



# Customizing Windows PE in DS 7.6

**Rasmus Ronlev**

Solution Architect

# 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

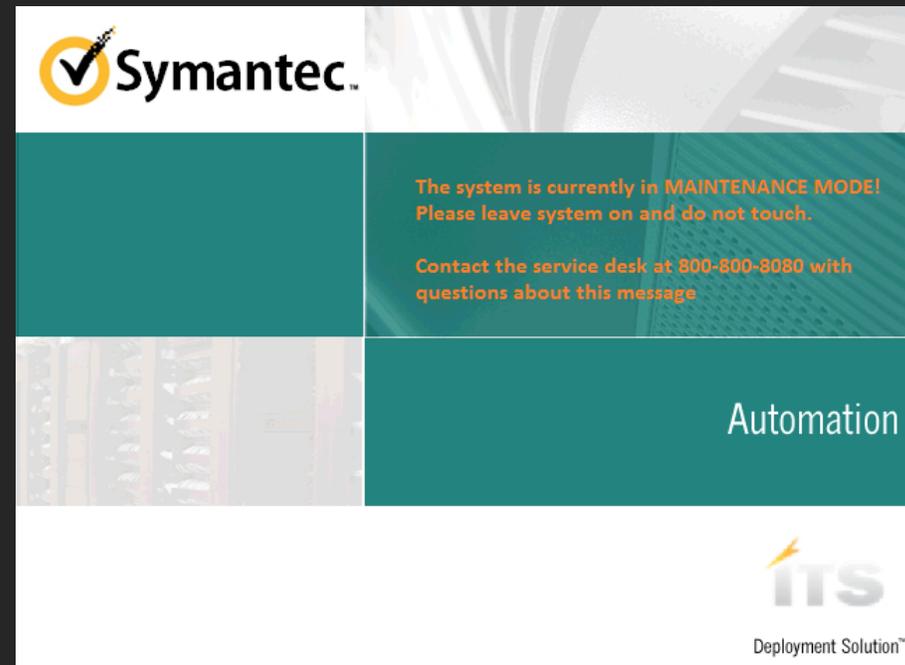


## Adding information to the desktop

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

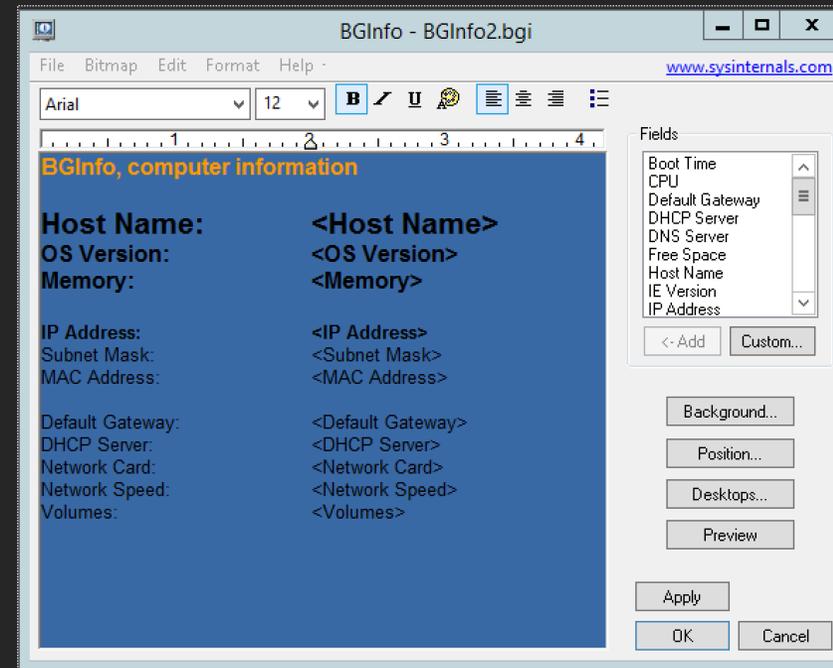
# Editing the desktop background

- 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 BGIInfo computer information

- BGIInfo allows adding additional information to the desktop such as the IP, name and network information.
- Customize the information displayed, save out BGIInfo.bgi along with BGIInfo.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 potable version
    - Copy Wireshark potable (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!

Rasmus Ronlev

[rronlev@itsdelivers.com](mailto:rronlev@itsdelivers.com)

616-242-5300

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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_OC\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_OC\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_OC\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_OC\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_OC\WinPE-DismCmdlets.cab"
```

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