

VIRTUAL KENNETH



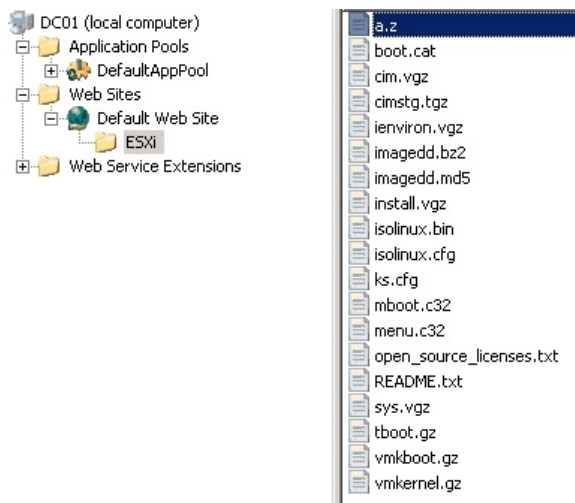
Scripted installation is a new feature for ESXi which is introduced with the release of **vSphere 4.1**. In this article I'm describing the setup of my home lab in which I use this new feature. Please be advised that this article assumes some basic understanding of Windows and ESX and gives you some guidelines which you can alter for your own specific needs.

There are a few ingredients we need to get this ESXi Scripted Installation to work:

- » ESXi Source Repository (HTTP in this article)
- » PXELinux
- » TFTP Server
- » DHCP Server

ESXi Source Repository

1. Install IIS on the Windows Server that will be serving the HTTP repository.
2. Create a ESXi directory in the wwwroot (for example d:\inetpub\wwwroot\ESXi)
3. Copy all the files from the ESXi ISO to the \ESXi folder (do not copy the .ISO itself but only the files in the .ISO)
4. Start the IIS Manager (Start, All Programs, Administrative Tools, Internet Information Services IIS Manager)



5. Right-click the "Default Website" and select "Properties"
6. Click on the "HTTP Headers"-tab and select "MIME Types"
7. Click "New" and Add:

- » Extension: *
- » MIME Type: All



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T W I T T E R

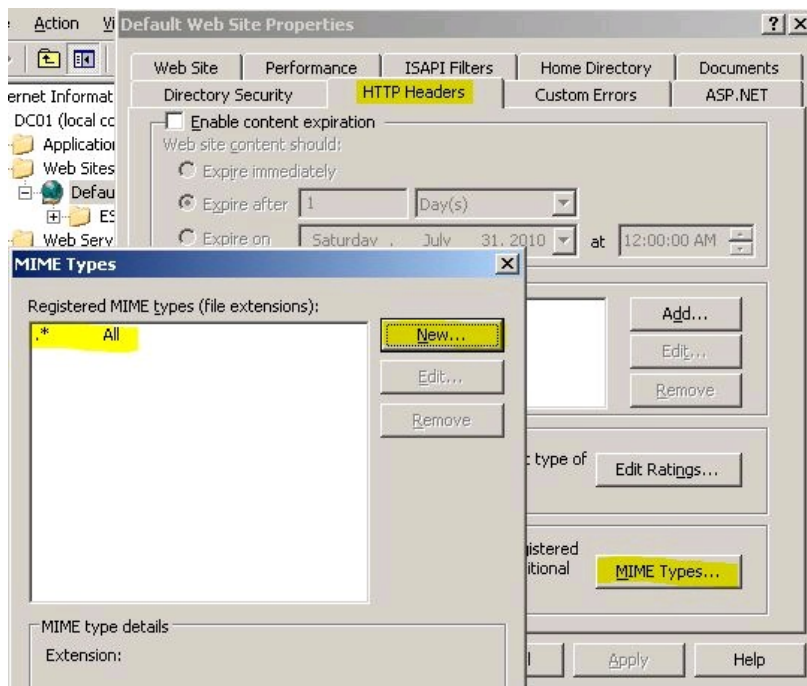


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T A G S

Advanced Settings Automatic rescan Block Size
 config.vpxd.filter.hostRescanFilter DAG Database
 Availability Group Design Discover VMto Resource
 Pool Encrypted VMotion Encryption VMotion ESX
 ESX 4.0 Exchange 2010 Flex-10 FlexNc Freeze
 HBA HP-HP c7000 HP c7000 enclosure HP Onboard
 Administrator HP Virtual Connect
 identify iSCSI initiator LeftHand LUN Maximum
 Multipathing Status Network Speed Partial/No
 Redundancy Port Mapping Reboot iLO Reset iLO
 Resource Pool SAN SANIQ 8.5 SCSI Bus Sharing
 Snapshot Speed Storage Views VCDX
 vCenter vMotion VMware
 vSphere



8. Now Click OK, OK, OK and exit the IIS Manager

PXELinux

1. Create a PXEboot directory (e.g. d:\PXEboot)
2. Create a subdirectory called ESXi (e.g. d:\PXEboot\ESXi)
3. Download and place [pxelinux.0](#) in the d:\PXEboot
4. Copy the 8 files listed below from the ESXi ISO to the d:\PXEboot directory

- » cim.vgz
- » ienvron.vgz
- » install.vgz
- » mboot.c32
- » menu.c32
- » sys.vgz
- » vmkboot.gz
- » vmkernel.gz

5. Create the **directory** d:\PXEboot\pxelinux.cfg

6. Copy the isolinux.cfg from the ESXi ISO to d:\PXEboot\pxelinux.cfg (please note that this is a directory)

7. Open the d:\PXEboot\pxelinux.cfg\isolinux.cfg with [Notepad++](#) or [VIM](#) (or any other tool that doesn't cause the line feed/carriage return problem with Linux files) and make the following adjustments:

- » Add the IIS directory name in front of all **8 file references** (so in this case "ESXi/")
- » Add "**ks=http://x.x.x.x/ESXi/ks.cfg**" (if you want an interactive installation, skip this line)
- » Additionally more bootstrap commands can be added as part of the "ks=..." line, see the [ESXi Installable and vCenter Server Setup Guide](#) (page 41)

The views expressed anywhere on this site are strictly mine and not the opinions and views of VMware.

```

default ESXi/menu.c32
menu title VMware VMvisor Boot Menu
timeout 80

label ESXi Installer
menu label ^ESXi Installer
kernel ESXi/nboot.c32
append ESXi/vmkboot.gz ks=http://10.0.0.100/ESXi/ks.cfg --- ESXi/vmkernel.gz --- ESXi/sys.vgz --- ESXi/cin.vgz --- ESXi/ienviron.vgz --- ESXi/install.vgz

label ^Boot from local disk
menu label ^Boot from local disk
localboot 0x80

```

8. Save the file

9. Rename the file to **default** (make sure it has got no file extension)

Alternately you can also use the following naming convention which is described in the [ESXi Installable and vCenter Server Setup Guide](#) (page 33)



Filename for the PXE Configuration File

For the filename of the PXE configuration file, choose one of the following:

- 01-mac_address_of_target_ESXi_host. For example, 01-23-45-67-89-0a-bc
- The target ESXi host IP address in hexadecimal notation.
- default

The initial boot file, pxelinux.0 (or gpxelinux.0) tries to load a PXE configuration file. It tries with the MAC address of the target ESXi host, prefixed with its ARP type code (01 for Ethernet). If that fails, it tries with the hexadecimal notation of target ESXi system IP address. Ultimately, it tries to load a file named default.

10. Create the d:\inetpub\wwwroot\ESXi\ks.cfg file (this is the Kickstart Script which contains the installation details)

11. Open the **ks.cfg** with with [Notepad++](#) or [VIM](#) and add the following lines to it (which need to be altered for your specific needs):

```

vmaccepteula
rootpw password
autopart --firstdisk --overwritevmfs
install url http://x.x.x.x/ESXi
network --bootproto=dhcp --device=vmnic0
reboot

```

All the available options can be found in the [ESXi Installable and vCenter Server Setup Guide](#) (page 41)

TFTP Server

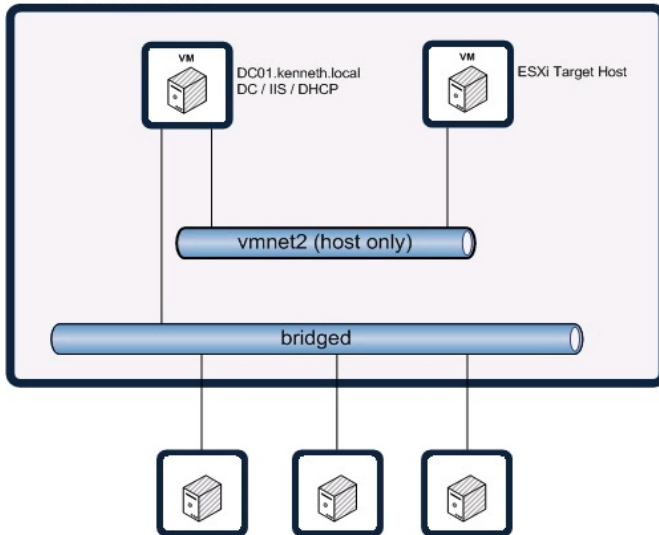
Now it's time to get the TFTP Server running. You can use your favorite TFTP program or follow the instructions on this [site](#)

DHCP Server

The last step is to get the DHCP server installed and configured. In my home environment I've got an Internet Router which acts as DHCP server for my internal network. Since I prefer to use this DHCP server which isn't capable of DHCP Options I decided to create a secondary DHCP server based on a Windows 2003 Server which is capable of DHCP options.

Please see the overview below to get an understanding of my setup.

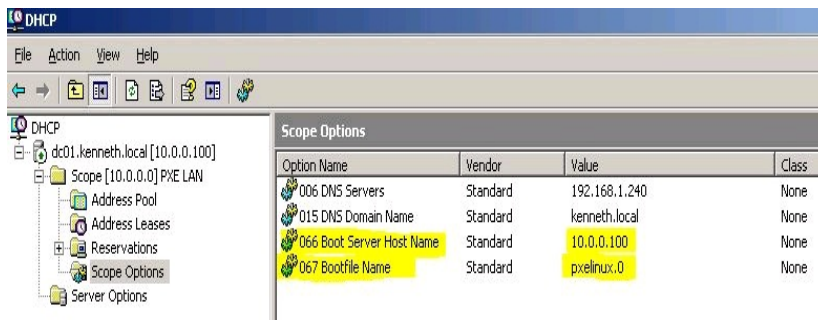
VMware Workstation



I connected this secondary DHCP server to an isolated network within VMware Workstation (**vmnet2**). Consequently this means that whenever I want to deploy an ESXi Host I first need to attach it to **vmnet2** and after deployment I need to change it to the bridged network.

1. Install the DHCP Service.
2. Create a DHCP Scope and active it.
3. Right-click Scope Options and select "Configure Options"
4. Scroll down the Available Options and configure

- » **066 Boot Server Host Name** with your DHCP Server IP address
- » **067 Bootfile Name** with pxelinux.0 (we placed this file earlier on in the d:\PXEboot directory)



Test the Scripted Installation

It's now time to test the scripted environment by starting your Target ESXi Host, if PXE works it will show the screen below where it will start downloading the source files.

```
COM32 Multiboot loader v0.2. Copyright (C) 2005-2006 Tim Deegan.
Kernel: ESXi/vmkboot.gz ks=http://10.0.0.100/ESXi/ks.cfg
Loading ESXi/vmkboot.gz.....
Module: ESXi/vmkkernel.gz
Loading ESXi/vmkkernel.gz.....
.....
Module: ESXi/sys.vgz
Loading ESXi/sys.vgz.....
```

Current Scripted Installation Limitations

Please note the current limitations of Scripted Installations:

- Scripted Install is available only with the Installer version of ESXi and is not available in the Embedded version of ESXi
- You cannot use Scripted Install to install ESXi Installable to a USB device

As outlined in this VMware [KB article](#).



b K E N N E T H V A O J M U L D Y I T M A , R S O H O 1 5 C O
f i l e s , I X N I S T A , V L S P T H I E O R N E
t a g E g S e B d S X , B C 4 R . J S P C T F E I D P T E D , S D C E R P I P T E M , E V I N S T S , F A
V S P H E R E 4 . 1

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15 Responses

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Sander Daems / July 21, 2010

“

Very nice article! Will try this setup in my test lab 😊



Simon Long / July 21, 2010

“

Nice post Kenneth. If you wanted to you could use the same Virtual Appliance that I use to deploy ESXi, it has DHCP, TFTP and PXE all on the same app.

Check it out here: <http://www.simonlong.co.uk/blog/2010/02/23/a-simple-vmware-esxi-rapid-deployment-system-part-1/>

Simon



Kenneth van Ditmarsch / July 21, 2010

“

Thanks for the link dude 😊



Brian / July 21, 2010

“

Great post, was going to be trying this myself soon.



Bouke Groenescheij / July 21, 2010

“

WAUW!!!! Excellent post – thank you very much!



Diego Quintana / July 21, 2010

“

Excellent Post and very useful.



Kendrick Coleman / July 21, 2010

“

great walkthrough and I almost have it working. I'm trying to do this all on Windows Server 2008 R2 and not server 2003.

Windows Server 2008 R2 will not allow you to create the * All mime type. It asks for a / tag.

"5. Create the directory d:\PXEboot\pxelinux.cfg". I can create a new folder called pxelinux.cfg, but I don't know how I can "7. Open the d:\PXEboot\pxelinux.cfg with Notepad++" because I can't open a folder with Notepad++.

As for the TFTP server setup, you should probably note that the TFTP server should be pointed at the directory D:\PXEboot\pxelinux.cfg

At this moment, I'm failing. I'm getting "Trying to load: pxelinx.cfg/default and unable to locate configuration file.

going to try and continue working on it to see what comes of it.



Kendrick Coleman / July 21, 2010



ok nevermind. i got it all working. Here is where I messed up:

4. Copy the 8 files listed below from the ESXi ISO to the d:\PXEboot directory
All of these files should be placed in the ESXi folder inside the PXEboot directory.

the TFTP server should be pointing to D:\PXEboot

Also, if you're on Windows Server 2008, in the features view of IIS, don't forget to Enable the Directory Browsing service.



Kenneth van Ditmarsch / July 21, 2010



Hi Kendrick,

Does it work with Windows 2008 when you add a MIME type: 'application/octet-stream' (with the quotes)?

Secondly, you are totally right, step 7 needs to be: 7. Open the
d:\PXEboot\pxelinux.cfg\isolinux.cfg (I've corrected this in the post, thanks for pointing that out)

Concerning the tftp, yeah this needs to be pointed to the tftp directory (in this example d:\pxeboot)

Kenneth



Kenneth van Ditmarsch / July 21, 2010



Please note Kendrick's note: Also, if you're on Windows Server 2008, in the features view of IIS, don't forget to Enable the Directory Browsing service.
Since this isn't the case on Windows 2003



Kendrick Coleman / July 21, 2010



ok last one i swear.

i figured out the mime type for 2008 R2

Click your ESXi site under default Web Site

Under Feature View, right click MIME Types and Open Feature

Add:

File name extension: .cfg

MIME Type: text/plain



Eric van der Meer / July 22, 2010



Thanks for sharing this tutorial with us Kenneth!



Dennis Agterberg / July 22, 2010



Nice article Kenneth. I can remove this one (no automatic deployment) from the list of ESXi

disadvantages for the environment I'm currently working on.



Eric / July 22, 2010



Nice article. Any chance you'll be adding any examples for using the %pre, %post and %firstboot sections of the ks.cfg file? A lot of people leveraged %pre and %post pretty heavily for scripted ESX installations. I'm looking to port my ks.cfg into a new one for ESXi 4.1.



Justin / August 4, 2010



No worky on ESXi 4.1

Try to install to USB on my PowerEdge T710 and it gets around 50% and fails saying there must be bad sectors. Tried with a brand new USB stick and same thing. Downloading the Dell customized image and see if that changes anything.

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