

# MDT and PXE-booting

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- Deploying Windows with Debian

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Is it possible to have a PXE-booted Lite Touch Installation of Windows without Windows Server and Active Directory? - Sure thing. This guide will provide you one way of setting up an environment with a deployment server running Debian.

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## Introduction

Imagine this; you want to deploy Windows by PXE-boot. Looking things up, you realise that you would need to set up an Active Directory environment with Windows Deployment Services. That isn't very cheap. Sure, you could waltz among the machines inserting discovery media to solve it, but that isn't just as cool, is it? Not to mention the horror of a huge bulk installation. Hoovering the net for a Linux way of doing it you just might end up in a solution which requires access to the network DHCP server to add the next-server option. Fear not, for this guide does not require such access.

If you are convinced enough to continue reading after the ridiculous previous paragraph;

Good luck and let this guide be for your convenience!

## Limitations of the environment

Be aware that there are some limitations with this environment. Multicasting and MSSQL are as far as I know, not possible to enable. I have not been actively looking for a solution for Multicasting since I doubt this will be used for such a large scale that multicasting would be considered. MSSQL however, could be replaced with an equivalent function by creating a solution which generates a "dynamic" customsettings.ini on the share.

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## Prerequisites

- Some familiarity with Debian and Windows
- Three machines of which one has Windows installed
- Connection to the Internet
- Windows installation media
- (Network card drivers for machine which will be used for PXE-boot install)

To clarify how familiar you should be with Debian;

In the guide, I have made the assumption that you are able to do basic tasks such as installing Debian, getting super user privileges, editing text documents, etc.

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## Installing the Deployment Server

### Installing Samba

Install Samba:

```
# apt-get install samba
```

Specify a workgroup name when asked. You could practically set anything. I specified the default "WORKGROUP" name.

### Creating Users

For this environment I had set up two accounts; mdtadmin and mdtuser. As the names suggest, one is for administrative use and one for deployment use.

For such creation run the following:

```
# adduser --disabled-password --disabled-login --no-create-home -  
-shell /bin/false --gecos "MDT Admin" mdtadmin
```

```
# adduser --disabled-password --disabled-login --no-create-home -  
-shell /bin/false --gecos "MDT User" mdtuser
```

The above two commands create the two accounts in the machine itself. We would naturally want the accounts to be available for Samba use as well. To do this you have to add them to samba and set a password when prompted:

```
# smbpasswd -a mdtadmin
```

```
# smbpasswd -a mdtuser
```

### Installing and Configuring TFTP-D-HPA

Install tftpd-hpa:

```
# apt-get install tftpd-hpa
```

Go with the default **/srv/tftp** as root directory when it asks.

Create **/srv/tftp/tftpd.map** with the following content:

```
rg \\ /
```

Edit **/etc/default/tftpd-hpa** to make it look like this:

```
# /etc/default/tftpd-hpa

TFTP_USERNAME="tftp"
TFTP_DIRECTORY="/srv/tftp"
TFTP_ADDRESS="0.0.0.0:69"
TFTP_OPTIONS="--secure -m /srv/tftp/tftpd.map"
```

Restart the tftpd:

```
# /etc/init.d/tftpd-hpa restart
```

## Configuring Samba

Create the directory **/srv/DeploymentShare**:

```
# mkdir /srv/DeploymentShare
```

Add the following to **/etc/samba/smb.conf**:

```
[DeploymentShare]
comment = MDT Deployment Share
path = /srv/DeploymentShare
admin users = mdtadmin
writable = yes

[tftp]
comment = TFTP Share
path = /srv/tftp
admin users = mdtadmin
writable = yes
```

Restart Samba:

```
# /etc/init.d/samba restart
```

## Installing and Configuring Dnsmasq

Install Dnsmasq:

```
# apt-get install dnsmasq
```

Create **/etc/dnsmasq.d/pxe.conf** with the following content:

```
# Disable DNS in dnsmasq
port=0

# Specify DHCP logging
log-dhcp

# Boot settings etc
dhcp-boot=/srv/tftp/Boot/pxeboot.0
dhcp-option=vendor:PXEClient,6,2b
dhcp-no-override

# Message with with 0s timeout
pxe-prompt="Running Lite Touch Installation...", 0

# Menu item for LTI
pxe-service=X86PC, "Run Lite Touch Installation", Boot/pxeboot

# Network settings
dhcp-range=10.0.0.0,proxy
```

Replace the network address marked with red with the network address of the subnet your machine will be placed in.

Restart Dnsmasq:

```
# /etc/init.d/dnsmasq restart
```

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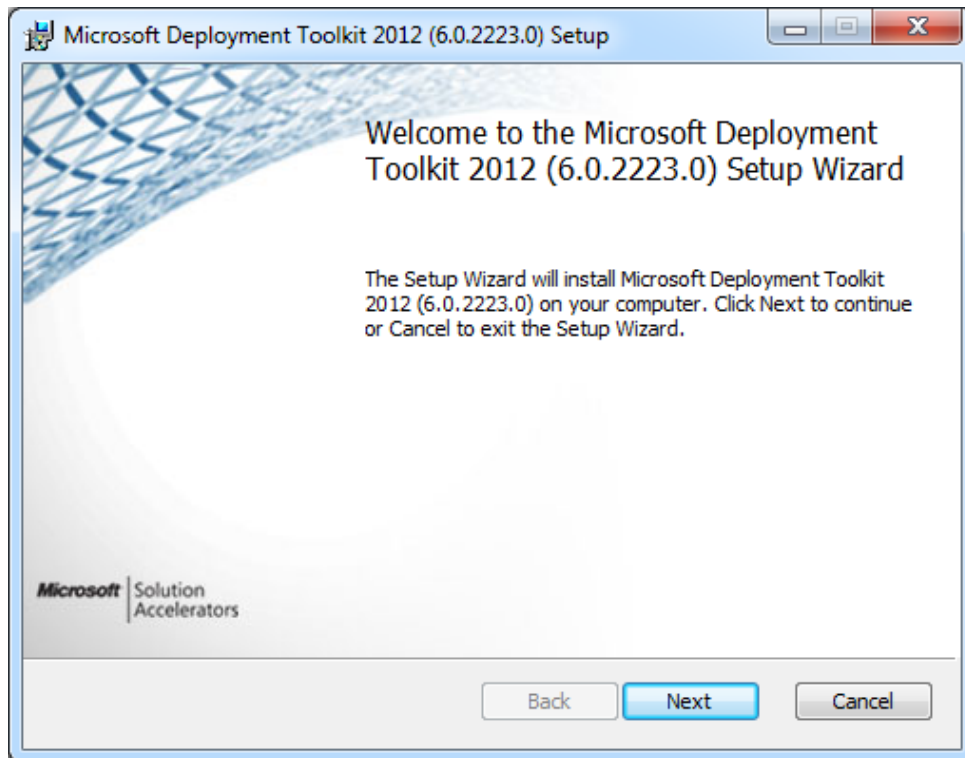
## Preparing the Windows 7 Machine

### Installing Microsoft Deployment Toolkit

Grab a copy of Microsoft Deployment Toolkit from Microsoft by visiting <http://technet.microsoft.com/en-us/solutionaccelerators/dd407791.aspx>

This guide will use the x64 package, but download the one appropriate for your system.

Run the downloaded file and install it.



No special configuration needed in this wizard. Just go through all the pages.

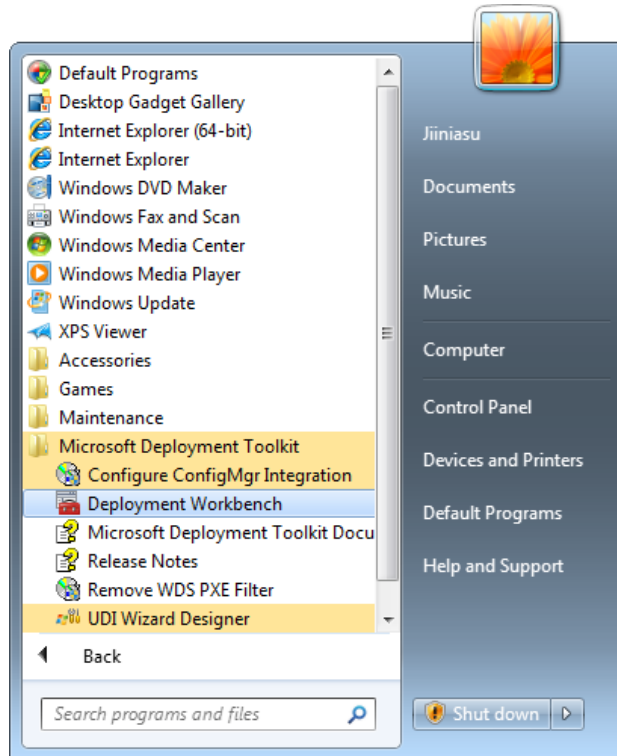
### Mounting Network Resources

Mount "DeploymentShare" to M: and "tftp" to T: using the mdtadmin login for later convenience.

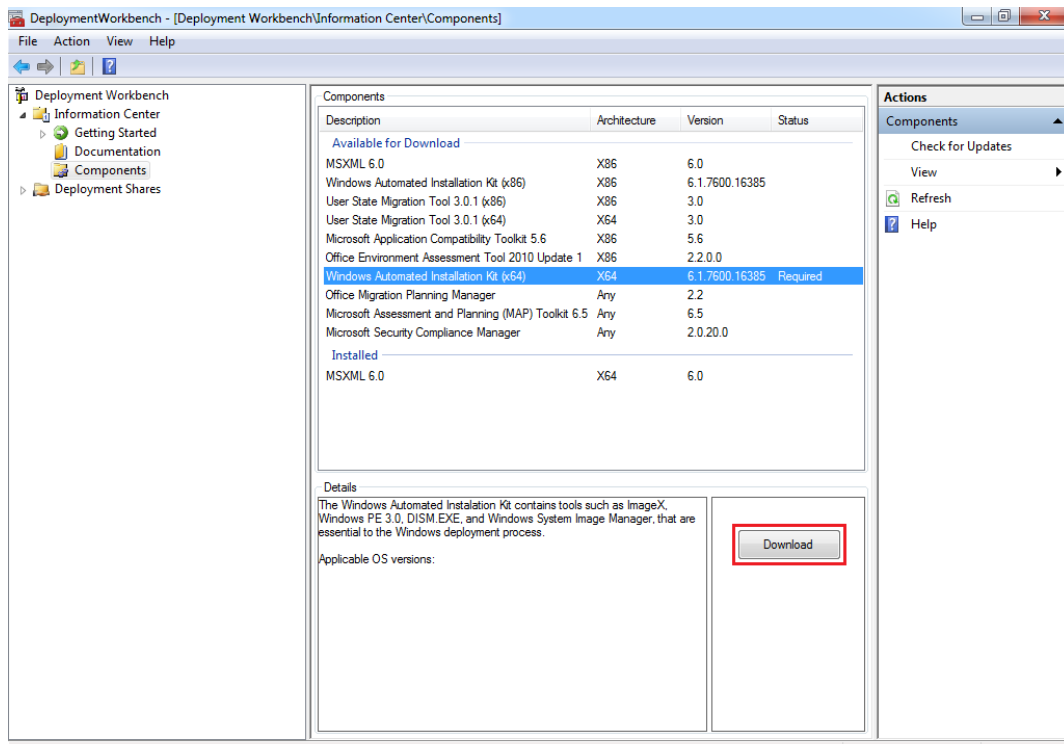


## Installing Windows Automated Installation Kit

Start the newly installed Deployment Workbench and install Windows Automated Installation Kit by using MDT's component snap-in.



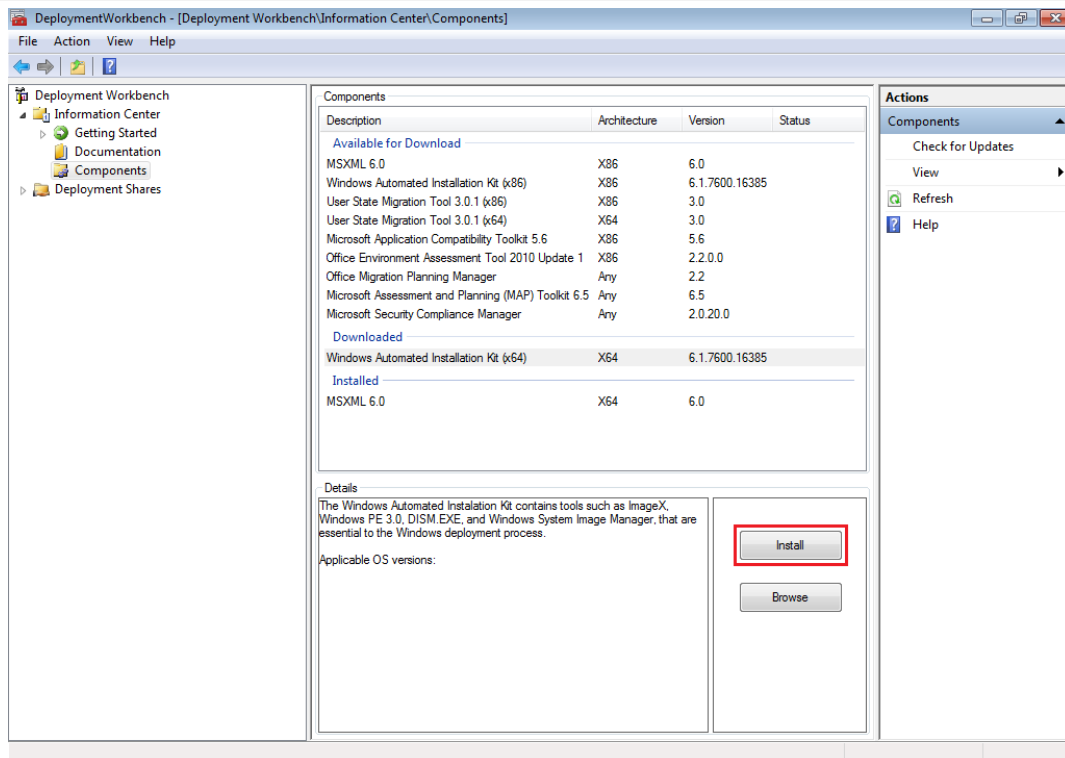
Deployment Workbench in the Start -> All Programs menu.



Now is a good opportunity to have a cuppa and some biscuits. Downloading might take a while.

# MDT and PXE-booting - Deploying Windows with Debian

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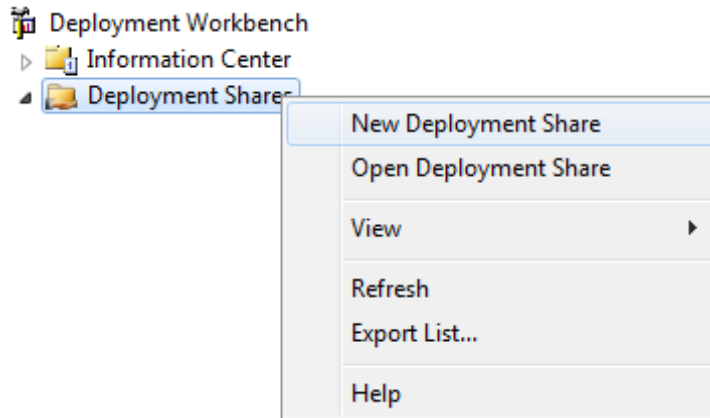
Pressing install launches the WAIC setup-wizard.

Run through the WAIC-installation in the same fashion as the MDT install. No special configuration is needed here.

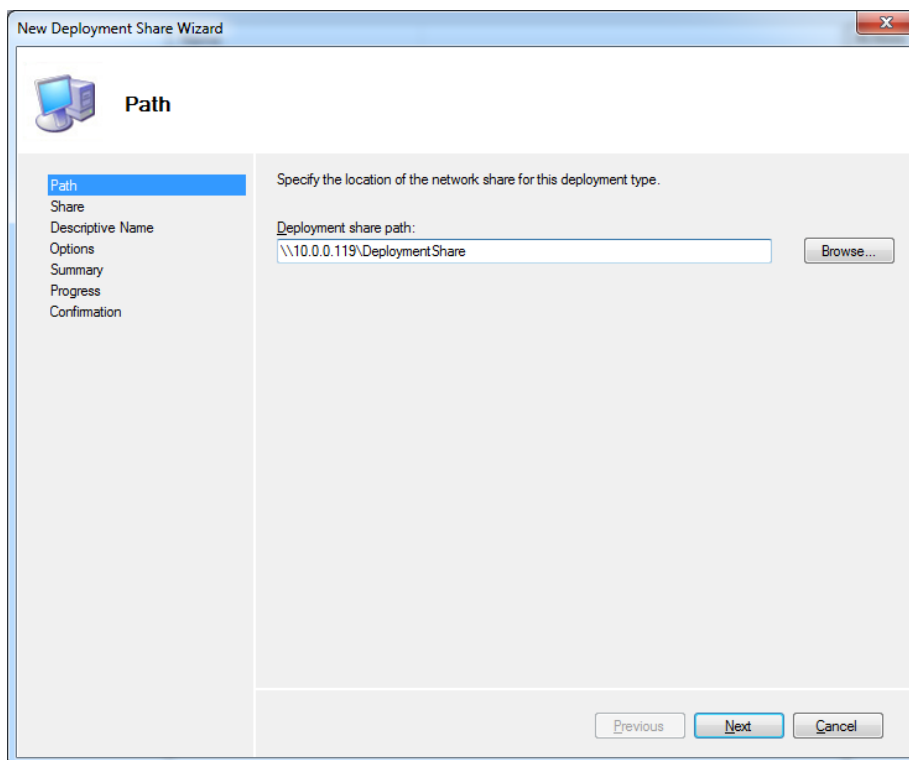
## Preparing the Deployment Share

### Populating the DeploymentShare-share

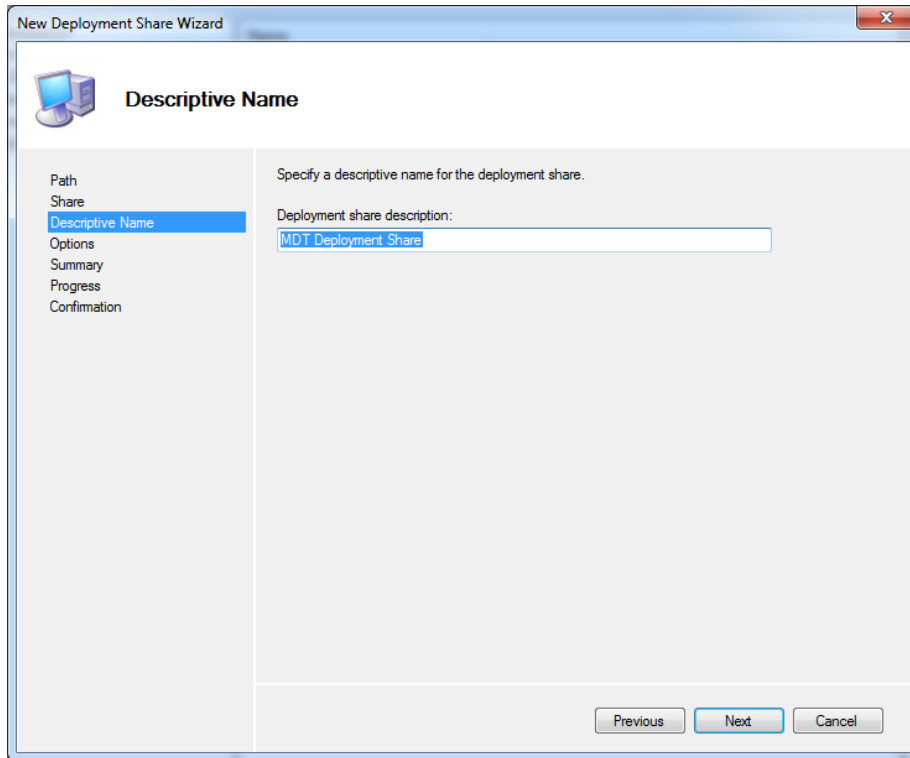
Populate the DeploymentShare-share by creating a new deployment share. Right click *Deployment Shares* and select *New Deployment Share*.



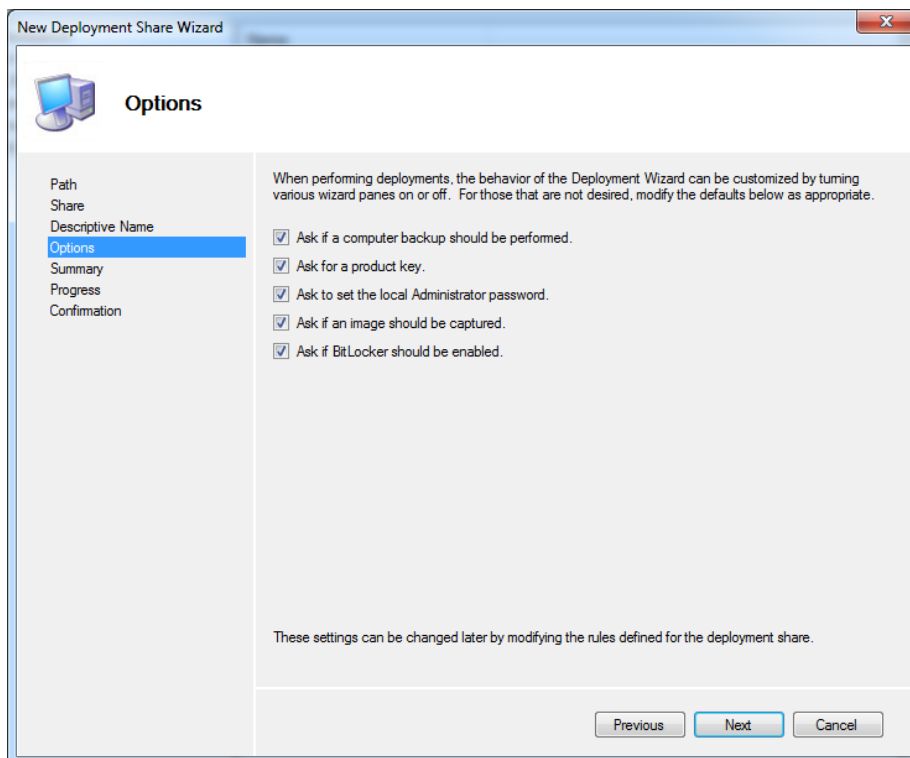
Start the New Deployment Share wizard.



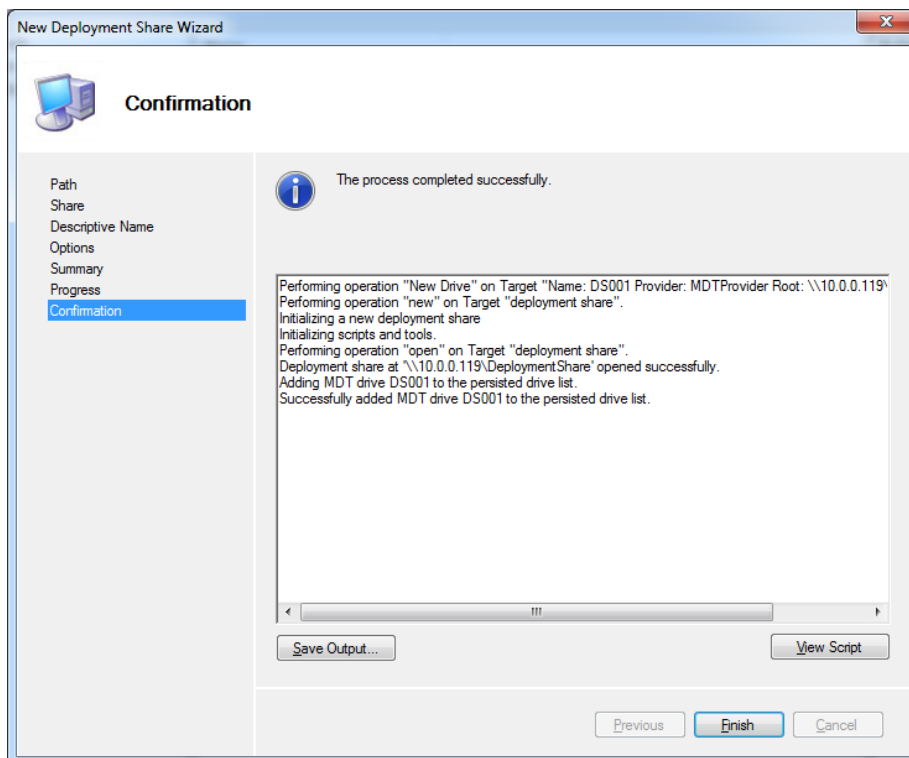
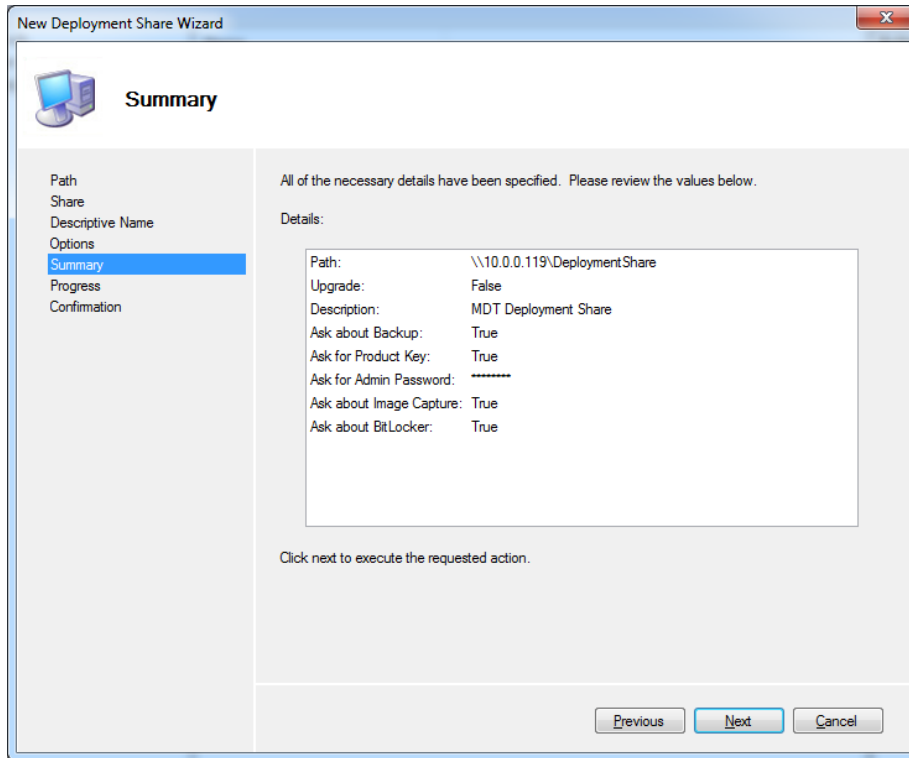
Type or browse to the DeploymentShare-share



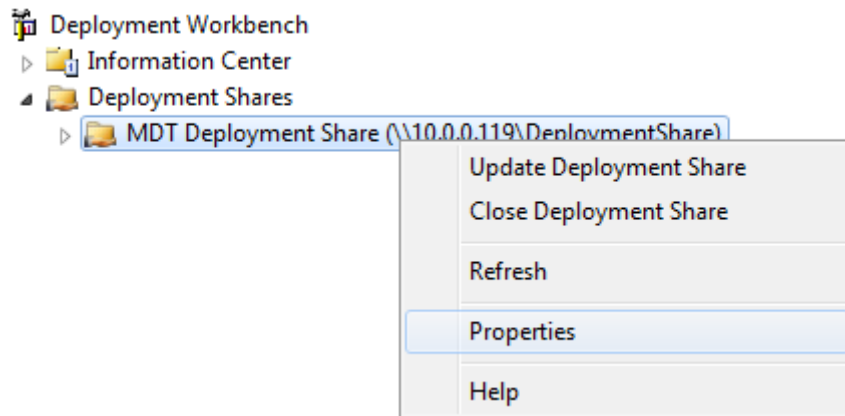
You can give the share any convenient name of your preference.



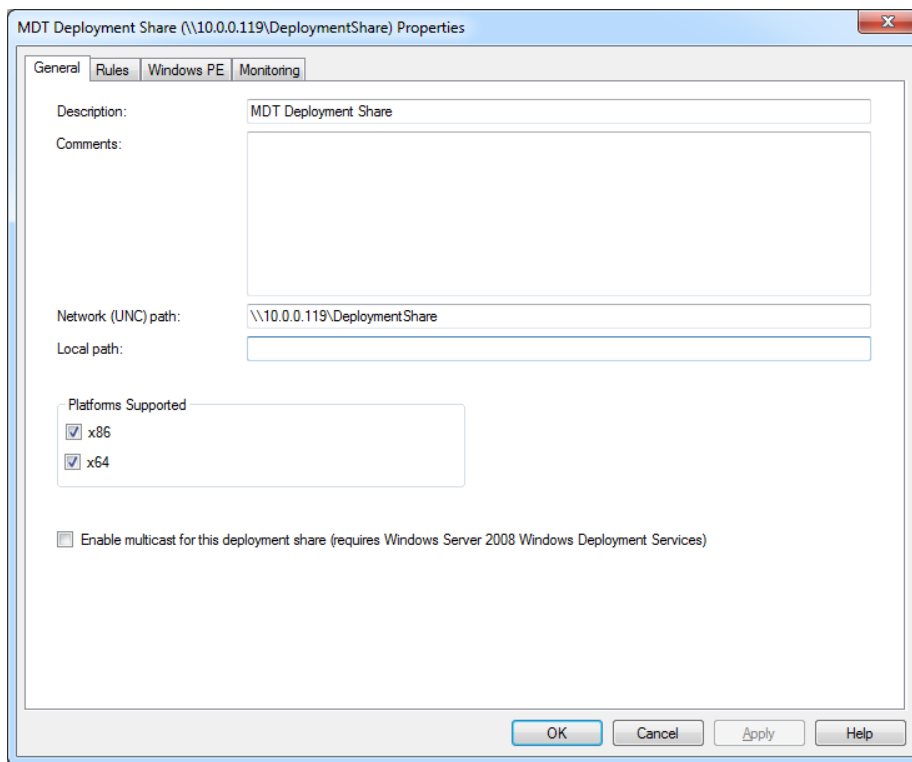
You can select this differently if you want, but I've chosen to tick all boxes for this guide.



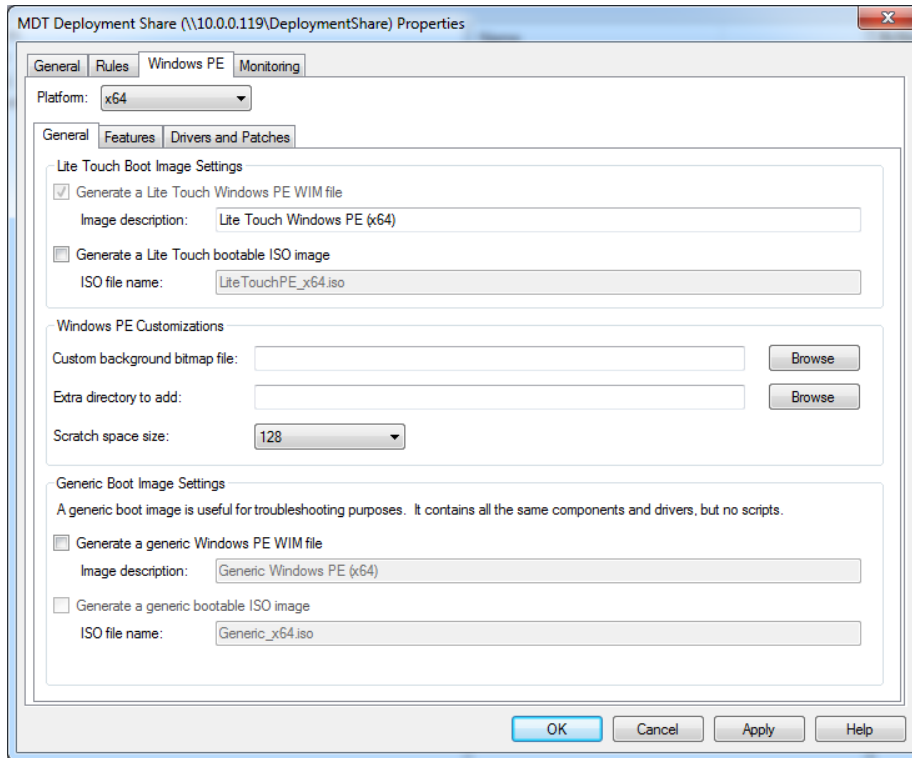
## Configuring some basic settings in MDT



Open the properties for the share.



Select whether you want to support deployment of platforms with x86, x64 or both.

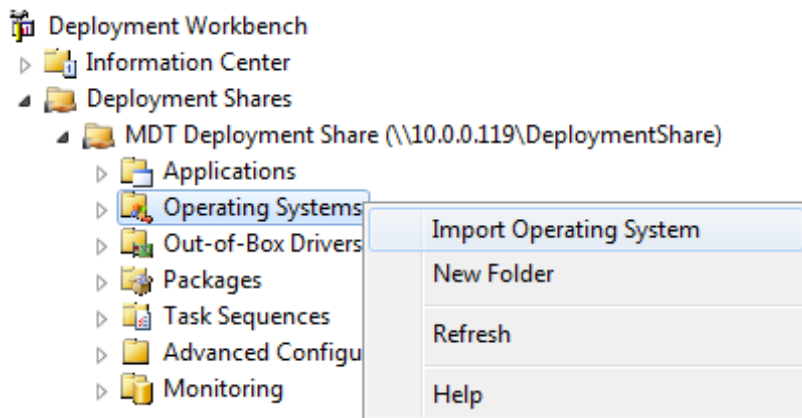


If you want to have an .iso-image for non-PXE machines, tick *Generate a Lite Touch bootable ISO image*.

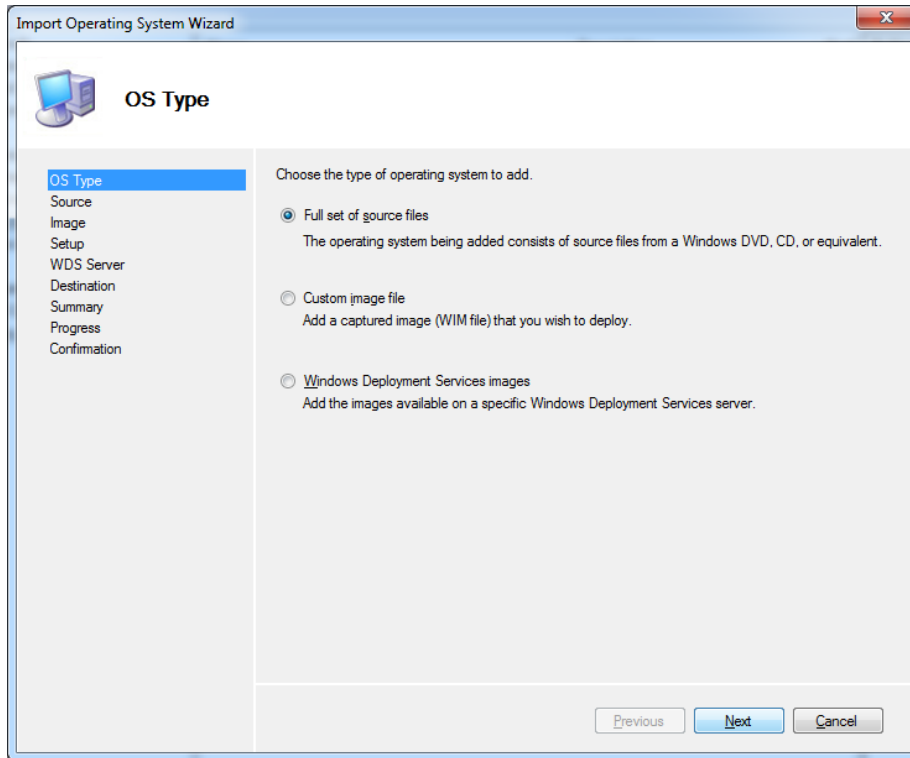
Make a similar configuration for the x86 platform if needed.

## Adding an Operating System to MDT

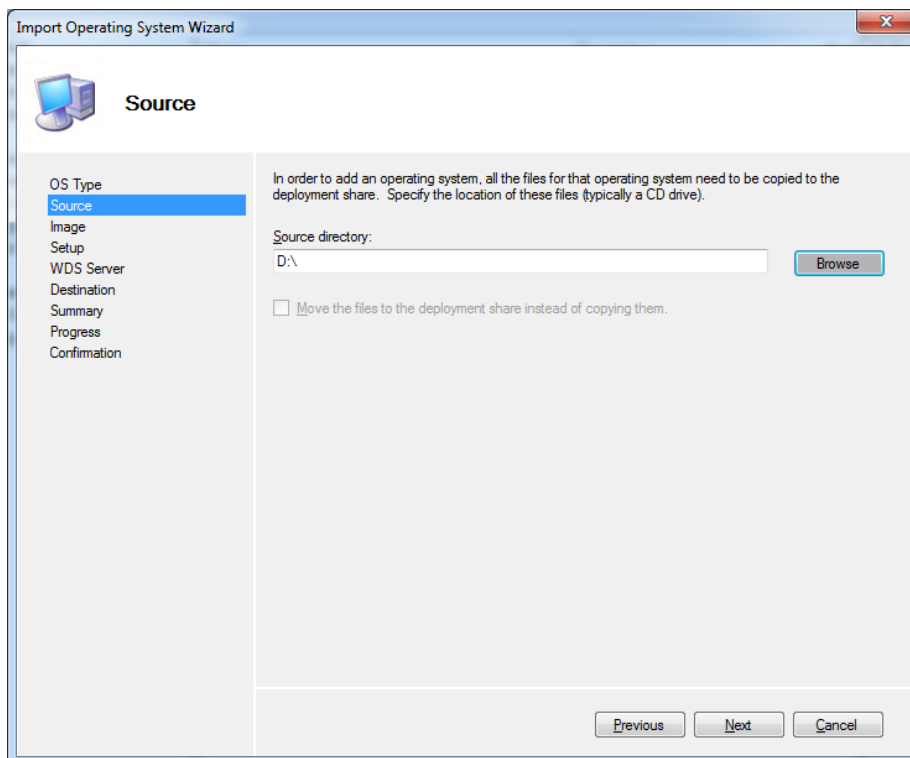
Load your Windows media in whichever way suits you and add it to the deployment share.



Import Operating System in the Deployment Workbench.

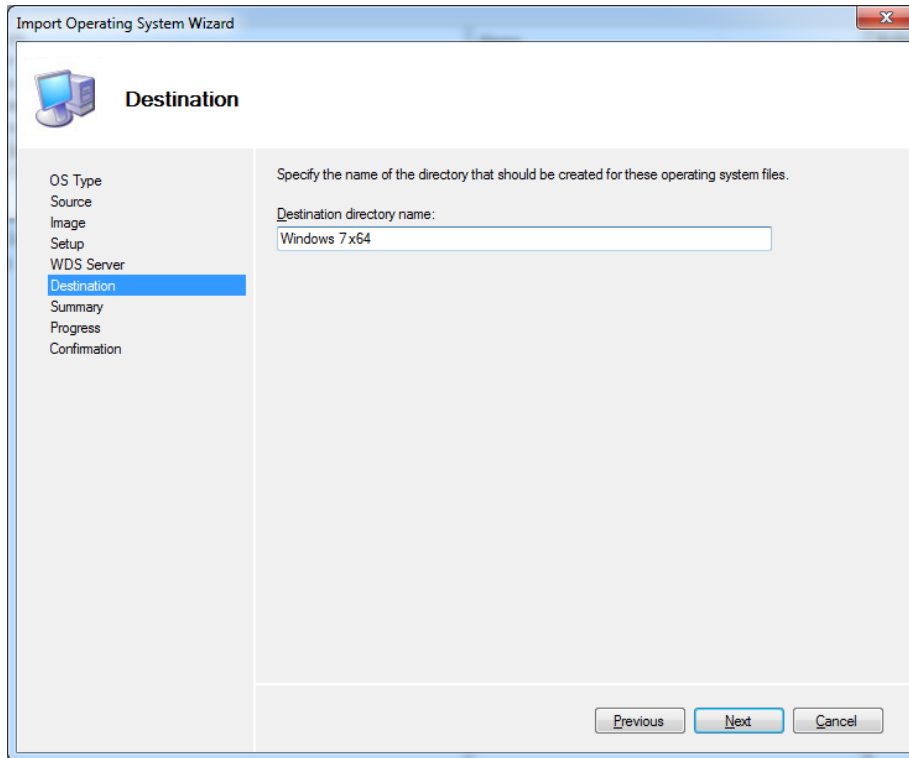


Select what's applicable for you.

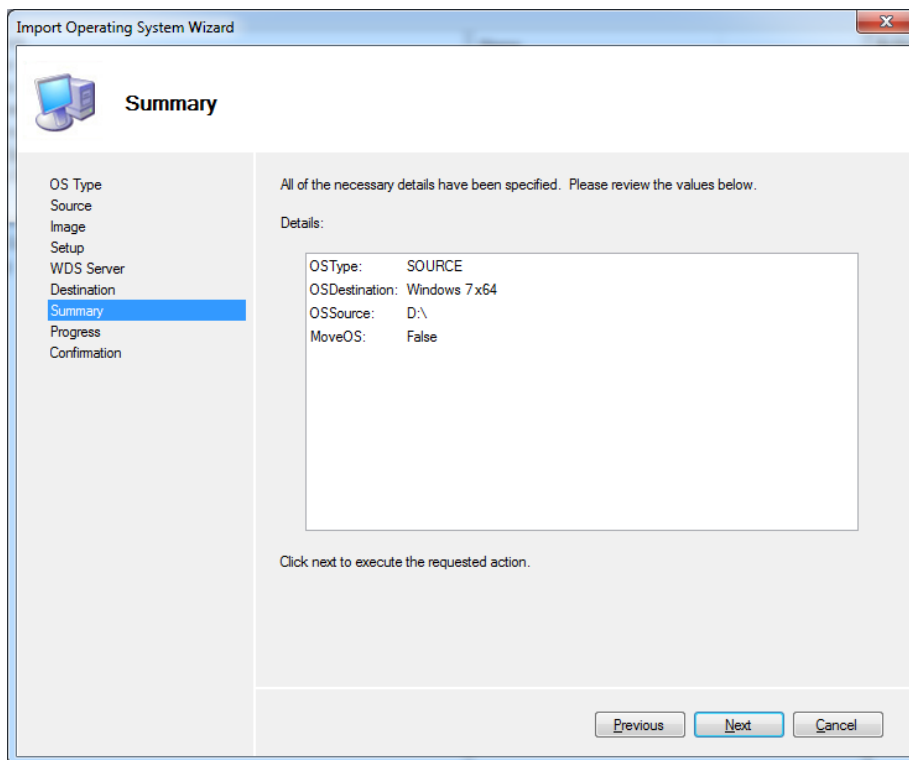


Point the wizard at the source files.

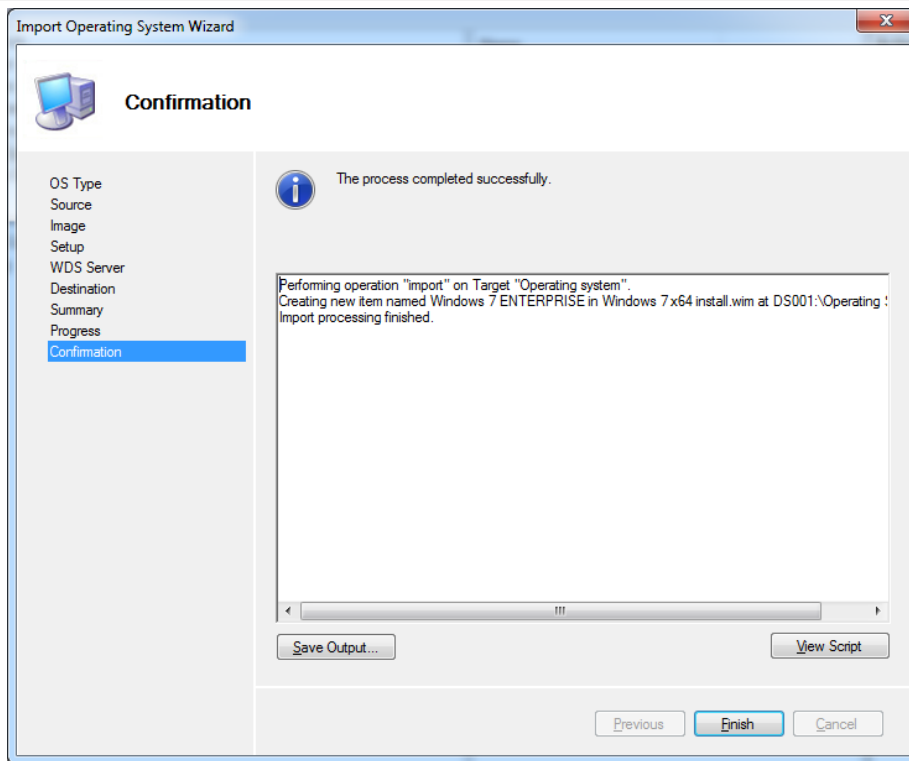




Give it an appropriate name. Note that Windows 7 Home Basic to Ultimate have the same source files.



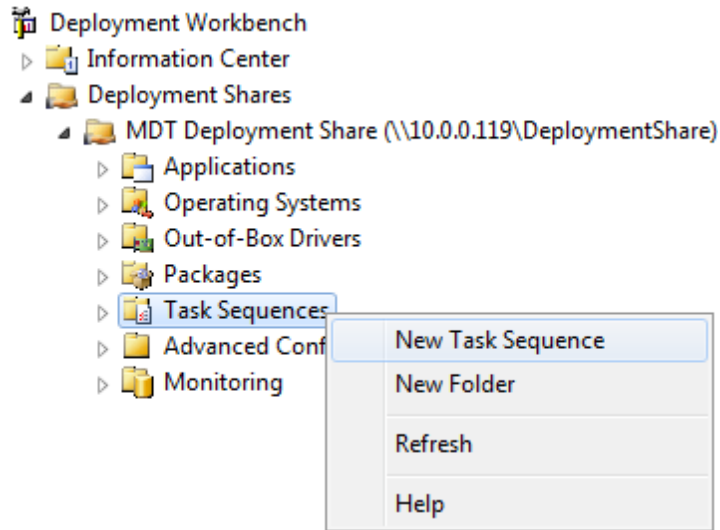
Confirm settings.



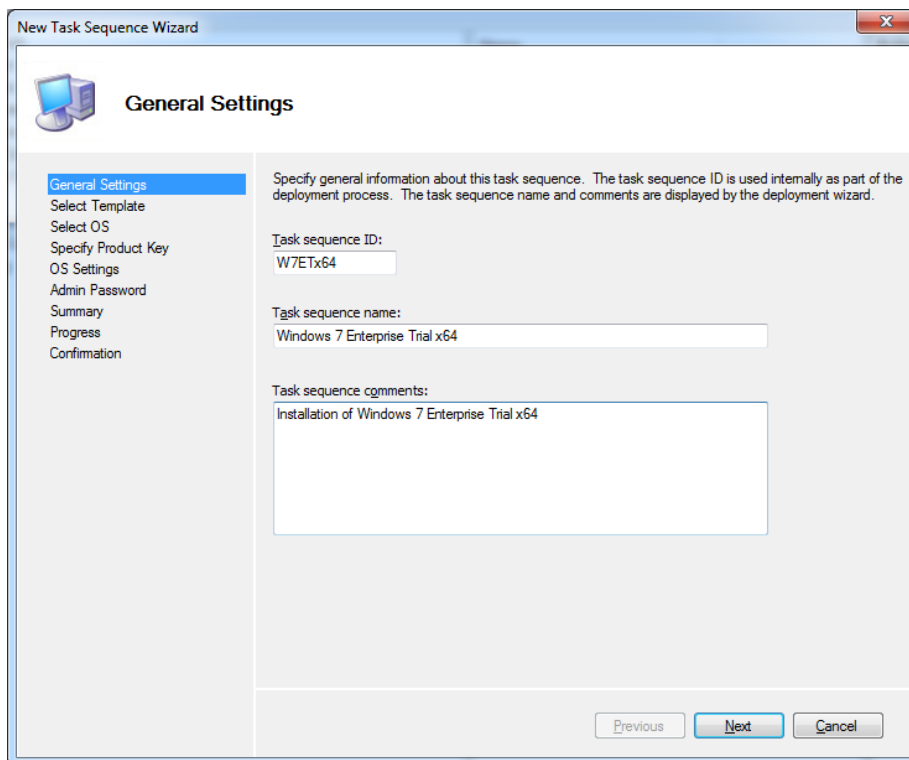
Click *Finish*.

## Adding a Task Sequence in MDT

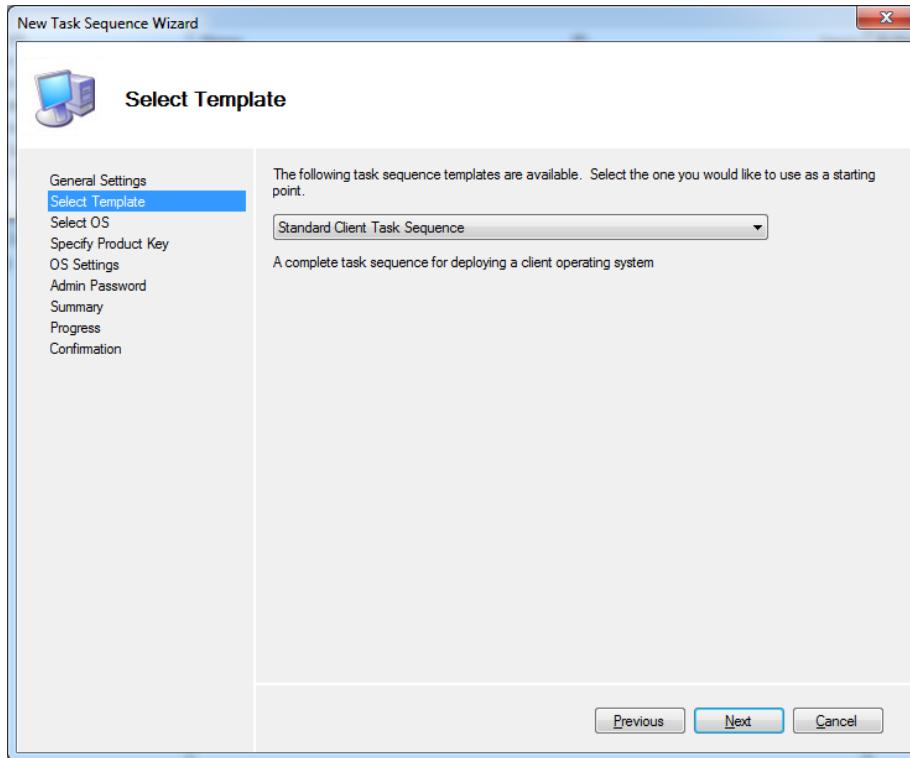
Add a task sequence:



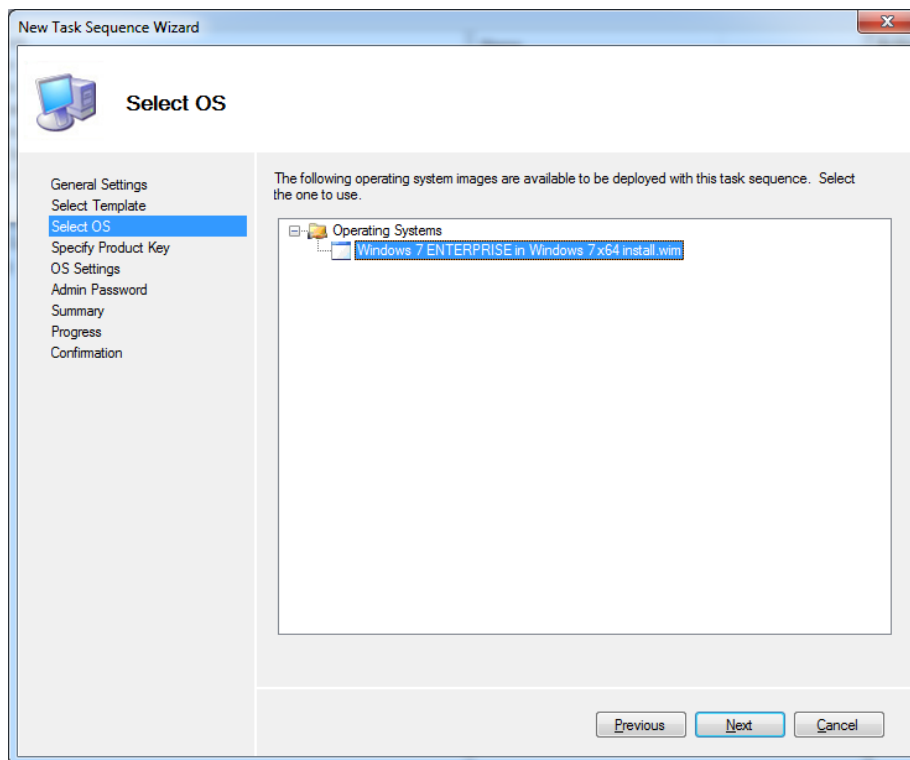
Continue with Task Sequences in the Deployment Workbench.



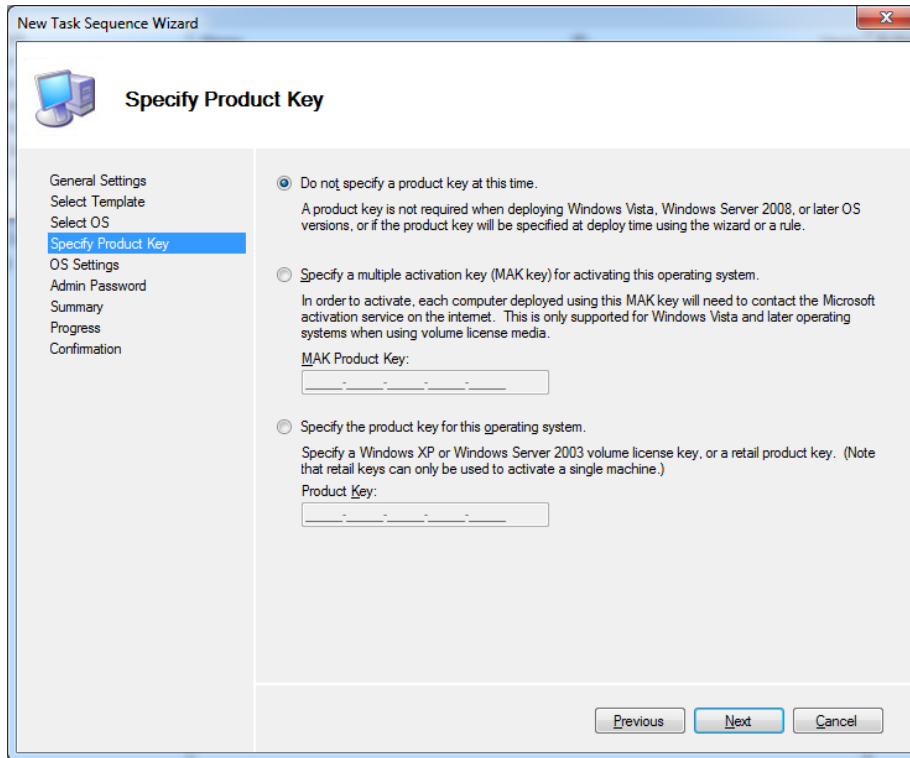
Fill in the info it asks for. The name and comments will be shown when choosing task sequence during install.



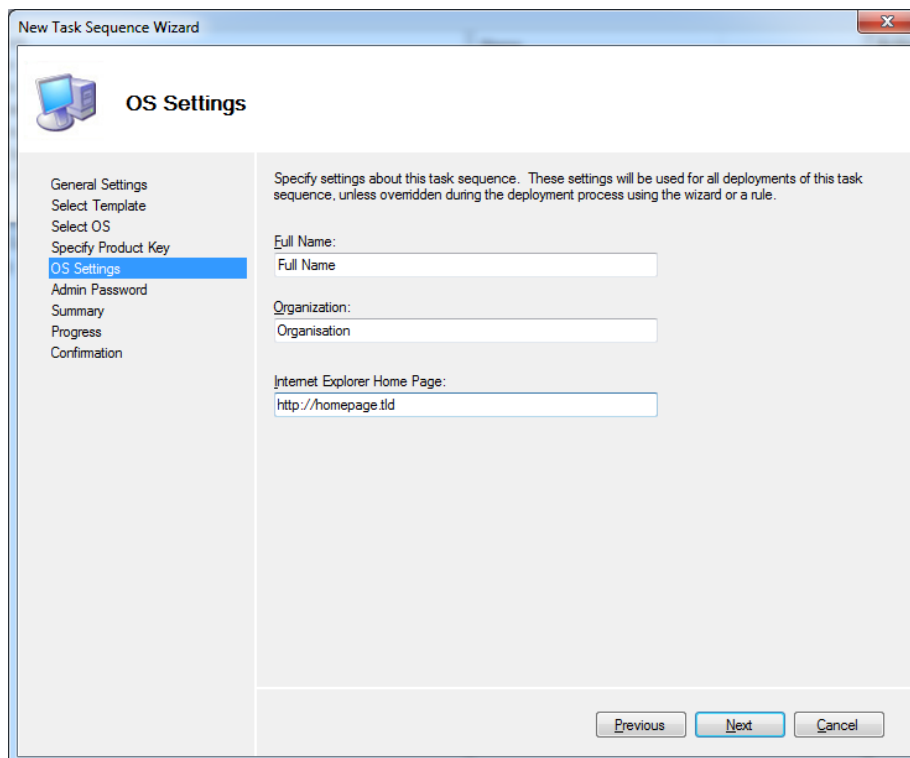
Select Standard Client Task Sequence.



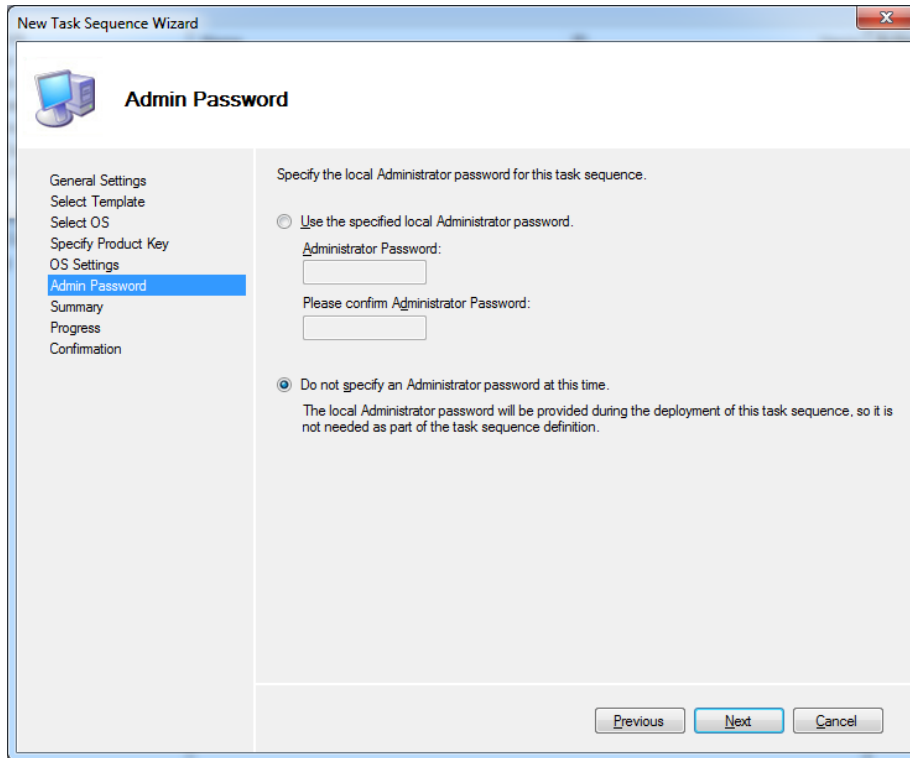
Select the OS used for this Task Sequence.



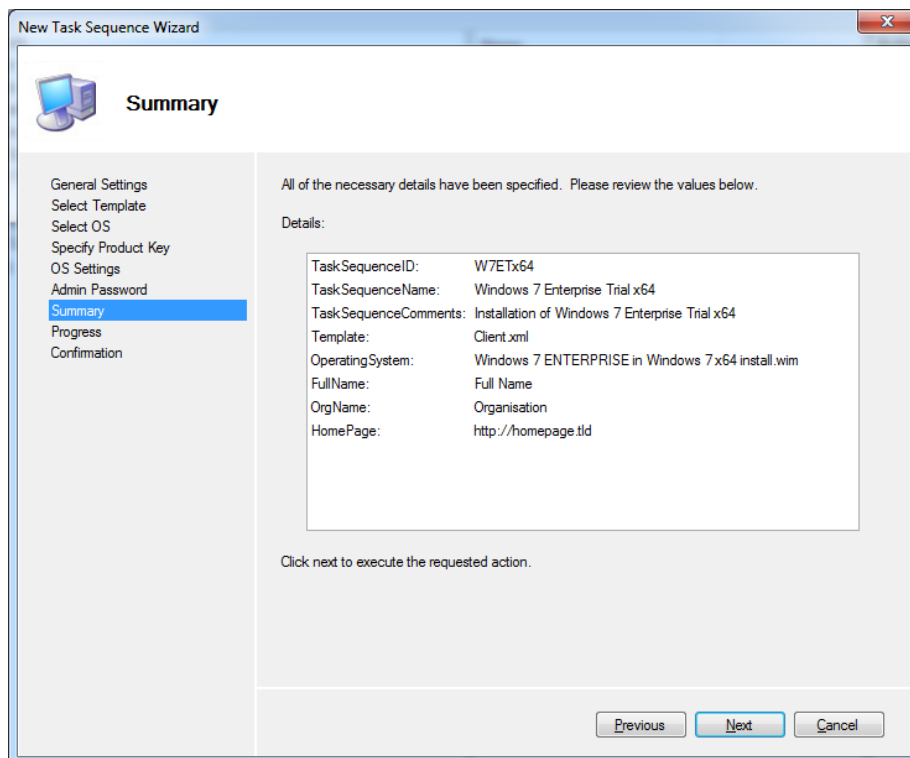
Add a key if you want to.



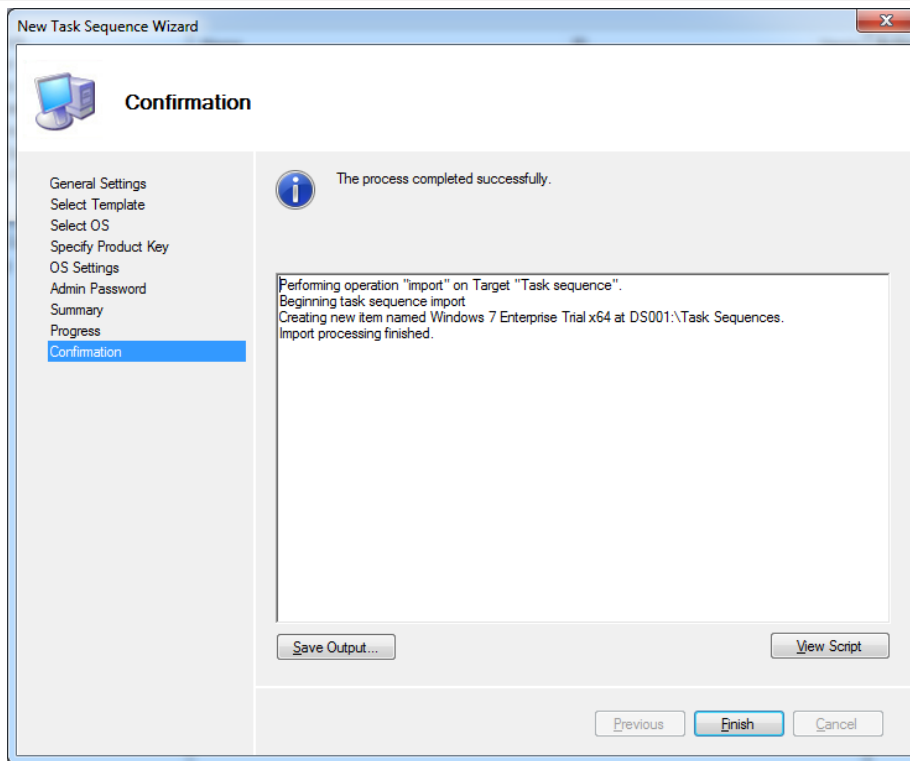
Fill in some default settings.



Add an administrator password if you want to.



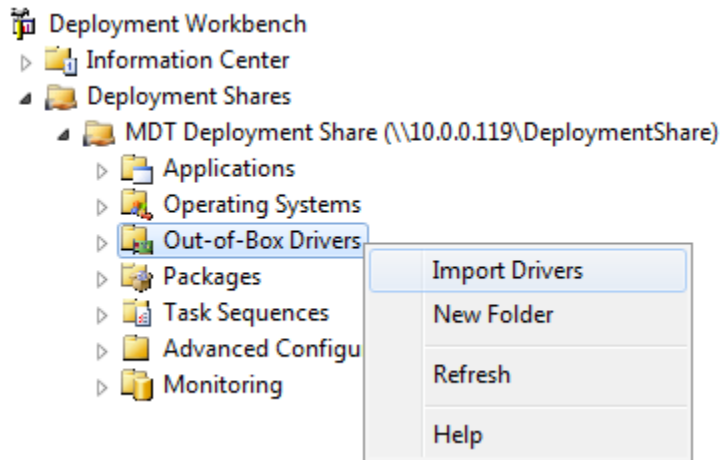
Confirm settings.



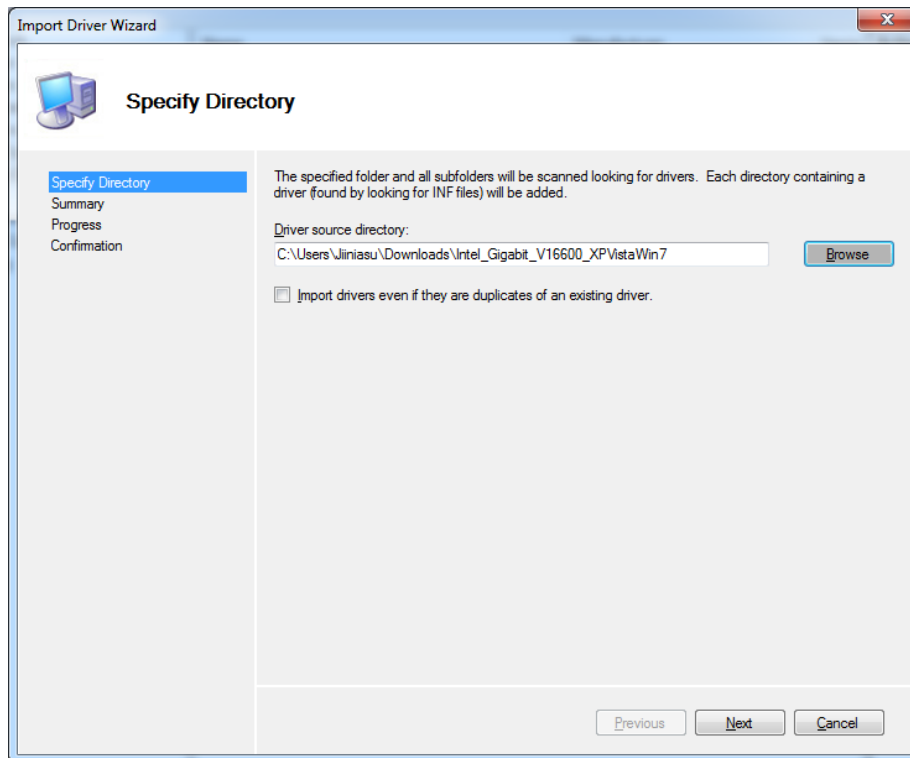
Click *Finish*.

## Adding Network Interface Card Drivers

Without the correct network card drivers, the installation will just run into a brick wall when booted. Download, extract and add your NIC-driver:

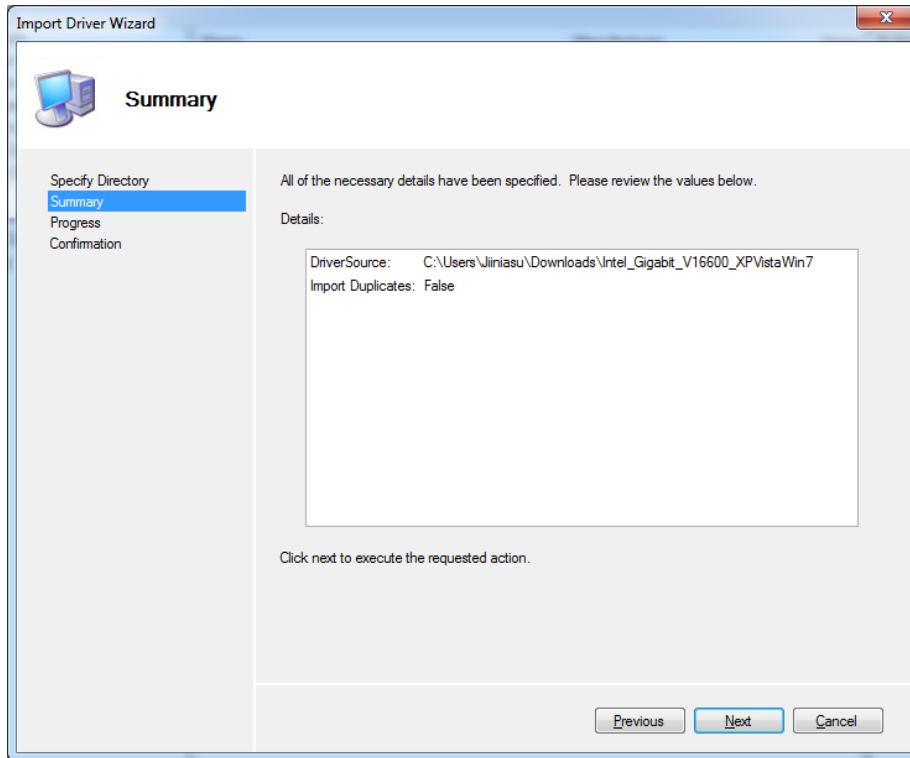


Once again, in the Deployment Workbench.

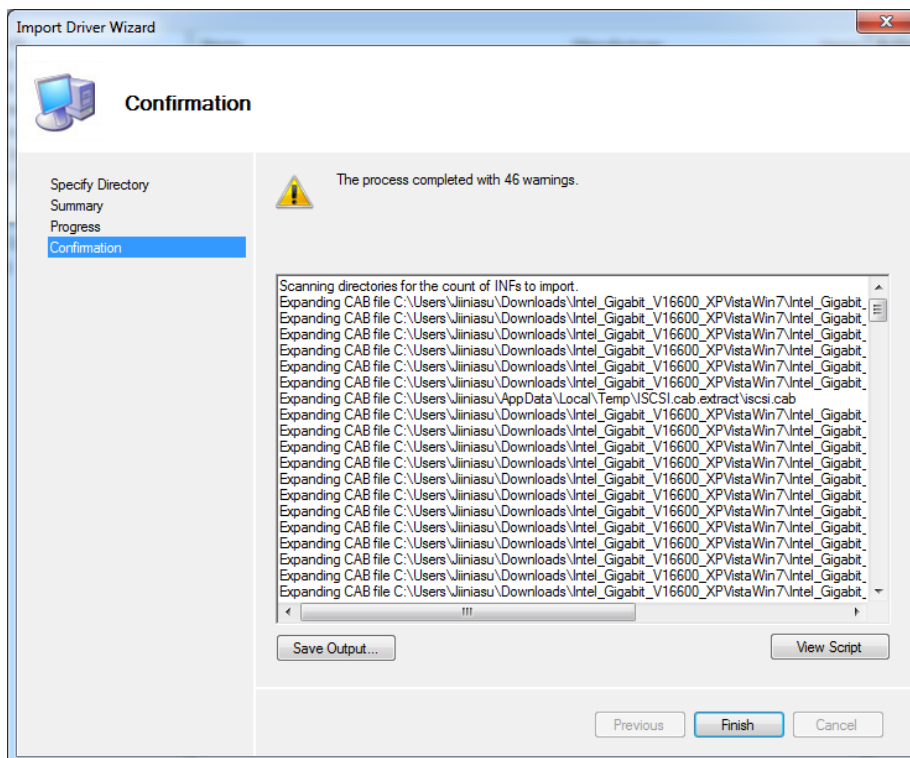


Point to the folder which you have extracted the drivers to.



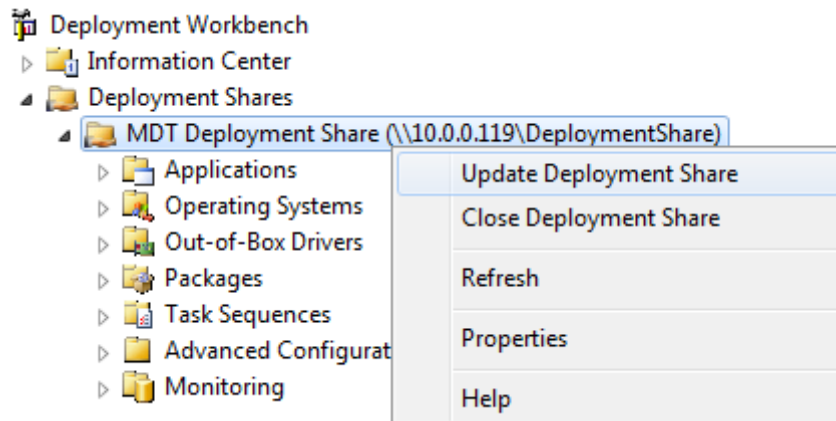


Confirm.

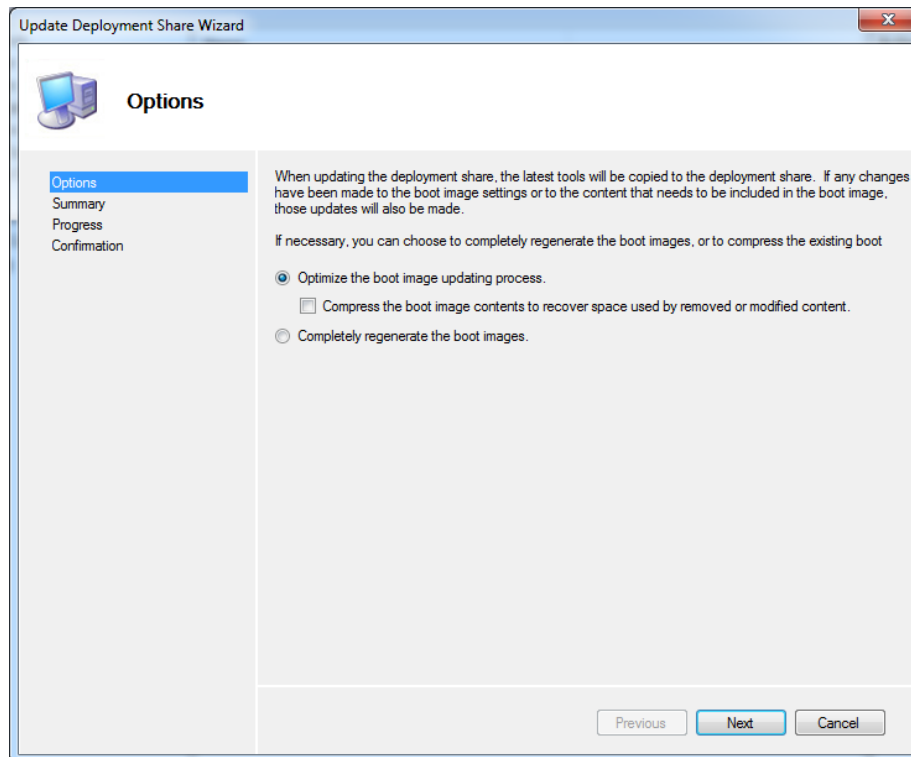


Finish. It may show some warnings if it finds drivers not applicable for any supported platforms.

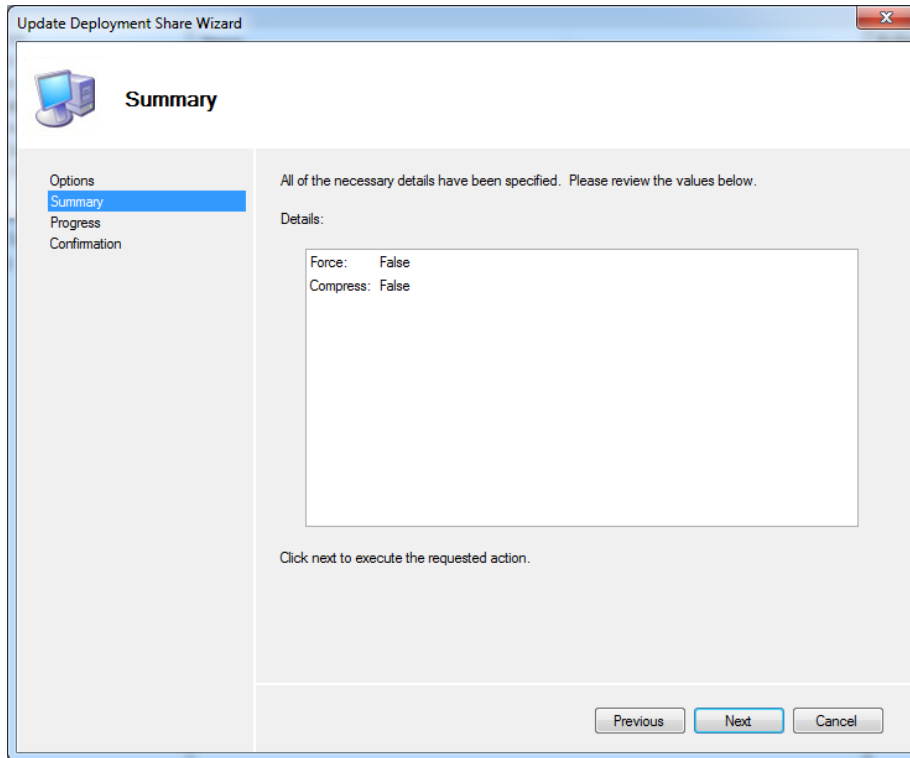
## Updating the Deployment Share



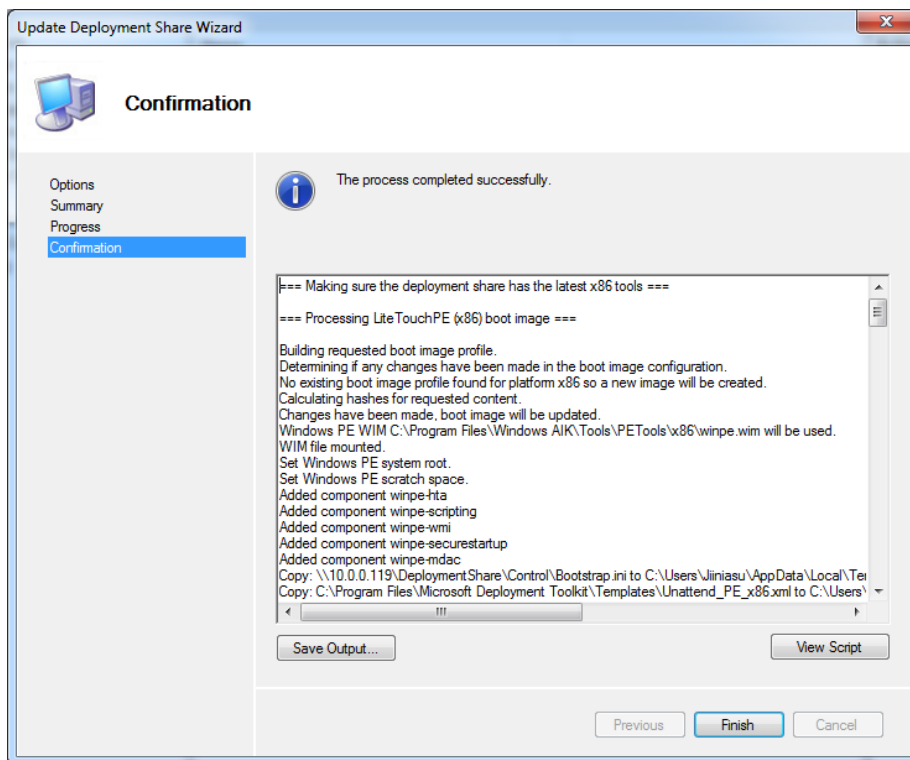
Select Update Deployment Share from the menu.



Since it's the first time updating the deployment share, it doesn't matter what you choose here.



Confirm.



Click Finish.

## Populating the TFTP-share

### Copying Files for PXE-Boot

With pretty much everything set up on the DeploymentShare-share, it's time to fill the TFTP-share with the things needed.

Create the folder **C:\mnt**.

Mount **M:\Boot\Lite Touch Windows PE (x86).wim**:

```
dism /mount-wim  
/wimfile:\10.0.0.119\DeploymentShare\Boot\LiteTouchPE_x86.wim  
/index:1 /mountdir:C:\mnt
```

Copy the following to **T:\**:

- **C:\mnt\Windows\Boot\PE\bootmgr.exe**

Copy the following to **T:\Boot**:

- **C:\mnt\Windows\Boot\PE\pxeboot.n12**
- **C:\mnt\Windows\Boot\Fonts**

Rename **T:\Boot\pxeboot.n12** to **T:\Boot\pxeboot.0**.

Close all files and explorer sessions within **C:\mnt** and unmount the .wim-file:

```
dism /unmount-wim /mountdir:C:\mnt /discard
```

Navigate to **M:\Boot\**.

Copy **LiteTouchPE\_x64.wim** and **LiteTouchPE\_x86.wim** to **T:\Boot**.

Navigate to **M:\Boot\x86\**.

Copy **boot.sdi** to **T:\Boot**:

Your **T:\** should look like this:

```
+--T:\  
  +-Boot\  
    | +-Fonts\  
    | | +-wgl4_boot.ttf  
    | +-boot.sdi  
    | +-LiteTouchPE_x64.wim  
    | +-LiteTouchPE_x86.wim  
    | +-pxeboot.0  
    +-bootmgr.exe
```

## Create the boot-file

Run the following to create a boot-file with basic settings:

```
bcdedit -createstore T:\Boot\BCD

bcdedit -store T:\Boot\BCD -create {ramdiskoptions}
bcdedit -store T:\Boot\BCD -set {ramdiskoptions} ramdiskdevice
boot
bcdedit -store T:\Boot\BCD -set {ramdiskoptions} ramdiskpath
\Boot\boot.sdi

for /f "tokens=3" %a in ('bcdedit -store T:\Boot\BCD -create -d
"Lite Touch Installation (x64)" -application osloader') do set
GUID64=%a

bcdedit -store T:\Boot\BCD -set %GUID64% systemroot \Windows
bcdedit -store T:\Boot\BCD -set %GUID64% detecthal yes
bcdedit -store T:\Boot\BCD -set %GUID64% winpe yes
bcdedit -store T:\Boot\BCD -set %GUID64% osdevice
ramdisk=[boot]\Boot\LiteTouchPE_x64.wim,{ramdiskoptions}
bcdedit -store T:\Boot\BCD -set %GUID64% device
ramdisk=[boot]\Boot\LiteTouchPE_x64.wim,{ramdiskoptions}

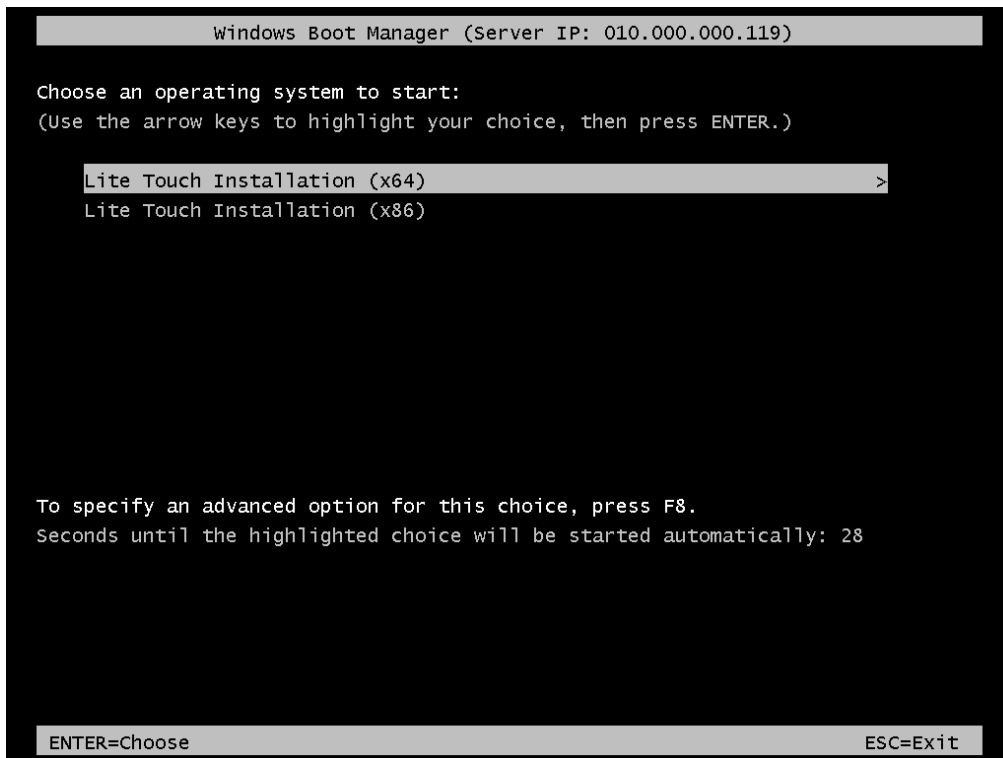
for /f "tokens=3" %a in ('bcdedit -store T:\Boot\BCD -create -d
"Lite Touch Installation (x86)" -application osloader') do set
GUID86=%a

bcdedit -store T:\Boot\BCD -set %GUID86% systemroot \Windows
bcdedit -store T:\Boot\BCD -set %GUID86% detecthal yes
bcdedit -store T:\Boot\BCD -set %GUID86% winpe yes
bcdedit -store T:\Boot\BCD -set %GUID86% osdevice
ramdisk=[boot]\Boot\LiteTouchPE_x86.wim,{ramdiskoptions}
bcdedit -store T:\Boot\BCD -set %GUID86% device
ramdisk=[boot]\Boot\LiteTouchPE_x86.wim,{ramdiskoptions}

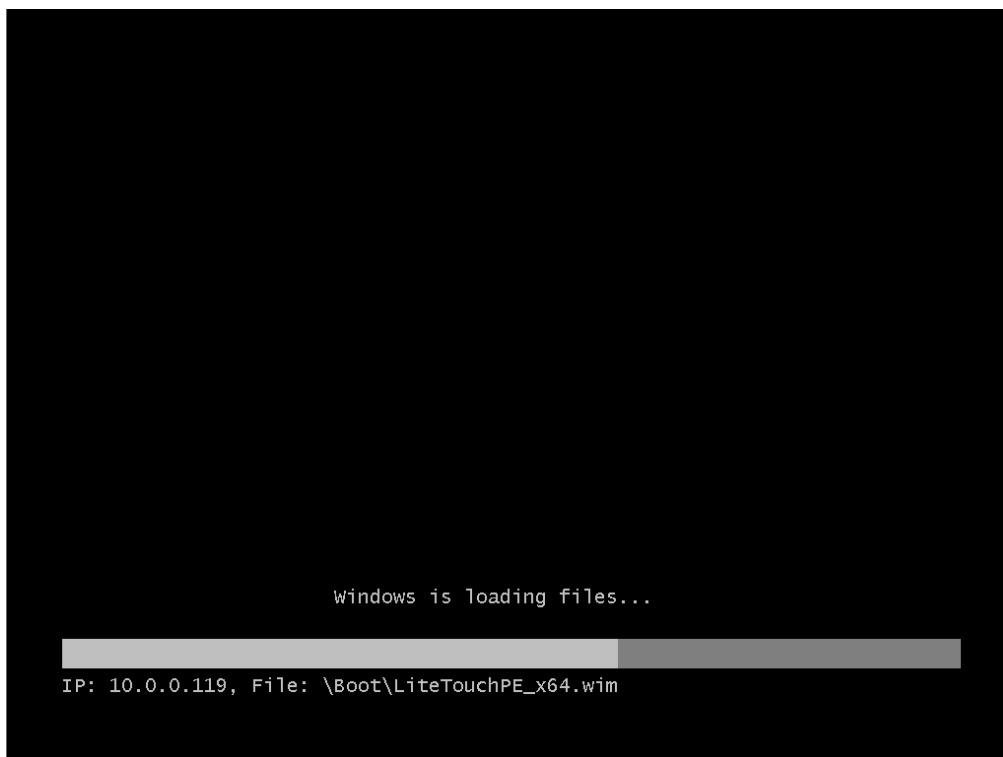
bcdedit -store T:\Boot\BCD -create {bootmgr} -d "Windows Boot
Manager"
bcdedit -store T:\Boot\BCD -set {bootmgr} timeout 30
bcdedit -store T:\Boot\BCD -set {bootmgr} displayorder %guid64%
%guid86%
```

## Performing an Installation

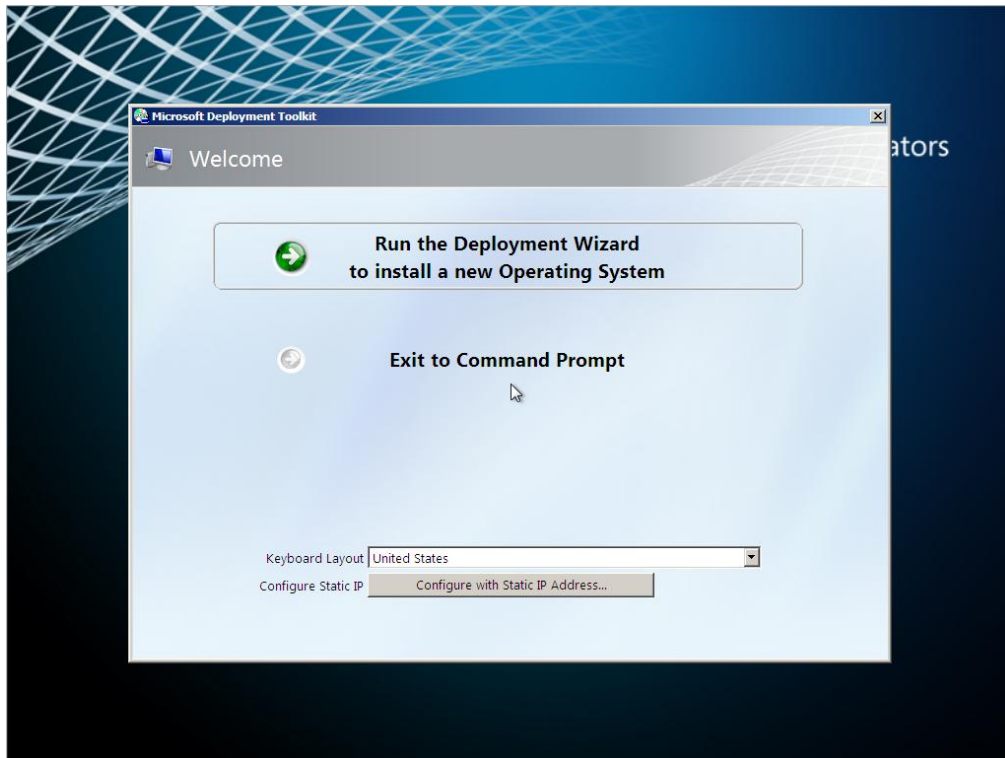
With everything in place, an installation over PXE should look like this:



**PXE-boot and select architecture.**



**Let it load.**



Run through the wizard to configure and install.

**Congratulations; you have got a Windows deployment environment based on Debian!**