Unattended Deployment of Microsoft® Windows® 7 on HP Business Desktops with the HP Integrated Device Driver Kit

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Executive Summary

This technical whitepaper describes the procedure for using the HP Integrated Device Drive Kit during the unattended installation of Microsoft Windows. This is an overview of the tools and steps needed to support a bare-metal installation of Windows 7 on HP business desktops. This whitepaper provides examples of the following:

- Deploying Microsoft Windows 7 using a network infrastructure
- Deploying Microsoft Windows 7 using installation media DVDs

Finally, this paper also provides tips and best practices for using the following:

- Microsoft Deployment Toolkit 2010
- Windows Automated Installation Kit

Introduction

Managing operating system images and hardware driver configurations has become a key activity for IT professionals. In enterprise environments, it can be a complex and time-consuming process as the IT professional needs to:

- Manually select and repackage the appropriate hardware drivers for the remote imaging environment
- Be able to deploy the drivers to the correct set of systems for keeping the environment stable and reliable

The HP Integrated Device Driver Kit, along with Microsoft Deployment Toolkit 2010 (MDT 2010) and the Windows Automation Installation Kit (WAIK) provide multiple solutions to help IT professionals deploy Windows 7 with HP-tested and -qualified drivers. This process and combination of tools streamline OS deployments and simplify the IT imaging process.

MDT 2010 provides a common console with the comprehensive tools and guidance needed to efficiently manage the deployment of Microsoft Windows 7. MDT 2010 is the recommended process and toolset to automate desktop deployments of Microsoft Windows.

Benefits

- This is an improved OS deployment experience with shortened image deployment timelines.
- The HP-tested drivers are structured for the unattended installation of Windows.
- This convenient package contains the hardware-enabling drivers for each supported PC model.
- It is a free solution from HP.

Prerequisites

Software Requirements

Deployment Using a Network

To deploy operating systems using a network, the following software components are required:

- Microsoft Deployment Toolkit 2010 (MDT 2010) – **Download**
- Windows Automated Installation Kit (WAIK) version 2.0 – **Download**
- Windows PowerShell v2.0 – **Download**
- Device drivers required for the target computer
- Device drivers required for the reference computer

> **Note:**
>
> Windows PowerShell 2.0 is distributed as part of the Windows Management Framework Core from Microsoft.

Deployment Using Removable Media

To deploy operating systems using removable media, the following components are required:

- Windows Automated Installation Kit (WAIK) version 2.0 – **Download**
- Device drivers required for the target computer
- Device drivers required for the reference computer

System Requirements

Technician's Computer

The technician's computer must meet the following specifications:

Operating System:	Windows Vista or later
Processor:	1.4 gigahertz (GHz) or faster
Memory:	1GB or more physical memory
Hard Disk Space:	16GB or more available disk space
Optical Drive:	CD/DVD-ROM drive

Target Computer

The target computer must meet the following specifications:

Processor:	1.4 gigahertz (GHz) or faster
Memory:	1GB or more physical memory
Hard Disk Space:	16GB or more available disk space

Deploying Microsoft Windows 7 over a Network

In this scenario, we demonstrate the general framework used to create and deploy an image of a Windows 7 using a network. This process, known as image-based deployment, is ideal for high-volume environments in which speed is a priority. Using this method, you create and deploy the image using the MDT 2010 Deployment Workbench and LiteTouchPE, a modified version of Windows PE. The Deployment Workbench provides imaging technology to capture and apply the Windows installation. LiteTouchPE provides a stand-alone pre-installation environment, including network connectivity and disk configuration.

For corporate deployments, using an image-based deployment over a network ensures faster and consistent installations across all systems. This scenario is a simple network solution. HP also offers very sophisticated solutions for deploying new operating systems, such as Windows 7, to a large number of devices: HP Client Automation. Other more advanced deployment solutions using management servers are discussed under **Additional References**.

The following process guides you through a Lite-Touch Installation (hereafter referred to as LTI) deployment, which is automated to a nearly Zero-Touch Installation. This process assumes that:

- You are installing to a machine with no operating system.
- The installation does not include any user or application migration information.

The following diagram illustrates the deployment process.

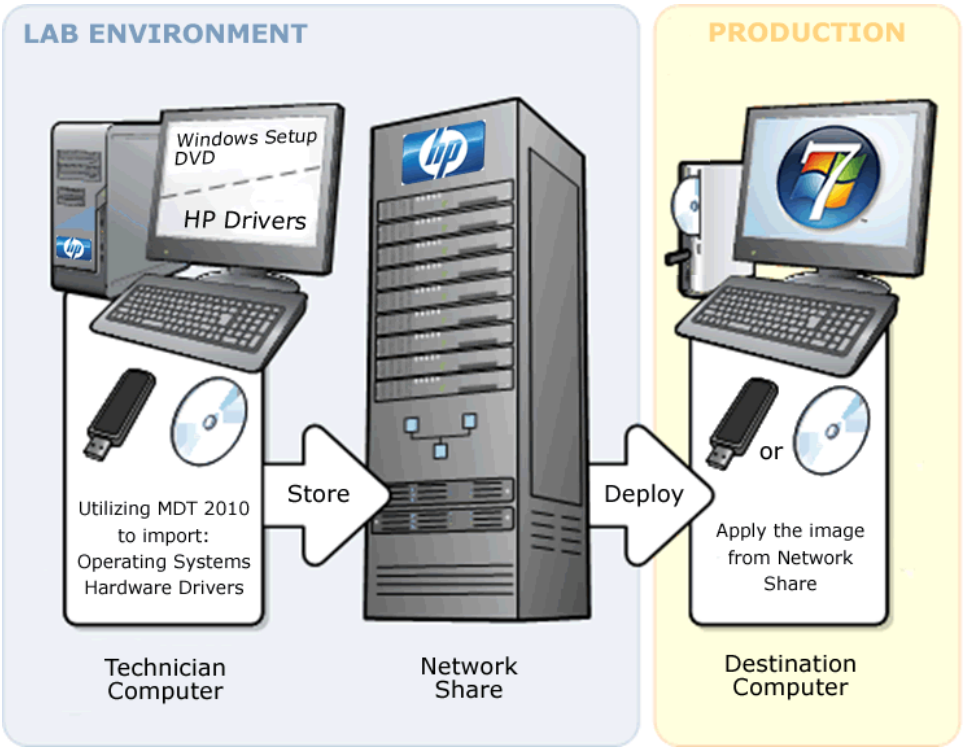


Figure 1: Network deployment model

Getting Started with the MDT 2010 Deployment Workbench

In this section, we create a New Deployment Share inside the Deployment Workbench.

1. Click **Start → All Programs → Microsoft Deployment Toolkit → Deployment Workbench**.
2. In the **Deployment Workbench** console tree, select **Deployment Shares**. In the **Actions** pane, click **New Deployment Share**.
3. The **New Deployment Share Wizard** starts. Perform the following steps to create the new deployment share:
   a. **Path** – Specify the location of the deployment share as `C:\Deploymentshare$` and then click **Next**.
   b. **Share** – This is automatically set; click **Next**.
   c. **Descriptive Name** – Keep the default name and click **Next**.
   d. **Allow Image Capture** – When performing a new computer (bare metal) deployment into a workgroup, the deployment wizard normally asks if an image should be captured. This step can be skipped if it is not required. (Captures of domain-joined machines are not recommended.) Clear the **Ask if an image should be captured** check box and then click **Next**.

e. **Allow Admin Password** – During deployments, users can be prompted to set the local Administrator account password. In some situations, you may wish to prevent the local user from accessing the local Administrator's account for security reasons. For this example, keep the default setting and click **Next**.

f. **Allow Product Key** – During deployments, users can be prompted to specify an installation or activation product key. In some situations, you may wish to prevent this. For this example, keep the default setting and click **Next**.

g. **Summary** – Click **Next**.

h. **Progress** – No user interaction is required.

i. **Confirmation** – Click **Finish**.

The **New Deployment Share Wizard** finishes and the new deployment share—**MDT Deployment Share (C:\DeploymentShare$)**—appears in the **Details** pane.

Importing Operating Systems

In this step, we import the Windows 7 DVD contents.

1. Insert the **Windows 7 DVD** into the DVDROM drive.
2. In the **Deployment Workbench** console tree, expand the MDT Deployment Share (**C:\DeploymentShare$**) and select **Operating Systems**. In the **Actions** pane, click **Import Operating System**.

   The **Import Operating System Wizard** starts.
3. Perform the following steps to import the operating system:

   a. **OS Type** – Select **Full set of source files** and then click **Next**.

   b. **Source** – Specify the location of the DVDROM drive and then click **Next**.

   c. **Destination** – Keep the default location and then click **Next**.

   d. **Summary** – Click **Next**.

   e. **Progress** – No user interaction is required.

   f. **Confirmation** – Click **Finish**.

   The **Import Operating System Wizard** finishes and the imported operating system—**Windows 7 ENTERPRISE in Windows 7 x86 install.wim**—appears in the **Details** pane.

> **Note:**
>
> The operating system name may be different depending on the version you imported.

Importing Out-of-Box Drivers

In this step, you import the network drivers for the LiteTouchPE disc. These drivers are incorporated into the LiteTouchPE to provide networking capability, without which your deployment does not work. In Additional Configurations, step 8, we add our entire driver collection to a share folder. Putting the driver collection in a share folder adds more flexibility.

> **Note:**
>
> Ideally, you should consolidate your network drivers in a single location and run this process once. Otherwise, you have to browse to and select each additional folder containing network drivers (step 2a).

1. In the **Deployment Workbench** console tree, under the expanded MDT Deployment Share (**C:\DeploymentShare$**), select **Out-of-Box Drivers**. In the **Actions** pane, click **Import Drivers**.

   The **Import Driver Wizard** starts.

2. Perform the following steps to import the network drivers:

   a. **Specify Directory** – Select **Browse**, locate the directory from which you extracted the HP Integrated Device Drive Kit and then select the folder containing the network drivers.

   b. **Summary** – Click **Next**.

   c. **Progress** – No user interaction is required.

   d. **Confirmation** – Click **Finish**.

   The **Import Driver Wizard** finishes and the imported drivers appear in the **Details** pane.

Create Task Sequences

In this step, we create a task sequence for deploying Windows 7.

1. In the **Deployment Workbench** console tree, under the expanded MDT Deployment Share (**C:\DeploymentShare$**), select **Task Sequences**. In the **Actions** pane, click **New Task Sequence**.

   The **New Task Sequence Wizard** starts.

2. Perform the following steps to create the task sequences:

   a. **General Settings** – Task sequence ID: MDT001, Task sequence name: Windows 7 Enterprise x86, Task sequence comments: Windows 7 Enterprise Install, and click **Next**.

   b. **Select Template** – In the **Select Template** list, click **Standard Client Task Sequence** click **Next**.

   c. **Select OS** – In **Windows 7 x86 install.wim**, select **Windows 7 ENTERPRISE** (the name may be different, depending on the version you imported in Importing Operating Systems) and then click **Next**.

   d. **Specify Product Key** – Keep the default setting **Do not specify product key at this time** (the Windows 7 setup DVD automatically assigns a product key) and then click **Next**.

e. **OS Settings** – Full Name: <enter full name>, Organization: <enter your organization>, Internet Explorer Home Page: <your organizations home page>, and then click **Next**.

f. **Admin Password** – Select **Do not specify an Administrator password at this time**. The local Administrator password is provided in this task sequence, so it is not needed. Click **Next**.

g. **Summary** – Click **Next**.

h. **Progress** – No user interaction is required.

i. **Confirmation** – Click **Finish**.

The **New Task Sequence Wizard** finishes and the new task—**Windows 7 Enterprise x86**—appears in the **Details** pane.

Additional Configurations

In this step, we describe the configurations necessary to automate the LTI deployment process. There are two main configuration files: Bootstrap.ini and CustomSettings.ini. Also, we create some additional folders to store the remaining drivers and installation logs.

1. In the **Deployment Workbench** console tree, select MDT Deployment Share (**C:\DeploymentShare$**). In the **Actions** pane, click **Properties**.

   The **MDT Deployment Share (C:\DeploymentShare$) Properties** window opens.

2. Select the **Rules** tab and click the **Edit Bootstrap.ini** button in the lower right corner.

   The **Bootstrap.ini** opens in Notepad.

3. The following settings are necessary to locate (DeplyRoot) and connect (UserID, UserDomain, and UserPassword) to the network share. Ideally, you should create a separate local account with access to the Deployment Share.

```
bootstrap.ini

[Settings]
Priority=Default

[Default]
SkipBDDWelcome=YES

DeployRoot=\\<machine name>\DeploymentShare$

UserID=<local user account>
UserDomain=<machine name>
UserPassword=<local user account password>
```

4. **Save** and exit Bootstrap.ini.

> **Note:**
>
> The Bootstrap.ini is compiled into the LiteTouchPEx86.iso. Any changes to the Bootstrap require a Deployment Share update. We explain this later in **Update Deployment Share and Create LiteTouchPE Disc**.)

5. Now edit the settings in the **Rules** tab as follows: (These settings are for the **CustomSettings.ini** and are necessary to automate the LTI deployment.)

```
CustomSettings.ini

[Settings]
Priority=Default
Properties=MyCustomProperty

[Default]
OSInstall=YES
WipeDisk=TRUE

UserID=<local user>
UserDomain=<machine name>
UserPassword=<user password>

SkipBDDWelcome=YES
SkipApplications=YES
SkipAppsOnUpgrade=YES
SkipProductKey=YES

SkipDeploymentType=YES
DeploymentType=NEWCOMPUTER

SkipDomainMembership=YES
JoinWorkgroup=WORKGROUP

SkipUserData=YES
UDDIR=%Computername%
UDShare=\\<machine name>\DeploymentShare$\USMT
UserDataLocation=NONE

SkipCapture=YES
ComputerBackupLocation=NETWORK

SkipComputerBackup=YES
BackupDir=%Computername%
BackupShare=\\<machine name>\DeploymentShare$\Captures

SkipTaskSequence=YES
```

```
TaskSquenceID=MDT001

SkipBuild=YES
BuildID=MDT001

SkipLocaleSelection=YES
KeyboardLocale=0409:00000409
UserLocale=en-US
UILanguage=en-US

SkipTimeZone=YES
TimeZoneName=Central Standard Time

SkipAdminPassword=YES
AdminPassword=<complex password>

SkipComputerName=YES
OSDComputerName=%SerialNumber%

SkipBitLocker=YES
BDEInstallSuppress=YES

SkipFinalSummary=YES
SkipSummary=YES

SLShare=\\<machine name>\DeploymentShare$\Logs

DriverPaths1=\\<machine name>\DeploymentShare$\Drivers
```

6. Now click **Apply** and then click **OK** to save the updated settings in **CustomSettings.ini**.

   The CustomSettings.ini and Bootstrap.ini can be located in the C:\DeploymentShare$\Control folder.
7. Create a Logs folder in the root of the deployment share **C:\DeploymentShare$\Logs** to store the logs from deployed machines. This value is set in the CustomSettings.ini as:

   `SLShare=\\<machine name>\DeploymentShare$\Logs`
8. Create a Drivers folder in the root of the deployment share **C:\DeploymentShare$\Drivers** and extract the HP Integrated Device Driver Kit to this folder. You can also add any additional drivers you have to this folder. This value is set in the CustomSettings.ini as:

   `DriverPaths1=\\<machine name>\DeploymentShare$\Drivers`

Update Deployment Share and Create LiteTouchPE Disc

In this step, you update the deployment share and generate the LiteTouchPE ISOs.

1. In the **Deployment Workbench** console tree, select MDT Deployment Share (**C:\DeploymentShare$**). In the **Actions** pane, click **Update Deployment Share**.

   The **Update Deployment Share Wizard** starts.

2. Perform the following steps to update the deployment share and create the LiteTouchPE disc:

   a. **Options** – When updating the deployment share, the latest tools are copied to the deployment share. If any changes have been made to the boot image settings or to the content that needs to be included in the boot image, those updates are also made. Keep the default setting, select **Compress the boot image contents to recover space used by removed or modified content**, and then click **Next**.

   b. **Summary** – Click **Next**.

   c. **Progress** – No user interaction is required.

   d. **Confirmation** – Click **Finish**.

3. After the **Update Deployment Share Wizard** finishes, browse to **C:\DeploymentShare$\Boot** to see **LiteTouchPE_x86.iso**. Use a CDROM burning application (i.e., Roxio, Nero, etc.) to create the LiteTouchPE disc.

Deployment Tasks

In this step, you deploy Microsoft Windows 7 using LiteTouchPE and the Deployment Workbench.

1. Insert the **LiteTouchPE** disc into the computer and turn the computer on.
2. Press F9 to go to the boot menu and select boot device **CD/DVD-ROM**. When prompted **Press any key to boot from CD or DVD**, press a key.

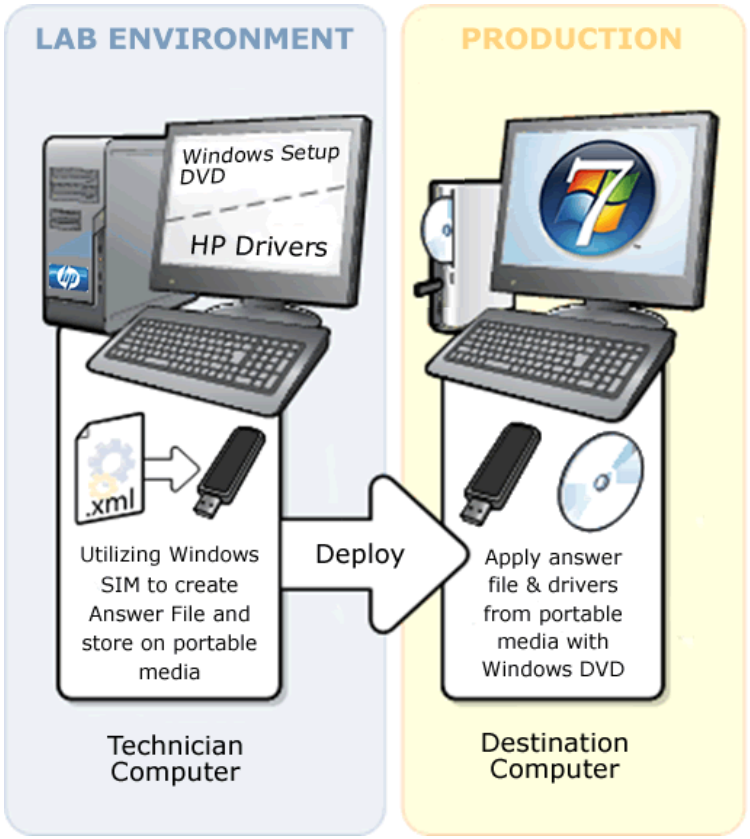
   LiteTouchPE launches and begins the installation process; all settings specified are applied.

   When Windows Setup is finished, the system logs in as administrator.

Deploying Microsoft Windows 7 Using Removable Media

In this scenario, we describe using removable media to install Windows 7 onto a new computer. This deployment method is sometimes known as bare-metal installation or the DVD-boot method. These procedures guide you through an unattended installation using an answer file rather than the standard Windows Setup. This process is ideal for low-volume processes (such as IT test laboratories), reimaging, and small organizations that need to configure only a few computers. This process does not require a network.

The following diagram illustrates the deployment process.



Setup Windows Systems Image Manager

In this step, you set up your Windows System Image Manager (hereafter referred to as Windows SIM) environment.

1. Click **Start → All Programs → Microsoft Windows AIK → Windows System Image Manager**.
2. In the **Distribution Share** pane, right-click **Select a Distribution Share** and then select **Create Distribution Share**.
3. In the **Create Distribution Share** dialog box, browse to the folder in which you want to create your Distribution Share and then click **Open**.

4. Unzip the **HP Integrated Device Driver Kit** to the **Out-of-Box Drivers** folder in which you created your Distribution Share.
5. On the technician computer, insert the **Windows 7 product DVD**.
6. Browse to the **\Sources** directory on your DVD-ROM drive and copy the **Install.wim** and **install_Windows[version].clg** files from the Windows product DVD to the computer.
7. On the **Windows SIM File** menu, click **Select Windows Image**.
8. In the **Select a Windows Image** dialog box, browse to the folder in which you saved Install.wim (in step 6). Select **Install.wim** and then click **Open**.
9. On the **File** menu, click **New Answer File**.

   An empty answer file appears in the **Answer File** pane.

Building an Answer File

In this step, you define Windows Setup configurations and Windows Welcome settings.

1. In the **Windows SIM Windows Image** pane, expand the **Components** node to display available settings and then expand it to the lowest child object.
2. On the expanded list of components, add the components in the table below to your answer file by right-clicking the component and then selecting the appropriate configuration pass.

   This action adds the component to your answer file in the specified configuration pass, or phase, of Windows installation.

Component	Configuration Pass
Microsoft-Windows-International-Core-LiteTouchPE\SetupUILanguage	windowsPE
Microsoft-Windows-Setup\DiskConfiguration\Disk\CreatePartitions\CreatePartition	windowsPE
Microsoft-Windows-Setup\ImageInstall\OSImage\InstallTo	windowsPE
Microsoft-Windows-Setup\UserData\ProductKey (if needed)	windowsPE
Microsoft-Windows-Shell-Setup	specialize
Microsoft-Windows-International-Core	oobeSystem
Microsoft-Windows-Shell-Setup\OOBE	oobeSystem
Microsoft-Windows-Shell-Setup\UserAccounts\AdministratorPassword	oobeSystem
Microsoft-Windows-Shell-Setup\UserAccounts\LocalAccounts\LocalAccount\Password	oobeSystem

   All of the settings you added must appear in the **Windows SIM Answer** File pane.

3. Under **Settings**, select the appropriate settings (in the right column) and type the appropriate value specified in the following table. To avoid receiving validation warnings/errors, remove any unused child objects that have no value assigned.

Configuration Pass	Component	Value
1 WindowsPE	Microsoft-Windows-International-Core-LiteTouchPE	InputLocale = en-US SystemLocale = en-US UILanguage = en-US UserLocale = en-US
1 WindowsPE	Microsoft-Windows-International-Core-LiteTouchPE\SetupUILanguage	UILanguage = en-US
1 WindowsPE	Microsoft-Windows-Setup\DiskConfiguration	WillShowUI = OnError
1 WindowsPE	Microsoft-Windows-Setup\DiskConfiguration\Disk	DiskID = 0 * WillWipeDisk = true
1 WindowsPE	Microsoft-Windows-Setup\DiskConfiguration\Disk\CreatePartitions\CreatePartition	Extend = true Order = 1 Type = Primary
1 WindowsPE	Microsoft-Windows-Setup\ImageInstall\OSImage	InstallToAvailablePartition = false WillShowUI = OnError
1 WindowsPE	Microsoft-Windows-Setup\ImageInstall\OSImage\InstallTo	DiskID = 0 PartitionID = 1
1 WindowsPE	Microsoft-Windows-Setup\UserData	AcceptEula = true FullName = <name> Organization = <organization name>
1 WindowsPE	Microsoft-Windows-Setup\UserData\ProductKey	Key = <product key> (if needed) WillShowUI = OnError
4 Specialize	Microsoft-Windows-Shell-Setup	ComputerName = * TimeZone = Central Standard Time
7 oobeSystem	Microsoft-Windows-Shell-Setup\OOBE	HideEULAPage = true NetworkLocation = Work ProtectYourPC = 1
7 oobeSystem	Microsoft-Windows-Shell-Setup\UserAccounts\AdministratorPassword	Value = <password>
7 oobeSystem	Microsoft-Windows-Shell-Setup\UserAccounts\LocalAccounts\LocalAccount	Description = <description> DisplayName = <display name> Group = Adminstrators Name = <username>
7 oobeSystem	Microsoft-Windows-Shell-Setup\UserAccounts\LocalAccounts\LocalAccount\Password	Value = <password>

Caution:

If Microsoft-Windows-Setup\DiskConfiguration\Disk [WillWipeDisk = True], then the hard drive will be formatted and all data will be lost.

4. In the **Windows SIM** menu, click **Insert** and then move the cursor over **Driver Path**. Select **Pass 2 offlineServicing**.
5. In the **Select a folder that contains driver files** dialog box, browse to the folder in which you extracted the HP Integrated Device Drive Kit and then click **Open**.
6. In the **Answer File** pane, verify or edit the path locations in the right column.
7. If you are using a UNC path, expand the child component **PathAndCredentials** and then select **Credentials**. In the right column, type the appropriate value for **Domain**, **Password**, and **Username**.
8. To add additional driver path locations, right-click **Driver Path**. Select **Insert New PathAndCredentials** and repeat step 5.

Important:

If you have boot critical drivers, you must add your drivers to Pass 1 WindowsPE or your installation could fail.

Validate and Save Settings

In this step, you validate the settings in your answer file and then save them to a file.

1. In **Windows SIM** menu, click **Tools** and then click **Validate Answer File**.

   The setting values in the answer file are compared with the available settings in the Windows image.
2. If the answer file validates successfully, the **No warnings or errors** message appears in the **Messages** pane at the bottom of the **Windows SIM** window. If it does not validate successfully, error messages appear in the **Messages** pane.
3. If an error occurs, double-click the error message in the **Messages** pane to navigate to the incorrect setting. Change the setting to fix the error and then validate again by clicking **Validate Answer File**. Repeat this step until the answer file validates without warnings or errors.
4. On the **File** menu, click **Save Answer File**.

Create a Configuration Set

In this step, you create a configuration set on a USB flash drive.

1. Insert a USB flash drive (UFD).
2. In **Windows SIM** menu, click **Tools** and then click **Create Configuration Set**.
3. In the **Create Configuration Set** dialog box, type the drive letter for the UFD and then click **OK**.

   Windows SIM now copies all necessary files to the UFD.
4. When all files have been copied, click **OK**.

Deployment Tasks

In this step, we deploy an unattended Microsoft Windows 7 using the Windows Setup disc and removable media.

1. Insert a USB flash drive (UFD) and the Windows product DVD into the computer.
2. Press F9 to go to the boot menu and select boot device **CD/DVD-ROM**. When prompted **Press any key to boot from CD or DVD**, press a key.

   Windows Setup applies all settings specified in the answer file.
3. When Windows Setup is finished, you can make any additional customizations and run tests.

Tips and Best Practices

MDT 2010 – Deployment Workbench

In **Additional Configurations**, we cover the settings needed to automate the LTI deployment. For more information on these settings, please **click here** to download *Microsoft Deployment Print Ready Documentation*. Once you have downloaded the zip file, extract the *Toolkit Reference.docx* for a full list of Property settings and values (pages 57-251).

In **Additional Configurations** step 8, we added a Drivers folder. You can have multiple locations for drivers which would be set consecutively as DriverPaths1, DriverPaths2, etc. These can be on any file share. This configuration allows you a great deal of flexibility to add, update, and remove drivers without recompiling your boot media.

WAIK – Windows SIM

In **Building an Answer File**, we discuss building an Answer File—two samples are below. The first is a basic, unattended install with one partition. The second has two partitions, one of which is hidden by setting Microsoft-Windows-Setup\DiskConfiguration\Disk\ModifyPartitions\ModifyPartition TypeID=0x27.

OnePartion_Sample_XML.pdf

TwoPartition_Sample_XML.pdf

Driver Path

The above samples have a driver path set to %ConfigSetRoot%—this refers to the root of the USB flash drive. You can add all drivers to the USB flash drive and the system searches for the correct driver. Alternately, you can use UNC paths for a more robust approach.

LocalAccount

A local user account must be defined in order to access the unattended build. For security reasons, the system disables the administrator account after installing the operating system.

ComputerName

Set this value to "*" and the system assigns a computer name automatically which allows you to reuse the Autounattend.xml indefinitely.

Also worth mentioning is that by default the Administrator password is encrypted in the autounattend.xml. The samples embedded above have PlainText set to "True" for example only.

Troubleshooting Installation Issues

Windows Setup produces numerous log files that are useful for troubleshooting installation. For more information about these log files, see *Windows Setup Log File Locations* at **http://support.microsoft.com/default.aspx/kb/927521**.

Additional References

HP Client Automation greatly simplifies the entire Windows 7 migration effort:

- Identifies which devices in the environment are Windows 7-capable, based on CPU speed, amount of memory, and free disk space
- Provides a complete inventory of all software being used (not just installed) by all users
- Protects users' data and personal settings while migrating to Windows 7
- Automatically acquires the latest versions (including Windows 7) of all hardware drivers and HP-supplied applications for HP PCs
- Easily customizes the Windows 7 environment after installation.

More information is available at **www.hp.com/go/clientautomation**.

A Windows 7 migration demonstration video is available at

http://hpbroadband.com/program.aspx?key=012110CASWin7.

Another solution for large-scale OS deployment is Microsoft System Center Configuration Manager (SCCM).

Deploying Operating Systems using Microsoft SCCM provides the tools needed to create operating system images to be deployed to:

- Computers managed by System Center Configuration Manager
- Unmanaged computers using bootable media, such as a CD or DVD

The deployment image, a Windows Imaging Format (WIM) file, contains:

- The Windows operating system to be deployed
- Any applications that you need to install on the computer

System Center Configuration Manager is designed to be the primary means to deploy operating systems for both server and client platforms.

Another important deployment feature of System Center Configuration Manager is the integrated Task Sequencer. Using System Center Configuration Manager, you no longer need to write scripts for deploying or capturing operating system images. Additionally, by taking advantage of the Task Sequencer, the operating system deployment process becomes completely hands-off.

Below are few links for more information on using System Center Configuration Manager for operating system deployments:

- *Overview of Operating System Deployment*
  http://technet.microsoft.com/en-us/library/bb694101.aspx.
- *How to Deploy Operating System Images to a Computer*
  http://technet.microsoft.com/en-us/library/bb632559.aspx.
- *How to Deploy an Operating System Image to a New Computer Using Boot Media*
  http://technet.microsoft.com/en-us/library/bb694215.aspx.
- *How to Deploy an Operating System Image to an Offline Computer*
  http://technet.microsoft.com/en-us/library/bb681017.aspx.
- *How to Create Stand-alone Media*
  http://technet.microsoft.com/en-us/library/bb632784.aspx.
- *How to Create a Computer Association for a Side-by-Side Migration*
  http://technet.microsoft.com/en-us/library/bb680730.aspx.
- *How to Configure the PXE Service Point*
  http://technet.microsoft.com/en-us/library/bb680668.aspx.
- *How to Deploy an Operating System Image using PXE*
  http://technet.microsoft.com/en-us/library/bb694069.aspx.
- *Administrator Workflow: PXE Deployment*
  http://technet.microsoft.com/en-us/library/bb693705.aspx.

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