



Customizing Windows PE in DS 7.6

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Agenda and topic overview

1	Why customize Windows PE?
2	Requirements and pre-requisites
3	Application customizations
4	Demonstrate build and functionality



Why customize Windows PE

Benefits and ideas for Windows PE customizations

Why Customize Windows PE?

- Remote desktop capabilities
 - No requirement to be at the computer (home/remote office)
 - Allows troubleshooting Windows PE with Symantec and others
- Troubleshooting capabilities
 - Ability to review logs and add log viewer(s)
 - Ability to see what goes on in WinPE during any phase once network connection is established
- Change backgrounds
 - Customize the background in Windows PE to your organizations needs and brand
 - Adding system information, such as; Name, IP, network information, etc.



Requirements and pre-requisites

What are the requirements and pre-requisites for customizing WinPE

Requirements and pre-requisites

- For successful Windows PE customizations it is highly recommended utilizing only 32-bit Windows PE. While 64-bit can be utilized, **a large number of applications will only run properly in 32-bit Windows PE!**
- Modifying and injecting the appropriate extensions and features into the windows WIM.
 - DS PXE bases its Windows PE environment on a .wim file with the base Windows PE environment
 - Located in; \Program Files\Altiris\Deployment\BDC\[PEversion]\Tools\PETools\x86\winpe.wim
 - This also requires imported Windows AIK/ADK environments.
- Modifying the file structure injected into Windows PE by bootwiz
 - \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe
 - This file structure is utilized across all Windows PE builds, if multiple Windows PE versions are built

Bootwiz injected Windows PE file structure

- \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe
- Expanding free space in Windows PE
 - \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe\default.bdc
 - Under [Application] Add RamDriveSize=512 (size is in Mb are; 32, 64, 128, 256, 512)
- Editing Windows PE “launch options”
 - \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe\x86\Base\runagent.bat
 - Use this file to control launching or installing of features, such as BGInfo, VNC and pcap
- Adding executables and other features
 - \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe\x86\Base\Program Files



Remote desktop capabilities

Access Windows PE anywhere anytime, when network connected

Remote desktop and connectivity capabilities

- Traditionally needed to be local to the machine in Windows PE to troubleshoot
- Our suggestion; Add a remote connectivity tool.
 - We will demonstrate with VNC
- Allows us to do things such as;
 - Validate status of the Windows PE environment, once connected
 - Review logs, or add log viewer capabilities
 - Add tools, such as Wireshark to troubleshoot network connectivity issues

Remote desktop and connectivity capabilities – Ultra VNC

- Using Ultra VNC
 - Location <http://www.uvnc.com/downloads/ultravnc/111-download-ultravnc-1205.html>
 - Get the Ultra VNC All Binary ZIP file, this will contain the necessary binaries to extract
- Extract Vista – Win 8 files
 - We need: vncviewer.exe and winvnc.exe
- Run vncviewer.exe and generate your VNC settings, such as password and connectivity options.
- Copy vncviewer.exe to the location where you would like to establish a remote connection from
- Copy winvnc.exe and UltraVNC.ini to your pre-staging folder for Windows PE

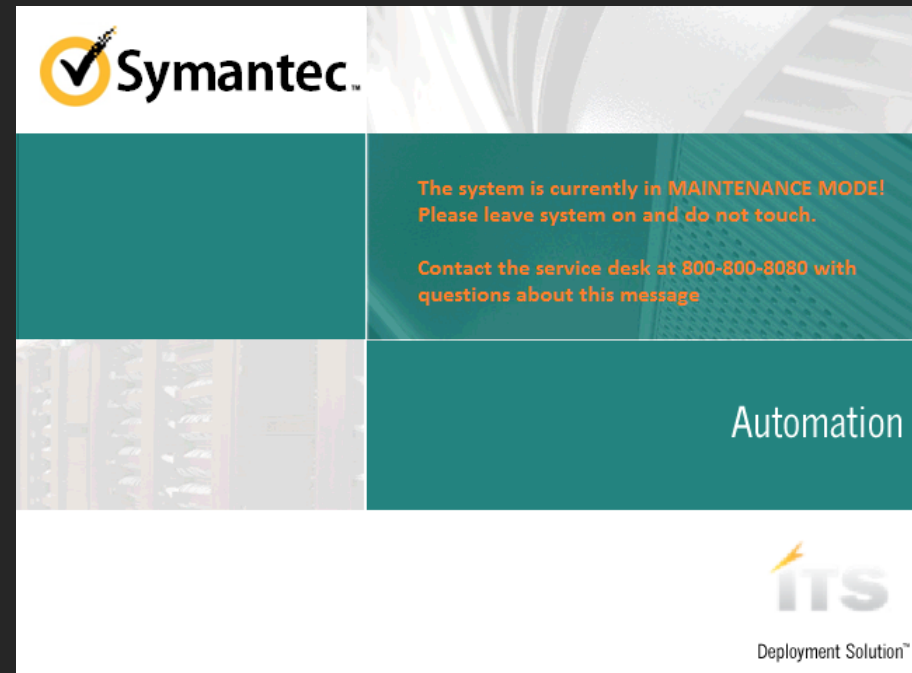


Adding information to the desktop

Using the Windows background and BGInfo to add information to the desktop

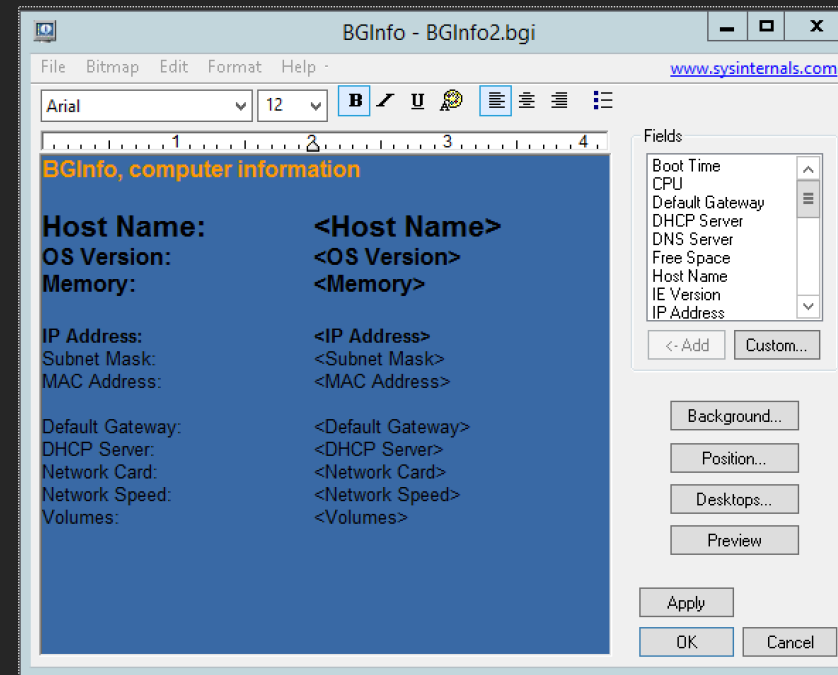
Editing the desktop background

- The background is based on WinPE.jpg and WinPE.bmp
 - Located in \Program Files\Altiris\Deployment\BDC\bootwiz\Platforms\WinPE\x86\Optional\Boot
 - Modify as applicable



Adding BGInfo computer information

- BGInfo allows adding additional information to the desktop such as the IP, name and network information.
- Customize the information displayed, save out BGInfo.bgi along with BGInfo.exe and eula.txt then put in staging folder





Adding utilities to the environment

Adding the SMP log viewer and Wireshark

Adding utilities to the environment

- SMP Log Viewer
 - Copy out logviewer2.exe to staging location
- Wireshark
 - Obtain and install Wireshark portable version
 - Copy Wireshark portable (extracted) directory to staging location
 - Download and stage winpcap installer for winpe
 - nmap.zip at <https://nmap.org/dist/nmap-6.47-win32.zip>
 - Extract .zip file and copy winpcap-nmap-4.13.exe to staging location
 - Silent install for winpcap-nmap is: **winpcap-nmap-4.13.exe /S**



Bringing it all together – preparing file structure

Build prep time time!

Modify and copy the appropriate files in place

- Remember to modify runagent.bat
 - "X:\Program Files\BGInfo\BGInfo.exe" /NOLICPROMPT /SILENT /TIMER:0 "X:\Program Files\BGInfo\BGInfo2.bgi"
 - start "VNC" "X:\Program Files\UltraVNC\winvnc.exe"
 - "X:\Program Files\WinPCAP\winpcap-nmap-4.13.exe" /S
- Remember to copy files into;
 - \Program Files\Altiris\Deployment\BDC\bootwiz\oem\DS\winpe\x86\Base\Program Files
 - \Program Files\Altiris\Deployment\BDC\bootwiz\Platforms\WinPE\x86\Optional\Boot



Build it!

How to build and synchronize the Windows PE preboot

Process to update and build the Windows PE bits

- Update the BDC Package
 - Settings > All Settings > Deployment > Packages
 - Click **Update Distribution Points** on BDC package
- Run **NS.Package Distribution Point Update Schedule**
 - Note; This windows scheduled tasks runs every 10 minutes
- Build WinPE environment
 - Settings > Deployment > Preboot Configurations
 - Add a new preboot configuration or update existing one
- Run Delta Resource Membership Update
 - Note; This runs on a scheduled interval (configurable)
- Update configuration for SMA on Site Server
 - This will download PXE WinPE build instructions policy and kick off bootwiz
 - Once bootwiz has finished and PXE services are synchronized test the new WinPE boot!



Q&A



Thank you!

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Additional Resources – Commands run to update WinPE.wim to 5.1

Start **Deployment and Imaging Tools Environment** as an administrator

```
copy c:\WinPE_x86
```

```
Dism /Mount-Image /ImageFile:"C:\WinPE_x86\media\sources\boot.wim" /index:1 /MountDir:"C:\WinPE_x86\mount"  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2919442-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2919355-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2932046-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2934018-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2937592-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2938439-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log  
Dism /Add-Package /PackagePath:C:\MSU\Windows8.1-KB2959977-x86.msu /Image:C:\WinPE_x86\mount /LogPath:AddPackage.log
```

```
Dism /image:c:\WinPE_x86\mount /Cleanup-Image /StartComponentCleanup /ResetBase  
Dism /Unmount-Image /MountDir:"C:\WinPE_x86\mount" /commit
```

```
Dism /Export-Image /SourceImageFile:C:\WinPE_x86\media\sources\boot.wim /SourceIndex:1  
/DestinationImageFile:C:\WinPE_x86\media\sources\boot2.wim
```

```
del C:\WinPE_x86\media\sources\boot.wim  
rename C:\WinPE_x86\media\sources\boot2.wim boot.wim
```

Additional Resources – Commands run to customize WinPE.wim

```
Copy boot.wim to C:\winpex86\  
md C:\winpex86\mount
```

```
imagex /mountrw c:\winpex86\boot.wim 1 c:\winpex86\mount
```

```
DISM /Add-Package /Image:"C:\WinPE86\mount" /PackagePath:"D:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\Windows Preinstallation Environment\x86\WinPE_OCs\WinPE-WMI.cab"
```

```
DISM /Add-Package /Image:"C:\WinPE86\mount" /PackagePath:"D:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\Windows Preinstallation Environment\x86\WinPE_OCs\WinPE-NetFx.cab"
```

```
DISM /Add-Package /Image:"C:\WinPE86\mount" /PackagePath:"D:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\Windows Preinstallation Environment\x86\WinPE_OCs\WinPE-Scripting.cab"
```

```
DISM /Add-Package /Image:"C:\WinPE86\mount" /PackagePath:"D:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\Windows Preinstallation Environment\x86\WinPE_OCs\WinPE-PowerShell.cab"
```

```
DISM /Add-Package /Image:"C:\WinPE86\mount" /PackagePath:"D:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\Windows Preinstallation Environment\x86\WinPE_OCs\WinPE-DismCmdlets.cab"
```

```
Dism /Unmount-Image /MountDir:"C:\WinPE86\mount" /commit
```