD drive to the system.

- c. You are unable to see the hardware in your list. In this case your firmware has not recognised the device and it is not supported for booting.

3. Change the motherboard boot order.

Please enter your BIOS or UEFI firmware setup utility and navigate to the "boot order" or "boot menu" equivalent screen. Please ensure CD/DVD booting has a higher priority than your hard disk, which may be labelled ATAPI, SATA, SCSI or various other labels depending on your system. Please press F10, or your equivalent for "save and exit" to reboot the system with the new priority. Please note that some UEFI firmware may not have boot priorities for removable media, or booting from removable media may be a configurable option that you must enable.

4. Create a USB rescue stick.

Follows the same steps as used when creating a CD, selecting instead "USB media" on the last page. If this works and you have verified your CD, it is indicative that your hardware cannot boot a CD. However, a usb stick, is just as functional as a CD, so we recommend you use this as your rescue device.

5. Confirm that the CPU architecture of the PE media is compatible with your system

For BIOS/MBR systems, in general, a PC with boot either a 32 and 64bit PE.

For EFI systems, the PE architecture must match the system type. A 32bit EFI CD will only boot on 32bit EFI systems and visa versa. Apart from a few tablet devices, all EFI systems are 64bit only.

What to expect when booting rescue media.

1. The **PE 3.1** environment is based on (a cutdown version of) Windows 7 and so boots in a similar fashion.
2. The **PE 4.0** environment is based on Windows 8 and so boots in a similar fashion.
3. The **PE 5.1** environment is based on Windows 8 and so boots in a similar fashion.

You may notice a lag during boot on CD/DVD rescue media whilst the WIM is copied into memory. This can take some time, so please be patient. PE 4.0/5.1 media on UEFI systems may additionally display no progress bar during initial load, so please be patient if you have a blank screen.
