

Windows Deployment Services

WDS for Large Scale Enterprises and Small IT Shops



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WDS Overview

- Deploy any Windows Operating System (Last 15 years) across a LAN
- Included with Windows Server 2008 and newer (Old version was RIS)
- Capture and deploy Images from and to any Windows compatible hardware or virtual host
- Easy to learn and very fast to deploy
- Requires AD, DNS, and DHCP
 - (DNS and DHCP do NOT have to be Microsoft)
 - Can all be on the same server

Benefits to Large Scale Corporate Environments

- Central source for all images
- Deployment of drivers regardless of hardware differences
- Security at multiple levels for fine tuning access
- Deploy virtually unlimited number of machines simultaneously
- Allow an end user to deploy their own computer
- Customizable images for each department or group
- Easy to administer and maintain
- Ability to run multiple WDS servers for higher bandwidth and reliability.

Benefits Small Businesses

- Free with any Windows Server 2008 and newer
- No special hardware needed
- Easy to use
- Works great to deploy only one machine
- Allows deployment of any version of Windows including OEM variants
- Only stores deltas between images for less storage space usage.
- Image an entire small office at one time for new deploys and upgrades.



Features

- Deploy any OS from XP to 8.1 and beyond
- Deploys all versions (Home, Standard, Pro, Enterprise, Datacenter....)
- Capture stock images from installation media both Microsoft and OEM computer manufacturers like Dell and HP.
- Capture customized images with and without additional Microsoft and third party software.
- Deployed images can be ready to use or setup for Out of Box experience
- Faster than hand installs

Advanced Features

- Multicast
 - Deploy 2 to ???? computers at the same time with minimal speed decrease and no bogging down of the server
 - Allows for differences in hardware and speeds of all of the computers
 - Separates into up to three different groups based on network and computer speed
- Driver hardware and OS filtering
 - Allows drivers to be installed on the proper hardware with the correct OS
 - Ability to use older/newer drivers with certain hardware for compatibility

Advanced Features

- Security
 - User level
 - Allows control of which operating systems a user can deploy
 - Hardware level
 - Controls which hardware is allowed to use WDS
- Automation
 - Basic Automation
 - Control boot image per hardware class or per specific predefined computer
 - Control Image selection per predefined computer

Automation

- Basic
 - Predefine a specific computer name
 - Control boot image per hardware class or per specific predefined computer
 - Control Image selection per predefined computer
- Advanced
 - Allows full automation: PXE boot and forget about it!
 - Predefine a specific boot image, set of drivers, and OS image
 - Give a user or low tiered IT person a computer to setup and plug into the network and be done. You can train anyone to do it!

Combine with Other Products

- Add SCCM or PDQ and automate the deployment of additional and/or updated software.
- Add Intel “vPro” to remotely PXE boot so you can reimage a computer from your desk. (Work Smarter NOT Harder)
- Add “Driver Packs” (DriverPacks.net) to have drivers for all of your hardware (There are positives and negatives)
- Add custom scripts to do final tweaks of the computer
 - I wrote a script which does Windows updates and reboots multiple times until it has all last minute updates entire for an image that is several years old.

My Usage for Purdue

- Standard Windows 7 x64 image with a few minor tweaks but no software.
 - Computer is predefined via a website AD interface.
 - Software is pushed via PDQ to setup a standard base image
 - Automated script the deploys as part of PDQ installs Windows updates and reboots multiple times (Image can be updated automatically also as an option)
 - PDQ then pushes any other packages that are needed in addition
- Lab image has special setup but otherwise is the same
 - Pushed to 150 computers at one time using multicast

Purdue - Boot Images

Windows Deployment Services

File Action View Help

Windows Deployment Services

- Servers
 - WDS.mgmt.purdue.edu
 - Install Images
 - Boot Images**
 - Pending Devices
 - Multicast Transmissions
 - Drivers
 - Active Directory Prestaged Devices

Boot Images 10 Boot Image(s)

Image Name	Architecture	Status	Expanded Size	Date	OS Version	Priority [▲]
KCC WDS Setup x64	x64	Online	1297 MB	12/11/2013 2:05 PM	6.2.9200	100000
KCC Win 7 Setup x64	x64	Offline	1039 MB	11/30/2012 12:32 ...	6.1.7601	200000
Microsoft Windows 7 Setup (x64)	x64	Offline	1023 MB	11/30/2012 12:31 ...	6.1.7601	300000
Microsoft Windows 8 Setup (x64)	x64	Offline	1206 MB	11/30/2012 12:31 ...	6.2.9200	400000
Microsoft Windows Server 2K8R2 Setup (x64)	x64	Offline	1056 MB	11/28/2012 11:37 ...	6.1.7601	500000 (Default)
Microsoft Windows Server 2012 Setup (x64)	x64	Offline	1197 MB	11/28/2012 11:38 ...	6.2.9200	500000 (Default)
Microsoft Windows 8 Setup (x86)	x86	Offline	983 MB	8/8/2013 4:08 PM	6.2.9200	800000
KCC Image Capture x64	x64	Online	1206 MB	4/10/2013 10:11 A...	6.2.9200	900000
WIN 7 x86 Special Boot	x86	Online	846 MB	9/4/2013 8:35 AM	6.1.7601	999999
Microsoft Windows 8.1 Setup (x64)	x64	Online	1342 MB	11/1/2013 2:23 PM	6.3.9600	999999

Purdue - Images

Windows Deployment Services

File Action View Help

Windows Deployment Services

Servers

- WDS.mgmt.purdue.edu
 - Install Images
 - CoolSign
 - LABS
 - TechNet
 - Windows 7 x64
 - Windows 7 x86
 - Windows 8 x64
 - Windows 8 x86
 - Windows 8.1 x64
 - Windows Server 2012
 - Windows Server 2K8R2
 - Windows XP x86
 - Boot Images
 - Pending Devices
 - Multicast Transmissions
 - Drivers
 - Active Directory Prestaged Devices

Windows 7 x64 3 Install Image(s)

Image Name	Architecture	Status	Expanded Size	Date	OS Version	Priority ^
KCC WIN 7 x64 SP1 (Default)(2-17-14)	x64	Online	17363 MB	2/17/2014 5:02 PM	6.1.7601	100000
KCC WIN 7 x64 SP1 (11-8-13)	x64	Offline	17153 MB	11/8/2013 3:38 PM	6.1.7601	500000 (Default)
Windows 7 Ent SP1 x64 (Purdue)	x64	Offline	11566 MB	4/25/2013 12:42 PM	6.1.7601	999999

Purdue – Server Images – Multiple Versions

Windows Deployment Services

File Action View Help

Windows Deployment Services

Servers

- WDS.mgmt.purdue.edu
 - Install Images
 - CoolSign
 - LABS
 - TechNet
 - Windows 7 x64
 - Windows 7 x86
 - Windows 8 x64
 - Windows 8 x86
 - Windows 8.1 x64
 - Windows Server 2012
 - Windows Server 2K8R2**
 - Windows XP x86
 - Boot Images
 - Pending Devices
 - Multicast Transmissions
 - Drivers
 - Active Directory Prestaged Devices

Windows Server 2K8R2 8 Install Image(s)

Image Name	Architecture	Status	Expanded Size	Date	OS Version	Priority ^
Windows Server 2008 R2 SERVERSTANDARDCORE	x64	Offline	3292 MB	11/30/2012 10:41 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERENTERPRISE	x64	Offline	9654 MB	11/30/2012 10:41 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERENTERPRISECORE	x64	Offline	3292 MB	11/30/2012 10:41 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERDATACENTER	x64	Offline	9655 MB	11/30/2012 10:42 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERDATACENTERCORE	x64	Offline	3292 MB	11/30/2012 10:42 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERWEB	x64	Offline	9548 MB	11/30/2012 10:42 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERWEBCORE	x64	Offline	3283 MB	11/30/2012 10:42 ...	6.1.7600	500000 (Default)
Windows Server 2008 R2 SERVERSTANDARD	x64	Offline	9655 MB	11/30/2012 10:41 ...	6.1.7600	500000 (Default)



Purdue – Drivers

Windows Deployment Services

File Action View Help



- Servers
 - WDS.mgmt.purdue.edu
 - Install Images
 - Boot Images
 - Pending Devices
 - Multicast Transmissions
 - Drivers
 - All Packages
 - DELL 745
 - DELL GX620 Win 7 x64
 - DELL LAT D630
 - DELL LAT E6230 x64
 - DELL LAT E6330 Win 7 x64
 - DELL LAT E6430 Win 7 x64
 - DELL OPTIPLEX 7010 Win 7 x64
 - DELL OPTIPLEX 7010 Win 8 x64
 - DELL OPTIPLEX 780 Win 7 x64
 - DELL OPTIPLEX 9020 Win7 x64
 - DELL PRECISION M4800 Win 7 x64
 - DELL PRECISION T1700 Win 7 x64
 - DELL WINPE 4
 - HP 6200 SFF Win 7 x64
 - HP 6530B Win 7 x64
 - HP 8200 ELITE Win 7 x64
 - HP 8300 ELITE Win 7 x64
 - HP DC7700 Win 7 x64
 - HP DC7800 Win 7 x64
 - HP DC7900 Win 7 x64
 - HP DC8000 Win 7 x64
 - HP ELITEBOOK 2730P Win 7 x64

DELL PRECISION M4800 Win 7 x64 533 Package(s)

Package Name	File Name	Architectu...	Manufacturer	Version	Package Date	Date Added	Class Name	Class GUID
ich5usb [ia64]	ich5usb.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	USB	{36FC9E60-C465-11CF-8056-4...
LxLpUSB [ia64]	LxLpUSB.inf	ia64	Intel	9.4.0.1017	2/25/2013 12:00 AM	12/5/2013 9:17 AM	USB	{36FC9E60-C465-11CF-8056-4...
ich8core [ia64]	ich8core.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
patusb [ia64]	patusb.inf	ia64	Intel	9.2.3.1030	2/25/2013 12:00 AM	12/5/2013 9:17 AM	USB	{36FC9E60-C465-11CF-8056-4...
ich5id2 [ia64]	ich5id2.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	hdc	{4D36E96A-E325-11CE-BFC1-...
lvyTown [ia64]	lvyTown.inf	ia64	Intel	9.3.2.1009	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
IntelCP2 [ia64]	IntelCP2.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
E5100 [ia64]	E5100.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
ich78usb [ia64]	ich78usb.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	USB	{36FC9E60-C465-11CF-8056-4...
LxLpCore [ia64]	LxLpCore.inf	ia64	Intel	9.4.0.1017	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
LxLpSens [ia64]	LxLpSens.inf	ia64	Intel	9.4.0.1017	2/25/2013 12:00 AM	12/5/2013 9:17 AM		{5175D334-C371-4806-B3BA-...
LxLpSMB [ia64]	LxLpSMB.inf	ia64	Intel	9.4.0.1017	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
wptahci [ia64]	wptahci.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	hdc	{4D36E96A-E325-11CE-BFC1-...
DH89xxCC-smb [ia64]	DH89xxCC-smb.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	System	{4D36E97D-E325-11CE-BFC1-...
ichacore [ia64]	ichacore.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
Tcreek [ia64]	Tcreek.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	System	{4D36E97D-E325-11CE-BFC1-...
Apfiltr [ia64]	Apfiltr.inf	ia64	Alps	8.1200.101...	7/23/2013 12:00 AM	12/10/2013 8:40 AM	Mouse	{4D36E96F-E325-11CE-BFC1-...
bcbtums-win7x86-b...	bcbtums-win7x8...	ia64	Broadcom ...	6.5.1.4500	5/13/2013 12:00 AM	12/10/2013 8:40 AM	Bluetooth	{E0CBF06C-CD8B-4647-BB8A...
bcbtumsLD [ia64]	bcbtumsLD.inf	ia64	Broadcom ...	6.5.1.4101	3/24/2012 12:00 AM	12/10/2013 8:40 AM	Bluetooth	{E0CBF06C-CD8B-4647-BB8A...
swg3knm05 [ia64]	swg3knm05.inf	ia64	Sierra Wirel...	13.2.1080.4	2/8/2013 12:00 AM	12/10/2013 8:39 AM	Ports	{4D36E978-E325-11CE-BFC1-...
whtptsd [ia64]	whtptsd.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	Ports	{4D36E978-E325-11CE-BFC1-...
whtpoint [ia64]	whtpoint.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	System	{4D36E97D-E325-11CE-BFC1-...
DH89xxCC-ME [ia64]	DH89xxCC-ME.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	hdc	{4D36E96A-E325-11CE-BFC1-...
TcrkSD [ia64]	TcrkSD.inf	ia64	Intel	9.1.9.1003	2/25/2013 12:00 AM	12/5/2013 9:17 AM	Ports	{4D36E978-E325-11CE-BFC1-...
DH89xxCC-id2 [ia64]	DH89xxCC-id2.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	hdc	{4D36E96A-E325-11CE-BFC1-...
cdvcore [ia64]	cdvcore.inf	ia64	Intel	9.2.2.1037	2/25/2013 12:00 AM	12/5/2013 9:18 AM	System	{4D36E97D-E325-11CE-BFC1-...

My Usage for Drown Enterprises

- Capture image of new customer computer after tweaking image
 - Reuse image on other computers
 - Allows reimage in case of problems
- Capture of OEM disks gives access to all versions of OS
- Deploy test VM copies of customer computers

PXE Boot

- Boot from the Network
- Initially a small image is downloaded which boot up the system
- Windows Pre Installation Environment (WIN PE) is then loaded from the network
- The WIN PE then gives you a GUI interface to pick options, or if automated, uses an xml file to select all of the options and install the OS with user interaction

PXE – Initial Boot

```
Hyper-V
PXE Network Boot 09.14.2011
(C) Copyright 2011 Microsoft Corporation, All Rights Reserved.

CLIENT MAC ADDR: 00 15 5D 83 B8 06  GUID: DACFA226-FFE6-4093-8518-0B21BBOE59BF
CLIENT IP: 128.210.131.157  MASK: 255.255.255.0  DHCP IP: 128.210.131.15
GATEWAY IP: 128.210.131.1

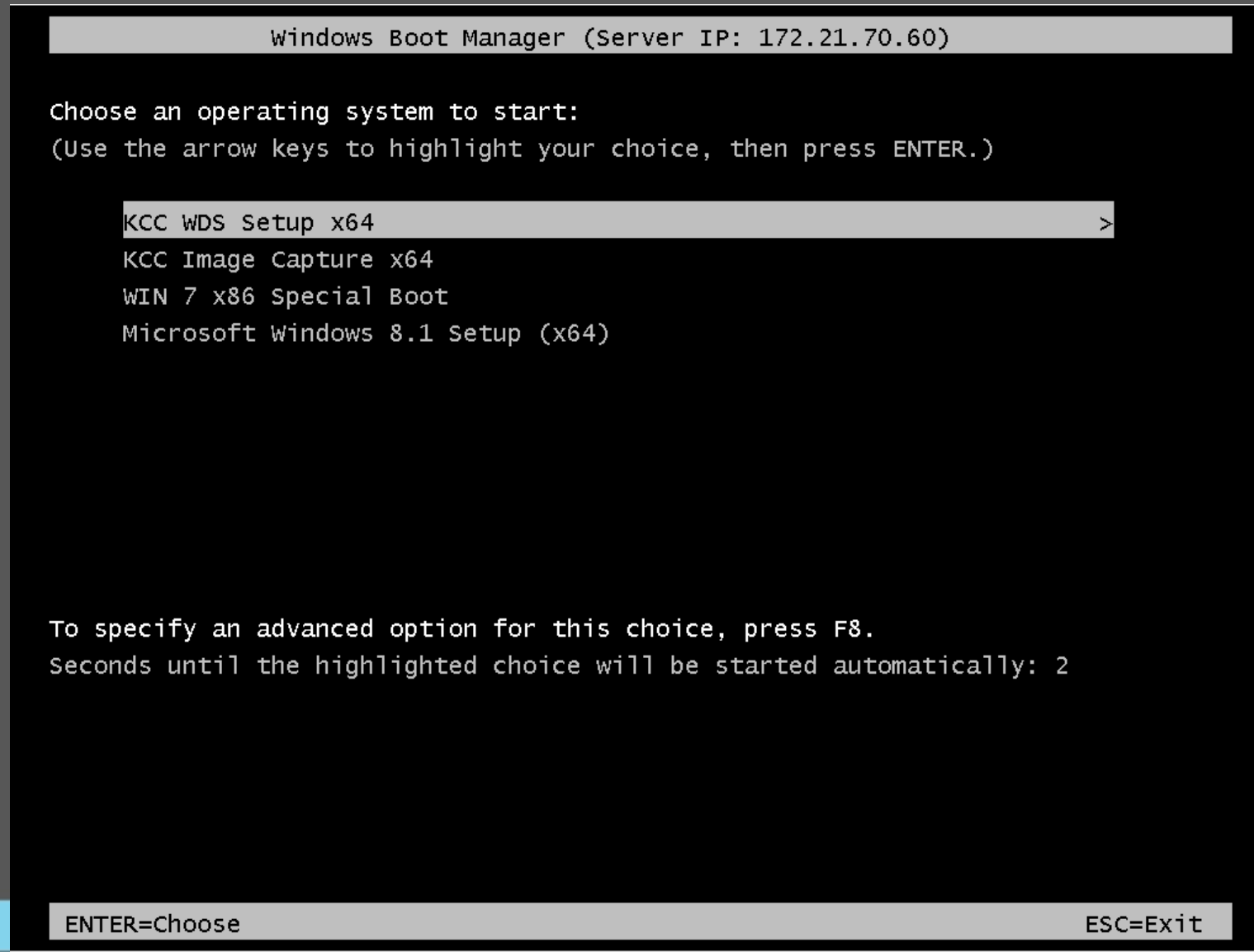
Downloaded WDSNBP from 172.21.70.60

WDSNBP started using DHCP Referral.
Contacting Server: 172.21.70.60 (Gateway: 128.210.131.1).
Architecture: x64
Contacting Server: 172.21.70.60.
TFTP Download: boot\x86\wdsnbp.com

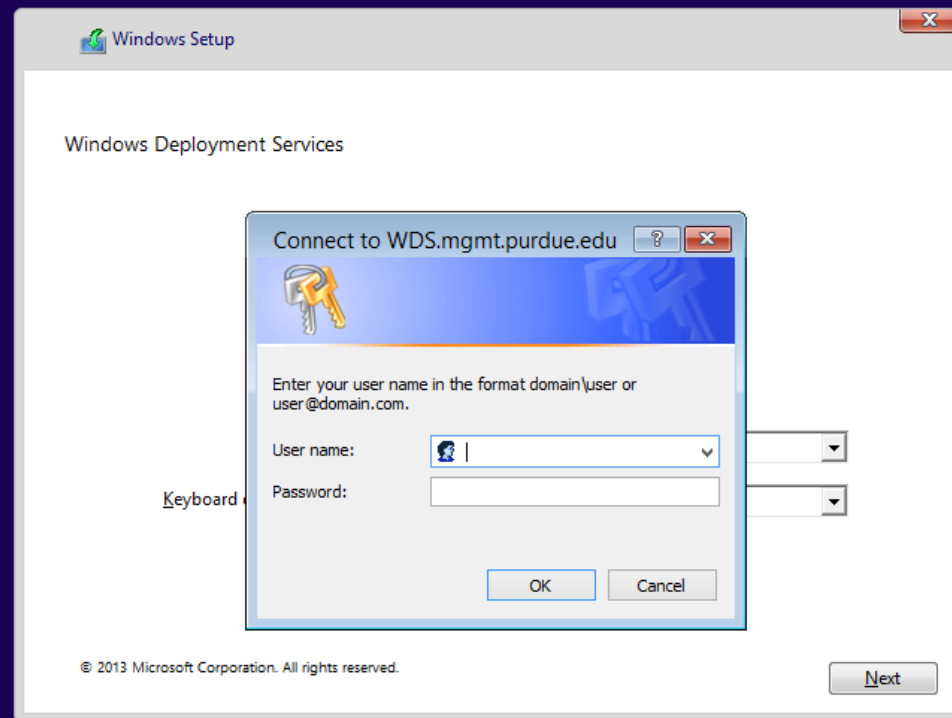
Downloaded WDSNBP from 172.21.70.60 WDS.mgmt.purdue.edu

Architecture: x64
Contacting Server: 172.21.70.60.
TFTP Download: boot\x64\pxeboot.n12
```

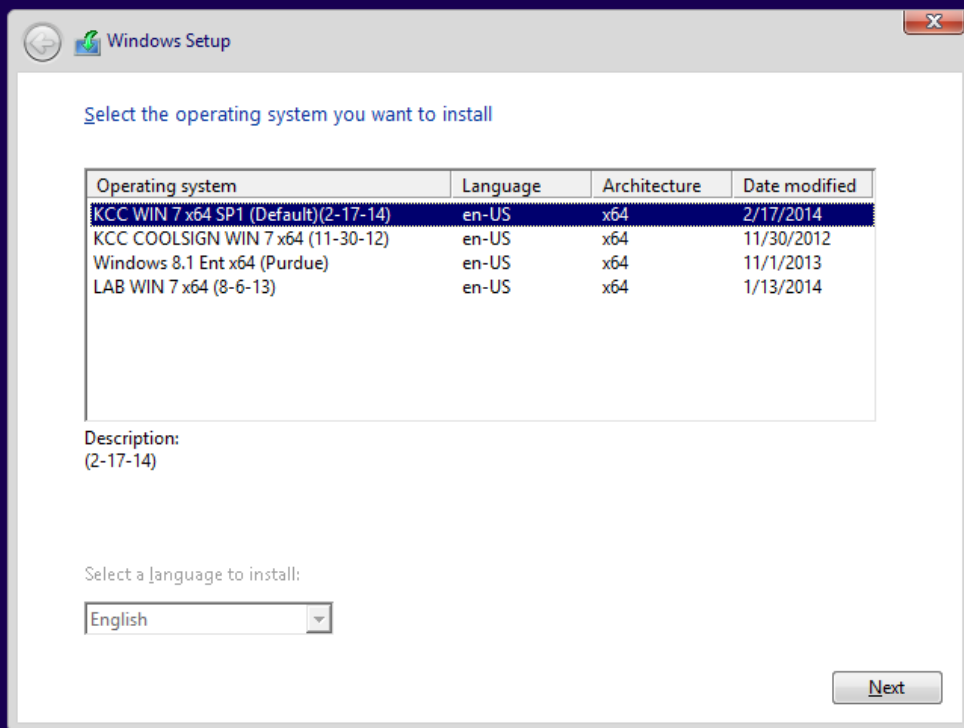
Boot Image Selection (If Not Automated)



Security (If Not Automated)



Deployment Image Selection (If Not Automated)



Drive Partitioning (If Not Automated)

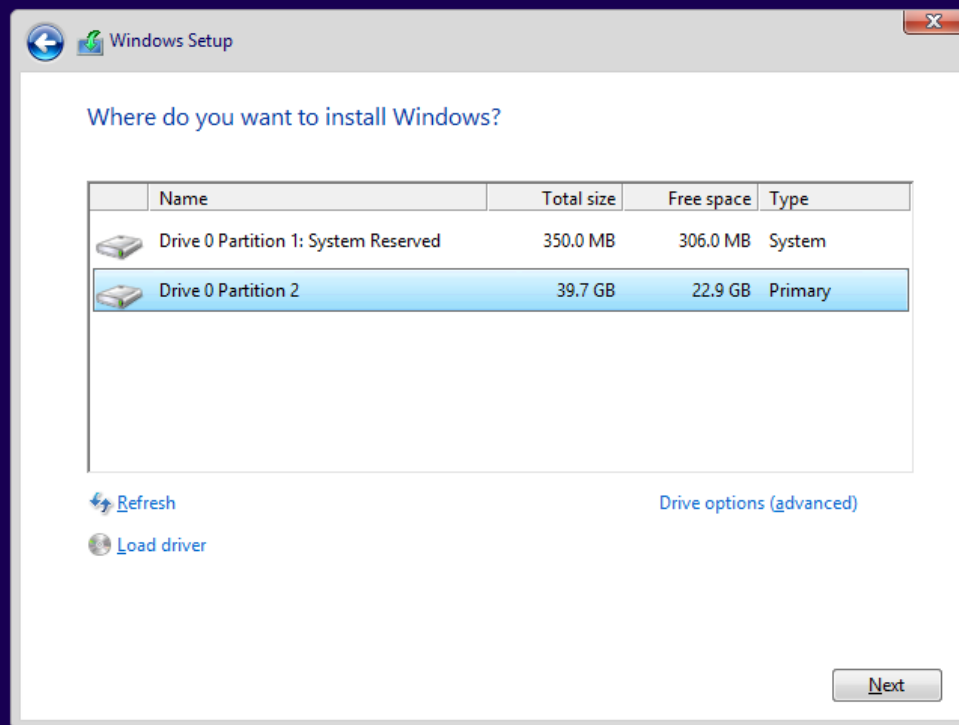
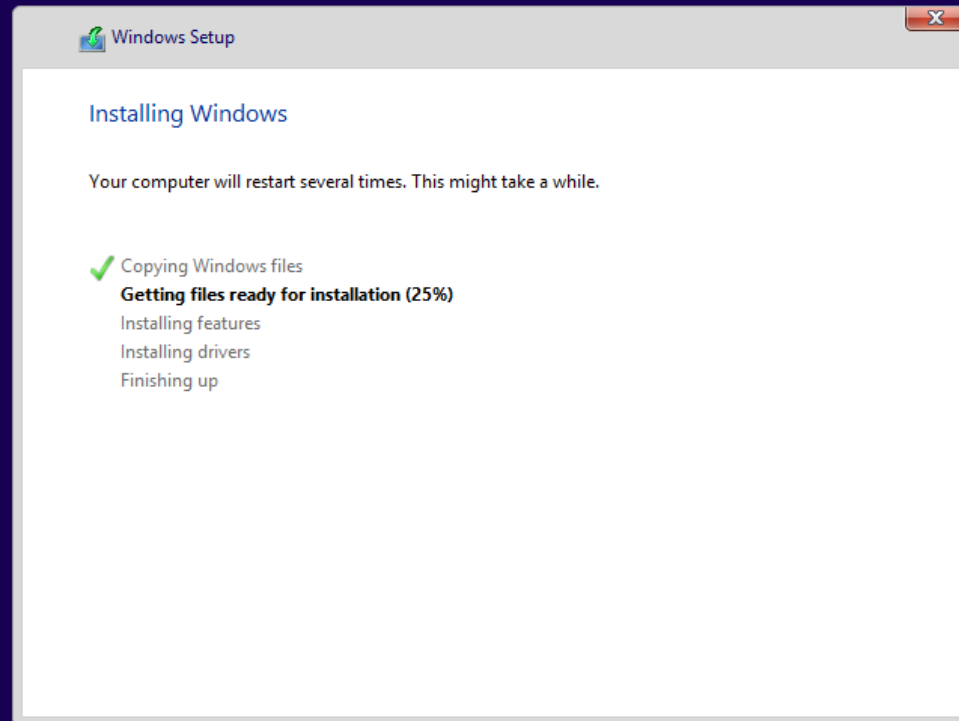


Image Deployment



Deploying Drivers Based on Hardware



Complete OS Ready to Use

Press CTRL + ALT + DELETE to log on



 Windows 7 Enterprise

012 R2

Windows Server 2012 R2 Standard
Build 9600



12:59 PM
3/18/2014

Questions ???

- Feel free to email any questions to rdrown@purdue.edu