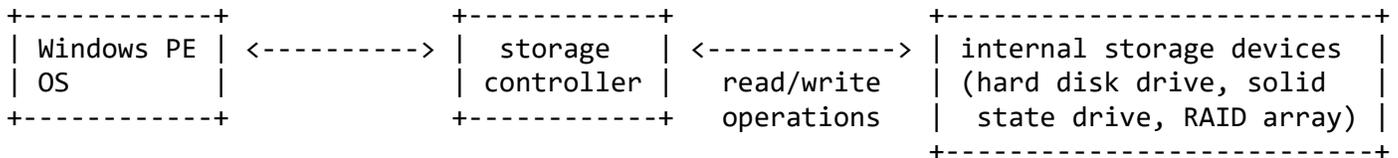


```
+-----+
| How to add device drivers for storage |
| controllers to this Windows PE media |
+-----+
```

Discussion

As time moves on, computer manufacturers use different storage controllers in their products. This means Windows PE might not recognize internal storage devices when attempting to do imaging tasks.

Block diagram



Windows PE communicates with the internal storage device via the storage controller. Therefore, the correct storage controller driver needs to be embedded in the Windows PE operating system. To determine if Windows PE sees the internal storage device, run the following test.

- [] Boot your computer into Windows PE
- [] Type DISKPART when the main menu appears
- [] At the DISKPART prompt, type "list disk"

If only one disk appears in the list, it indicates Windows PE does not have the appropriate driver for the storage controller. Typically, two disks are listed with the "list disk" command, as follows:

```
Disk 0
Disk 1
```

Disk 0 is the internal drive
Disk 1 is the USB flash drive (Windows PE operating system)

If only one disk is listed, it's the USB flash drive. Follow these steps if you wish to add device drivers for storage controllers to this Windows PE media. Consider this scenario. You purchased a new computer but Windows PE does not see the internal storage device. Previously, Windows PE worked fine on older computers.

Troubleshooting

- [] Ensure that "Secure Boot" is disabled in system setup (BIOS)
- [] Ensure that BitLocker drive encryption is turned off in Windows 10 or Windows 11
- [] Ensure that your computer uses UEFI boot mode - BIOS boot mode will not work

If Windows PE still does not see the internal drive, proceed as follows.

In this example, drivers are needed for a Dell OptiPlex Micro Form Factor 7020. Dell provides drivers on dell.com for many operating systems, including Windows PE.

dell.com/support is a good starting point. Search by Dell service tag (serial number) and by the type of drivers you need. For this example "WinPE Driver Pack" was entered

as the search string. You can also search for "Deploy WinPE 10.0 Driver Pack" since this is more specific.

Here is the URL where good drivers were found:

<https://www.dell.com/support/home/en-us/drivers/driversdetails?driverid=x0d0g>

Here is the cabinet file that needs to be downloaded:

WinPE10.0-Drivers-A26-X0D0G.CAB

Step-by-step

```
+-----+
| These steps are successful on Windows 10 Pro and Windows 11 Pro computers. |
| The "Home" versions of Windows were not tested.                         |
+-----+
```

[] Download the .CAB file and extract the contents to a temporary folder.
If Windows file explorer cannot extract the file, use WinRAR or 7-Zip.

[] Create this temporary folder: C:\CAB

[] Extract WinPE10.0-Drivers-A26-X0D0G.CAB to C:\CAB

[] This folder structure now exists:

```
C:\CAB\WinPE10.0-Drivers-A26-X0D0G\winpe\x64\storage
```

It contains 56 .inf files in 20 folders. The 56 drivers will be added to the Windows PE boot file in the next steps.

[] Create this temporary folder: C:\WIM

[] Open the \sources folder on the Windows PE USB flash drive

[] Copy the boot.wim file to folder C:\WIM
boot.wim is an archive file, similar to an ISO file. It needs to be mounted to view the contents, add 56 storage drivers, then saved and dismounted.

[] Create this temporary folder: C:\MOUNT

[] Open the command prompt (cmd.exe) as administrator, and change to the root of C:
cd\

[] Here is the mount command:
dism /Mount-Wim /WimFile:C:\WIM\boot.wim /Index:1 /MountDir:C:\MOUNT

C:\MOUNT is now populated with files from the boot.wim archive.

[] Here is the command to add the 56 storage driver files:

```
dism /Image:C:\MOUNT /Add-Driver /Driver:C:\CAB\WinPE10.0-Drivers-A26-X0D0G\winpe\x64\storage /Recurse
```

(due to page margins, the command continues on the second line)

[] This message should appear: "The operation completed successfully."

[] Here is the command to save boot.wim and dismount the C:\MOUNT folder:
dism /Unmount-Wim /MountDir:C:\MOUNT /Commit

[] This message should appear: "The operation completed successfully."

[] Copy the new boot.wim file to the \sources folder on the Windows PE USB flash drive.
You may wish to backup the old boot.wim in case it's needed in future.

[] The procedure is complete. Windows PE now contains the needed storage drivers.
You are now ready to proceed with imaging tasks on the new computer.

[] An optional, additional step might be of interest. WIM files tend to bloat after adding files. For example, adding files totaling 10 megabytes could increase the WIM file size by 12 megabytes or so. The solution is to export the WIM file into a new file which reduces the bloat - the exported file is smaller than the source file.

[] Create this temporary folder: C:\EXPORT

[] Here is the command to export a WIM file:
dism /Export-Image /SourceImageFile:C:\WIM\boot.wim /SourceIndex:1
/DestinationImageFile:C:\EXPORT\boot.wim

(due to page margins, the command continues on the second line)

A space exists between "/SourceIndex:1" and "/DestinationImageFile"

The size reduction might seem trivial, but if you add multiple driver packs it would be significant.

The scenario outlined was used to solve the problem with a Dell OptiPlex Micro 7020. Use these general steps in a similar manner for other computer brands. Adding drivers involves trial and error. It will likely require significant effort to find and install the correct storage drivers for your environment.