

WINDOWS 7 IMAGE CAPTURE DEMONSTRATION

Prepare the Reference System (Sysprep)

Before we capture our reference computer image, we should run Sysprep tool on it. **Sysprep.exe** prepares the Windows image for capture by cleaning up various user and computer specific settings, as well as log files. Let's say that in our case the reference installation is complete and ready to be imaged. Now we will use the **sysprep** command with the **/generalize** option to remove hardware-specific information from the Windows installation, and the **/oobe** option to configure the computer to boot to Windows Welcome upon the next restart. You can run the Sysprep tool from a command prompt by typing:

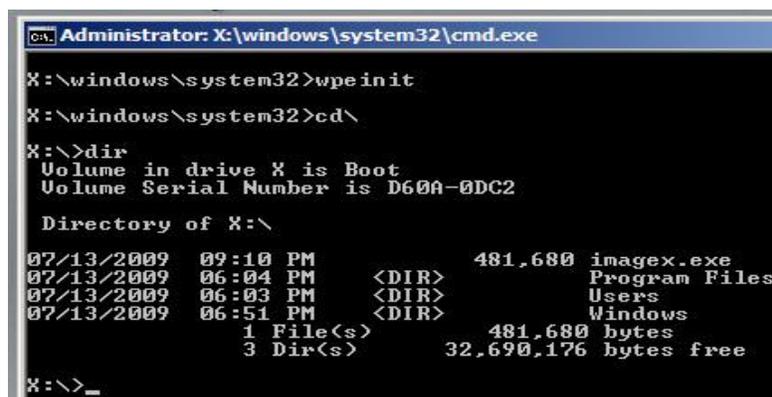
'c:\windows\system32\sysprep\sysprep.exe /oobe /generalize /shutdownIn'.

Alternatively, if we run the Sysprep GUI in audit mode, we can use these options:

- Enter System Out Of Box Experience (OOBE) (from the System Cleanup Action list)
- Check the Generalize option
- Shutdown (from the Shutdown Options list)
- Click OK

Run WinPE

Our referenced computer is now prepared and turned off. Now we need to boot that computer using WinPE CD which we created earlier. WinPE runs from the command line. It boots the system with a limited version of Windows 7, which provides disk access and limited networking support. It has two different architectures: a 32-bit version and a 64-bit version. The version must match the intended installation version of Windows 7. Once we enter WinPE we can go to the root folder so that we can run ImageX which we copied earlier.



```
Administrator: X:\windows\system32\cmd.exe
X:\windows\system32>wpe init
X:\windows\system32>cd \
X:\>dir
Volume in drive X is Boot
Volume Serial Number is D60A-0DC2

Directory of X:\

07/13/2009  09:10 PM          481,680  imagex.exe
07/13/2009  06:04 PM          <DIR>      Program Files
07/13/2009  06:03 PM          <DIR>      Users
07/13/2009  06:51 PM          <DIR>      Windows
               1 File(s)          481,680 bytes
               3 Dir(s)          32,690,176 bytes free
X:\>_
```

Image 185.1 - WinPE Root Folder

In WinPE we have access to our network. This is great because we can transfer images to the shared folder on our network. In our case we have a shared folder named 'shared-images' on computer named 'nx7300'. We will map a network drive to our shared folder using a net use command: **'net use z: \\nx7300\shared-images'**.

```
X:\>net use z: \\nx7300\shared-images
The password is invalid for \\nx7300\shared-images.
Enter the user name for 'nx7300':
```

Image 185.2 - Net Use Command

Our shared folder is password protected, so we have to provide our credentials.

Notice that we had to provide the computer name in front of our user name. If we had a domain account, we would provide a domain name instead of computer name.

```
X:\>net use z: \\nx7300\shared-images
The password is invalid for \\nx7300\shared-images.
Enter the user name for 'nx7300': nx7300\admin
Enter the password for nx7300:
The command completed successfully.
X:\>
```

Image 185.3 - Net Use Completed Successfully

The shared folder is now mounted as our Z drive. Before we use ImageX command we have to see on which partition our Windows 7 installation is on. To do that we can use **diskpart** command.

```
X:\>diskpart
Microsoft DiskPart version 6.1.7600
Copyright (C) 1999-2008 Microsoft Corporation.
On computer: MININT-B7SMUCU
DISKPART>
DISKPART> _
```

Image 185.4 - Diskpart Command

Once in diskpart we can use a **'list disk'** command.

```
DISKPART> list disk
  Disk ###  Status              Size               Free               Dyn  Gpt
  -----  -
  Disk 0    Online              40 GB               0 B
DISKPART>
```

Image 185.5 - List Disk Command

In our case we only have one disk. Let's select it and list partitions on that disk. To select it enter the '**select disk 0**' command.

```
DISKPART> select disk 0
Disk 0 is now the selected disk.
DISKPART> _
```

Image 185.6 - Selected Disk

To list partitions on disk enter the '**list partition**' command.

```
DISKPART> list partition
Partition ###  Type  Size  Offset
-----
Partition 1    Primary  39 GB  1024 KB
DISKPART> _
```

Image 185.7 - List Partition Command

We do that because we might have multiple disks with multiple boot partitions. We have to capture the proper image. In our case we only have one partition. In Windows 7, if we use BitLocker, we will always have at least two partitions when looking disks with diskpart. The first partition, size of 100MB would be BitLocker partition. Letters for partitions in WinPE can be different from those in regular Windows 7. While running Windows PE on a machine with BitLocker, the first logical partition is already used as drive C: (i.e., Partition 1) and does not contain the reference computer's Windows 7 installation. We can always check the content of our partitions.

```
X:\>c:
c:\>dir
Volume in drive C has no label.
Volume Serial Number is BC51-CE5D

Directory of c:\

06/10/2009 01:42 PM                24 autoexec.bat
06/10/2009 01:42 PM                10 config.sys
07/13/2009 06:37 PM                <DIR>         PerfLogs
05/03/2011 10:39 AM                <DIR>         Program Files
04/22/2011 09:17 AM                <DIR>         Users
04/22/2011 09:02 AM                <DIR>         USMT
04/22/2011 09:17 AM                <DIR>         Windows
05/03/2011 12:42 PM                <DIR>         wpe
05/03/2011 12:21 PM                <DIR>         wpen
                2 File(s)      34 bytes
                7 Dir(s)      31,407,226,880 bytes free

c:\>_
```

Image 185.8 - Check Partition Content

Let's go back to our WinPE disk (x: drive) and run the ImageX command to capture our Windows 7 image. ImageX is a command line tool that creates an image from a reference computer. We will use the command **'imagex /capture c: z:\win7.wim "Win7 Image" /compress fast /verify'**. The **/capture** means that we are capturing Windows image, **c:** is the drive we are capturing, **z:\win7.wim** will be the exported file on the z: drive that we mapped to, **"Win7 Image"** will be the image name, **/compress fast** will perform fast compression, and we will also verify the image (**/verify** switch).

```
c:\>x:
X:\>imagex /capture c: z:\win7.wim "Win7 Image" /compress fast /verify
```

Image 185.9 - ImageX Command

```
Administrator: X:\windows\system32\cmd.exe - imagex /capture c: z:\w
ImageX Tool for Windows
Copyright (C) Microsoft Corp. All rights reserved.
Version: 6.1.7600.16385

Files/folders excluded from image capture by default:
// $windows.~bt
// $windows.~ls
// winpege.sys
// Windows\CSC
// Recycle
// Recycler
// $Recycle.Bin\*
// System Volume Information
// pagefile.sys
// hiberfil.sys

Turning on UERIFY option for network share
Scanning files and directories..._
```

Image 185.10 - ImageX Scanning...

ImageX will first scan all files that are on our C: partition and then create an image out of all that files. Once the process is complete we will have win7.wim file which we can deploy to other computers, or which we can use to perform recovery if our computer brakes down. If we intend to transfer that image to different computer, we must run Sysprep on the reference computer before we capture the image.

Remember

If we intend to transfer captured image to different computer, we must run Sysprep on the reference computer before we capture the image. Once in WinPE, we can mount shared folder using Net Use command, which we will then use to store our captured image. Before capturing we also have to check which partition exactly contains Windows 7 installation files using diskpart command.

Commands that are mentioned in this article

Use Sysprep:

- **c:\windows\system32\sysprep\sysprep.exe /oobe /generalize /shutdown** - run sysprep with the /generalize option to remove hardware-specific information from the Windows installation, and the /oobe option to configure the computer to boot to Windows Welcome upon the next restart

Capture image using WinPE:

- **net use z: \\nx7300\shared-images** - map a network drive to our shared folder using a net use command
- **diskpart** - used to check on which partition our Windows 7 installation is on
- **list disk** - used inside of diskpart to list all disks on our computer
- **select disk 0** - used inside of diskpart to select disk 0
- **list partition** - used inside of diskpart to list all partitions on selected disk
- **imagex /capture c: z:\win7.wim "Win7 Image" /compress fast /verify** - command which we used to capture Windows 7 image to the z:\win7.wim image, with the name "Win7 Image", using fast compression. The image will be verified.

Paths that are mentioned in this article

- **c:\windows\system32\sysprep\sysprep.exe** - location of the Sysprep tool
- **\\nx7300\shared-images** - UNC path to our shared folder in which we stored captured image

Source: <http://www.utilizewindows.com/7/deployment/185-windows-7-image-capture-demonstration>