

Adding or Removing Drivers from a Windows Image

By Hannes Sehestedt
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```
*****
* Adding or Removing Drivers from a Windows Image *
*****
```

This procedure is only needed if you want to add or remove drivers to or from an image. You can do this with a plain Windows installation image or an already customized image that you have created previously.

NOTE: We begin this topic by showing how to add drivers that will be used by Windows in normal operation. For Boot Critical Drivers (drivers necessary for Windows Setup to function on your hardware) see the topic [Adding Boot Critical Drivers to the boot.wim](#).

```
*****
* Get Drivers *
*****
```

Use one or both methods below to first obtain drivers.

```
*****
* Get drivers: Download Method *
*****
```

Download required drivers from manufacturer's site.
Extract the drivers in order to be able to access the .inf file.

The following is an example of extracting the contents of a driver called **driver.cab**. Start by opening an elevated command prompt and changing to the directory where the driver is located, then run these commands:

```
md .\extracted
expand .\driver.cab -f:*.* .\extracted
```

These commands will create a subdirectory called **extracted** and will extract the driver to that folder. "**f:**" is **NOT** a drive letter - don't change it.

```
*****
* Get drivers: Export Method (3 ways to export) *
*****
```

Create a new folder for exported drivers, in this example I'll use **C:\Drivers**. Follow any one of the options below. They all do the same thing.

1) Using DISM: To export all hardware drivers from an existing Windows installation, use the following command in elevated command prompt or PowerShell, replacing the path **C:\Drivers** with your actual path:

```
DISM /Online /Export-Driver /Destination:C:\Drivers
```

2) Using PNPUTIL: Run from an elevated command prompt or PowerShell:

```
pnputil /export-driver * C:\Drivers
```

3) Using PowerShell: This method provides more detail on the extracted drivers than just the cryptic directory names provided by the DISM or PNPUTIL methods.

Run these commands in the elevated PowerShell:

```
$Drivers = Export-WindowsDriver -Online -Destination C:\Drivers  
$Drivers | Select-Object ClassName, ProviderName, Date, Version | Sort-Object  
ClassName
```

You can use any variable in place of \$Drivers in the above command and you can sort however you want.

```
*****  
* End of Get Drivers Sub-Section *  
*****
```

```
*****  
* Mount Offline Image *  
*****
```

Create a folder to which you will extract your Windows ISO image, for example, **C:\ISO_Files**. If you already have this folder, you can use those files. Otherwise, extract the files from your ISO image to that folder now.

Create a folder to mount the offline image. For example, **C:\Mount**.

Open an elevated command prompt. Enter the following command to check what editions are included in the image:

```
DISM /Get-WimInfo /WimFile:C:\ISO_Files\Sources\install.wim
```

```
*****  
* Mounting an Image Located on HD, Thumb Drive, Flash Media *  
*****
```

Mount the image of your preferred Windows edition using its index number, index 6 in this example:

```
DISM /Mount-Image /ImageFile:C:\ISO_Files\Sources\install.wim /Index:6  
/MountDir:C:\Mount
```

Skip to [Adding or Removing Drivers](#) below.

```
*****
* Mounting an Image Located on Virtual HD (VHD / VHDX) *
*****
```

When mounting a VHD file, the index number is always 1. Set **/ImageFile** as path to virtual hard disk file, for instance mounting a VHDX file named **W11PRO.vhdx** which is stored in folder **F:\VHD_Files**, you would use the following mount command:

```
DISM /Mount-Image /ImageFile:F:\VHD_Files\W11PRO.vhdx /Index:1
/MountDir:C:\Mount
```

This will take some time. Please note that the drive where the Mount folder is located needs some free space. I do not recommend mounting a WIM image to a folder on a drive with less than 15 GB free space. If your image is customized, it may require even more space.

Mounting a VHD / VHDX file requires at least as much free space on the drive where the Mount folder is located as the size of the virtual hard disk. If you mount a dynamically expanding 64 GB virtual hard disk to be serviced, you need at least 70 GB free space.

Skip to [Adding or Removing Drivers](#) below.

```
*****
* Optional: Checking for Drivers Already Present *
*****
```

Optional: You can check which drivers are already present in an offline image with the following command:

```
DISM /Image:C:\Mount /Get-Drivers
```

```
*****
* Adding or Removing Drivers *
*****
```

```
*****
* Adding Individually Downloaded Drivers *
*****
```

If you downloaded individual drivers, you could add them to an offline mounted image with the following command:

For signed drivers (this is the normal case), use this command:

```
DISM /Image:C:\Mount /Add-Driver /Driver:C:\Drivers\DriverName.inf
```

For unsigned drivers, use this command:

```
DISM /Image:C:\Mount /Add-Driver /Driver:C:\Drivers\DriverName.inf
/ForceUnsigned
```

Replace the mounted folder path **C:\Mount** in the above command with the actual path to your mount folder. Replace the driver path and name **C:\Drivers\DriverName.inf** with the actual path to the downloaded driver.

```
*****
* Adding Multiple Drivers by Recursing a Folder *
*****
```

If you have a folder that contains multiple drivers in subfolders, such as when exported from an existing installation as described earlier, you can add all drivers with one simple command, replacing the mount folder and drivers folder paths with your actual paths:

```
DISM /Image:C:\Mount /Add-Driver /Driver:C:\Drivers /Recurse
```

The **/Recurse** switch will cause the folder and all subfolders to be processed, adding all drivers found.

```
*****
* Removing Drivers *
*****
```

If you want to remove a driver from offline image, use the following command:

```
DISM /Image:C:\Mount /Remove-Driver /Driver:C:\Drivers\DriverName.inf
```

With **/Add-Driver** and **/Remove-Driver** you can add or remove multiple drivers:

```
DISM /Image:C:\Mount /Add-Driver /Driver:C:\Drivers\DriverName.inf
/Driver:C:\Drivers\Driver2Name.inf
```

```
*****
* Unmount Offline Image *
*****
```

You can now save changes and unmount an offline image with following command:

```
DISM /Unmount-Image /MountDir:C:\Mount /Commit
```

The **/Commit** switch is the important one, it commits (saves) all changes to the image.

Follow the section in [Methods to Create Bootable Images, DVD, Drives](#) to create media.

```
*****
* End of Procedure for Adding and Removing Drivers *
*****
```

```
*****
* Adding Boot Critical Drivers to the boot.wim *
*****
```

This section will show you how to add **Boot Critical Drivers** to the boot.wim. Boot Critical Drivers are drivers that are needed by Windows Setup that are not already included in setup. As an example, suppose that you have a new storage adapter for which drivers are not included in Windows. This requires a Boot Critical Driver in order for setup to see the storage devices attached to that controller.

Create three folders. In this example I will use the following:

```
C:\Mount          < Will contain the boot.wim to inject drivers into
C:\Mount\Drivers  < Will contain drivers to inject
C:\Mount\BootWIM  < A temporary directory to mount the boot.wim into
```

Copy the drivers you wish to inject into the **C:\Mount\Drivers** folder.
Copy the **boot.wim** file to the **C:\Mount** folder.

NOTE: The drivers need to be extracted so that the .inf files are accessible.

Open a CMD prompt as Administrator.

You can see information about the image file (including available indexes) with this command:

```
dism /get-wiminfo /wimfile:c:\Mount\boot.wim
```

Note the available indexes from the above command.

Repeat the below procedure twice. Once using an index of "1" and again for index "2".

Use the following DISM commands to mount the **Boot.wim**:

```
DISM /Mount-Wim /WimFile:C:\Mount\boot.wim /Index:1
/MountDir:C:\Mount\BootWIM
```

Use the following DISM command to add the driver(s):

```
DISM /Image:C:\Mount\BootWIM /Add-Driver /Driver:C:\Mount\Drivers
/recurse
```

Use the following DISM command to unmount the **Boot.wim**:

```
DISM /Unmount-Wim /MountDir:C:\Mount\BootWIM /Commit
```

```
*****
* End Procedure for Adding Boot Critical Drivers to the boot.wim *
*****
```