

# HP Client Automation OS Management

## Version 7.80

Using the OS Management Build Scripts to Generate:

- Custom Windows PE Service OS
- New Image Capture Media ISO
- New Image Deploy Media ISO

### Table of Contents

|   |    |
|---|----|
| Introduction.....                                 | 2  |
| Purpose .....                                     | 2  |
| Audience .....                                    | 2  |
| Overview .....                                    | 2  |
| When to Use this Information .....                | 2  |
| What is a Service OS? .....                       | 2  |
| What are Media ISOs? .....                        | 3  |
| Getting Started.....                              | 3  |
| Prerequisites .....                               | 3  |
| Additional Notes.....                             | 3  |
| Preliminary Steps .....                           | 4  |
| Executing the Scripts.....                        | 5  |
| Adding Drivers to the Windows PE Service OS ..... | 6  |
| Notes on Drivers .....                            | 6  |
| Create a New WIM File .....                       | 6  |
| Creating New Media ISOs .....                     | 9  |
| General Instructions.....                         | 9  |
| Image Capture ISO and Image Deploy ISO .....      | 11 |
| Using the Build-Items Directory .....             | 14 |
| Appendix A – Resources and References .....       | 15 |
| Appendix B – Glossary .....                       | 16 |



# Introduction

## Purpose

The purpose of this document is to provide a set of simplified instructions for typical use cases where a custom Windows PE Service OS and/or new media ISOs need to be created.

Note that these instructions are specific to the HP Client Automation (HPCA) and are based on the use of the HPCA version 7.8 `build_scripts.zip` media.

## Audience

This document is intended for HPCA administrators responsible for operating system (OS) management and deployment. The instructions provided are generally applicable to the HPCA Classic, Enterprise, or Standard editions.

Readers of this document should have a prior knowledge of Windows OS deployment using the Windows Preinstallation Environment (Windows PE) Service OS and some knowledge of how to use the Windows Automated Installation Kit (Windows AIK).

## Overview

HP provides the `build_scripts.zip` media as part of any HPCA installation with OS Manager.

This document describes the steps required to use these scripts to complete the following tasks:

- Generate a custom Windows PE Service OS
- Generate a new Image Capture media ISO
- Generate a new Image Deploy media ISO

For definitions of terms used in this document, see [Appendix B – Glossary](#) on page 16.

## When to Use this Information

If you are using ImageX or Windows Setup to capture and deploy operating systems in your environment, you may need to update the Windows PE Service OS from time to time.

The main reason to generate a custom Windows PE Service OS is to add hardware drivers and then create new Image Capture and Image Deploy media ISOs for use in an enterprise.

This is usually only necessary when you are adding hardware that has a newer driver than what was available in the originally supplied media ISOs.

If you use the Legacy deployment method for Windows operating systems prior to Vista, contact HP Support for the latest HPCA OS Manager off-cycle release (which includes the latest Linux Service OS).

Refer to “Preparing and Capturing OS Images” in the *HPCA OS Manager System Administrator Guide* for information about the various deployment methods and the operating systems for which each method is suitable.

## What is a Service OS?

A Service OS is a pre-installation environment that is based on a lightweight operating system such as Linux or Windows PE. This environment is used to provision a target device or to apply operations to hardware on a target device.

In other words, a Service OS is a “stripped down” operating system used by HPCA to enable the configuration of client devices and to deploy, replace or, update an OS on a managed device.

This document also references the “WIM file.” In this context, this is the Windows PE Service OS in the WIM file format as used by the HPCA product.

## What are Media ISOs?

HPCA provides two media ISOs: an Image Capture ISO and an Image Deploy ISO.

- The Image Capture ISO provides the tools necessary to capture an image from a reference machine and then upload the captured image files to the HPCA Core server (in a Classic installation, the image files are uploaded to the OS Manager server).
- The Image Deploy ISO provides the ability to boot a device into a Service OS from a CD in order to deploy an OS onto that device.

In either case, the use of the Service OS is necessary. As described in the Overview, these Service OSs sometimes require an update.

## Getting Started

### Prerequisites

- A machine with the latest Windows AIK installed that is **NOT** your Boot Server and does **NOT** have cygwin installed.

A copy of the `build_scripts.zip` file either copied from the HPCA product media or provided by HP Support. The `build_scripts.zip` file is located in the following directory on the HPCA server:

```
InstallDirectory\HPCA\Media\iso\roms
```

Depending on the version of HPCA that you are using, you will want to use the version of the `build_scripts.zip` file that came with your version of HPCA.

- Existing copies of the Image Capture and Image Deploy CDs.

### Additional Notes

- All driver files **MUST** have their extensions in lower-case (for example, `.inf` and not `.INF`). If they are not in lower-case they will not be recognized and will not be added to the Windows PE Service OS.
- In the event that you have placed a `WinPE.wim` file in the root of the build-items directory AND you create a new `WinPE.wim` while running the scripts, the newly generated `WinPE.wim` will be the one used when the media ISOs are created.
- If there are multiple CD drives, you can only use one of them and may have to swap out Image Capture and Image Deploy disks when creating new media ISO CDs.

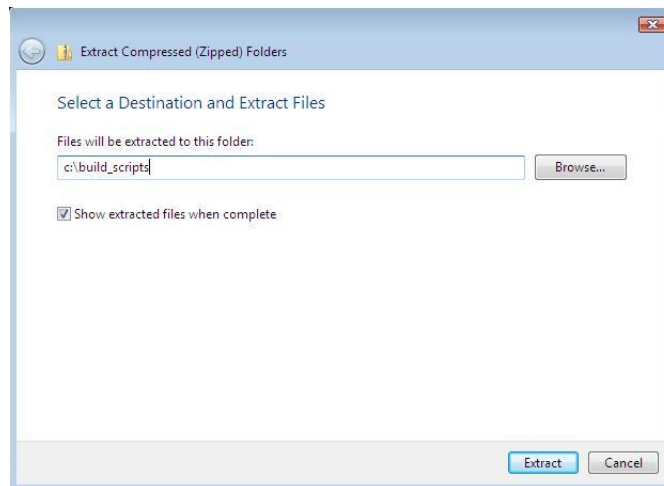
After the first complete execution of the build scripts, a configuration file is created and stored as `c:\build_scripts\build.config`. If a configuration file already exists, you will be prompted to either use the existing configuration file or not. The file is modified every time that the scripts are run and you choose not to reuse it. The configuration file makes it easy to replicate the last run if you need to re-do the same work. For this document, it will be assumed that there is no configuration file.

## Preliminary Steps

Extract the contents of the `build_scripts.zip` file to `c:\build_scripts`

---

**Figure 1:** Extract the .zip file



---

For these instructions the following folders were created ahead of time so that the path was known and so that the `build_items` directory could be populated prior to executing the scripts:

- `c:\build_items`
- `c:\build_work`
- `c:\build_output`

It is not necessary to create all of the directories ahead of time, because you will be asked for the path to them while the scripts are running. The `build_items` directory must exist; the other directories will be created if they do not yet exist. `c:\build_items` is the directory where you will place updated payloads, new `rootfs.gz` and `bzimage` files for the Linux Service OS, and any other component that you want to update on the Image Capture and/or Image Deploy media ISO(s). For more on the `build-items` directory see [Using the Build-Items Directory](#) on page 14.

`c:\build_work` is the directory that the build scripts use for combining components, generating and mounting the `WinPE.wim` file, and doing all of the "work" involved in creating a custom WIM file and generating the new media ISOs.

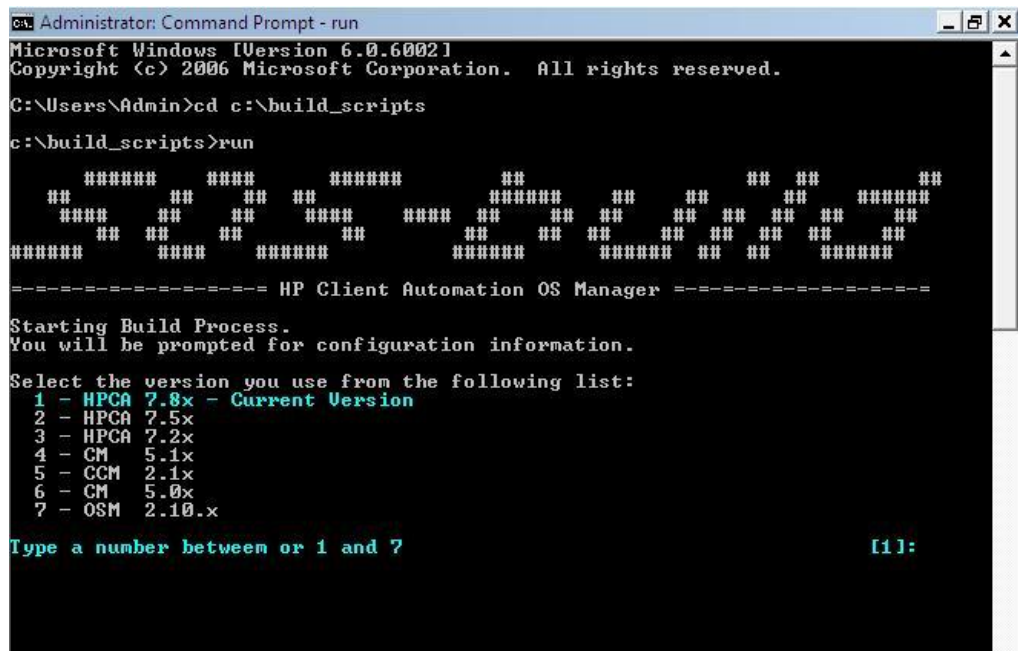
`c:\build_output` is the directory where the new artifacts will be placed after the scripts are complete. Specifically:

- A custom `WinPE.wim` file. This is the new, custom Windows PE Service OS.
- A new Image Capture media ISO.
- A new Image Deploy media ISO.

## Executing the Scripts

1. Open a command window, and navigate to `c:\build_scripts`. Type **run**.

Figure 2: Start the build scripts.



```
Administrator: Command Prompt - run
Microsoft Windows [Version 6.0.6002]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd c:\build_scripts
c:\build_scripts>run

#####  ##  ##  ##  #####  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##
#####  ##  ##  ##  #####  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##
#####  ##  ##  ##  #####  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##

===== HP Client Automation OS Manager =====

Starting Build Process.
You will be prompted for configuration information.

Select the version you use from the following list:
 1 - HPCA 7.8x - Current Version
 2 - HPCA 7.5x
 3 - HPCA 7.2x
 4 - CM 5.1x
 5 - CCM 2.1x
 6 - CM 5.0x
 7 - OSM 2.10.x

Type a number between or 1 and 7 [1]:
```

2. If you are asked whether you want to reuse a configuration file, specify **Y** or **N**. For these instructions, the answer would be **N**.
3. Select your version. For these instructions the default is HPCA 7.8x.
4. Answer the subsequent questions based on your objectives. For more information, see the following topics in this document:

To create a new WIM file, see [Adding Drivers to Windows PE Service OS](#) on page 6.

To create a new Image Capture or Image Deploy ISO, see [Creating New Media ISOs](#) on page 9.

**Figure 3:** Selected **Y** to create a new WIM file, selected **Y** to create a new Image Capture ISO, and selected **Y** to create a new Image Deploy ISO.

```
Do you want to create a new WIM File? (Y/N) [N]:y
Type the path to the Windows AIK Tools directory.
[c:\Program Files\Windows AIK\Tools]:
Detected WAIK version 2.0
The HPCA OS Manager components will be added to a base WinPE.wim file.
Use WinPE.wim from Microsoft Windows AIK as base? (Y/N) [Y]:
Font support packages are available for Chinese, Japanese, Korean.
Including the font packages will add ~30Mbyte to the WinPE.Wim file.
Do you want to add font support (Chinese, Japanese, Korean)? (Y/N) [N]:
Do you want to pause the WIM creation process after the preparation step to
add extra drivers or packages? (Y/N) [N]:
Do you want to provide a directory for additional drivers to be added
during the WIM creation process? (Y/N) [N]:y
Type the fully qualified path to the directory with additional drivers.
All drivers contained in the directory will be added to the WIM file
See the documentation for details about what it should contain.
: c:\drivers\8540pNIC
Do you want to create a new Image Capture ISO? (Y/N) [N]:y
Do you want to create a new Image Deploy ISO? (Y/N) [N]:y
```

## Adding Drivers to the Windows PE Service OS

### Notes on Drivers

There are essentially two sets of drivers – those that need to be in the Windows PE Service OS before it is booted, and those that can be added later.

- Drivers that need to be in the WIM file fall into two main categories:
  1. Those that are required before there is a connection to the OS Manager Server – NIC drivers, for example.
  2. Those that cannot be installed by the Windows Deployment Image Servicing and Management (DISM) tool, but instead either require special handling or need to be installed via Windows Setup.
- Drivers that can be added later (for example, a storage driver for a newer hard drive) can be placed in a special directory on the HPCA Core server (in an HPCA Classic installation, this directory is on the OS Manager Server). Assuming a typical installation of HPCA, this directory is:

```
InstallDirectory\OSManagerServer\Service OS\Windows PE\drivers
```

### Create a New WIM File

The instructions in this section are for creating a new Windows PE WIM file with updated drivers.

Presumably, you will also be creating new media ISOs (Image Capture and Image Deploy) using this new WIM file. The steps specific to creating new media ISOs are covered in following sections.

The path to the Windows AIK Tools directory should be as follows:

```
c:\Program Files\Windows AIK\Tools
```

1. If you installed the Windows AIK in a different location, specify the correct path. Otherwise, press **Enter** to accept the default.
2. It is strongly recommended that you use the `WinPE.wim` base file that is provided with the Windows AIK. To do this, accept the default by pressing **Enter**. If you specify **N** here, you will be reminded to ensure that your pre-existing `WinPE.wim` file is built according to specifications. Then, you will be prompted to specify the fully-qualified path to the pre-existing `WinPE.wim` file.

**Figure 4:** Warning if using a different WIM file than the recommended one.

```

Do you want to create a new WIM File? <Y/N>                               [N]:y
Type the path to the Windows AIK Tools directory.
[c:\Program Files\Windows AIK\Tools]:
Detected WAIK version 2.0
The HPCA OS Manager components will be added to a base WinPE.wim file.
Use WinPE.wim from Microsoft Windows AIK as base? <Y/N>               [Y]:n
*** WARNING ***
Please verify that the WinPE.wim file is built as per specifications
in the HP Client Automation OS Manager product documentation.
*** WARNING ***
Type the fully qualified path of the WinPE.wim file to be used.
[c:\Program Files\Windows AIK\Tools\PETools\x86\winpe.wim]: _

```

3. When prompted to add font support packages for Chinese, Japanese and/or Korean, specify **N** unless you require support for these languages.
4. If you are adding drivers for which any of the following statements are true, specify **Y** to pause the process during WIN file creation:
  - The drivers cannot be installed via DISM.
  - You want to install the drivers by manually running DISM.
  - The drivers need to be installed using Windows Setup
  - The drivers have some other special handling requirements

If you specify **Y** here, the scripts will halt and exit to a command prompt later on. At that point you may do any manual driver insertion/handling that you require. In order to continue the scripts after you are finished, navigate back to `c:\build_scripts` and type **run**. The build-scripts process will resume from the point at which it halted.

5. If you are adding drivers that can be installed with DISM, you can place the files in a known directory.

The driver directory used in this example is `c:\drivers\8540pNIC` but could simply have been `c:\drivers`, because HPCA will recursively go through the subdirectory structure.

What is needed from the driver bundle will vary, but typically it will be the files (except the `.exe` file) in the 32bit directory of a driver bundle. For HPCA 7.8, the Windows PE Service OS is based on Windows PE 3.0, which is compatible with Windows 7. If multiple versions of a driver bundle are available, it is recommended that you use the Windows 7 32-bit set.

6. Assuming that you want to create new media ISOs, answer **Y** when asked if you want to create a new Image Capture ISO and **Y** again to create a new Image Deploy ISO.

If you select **N**, only a new WIM file will be created and placed in the `c:\build_output` directory (the file will be called `WinPE.wim`).

Figure 5: In this example, the driver for the 8540p NIC is being added to the 7.8 Windows PE Service OS.

```
Administrator: Command Prompt - run
Microsoft Windows [Version 6.0.6002]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd c:\build_scripts
c:\build_scripts>run

#####
##          ##          ##          ##          ##          ##          ##          ##          ##          ##
##          ##          ##          ##          ##          ##          ##          ##          ##          ##
##          ##          ##          ##          ##          ##          ##          ##          ##          ##
#####

===== HP Client Automation OS Manager =====

Starting Build Process.
You will be prompted for configuration information.

Select the version you use from the following list:
1 - HPCA 7.0x - Current Version
2 - HPCA 7.5x
3 - HPCA 7.2x
4 - CM 5.1x
5 - CCM 2.1x
6 - CM 5.0x
7 - OSM 2.10.x

Type a number between or 1 and 7 [1]: 1

Do you want to create a new WIM File? (Y/N) [N]: y

Type the path to the Windows AIK Tools directory.
[ c:\Program Files\Windows AIK\Tools]:
Detected WAIK version 2.0

The HPCA OS Manager components will be added to a base WinPE.wim file.
Use WinPE.wim from Microsoft Windows AIK as base? (Y/N) [Y]:

Font support packages are available for Chinese, Japanese, Korean.
Including the font packages will add ~30Mbyte to the WinPE.Wim file.
Do you want to add font support (Chinese, Japanese, Korean)? (Y/N) [N]:

Do you want to pause the WIM creation process after the preparation step to
add extra drivers or packages? (Y/N) [N]:

Do you want to provide a directory for additional drivers to be added
during the WIM creation process? (Y/N) [N]: y

Type the fully qualified path to the directory with additional drivers.
All drivers contained in the directory will be added to the WIM file
See the documentation for details about what it should contain.
: c:\drivers\8540pNIC

Do you want to create a new Image Capture ISO? (Y/N) [N]: y
Do you want to create a new Image Deploy ISO? (Y/N) [N]: y

Which Service OSs do you want the ISOs to include:
1 - WinPE
2 - Linux
3 - Both
Note that often both are required to perform low level provisioning.
Type 1, 2 or 3 : _
```



# Creating New Media ISOs

## General Instructions

1. Select which Service OSs to include – you will have a more generally applicable set of media if you include both Windows PE and Linux Service OSs.  
  
For example, if you have both Legacy and ImageX (or Windows Setup) images, by having both the Linux Service OS and the Windows PE Service OS on the media ISO, you can use the same media for either type of OS deployment.
2. Next you can either create a new `Rombl.cfg` file and provide the values, or use a pre-existing one. Typically, using the pre-existing one is fine. For completeness, however, creating a new one is specified in the example.
  - Specify which Service OS boots by default; the standard is Linux.
  - Show or hide the boot menu (and set a timer). In this example, the settings match the default settings (hidden for Image Capture ISO and 15 second timeout for Image Deploy ISO).
  - Indicate whether you want to change the port. For HPCA 7.8, the default port is 3466. If your environment uses another port for the HPCA OS Manager Server, select **Y** and then provide that port number.

**Figure 6:** Specify which Service OSs that you want and the `Rombl.cfg` file options.

```
Do you want to create a new Image Capture ISO? (Y/N)           [N]:y
Do you want to create a new Image Deploy ISO? (Y/N)          [N]:y

Which Service OSs do you want the ISOs to include:
  1 - WinPE
  2 - Linux
  3 - Both
Note that often both are required to perform low level provisioning.
Type 1, 2 or 3                                             : 3

Do you want to
  1 - create a new Rombl.cfg file and provide the required values
  2 - use a pre-existing Rombl.cfg file?
Type 1 or 2                                               [1]: 1

Which Service OS do you want to boot by default:
  1 - WinPE
  2 - Linux
Type 1 or 2                                               [2]:

You can configure the boot menu according to the options below.
Type 0 to hide the boot menu from the user.
The default Service OS you selected earlier will be used.
Type -1 to show the boot menu and wait for a user response.
The response will override the default Service OS setting.
Type a number greater than 0 to show the boot menu and wait X seconds
for a user response before booting into the default Service OS.

Type the appropriate value for the Image Capture ISO        [0]:
Type the appropriate value for the Image Deploy ISO         [15]:

The default port used to connect to the OSM infrastructure is 3466
The port is currently set to 3466
Do you want to change the port? (Y/N)                       [N]:
```

3. Specify the ISO boot load value: Enter **Y** and then option 2 (ISO default) in almost all cases. The exceptions would be:
  - Option 1 (HPCA default) is recommended for media ISOs used to capture from or deploy to HP Thin Clients.
  - If you are certain that a different boot load value is required, specify option 3 and provide that value.

Figure 7: Shows the options for the ISO boot load value - select ISO default in most cases.

```
Administrator: Command Prompt - run
Do you want to create a new Image Capture ISO? (Y/N) [N]:y
Do you want to create a new Image Deploy ISO? (Y/N) [N]:y
Which Service OSs do you want the ISOs to include:
  1 - WinPE
  2 - Linux
  3 - Both
Note that often both are required to perform low level provisioning.
Type 1, 2 or 3 : 3
Do you want to
  1 - create a new Rombl.cfg file and provide the required values
  2 - use a pre-existing Rombl.cfg file?
Type 1 or 2 [1]: 1
Which Service OS do you want to boot by default:
  1 - WinPE
  2 - Linux
Type 1 or 2 [2]: 2
You can configure the boot menu according to the options below.
Type 0 to hide the boot menu from the user.
The default Service OS you selected earlier will be used.
Type -1 to show the boot menu and wait for a user response.
The response will override the default Service OS setting.
Type a number greater than 0 to show the boot menu and wait X seconds
for a user response before booting into the default Service OS.
Type the appropriate value for the Image Capture ISO [0]: 0
Type the appropriate value for the Image Deploy ISO [15]: 15
The default port used to connect to the OSM infrastructure is 3466
The port is currently set to 3466
Do you want to change the port? (Y/N) [N]:
For some BIOSes it may be required to adjust the ISO boot load value
that gets included in the ISO boot sector
Do you want to select a non default value ? (Y/N) [N]:y
*** WARNING ****
* Selecting the wrong value may result in target machines not being able to *
* boot from the created ISO/CD *
*
* Use this option only if you experience problems using the default value *
* and only you are instructed to do so by support *
*** WARNING ****
Which boot load segment do you want to use
  1 - HPCA default - working with most BIOSes (0x2000)
  2 - ISO default
  3 - manually enter a value like 0x2000
WARNING: use this option if instructed to do so by support
Type 1, 2 or 3 [1]: 2
Type the fully qualified path to the build items directory.
See the documentation for details about what it should contain.
:
```

- Remember when we created those build directories? Now we will use them.
  - Enter `c:\build_items` for the path to the build-items directory (or the correct fully-qualified path if you have used a different directory naming convention).
  - Enter `c:\build_work` for the path to the temporary work directory.
    - Specify **Y** when asked if you want to delete the contents.
    - Specify **Y** when asked if you are sure that you want to delete the contents.
  - Enter `c:\build_output` for the path to the output directory.

Figure 8: Provide the paths to the build directories.

```
Type the fully qualified path to the build items directory.
See the documentation for details about what it should contain.
: c:\build_items
Type the fully qualified path for the temporary work directory.
The directory will be created if it does not exist.
: c:\build_work
The directory "c:\BUILD_~3" already exists and is not empty.
Do you want to delete its contents? (Y/N) [N]:y
Are you sure you want to delete the contents of
"c:\BUILD_~3" ? (Y/N) [N]:y
Deleting "c:\BUILD_~3"...
Directory "c:\BUILD_~3" is now empty.
Type the fully qualified path for the output directory.
The directory will be created if it does not exist.
: c:\build_output
Directory exists - output files will be overwritten.
Detected WAIK version 2.0
```

## Image Capture ISO and Image Deploy ISO

Any items required but not found in the build-items directory will need to be pulled from the original Image Capture and/or Image Deploy media. Be sure to have these items available, and be aware that you may need to swap between the CDs a few times during this process.

Depending on what has been provided in the build-items directory, everything else needed to make the media ISO will be required and will be brought over from the existing media CD(s).

If you are creating only one type (Image Capture or Image Deploy), you will not need to swap, but you will need to provide the existing CD for the media ISO type that you are creating.

If you are not creating media ISOs then you do not require the CDs.

Figure 9: Request for Image Capture CD, then Image Deploy CD, then Image Capture CD.

```
Administrator: Command Prompt - run
"rombl.0" was not found in "c:\build_items"
To continue "rombl.0" needs to be copied from CD,
please insert a Image Capture CD and
press Y when the CD is loaded. Press N if you wish to abort.
Image Capture CD loaded? <Y/N> [Y]:y
Checking for "Image Capture CD"
...processing rombl.bin
Checking for "Image Capture CD"
...processing rombl.bcd
Checking for "Image Capture CD"
...processing boot.sdi
boot.sdi copied from c:\Program Files\Windows AIK\Tools\PETools\x86\boot\boot
.sdi
...processing pxeboot.n12
pxeboot.n12 aquired from c:\Program Files\Windows AIK\Tools\PETools\x86\winpe
.wim
...processing bootmgr.exe
bootmgr.exe aquired from c:\Program Files\Windows AIK\Tools\PETools\x86\winpe
.wim
...processing winpe.wim
...processing MPE*
...processing bzImage
Checking for "Image Capture CD"
...processing rootfs.gz
Checking for "Image Capture CD"
...processing LNX*
...processing image_preparation_wizard
Checking for "Image Capture CD"
...processing windows_native_install
Checking for "Image Capture CD"
...processing samples
Checking for "Image Capture CD"
...processing rombl_capture.cfg
OSM bootloader config file Rombl.cfg will be created based on user input
Rombl.cfg will be autocreated
...processing image_preparation_wizard/wince
...processing help
Checking for "Image Capture CD"
...processing autorun.inf
Checking for "Image Capture CD"
...processing index.htm
Checking for "Image Capture CD"
...processing romsinfo.ini
Checking for "Image Deploy CD"

"romsinfo.ini" was not found in "c:\build_items"
If you want to have "romsinfo.ini" copied from CD,
insert a Image Deploy CD and press Y when the CD is loaded.
Press N if the CD is not loaded and you wish to continue.
Image Deploy CD loaded? <Y/N> [N]:y
Checking for "Image Deploy CD"
optional item "romsinfo.ini" was not found - skipped
...processing netinfo.ini
Checking for "Image Deploy CD"
optional item "netinfo.ini" was not found - skipped
...processing rombl_deploy.cfg
OSM bootloader config file Rombl.cfg will be created based on user input
Rombl.cfg will be autocreated
...processing i18n
Checking for "Image Capture CD"

"i18n" was not found in "c:\build_items"
If you want to have "i18n" copied from CD,
insert a Image Capture CD and press Y when the CD is loaded.
Press N if the CD is not loaded and you wish to continue.
Image Capture CD loaded? <Y/N> [N]:
```

**Figure 10:** Completion after adding drivers from the Windows 7 x86 NIC driver bundle to the Windows PE Service OS and creating new Image Capture and Image Deploy media ISOs.

```
Administrator: Command Prompt
Image Capture CD loaded? (Y/N) [N]:y
  Checking for "Image Capture CD"
  optional item "i18n" was not found - skipped
...processing CCM
...resetting file attributes
...all required items gathered.

Successfully saved configuration information.

Starting WinPE directory creation.
.....
Successfully created base WinPE.
Expanding WinPE.wim image. This will take some time.
Successfully expanded WinPE.wim image.
Adding cygwin to the WinPE.wim image.
Adding SOS specific contents to the WinPE.wim image.
Successfully created WinPE directory: "c:\build_work\WIM"
Expanding addon components...

Completing SOS-WinPE WIM file creation.

Adding packages...
Adding package WinPE-hta.cab
Adding package WinPE-scripting.cab
Adding package WinPE-wmi.cab
Adding package WinPE-setup.cab
Adding package WinPE-legacysetup.cab
Adding package WinPE-setup-client.cab
Adding package WinPE-setup-server.cab

Adding default driver...
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\intel\pro1000\Win32"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\broadcom\netxtreme\IA32"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\ProLiant\NCBroadcom"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\ProLiant\NCIntel"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\ProLiant\NCIntelNIE"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\ProLiant\NCMultiFunc"
Adding driver(s) found in "c:\build_work\ADDON\driver\HP\ati\raid\x86"

Adding extra driver...
Adding driver(s) found in "c:\drivers\8540pNIC"

Capturing modified WinPE.wim image. This will take some time.
**** WinPE WIM file successfully created!
  File name: "c:\build_output\winpe.wim"

Starting creation of ImageCapture ISO
Assembling ISO now...
.....
Building ISO filesystem now...
.....Using default ISO Boot Load value
.....
**** ImageCapture ISO successfully created!
  File name: "c:\build_output\CAE_ImageCapture.iso"

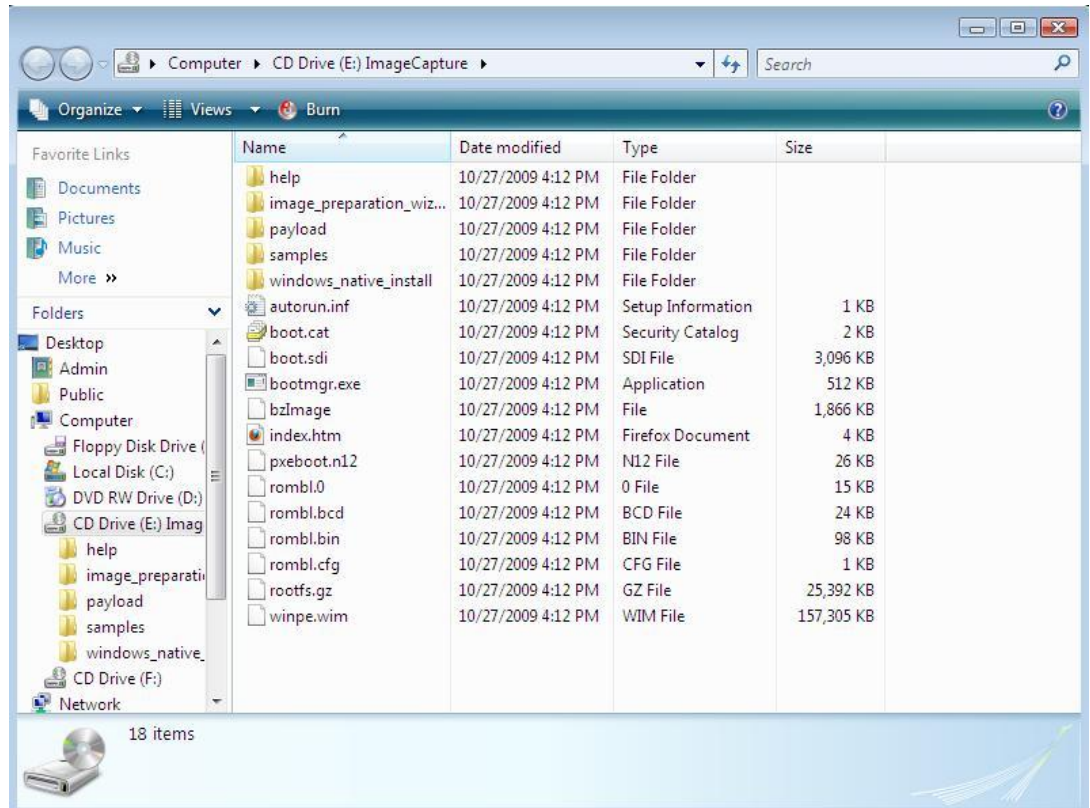
Starting creation of ImageDeploy ISO
Assembling ISO now...
.....
Building ISO filesystem now...
.....Using default ISO Boot Load value
.....
**** ImageDeploy ISO successfully created!
  File name: "c:\build_output\CAE_ImageDeploy.iso"
SOS creation process completed successfully.
c:\build_scripts>
```

## Using the Build-Items Directory

You can look at the stock version of an Image Capture or Image Deploy ISO to see what the build-items directory can look like. See Figure 11.

Basically, any component that needs to be upgraded on the new media should be placed as if `c:\build_items` were the root directory of the CD ROM and should match the directory structure of the original media ISO.

**Figure 11:** Directory structure of the 7.8 Image Capture ISO.



- For example, updating the Linux Service OS would then require that the updated `rootfs.gz` and `bzImage` files be located in the root of the build-items directory.
- Another example would be generating new media ISO(s) with a previously updated or customized WIM file for the Windows PE Service OS. In this case, `WinPE.wim` should be placed in the root of the build-items directory, and you would **not** be creating a new custom WIM file. Instead, you would be using one that was previously generated.
- Yet another example would be creating new media ISO(s) with an updated payload. In this case, the directory structure should include `c:\build_items\payload`, and the new payload(s) would be contained in the `payload` directory.

## Appendix A – Resources and References

- Refer to the following Microsoft TechNet articles:
  - [Building a Windows PE Image](#)
  - [Adding Device Drivers using DISM](#)
  - [Adding Device Drivers using Windows Setup](#)
- Here is a link to the latest WINDOWS AIK (as of June, 2010):
  - [Windows Automated Installation Kit \(AIK\) for Windows 7 Download](#)
- The *HPCA OS Manager System Administrator User Guide* can be found on the HPCA Core server in the following location:
  - `InstallDirectory\HPCA\Docs\HPCA Enterprise\Reference Library\OSMgr_SAG_Win.pdf`
  - [Link to the 7.8 version of this document](#)

## Appendix B – Glossary

- **Artifact** – a WIM file or media ISO created using the build scripts.
- **Cygwin** – provides native integration of Windows-based applications, data, and other system resources with applications, software tools, and data of the Unix-like environment. Thus, it is possible to launch Windows applications from the Cygwin environment, as well as to use Cygwin tools and applications within the Windows operating context.
- **DISM** – a single new tool in Windows AIK version 2.0 that took over the functions of several earlier tools, including PEimg and IntlCfg, which were deprecated.
- **Driver** – a computer program allowing higher-level computer programs to interact with a hardware device.
- **Image Capture ISO** – media provided with the HPCA product that enables users to capture an Operating System image and upload it to the HPCA Core server. That image can then be published and used for deployments to other machines.
- **Image Deploy ISO** – media provided with the HPCA product that enables users to boot a device from a CD into a Service OS environment for the purpose of deploying an operating system (or conducting some other low-level management) onto that device.
- **ISO** – an archive file (also known as a disc image) of an optical disc in a format defined by the International Organization for Standardization (ISO). This format is supported by many software vendors. ISO image files typically have a file extension of `.iso`. The name *ISO* is taken from the ISO 9660 file system used with CD-ROM media, but an ISO image can also contain a UDF file system since UDF is backward-compatible with ISO 9660.
- **NIC** – a hardware device that handles an interface to a computer network and allows a network-capable device to access that network.
- **payload** – the file that contains the modules that run under the Service OS. Each Service OS has its own payload (i.e. `LNX-780_00000.tgz` for the Linux Service OS and `WPE-780_00000.tgz` for the Windows PE Service OS).
- **Service OS (Service OS)** – a pre-installation environment that is based on a lightweight operating system, such as Linux or Windows PE. This environment is used to apply operations to hardware on a target device as well as provision target devices.
- **WIM file (Windows Imaging Format)** – a file-based disk image format. It was developed by Microsoft to deploy its latest Windows operating system releases, Windows 7 and Windows Server 2008, which use it as part of their standard installation procedure. It works equally well with legacy versions of Windows however, and is used as part of Windows Fundamentals for Legacy PCs.
- **Windows Automated Installation Kit (Windows AIK)** – a collection of tools and technologies produced by Microsoft designed to assist in the deployment of Windows. It was first introduced with Windows Vista.
- **Windows PE (Windows Preinstallation Environment)** – is a lightweight version of Windows that is used for the deployment of workstations and servers. It is intended as a 32-bit replacement for MS-DOS during the installation phase of Windows.
- **Windows PE\_cjk** – Windows PE Service OS with language support for Chinese, Japanese and Korean languages.



---

© Copyright 2010 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Trademark acknowledgments:

Microsoft® Windows®, Windows NT®, Windows® XP, and Windows Vista® are U.S. registered trademarks of Microsoft Corporation.

Created August 2010

