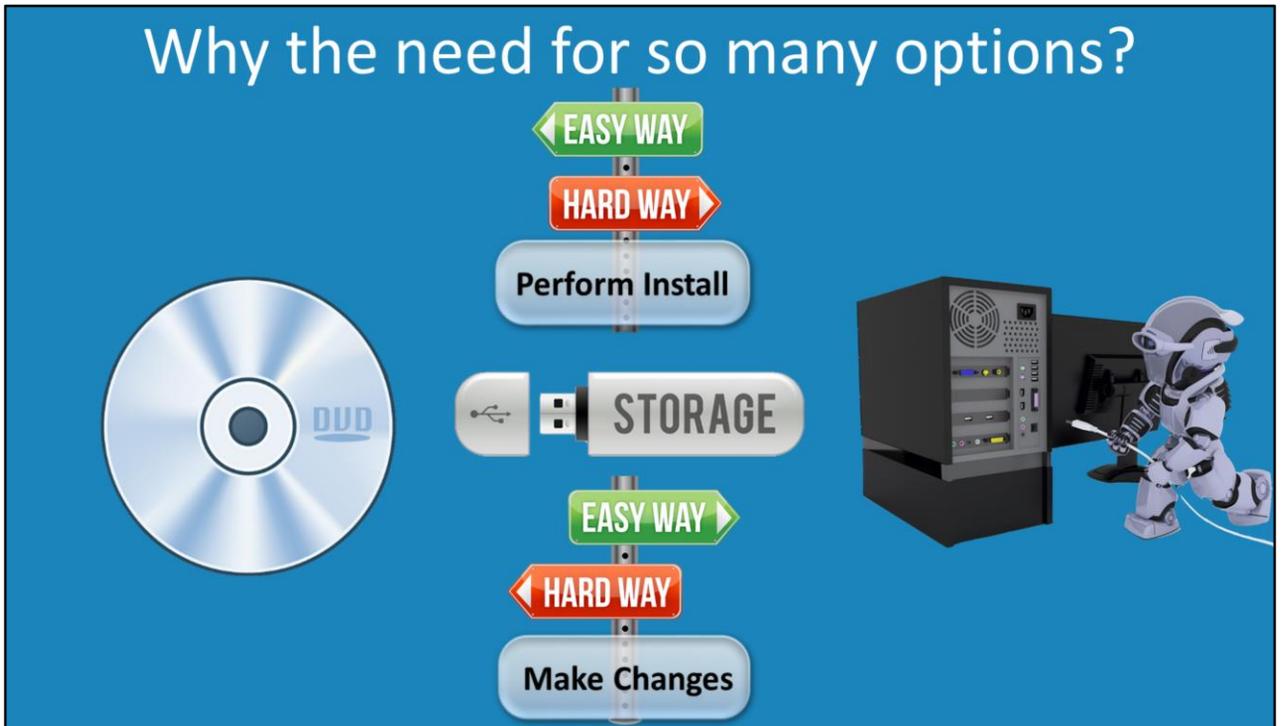


Install Windows 8 DVD/USB/Network

For the free video please see
<http://itfreetraining.com/installwindows#dvd-usb-network>

This video will look at how to perform a full install of Windows 8 from the DVD, USB or via the network. The network install requires no media to be taken to the computer. By the end of the video you will understand how to customize the Windows 8 install using different media to meet your needs.

Why the need for so many options?

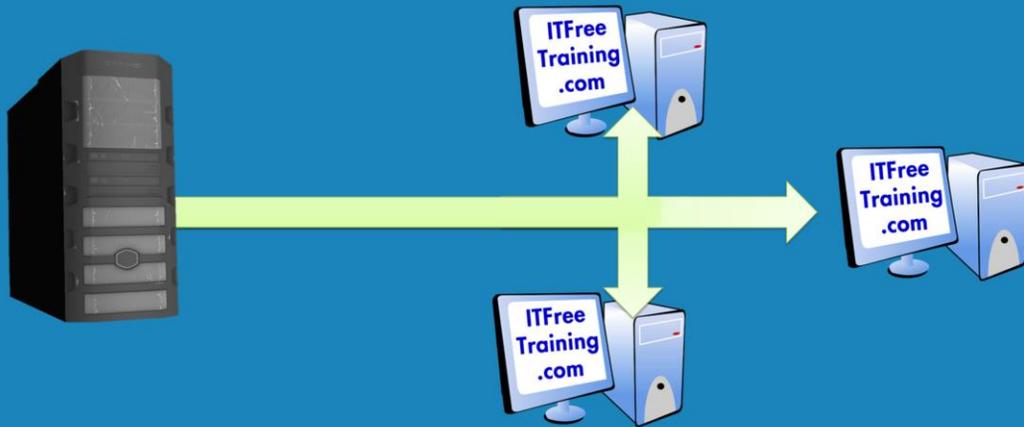


Why the need for so many options?

Ultimately it depends on how many computers you want to install Windows 8 on to determine which option you will choose. If you only need to do one or two installs, the DVD will usually be the easier method. If the computer does not have an optical drive you may elect to use a USB key instead of the DVD. If you are planning to make changes to the install media, for example adding additional device drivers, it is generally easier to make these changes on a USB key. It is possible to perform these changes using optical, for example using a rewritable optical disc, however this is will generally be slower to make changes as compared with USB. If you plan to perform installs on a lot of computers, a network based install is a good option as there is only one copy of the install media and thus only one place where changes need to be made.

Multicast Support

- Requires commercial product
 - Windows Deployment Services



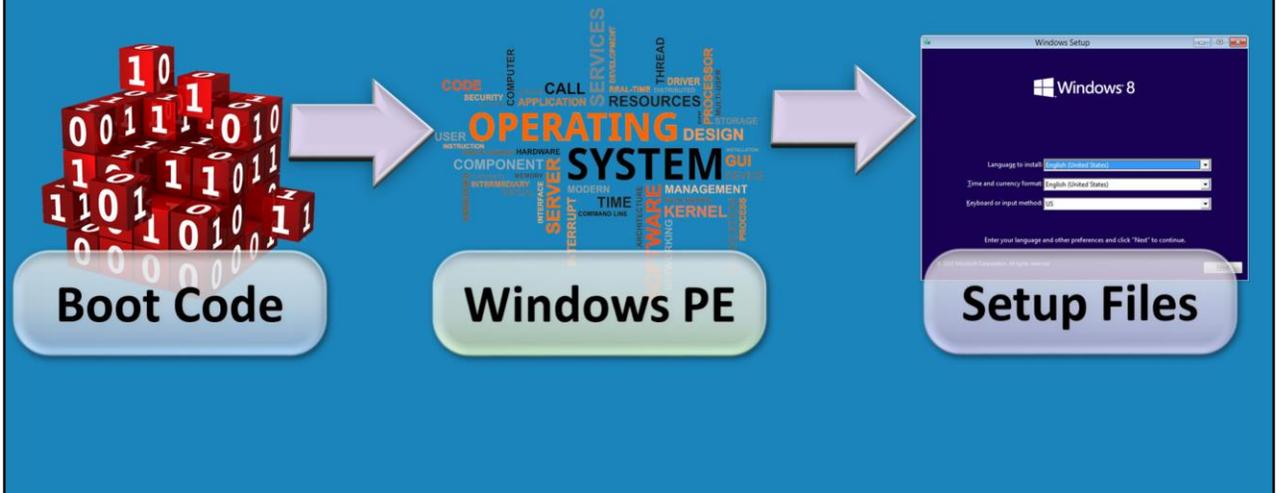
No Multicast Support

The network solution looked at in this video does not include multicast support. If you require multicast support you will need to use a commercial solution like Windows Deployment solution. Multicast support provides fast network install when many computers are being installed at one time as the same packet can be sent to multiple computers at the same time.

We also have a second video which only looks at a quick way to perform network based installs. If you are interested in that install and are not too worried about how it works, see the link for the following video.

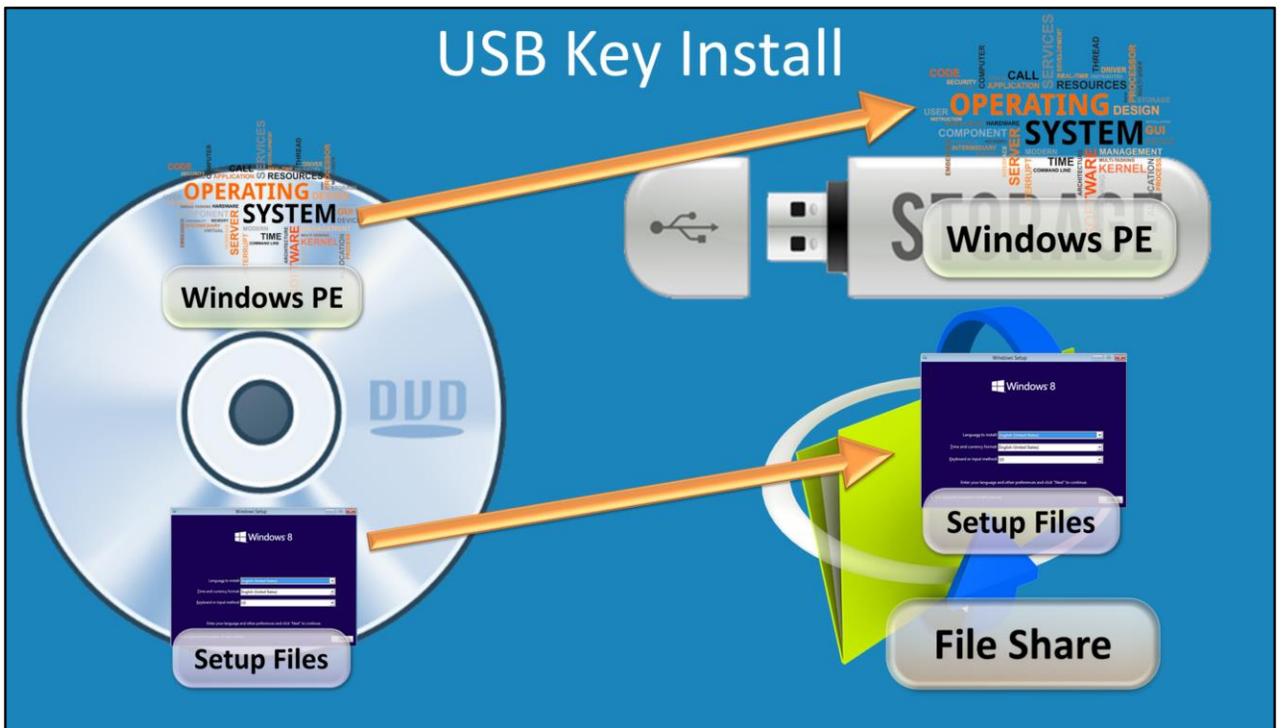
<http://itfreetraining.com/installwindows#network-quick>

The Install Process



The Install Process

In order to start the install process or boot Windows, a small amount of code first needs to be loaded. This is called the boot code, or boot strap or boot loader. It is responsible for displaying boot menus and loading the next part of the operating system. In the case of a Windows setup, this will be Windows PE. Windows PE will be loaded in memory and executed. Windows PE is a light weight version of Windows and can be used to run tools and run the Windows Setup. It is not a replacement for Windows and if left running long enough will automatically reboot. Each part of this boot process can be moved or changed to different media. For example you could boot Windows PE from a DVD and then run the setup from a network share. The choice is up to you.



Windows 8 install from the DVD

- 1) Place the Windows 8 DVD in the computer and start the computer. If no operating system is installed on the local drive, the setup will automatically will start. If an operating system already exists, you may need to press a key during boot to access the boot menu or go into the bios and change the boot order. If an installed operating system is found on a local drive, you will need to press any key when prompted to boot from the DVD.
- 2) The welcome screen allows you to change the install language, time and currency format and input keyboard type used for the install. Once you are happy with the options, press next.
- 3) On the next screen press the option install now when you are ready to start the install. On this screen is also the option "Repair your computer". This will launch a number of tools which may be able to fix boot problems with the computer. If you experience problems like this, select this option and this may be able to repair the computer rather than having to reinstall the operating system.
- 4) The next screen will ask you for a product key. If you do not have a product key you can still install Windows however you will need to obtain and enter a product key within 30 days or Windows will go into reduced function mode. In this mode, you will be able to do very little on the computer except enter in a product key. If you do not enter in a product key when you install Windows, make sure you install the correct edition for the product key that you are going to use later. Windows will not accept a product key for a different edition and if you install the wrong edition you will need to

reinstall Windows with the correct edition in order to use that product key.

5) The next screen will ask you to accept the license. You only need to tick the checkbox “I accept the license terms” to continue the install.

6) The next screen will ask you what type of install you want to perform. This is either an upgrade or a custom install. The upgrade will only work if you run setup from the operating system that you want to upgrade. In this case custom will be chosen as this will perform a clean install of Windows.

7) On the next screen you can choose which drive that you want to install Windows on. To see additional options, select the option “Drive options (Advanced)”. If the drive you want to install on does not appear, select the option “Load Driver” to load additional device drivers. It is not uncommon for drives like SCSI drives not to appear until a device driver is loaded. There is also additional options in here to manually create partitions. If you have unallocated space, setup will automatically partition the hard disk as required. If there are existing partitions available, setup will install Windows to these partitions.

8) The next step will copy the required Windows files to the drive and configure the drive. Once complete, the computer will restart and a number of performance tests and configurations will be run. The computer may restart a number of times during this process.

9) Once the computer has finished configuring, the initial setup wizard will run. The first screen will ask for the computer name. You should choose a sensible computer name here that identifies the computer.

10) The next screen will ask if you want to customize the computer or use the express settings. The settings can be changed later on if required and default will suit most uses. In this case the customize option was chosen to see what options are available during the initial setup.

11) The next screen will ask if you want to turn on sharing and connect to devices automatically. If you are on a home network that is behind a firewall this option will allow you to automatically find other computers and devices on the network.

12) The next screen allows a number of protection settings to be configured. The Windows Update setting determines how updates will be installed on the computer. The default option will automatically download important and recommended updates and install them. If you have a slow network connection you may want to disable automatic updates and install them when required. The important thing is, regardless which option you choose, is to make sure that Windows Updates are installed on a regular basis so that that your computer is as secure as possible. The option “Automatically get device drivers, apps, and info for new devices” will contact the internet when a new device or software is installed on the computer. It is generally a good idea to leave this option on. The next 3 options relate to Internet Explorer. They improve security and also disable some tracking options. It is recommended that you leave these options enabled.

13) The next screen allows you to configure different parts of Windows 8 to provide

feedback to Microsoft in regards to performance and also crashes. This information helps Microsoft build a better operating system. It is up to you to decide if you want to provide this information to Microsoft.

14) The next screen allows Windows to check online for information about known problems with applications and web pages. It is recommend to leave these options on. The second set of options allows applications to use your name and pictures. For privacy reasons you may want to switch these off, the choice is up to you.

15) The next screen allows you to use an online account or create a new online account if you do not have one. The benefit of this is that settings can be synced up. For example documents can automatically be stored in SkyDrive and can be linked to the account. If you choose the option "Sign in without a Microsoft account" this will create a local account on the computer. This will not automatically be linked to services like SkyDrive, however this can be manually configured later on.

16) If you select "Sign in without a Microsoft account" the next screen will confirm that you want to do this. To create a local account select the button at the bottom right that says "Local Account".

17) The next screen asks you to enter in a username, password and password hint for the new local account that will be created. Once this is entered in, Windows will create the local user account and create the profile associated with that user. Since this is the first time a user has logged into the computer, a number of performance tests are also run on the computer. The results of these tests allow Windows to fine tune the Windows experience to match the hardware that is installed in the computer.

USB Key Install

To boot from a USB key, the USB key needs to be formatted to allow booting and boot code copied to the USB key. There are a lot of free tools that make this process easy. In this case, I will use the free tool from <http://www.pendrivelinux.com> to prepare the USB key and copy over the install files. Copying the files from the DVD to the USB key will functionally perform the same install as using the DVD. The DVD contains Windows PE and the setup files. For this demonstration, I will put Windows PE on the USB key and the setup files on a network share.

The advantage of separating Windows PE from the setup files is that this means the setup files are only in the location making them easy to update. Windows PE can be duplicated as many times as required and thus the install can be performed on multiple computers at the same time. When Windows PE boots, the operating system is placed in memory so once it has boot the USB key can be removed and used on another computer.

Demonstration USB Key install

This demonstration uses two ISO images of the Windows 8 DVD. They are mounted in the operating system and the files copied from them. You could also perform this step

by inserting the DVD into the optical drive and copies from there. Your DVD burning software should have an option to create these DVD's. If it does not, you can download free software from <http://opensource.ebswift.com/DoISO>.

1) In this case the Windows 8 DVD is on an ISO on the desktop. To mount it, right click and select the mount option. All the files need to be copied to a local directory on the c drive, in this example I will use the folder name "InstallFiles" and then create a sub folder called "Windows 8 x86". In this sub folder, I will copy all the files from the DVD.

2) To share the folder, right click on the folder and select the option properties. Then select the tab sharing. On the sharing tab press the button "Advanced sharing". The next screen, tick the option "Share this folder". The default permission for the share is "read" so in this case I will not change it.

3) Since Windows PE is copyrighted software, it is not available for download and we are not able to provide a link to download it. However, you are able to create your own copy of Windows PE using the software "Windows Assessment and Deployment Kit (ADK) for Windows® 8". This is available for download from the following location. <http://www.microsoft.com/en-au/download/details.aspx?id=30652>

4) Once ADK has been downloaded, run the setup and accept all the defaults. The only features required for the install are "Deployment Tools" and "Windows Preinstallation Environment (Windows PE)".

5) Once the install has completed, press the Windows start key and select the icon "Deployment and imaging tools Environment". This will open a standard command prompt however the difference is that there is a number of additional environment options that are run. For a standard command prompt, if you run the following commands you will receive a messages stating that the tools could not be found.

6) The first command that is run is "copy x86 c:\WinPex86". This will create a folder with all the required files for Windows PE in it. The x86 parameter will create a 32bit version of Windows PE.

7) The next command that is run is "MakeWinPEMedia /iso c:\WinPEx86 %HomePath%\desktop\WinPEx86.iso" This will create an iso from the files that were created in the previous step and store that iso on the desktop.

8) The next step is to transfer Windows PE to the USB key. To do this, software from pendrivelinux.com will be used. The software is a Universal USB Installer which is standalone software so it can be run without having to install it from the network.

9) Once the Universal USB Installer has been run, it is a matter of selecting the option Windows 8 installer from the pull down list. Once selected, next it is a matter of browsing to the iso image created earlier and stored on the desktop. Lastly the USB key that you want to use needs to be selected.

10) Once all the options have been selected, press the create button and the USB key will be configured and the setup files copied over. Once complete, the USB key can be put into the computer that you want to boot from.

11) In this case, the computer that Windows is being installed on has the option to press the del key on startup to enter the bios. On other computers, this key may be

different.

12) The boot options in this bios can be found under Advanced BIOS features and then hard disk boot priority. In this option it is just a matter of making sure that the USB key is the first on the list. Once configured, save the bios settings and exit.

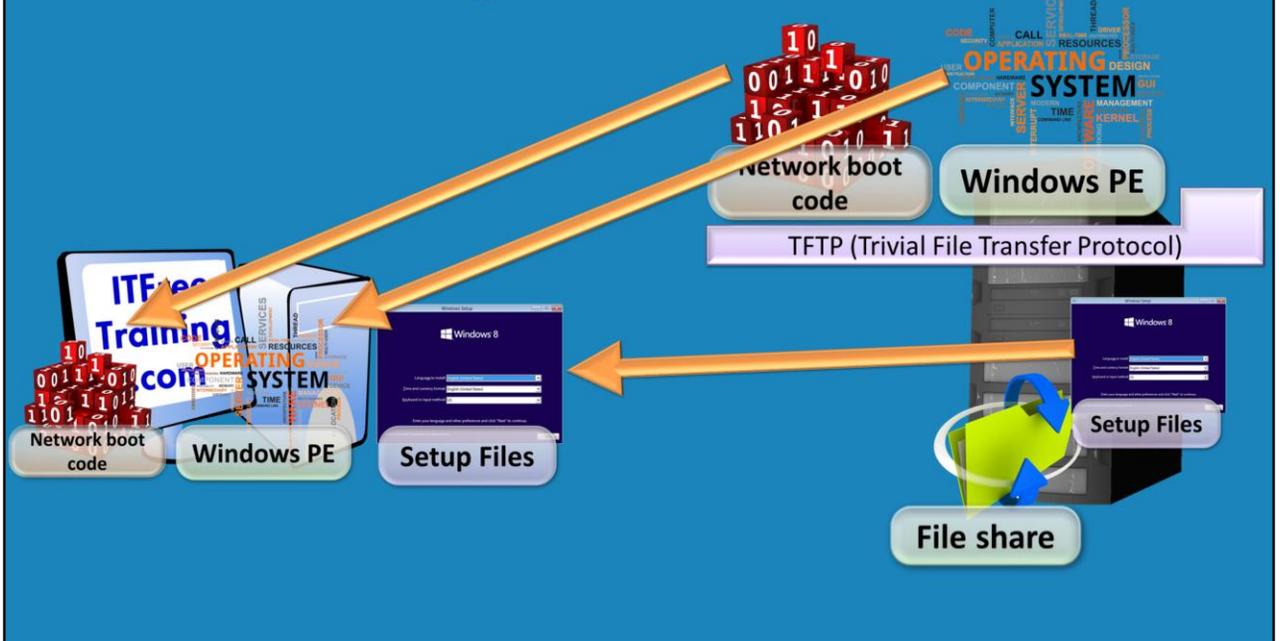
13) When the computer starts from the USB key it will boot into Windows PE. When complete, a command prompt will open and the command wpeinit will be run. This command configures the networking, for example, it detects the network card and attempts to configure it using DHCP.

14) In order to start the setup, run the command "net use I: \\192.168.2.100\InstallFiles". The IP Address on your network may be different.

15) Once the drive has been mapped, change to that drive and run setup or run "i:\Windows 8 x86\setup"

16) Once setup has run the setup process will be the same as that of the DVD install performed above so in this example I won't perform the install. Refer to the DVD install section if you need assistance running the setup from this point onwards.

Installing Over The Network



Installing Over The Network

In order to install Windows 8 over the network without any media the first step is to get boot code from the server to the client. This boot code allows the client to download and run Windows PE. In order to do this TFTP (Trivial File Transfer Protocol) is used. This is a lightweight version of FTP (File Transfer Protocol). It does not have as many features as FTP, the most noticeably missing feature is username and passwords. TFTP is quite small and thus is often a choice for embed device. TFTP in this device is used to obtain software and code off the network. In this case TFTP will be used to transfer Windows PE over the network to the client. You could also use TFTP to transfer the Windows 8 DVD. The point to remember with this is that the DVD is around 4 Gigabytes in size and all this need to be transferred over the network and stored in the memory of the client. This means that the clients require at least 4 Gigabytes of RAM. Given that 32bit only access 4 Gigabytes of RAM, this means the install is limited to clients that are 64bit and have at least 5 Gigabytes of RAM. In this case Windows PE will be downloaded and then used to access the setup files from a file share on the network.

Demonstration performing a network install of Windows 8

The TFTP and DHCP software used for this demonstration is called TFTP32 and is available from the following location. <http://tftpd32.jounin.net>. There are two additional settings that need to be configured in DHCP to allow the client to locate where to download the boot files from the network. TFTP32 automatically adds

these settings. Later in the video I will look at how to manually add these settings to Microsoft DHCP.

1) To download TFTP64, go to <http://tftpd32.jounin.net> and select the download option. From the downloads select the download "TFTP64 Standard Edition (zip)". Once downloaded, extract the files and run the file tftp64.

2) To configure TFTP64, press the settings button and then select the tab TFTP. On this screen enter the base directory and enter the folder name "C:\tftp". On this screen also tick the option "PXE Compatibility". This will improve PXE Compatibility. Your network card may or may not work without ticking this option.

3) To configure DHCP, select the DHCP tab and enter in an IP Address starting address and size of pool. For the boot file enter in "pxelinux.0". Also enter in the other details like the DNS server, default router and network mask. The settings then need to be saved.

4) If you obtain a security alert from the Window Firewall asking if TFTP Server should be allow to access the network, select allow access.

5) The next stage is to download PXELinux and configure it. If you want the pre-configured files they are available here.

<http://itfreetraining.com/downloads/tftpdfiles.zip>

6) This install used PXELinux which is part of SysLinux. SysLinux is a project that contains a number of different boot loaders. It is available from the following location <http://www.syslinux.org/wiki/index.php/PXELINUX>

7) There is a lot of information on the web page and it is difficult to see the download link. For this reason it is easier to search for "download" to find the link or click on this link. <https://www.kernel.org/pub/linux/utils/boot/syslinux/>

8) Download the latest version of the software. In this case a Windows computer is being used so the file that will downloaded is the zip file.

9) There are five files that need to be copied from the zip file to "c:\tftp". These are listed below.

bios\core\pxelinux.0 (boot strap code. First code to be downloaded and executed)

bios\com32\elflink\ldlinux.c32 (Bootloader boots an operating system like Windows PE)

bios\com32\libutil\linutil.c32 (Contains additional functionality required by menu.c32)

bios\memdisk\memdisk (Creates a disc in RAM that is used to store Windows PE)

bios\com32\menu\menu.c32 (This displays a menu that the user can select which OS to load)

10) The boot software also requires configuration files. These are stored in the folder "c:\tftp\pxelinux.cfg".

11) A file needs to be created called default to store the configuration information.

This file needs to have no file extension. This can be created by running

```
"echo.>c:\tftp\pxelinux.cfg\default"
```

12) Once the default file has been created it needs to be edited and the following

```
lines added to it.  
DEFAULT menu.c32  
PROMPT 0  
menu title Network Windows 8 Installer
```

```
timeout 600
```

```
LABEL Windows 8 32bit  
        LINUX /memdisk  
        INITRD /WinPE86.iso  
        APPEND iso raw
```

```
LABEL Windows 8 x64  
        LINUX /memdisk  
        INITRD /WinPE64.iso  
        APPEND iso raw
```

13) The first two lines state the default option will be to load menu.c32 after 0 seconds. The rest of the options in the file relate to menu configuration. “menu title” allows a title to display at the top of the menu during boot up. The timeout option configures how long the menu will be displayed before an option is automatically selected. In this case 600 is used which is 60 seconds. The next set of settings in the file configure are the options for the menu and what will be used. The label is the option shown in the menu. Linux /memdisk loads the ram disk in memory. INITRD followed by the iso name downloads the iso from the TFTP and stores it in the ram disk and runs it. “Append iso raw” is a setting that may need to be added on Windows computers.

14) A Windows PE iso needs to be created for 64bit operating systems. When this is created, an additional script will be added to the Windows PE ISO which will automatically map a drive to the network share holding the setup files and run the setup.

15) To create a Windows PE ISO, open the start menu, right click the icon on Deployment and Imaging Tools and then select the option at the bottom run as administrator. Administrator rights are not created for the creation of the ISO, however they are required to make changes to the ISO after it has been made.

16) To create the files from the Windows PE 64bit iso, run the command “copy c:\WinPE64”

17) To make changes to Windows PE the wim file needs to be mounted. The wim files contains all the files used by Windows PE. To do this run the command “imagex /mountrw c:\WinPE64\media\sources\boot.wim 1 c:\WinPE64\mount”. The parameter /mountrw mounts the image as read write. Next is the image file. WIM files can contain multiple images so the image number you want to use needs to follow this, which in this case is 1 since there is only one image in this image file.

Lastly the folder that the image file will be mounted to needs to be added to the end.
18) In this case I will add an additional script file that will be run when Windows PE starts up. This is created with the command "echo.>startnet.cmd". The following lines need to be added to this file.

```
@echo off
```

```
wpeinit
```

```
%systemroot%\system32\timeout 20
```

```
net use I: \\192.168.2.100\InstallFiles /user:admin Pa$$word
```

```
"I:\Windows 8 x64\Setup"
```

19) The command @Echo off prevents commands that are run from being shown on the command prompt. The @ at the beginning of the command prevents the echo command from being seen on the command line. Wpeinit configures the network and installs network device drivers. When the file startnet.cmd is created, this prevents wpeinit from running so this needs to be run manually. Wpeinit also contacts DHCP in order to obtain an IP Address. This does take about 10 seconds to complete so the timeout command is run to stop execution of the script for 20 seconds giving it time to run. The next command maps the I drive to the install files shared out on the network. Once this is done, the setup executable is run from the file share.

20) The timeout command is not included in Windows PE so it needs to be copied using the following command. "copy c:\Windows\System32\timeout.exe c:\WinPE64\mount\Windows\system32". Make sure the architecture is the same. That is, 32bit used with 32bit Windows PE and 64bit used with 64bit Windows PE.

21) Once the changes have been made this can be committed using the command "imagex /unmount c:\WinPE64\mount /commit"

22) To create the Windows PE ISO the following command needs to be run.

```
"MakeWinPEMedia /iso c:\WinPE64 %HomePath%\desktop\WinPE64.iso"
```

23) The 32bit and 64 Windows PE ISO's next need to be copied from the desktop to the folder c:\tftp.

24) The install files for 64bit need to be copied from the DVD to

```
"c:\InstalFiles\Windows 8 x64". To mount the ISO, right click the ISO and select the mount option.
```

25) To start the network install, when the computer starts up press the button for a network install. In the case of this computer the key that needs to be pressed is F12.

26) The network boot will automatically obtain an IP Address and download PXELinux.0. The menu will then appear and you will be able to select which version of Windows PE you want to load. In this case Windows PE 64bit will be chosen. It is also possible to add additional options to the menu. For example you could add recovery DVD's to it if you wanted to.

27) Once Windows PE has loaded, if an operating system is detected you will receive a prompt saying "Press any key to boot from CD or DVD...". You only get a couple of second to press a key otherwise the computer will boot from the local drive.

28) Windows PE will now boot and the script on Windows PE will automatically run mapping the drive to the install files and running the setup.

Demonstration installing from Windows Server 2012

- 1) TFTP does not come with Windows Server 2012 all though a TFTP Server is included in the role Windows Deployment Services but this is fundamentally designed to work with that role not function as a standalone TFTP Server. TFTD32 can be used to provide TFTP services. From the web site <http://tftpd32.jounin.net> select download and then select the option "tftpd64 service edition (Installer)".
- 2) From the install, select all the default options and add the option "Start service Tftpd32_svc". This will start the service after the install has completed and thus allow it to be configured.
- 3) Once the install has completed, a change also needs to be made to the firewall. This can be done by opening charms by moving the mouse to the top right side of the screen and then selecting settings. From settings, select control panel and then open Windows Firewall and then select advanced settings to open Windows Firewall with Advanced Security.
- 4) To create the new rule, right click on Inbound Rules and select the option New Rule.
- 5) From the new rule wizard select the option custom.
- 6) On the program screen select this program path and then select "c:\program files\Tftpd64_SE\tftpd64_svc.exe"
- 7) Since tftpd will be running as a service, select the option customize next to services. In this option select the option "apply to services only".
- 8) On the next screen select the protocol type as UDP and enter in the port number as 69.
- 9) For the rest of the wizard all the default options can be used.
- 10) There needs to be a directory for the tftp files. To store these, I will create a folder on the c drive called c:\tftp
- 11) TFTP next needs to be configured. To do this launch the admin software using the shortcut. Once loaded press the settings button. On the global tab, deselect all option except TFTP Server.
- 12) On the TFTP tab, enter in the base directory to "c:\tftp". Also select the option PXE compatibility.
- 13) Once the options have been changed and saved, the service will need to be restarted. This is done by opening services from the control panel and finding TFTP Service edition and restarting it.
- 14) The pexlinux files and the configure files need to be added to c:\tftp. These can be found at <http://itfreetraining.com/downloads/tftpdfiles.zip> Unzip the files and place them in this folder. The Windows PE ISO needs to be added to this folder.
- 15) DHCP next needs to be configured by opening Server Manager and then selecting tools and then selecting DHCP.

16) To add additional options to DHCP, expand down through IPv4 and down to Server Options. Right click on Server options and select the option Configure Options. The options that need to be configured is option "66 Boot Server Host Name" to the IP Address of the server running TFTPd and option "67 Bootfile Name" to pxelinux.0

See <http://YouTube.com/ITFreeTraining> or <http://itfreetraining.com> for our always free training videos. This is only one video from the many free courses available on YouTube.

References

"ITFreeTraining TFTPd Download files"

<http://itfreetraining.com/downloads/tftpdfiles.zip>

"TFTPd" <http://tftpd32.jounin.net>

"Windows Assessment and Deployment Kit (ADK) for Windows 8"

<http://www.microsoft.com/en-au/download/details.aspx?id=30652>

"Free ISO creation software" <http://opensource.ebswift.com/DoISO>

"PXELINUX" <http://www.syslinux.org/wiki/index.php/PXELINUX>