

Using Symantec Ghost and Group Policy Objects For Multiple Machines

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CSE482 Senior Project

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Symantec Ghost and Group Policy Objects

Objective: This Project is to demonstrate what a Computer Systems Administrator working in a computer lab and in charge of 40 computers, making sure they all have the same image files and settings. It would take a long time for that Administrator to download the same program forty times along with adding the same settings to all the computers forty times. There is a simple task to set all the settings at once and the image files by using Group Policy Object and Symantec Ghost.

Group Policy Object (GPO) is a collection of settings that will make the computers behave for a defined group user. The administrator can create a specific configuration that will apply to a group of users. The active directory enables the group policy and are linked to containers. If a student were to log on the computer and wanted to add a printer to the computer, a GPO setting will restrict access to the student from adding a printer. Moreover, Group Policy also includes several extensions such as administrative templates, security settings, software installation, scripts and remote installation services.

Symantec Ghost manages the cloning and deployment of computers within a certain environment. This tool will copy an image of one computer, and then clone to multiple computers in the same environment. If an Administrator had to put ten image files on all forty computers, he can simply grab an image from one computer with all ten files on it, clone it, and push it to all forty computers in the same environment at once instead of taking hours to download each image file one at a time for forty computers.

Procedure I: Installing Virtual Box and Creating Virtual Machines

<https://www.virtualbox.org/wiki/Downloads>

The first machine that will be created is the Windows 2012 server. Download the file here.

<https://www.microsoft.com/en-US/evalcenter/evaluate-windows-server-2012>

A screenshot of a web page showing a download link for Windows Server 2012. The page has a light blue header with the Microsoft logo. Below the header, there's a section for "Windows Server 2012" with a "Download" button. A note says "Registration is required for this evaluation." and a "Register to continue" button is visible.

(-) Windows Server 2012
Evaluations | 180 days

(-) Download

Registration is required for this evaluation.
Register to continue

Click "Register to Continue".

 Download

Please fill out the following form to begin your download:

* First name	<input type="text"/>
* Last name	<input type="text"/>
* Company name	<input type="text"/>
* Work email address	<input type="text"/>
Work phone number	<input type="text"/>
* Country	<input type="text"/>

* Indicates a required field

Continue

Fill out the information above for first and last name. The company name fill in with “CSUSB” and work email “youremail@coyote.csusb.edu” and United States for the country and select “Continue”.

 Download

Please fill out the following form to begin your download:

* Please choose a file type:

- ISO
- VHD - Standard
- VHD - Datacenter

* Indicates a required field

Continue

Select ISO as the file type and click “Continue”.

 Windows Server 2012
Evaluations | 180 days

 Download

Please fill out the following form to begin your download:

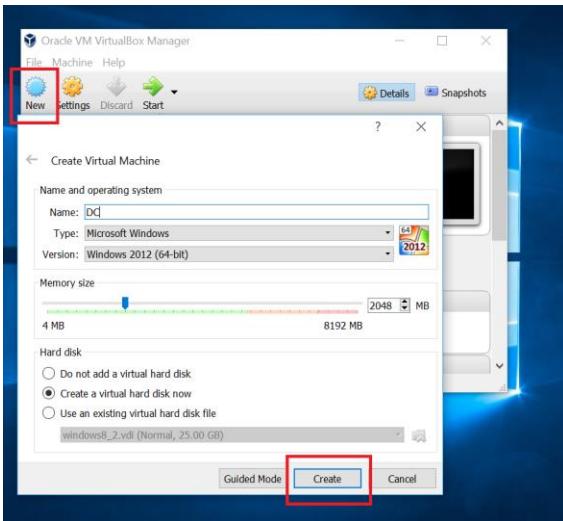
* Product language:

▼

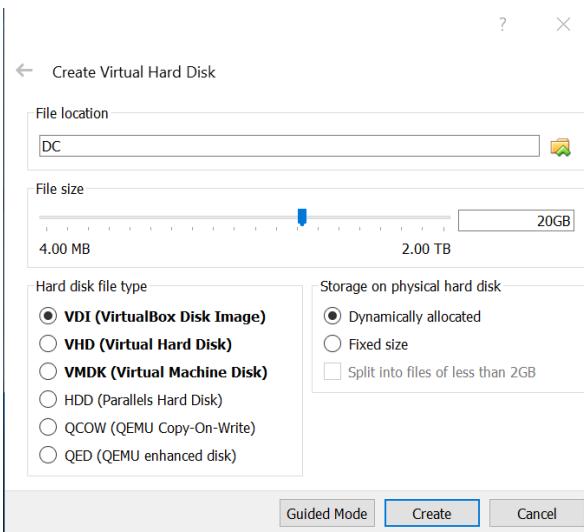
* Indicates a required field

Download

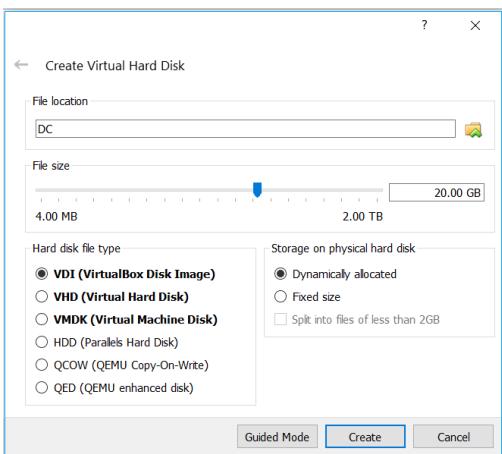
Select the Product Language and then click “Download”.



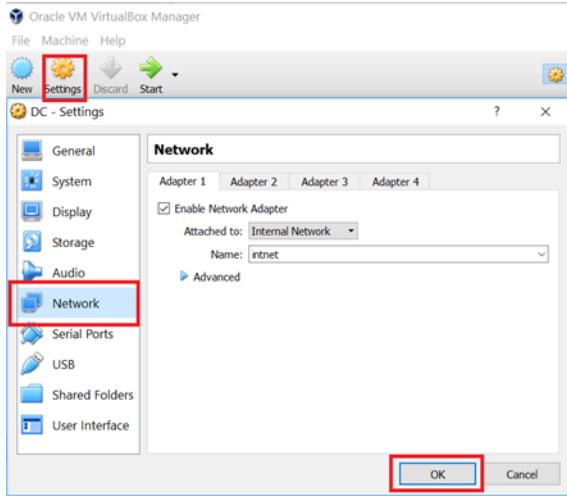
Select “New” to create the Virtual Machine.



Name the Machine DC for Domain Controller, select Microsoft Windows as the type of Operating System and Windows 2012 64-bit for the version. Set the memory to 2048 MB, and the hard disk set to create virtual hard disk now, and click “Create”.

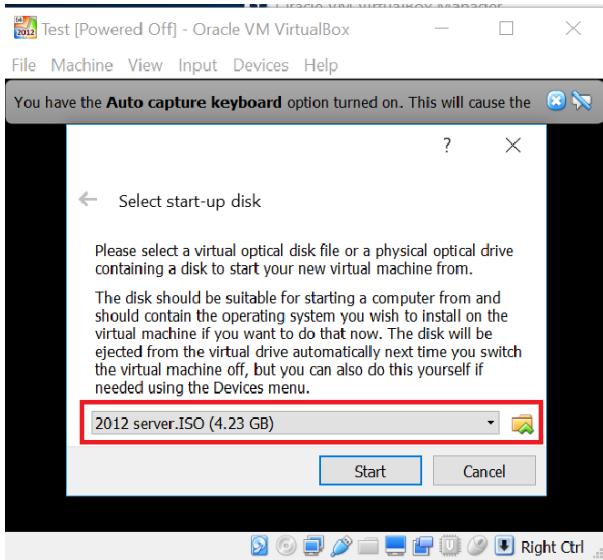


Make the file size 20GB, and set the file type to VDI which is the virtual disk image, and select the hard disk as dynamically allocated and click “Create”.

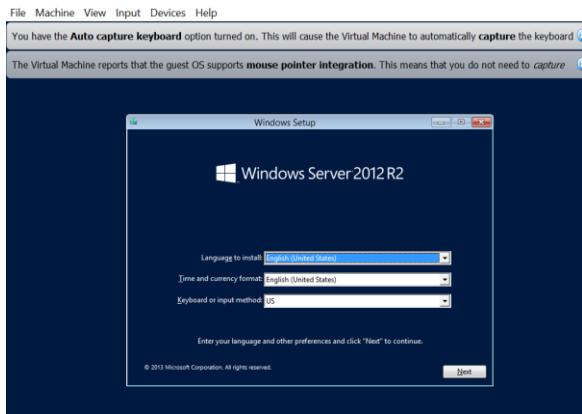


To configure the network, select “Settings” then “Network” and attach to “Internal Network” and click “Ok”. The Internal Network will allow the multiple virtual machines to directly communicate with each other.

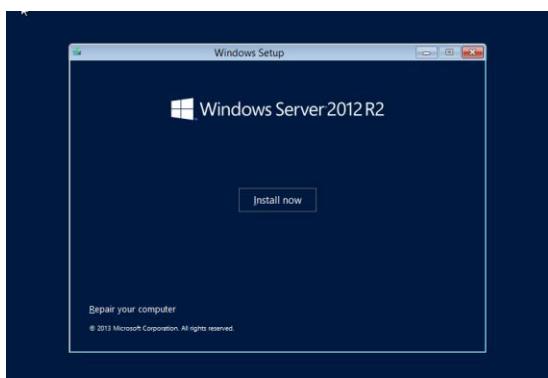
Click “Start” to start windows 2012 server virtual machine.



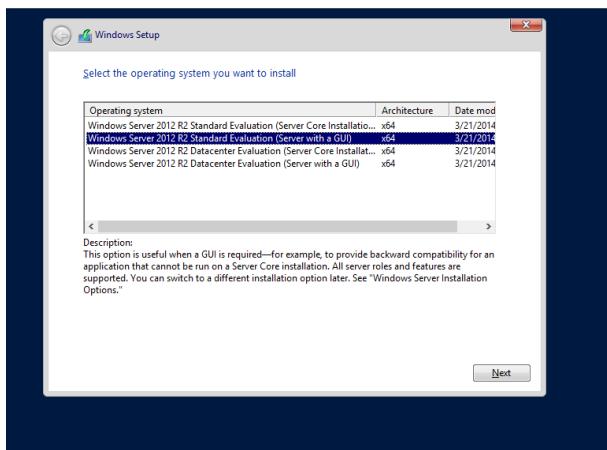
As soon as the virtual machine starts, it will ask the user to select a disk file. Select the windows 2012 server that was recently downloaded and click “Start”.



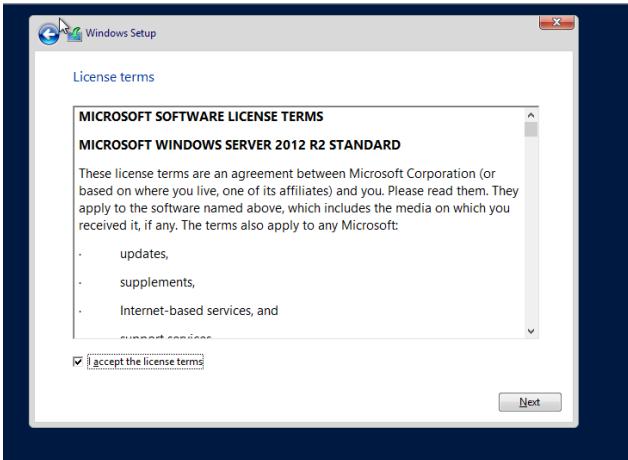
Select “Next”.



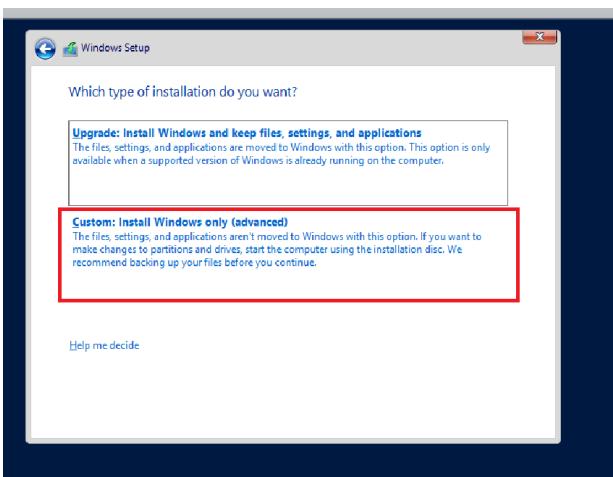
Click “Install Now”.



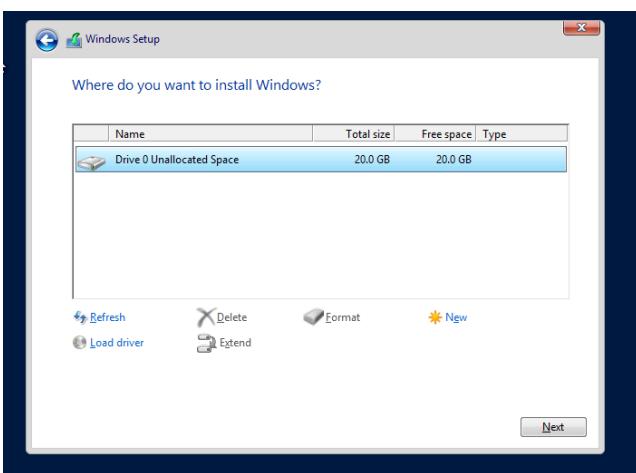
Select “Standard Evaluation (Server with a GUI)” and click “Next”.



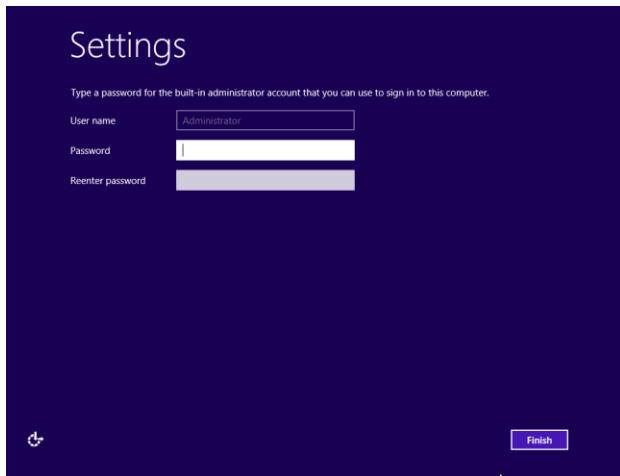
Select the license terms and click "Next".



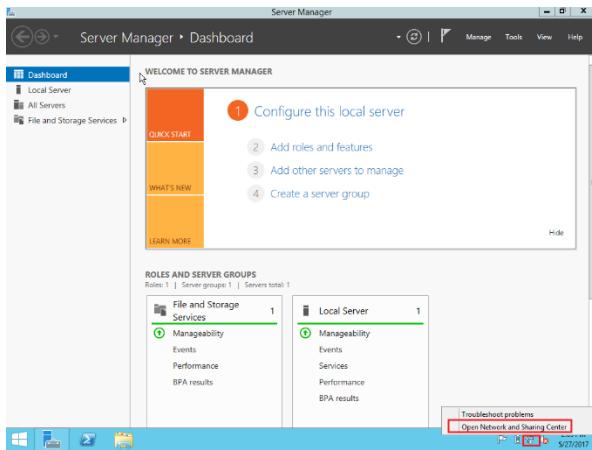
Select Custom Install.



Select the drive where you wish to install windows and click "Next".

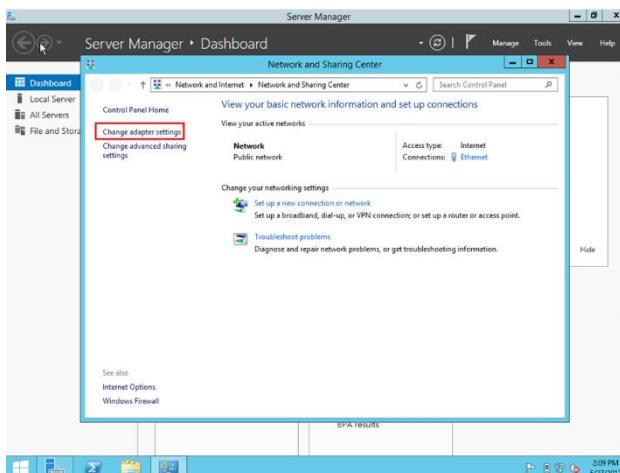


Setup the administrator password and click “Finish”.

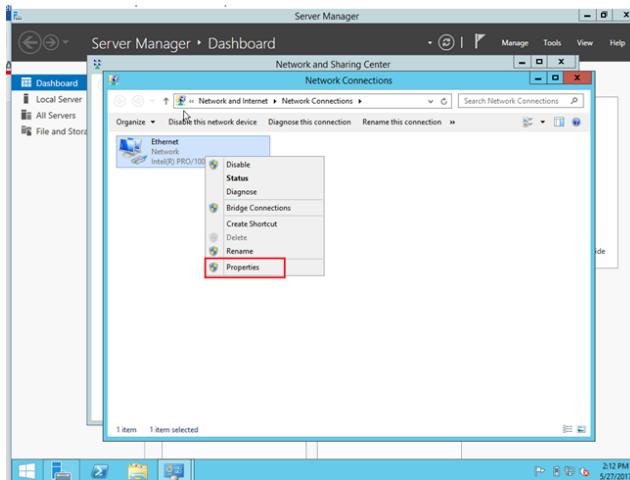


Once logged in, the server will need to be configured.

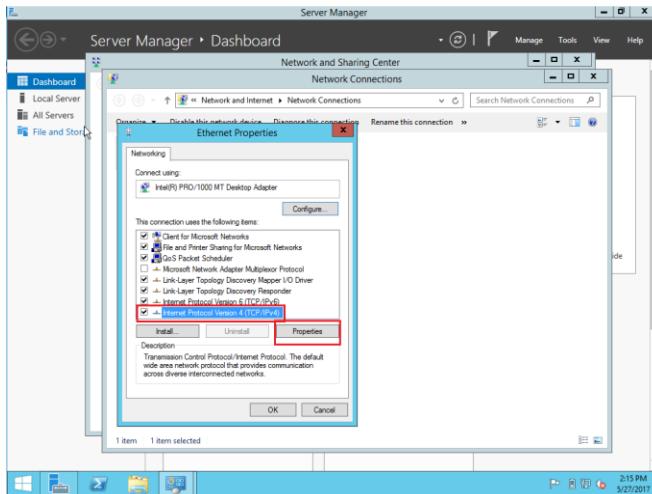
Right click on computer icon. Choose “Open Network and Sharing Center.”



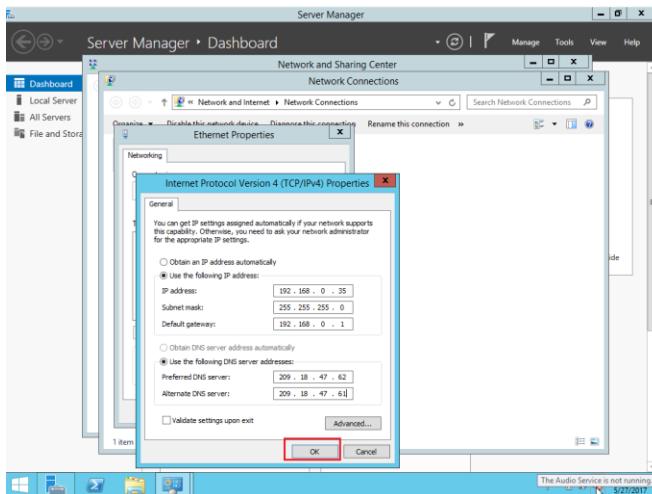
Click “Change adapter settings.”



Right click on the network adapter, click “Properties.”

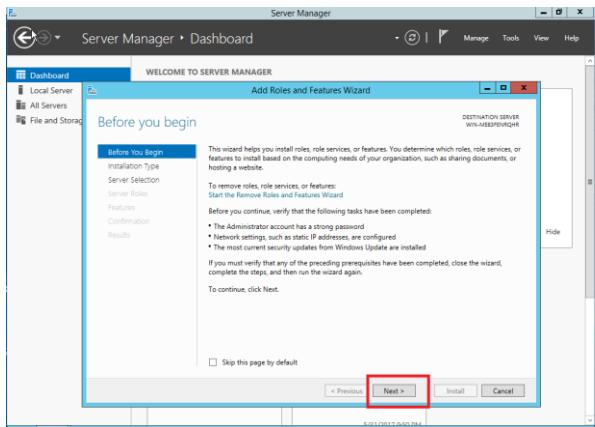
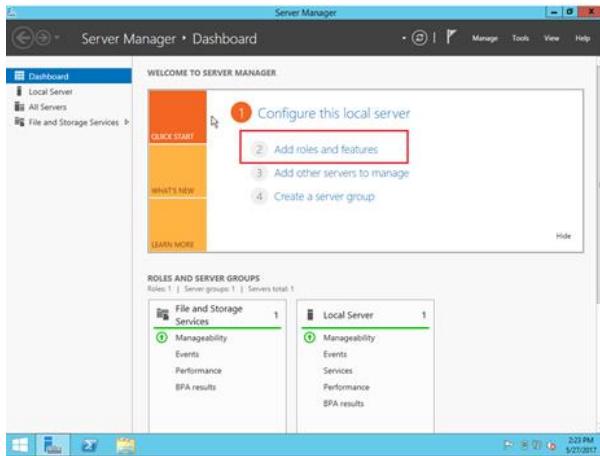


Click on “Internet Protocol Version 4 (TCP/IPv4)” and then click “Properties.”

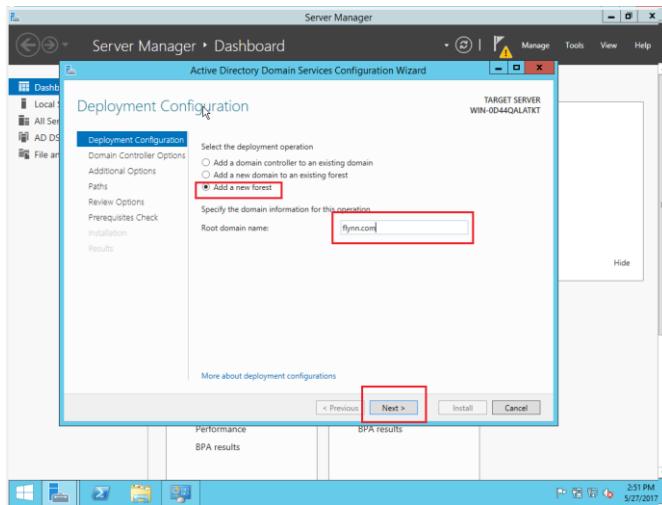


Assign a static IP address. Click “OK.” Then click “Close.”

Open “Server Manager” if it is not already open. Click on “2 Add Roles and features.”

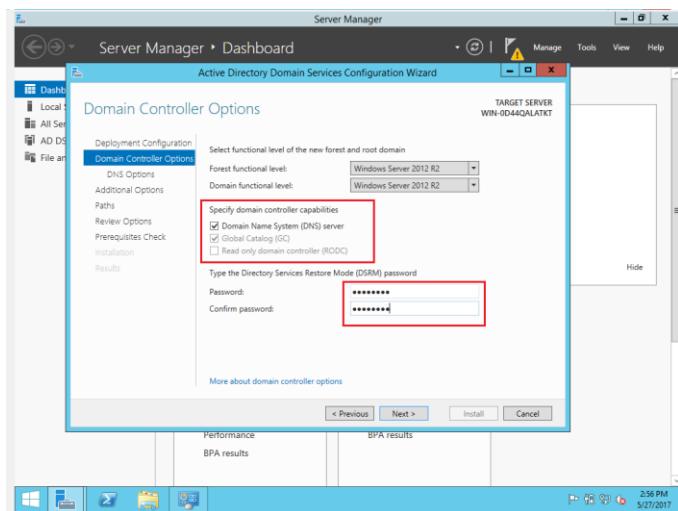


Click "Next"

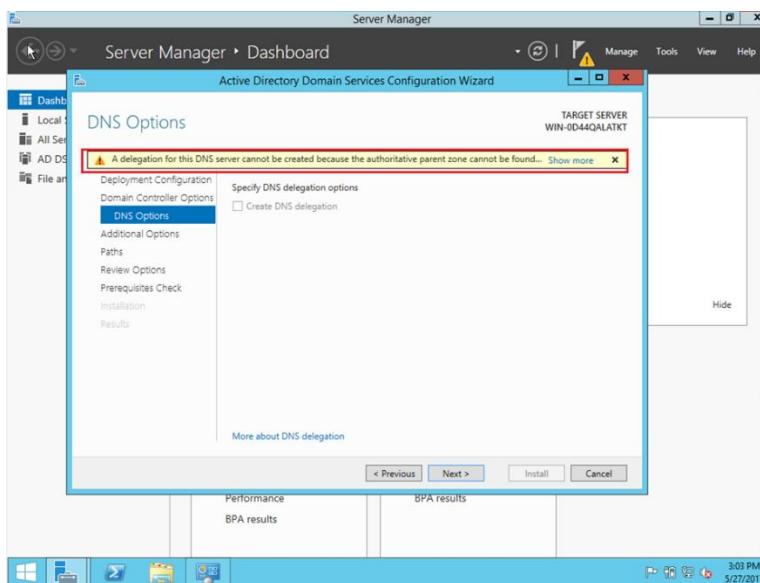


Select "Add new forest" and give it a root domain name, and click "Next".

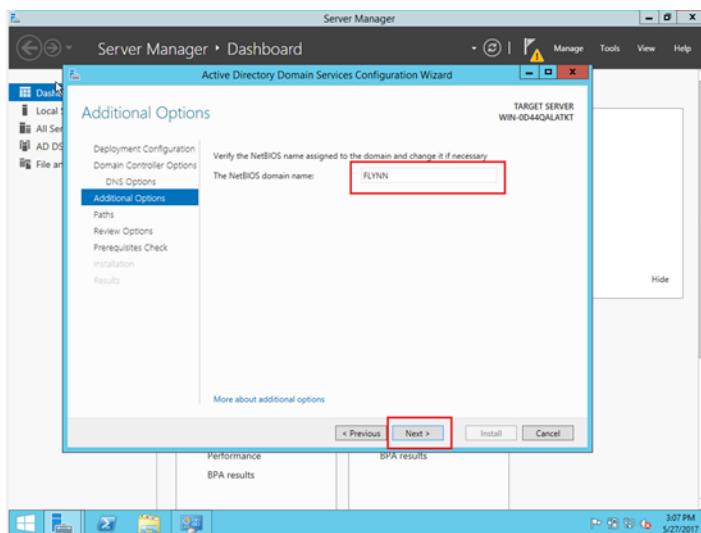
The forest name you choose will be the domain network you will connect all your machines to.



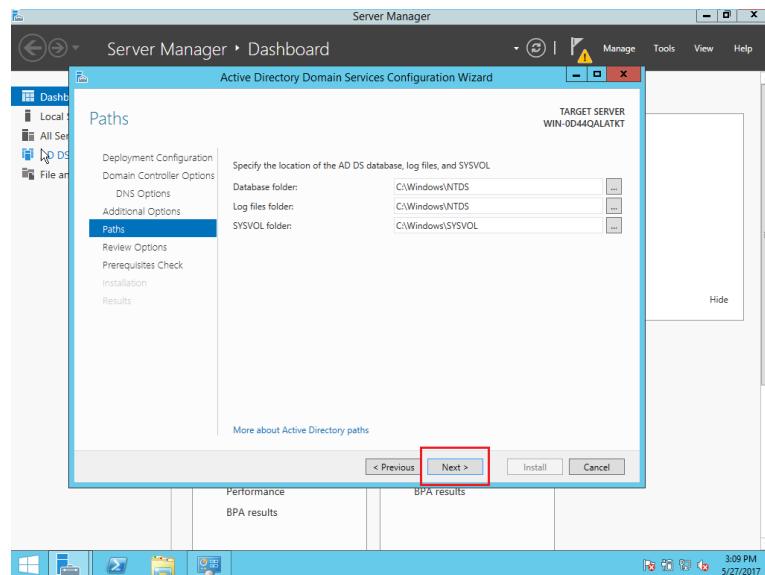
Check the “Domain Name System” and provide a password for it, and click “Next”.



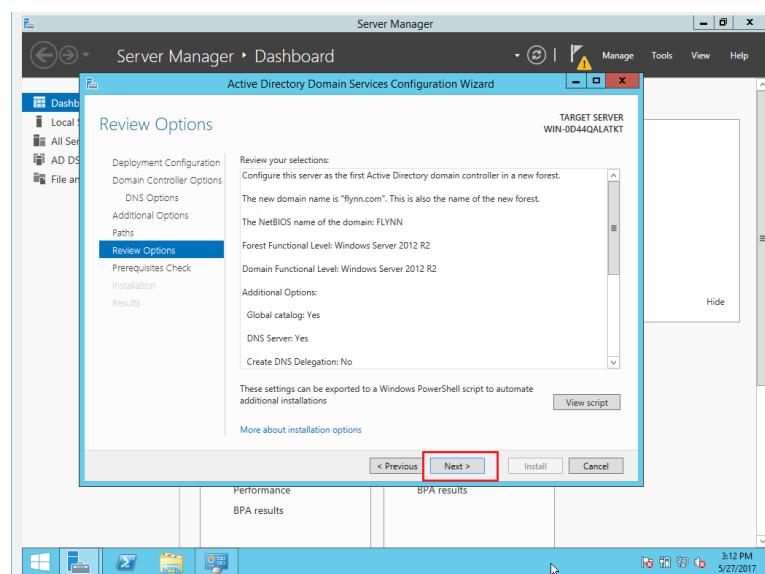
Ignore the warning above about the delegation above and click “Next”.



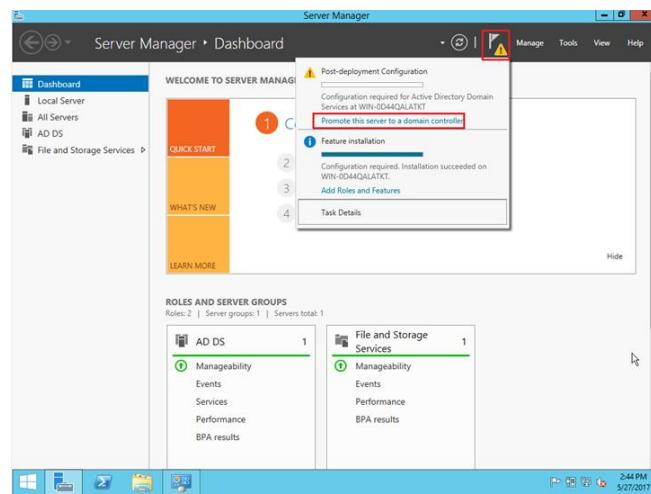
Create a name for the NetBIOS domain name, click “Next”.



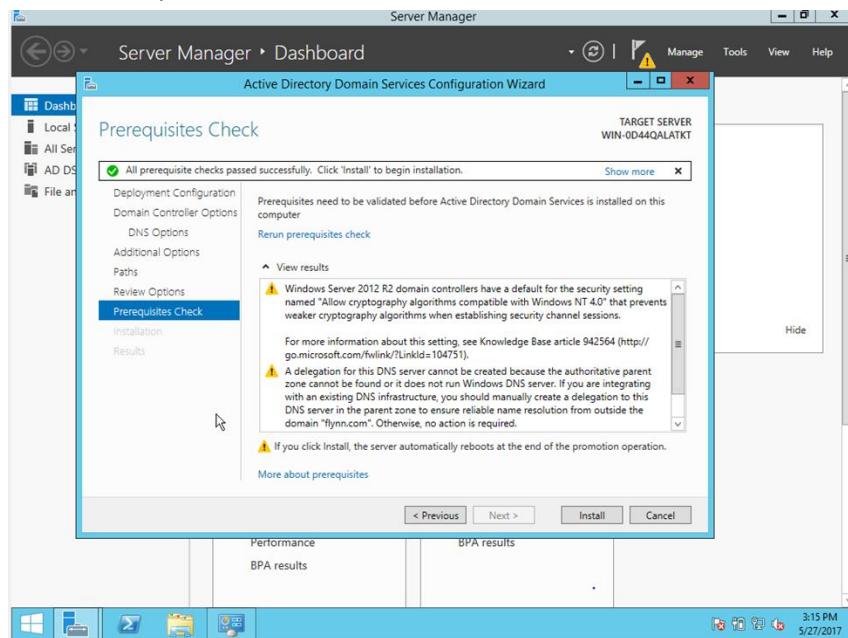
Make sure all the folders are correct and Click the “Next”.



Review to make sure all the selections are correct and Click “Next”.



Click on the yellow exclamation and then click “Promote this server to a domain controller.”



Click “Install”.

After install, the DC server machine will need to be restarted.

Once the DC server machine is up and running, you will create another Windows 2012 server with the same setting and same it SG (Symantec Ghost). Once the server is created log in, and you will go back to it later.

We are now going to create 3 Windows7 Professional virtual machines.

<https://pcriver.com/operating-systems/windows-7-professional-iso-free-download.html>

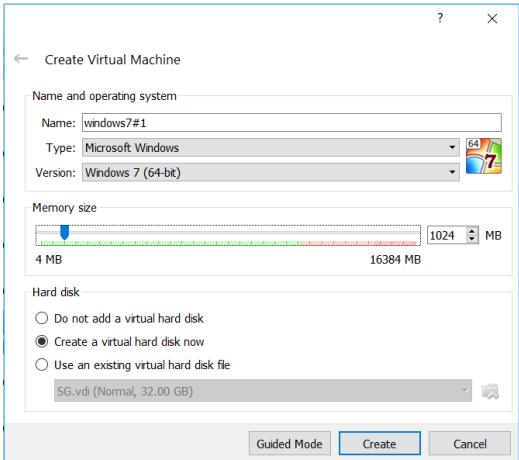
Windows 7 Pro 32 bit download

Download

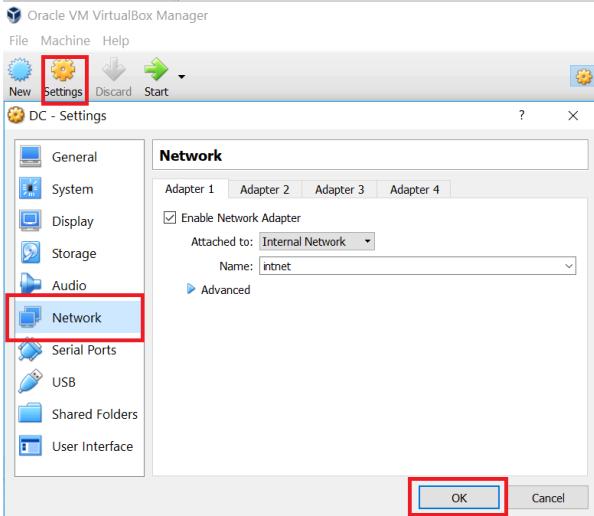
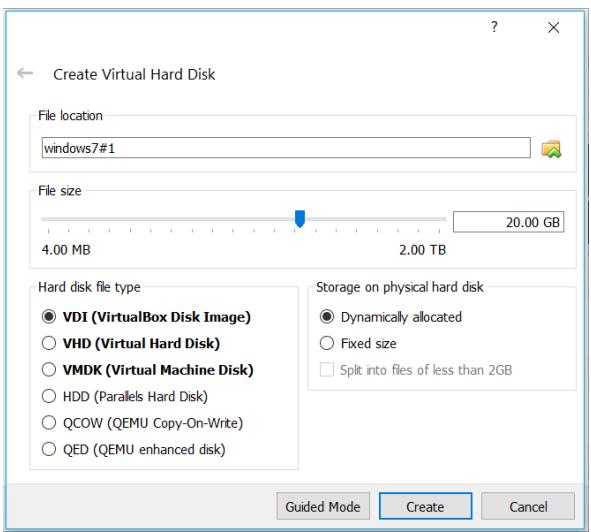
Windows 7 Pro 64 bit download

Download

Select and Download



Name the machine, and select windows 7 as the version, and set the memory size to about 1GB.



Once all the settings are enabled start the virtual machine, and select the startup disk as the windows7 professional that was downloaded.

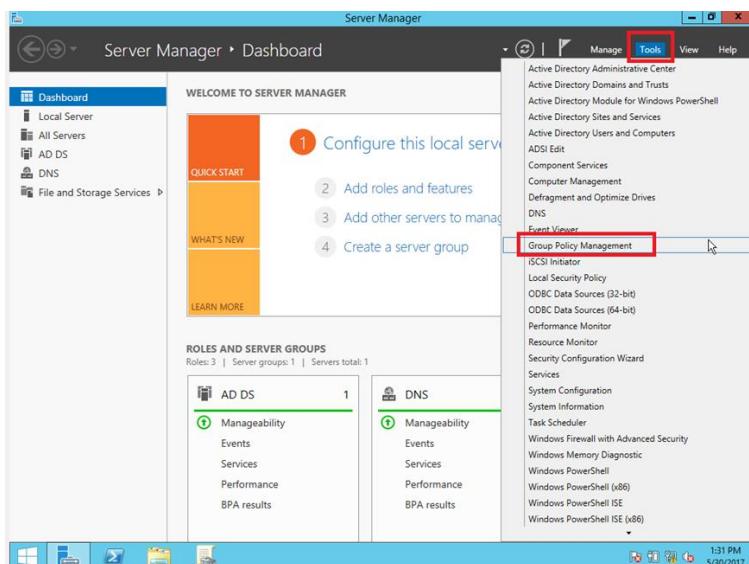
The startup settings will be the same just like the server by selecting custom installation, selecting the drive you wish to install windows 7, and creating a username and password.

You are going to set up a total of three windows 7 machines and name them differently ex: Windows7#1, Windows7#2, Windows7#3.

Procedure II: Adding Users to the Domain and Creating Group Policy Objects (GPO)

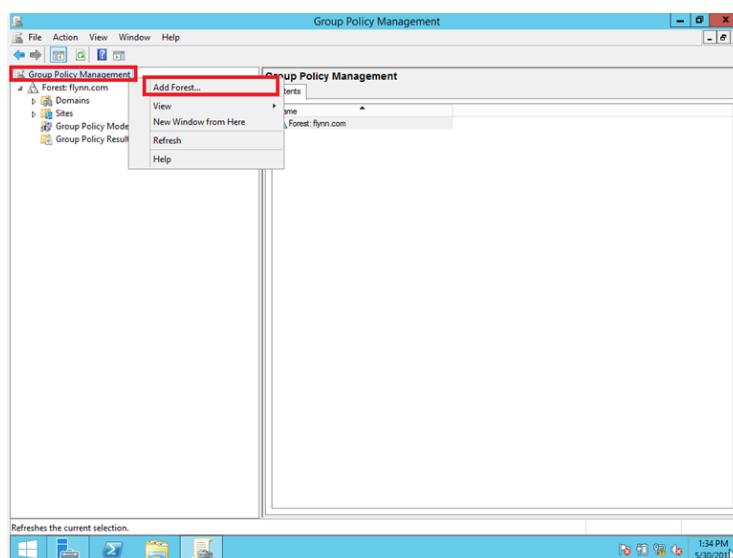
In the DC server, the Domain will be created where you will add the different users, and the Group Policy Objects.

Creating Group User

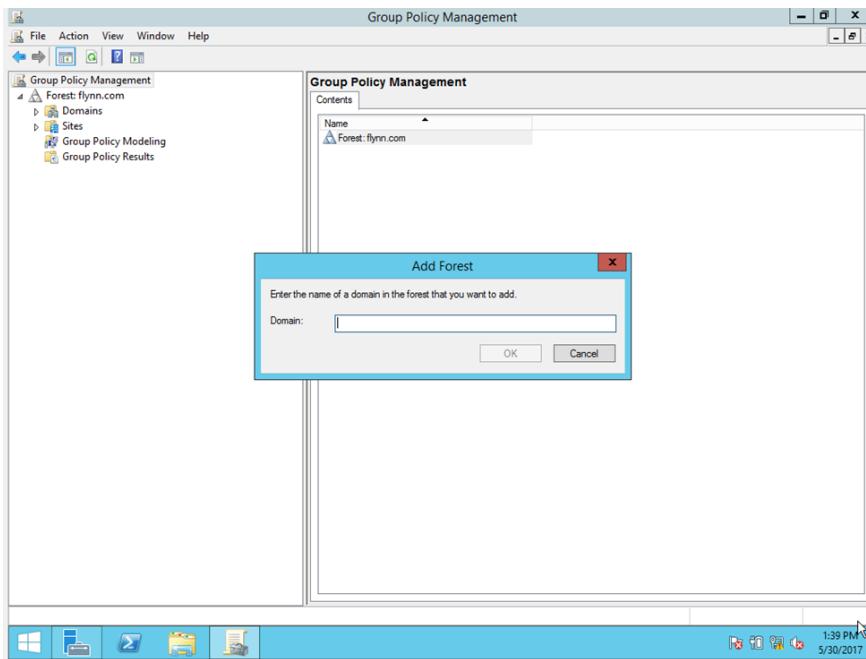


The Server Manager Dashboard will automatically be open once logged in to the sever.

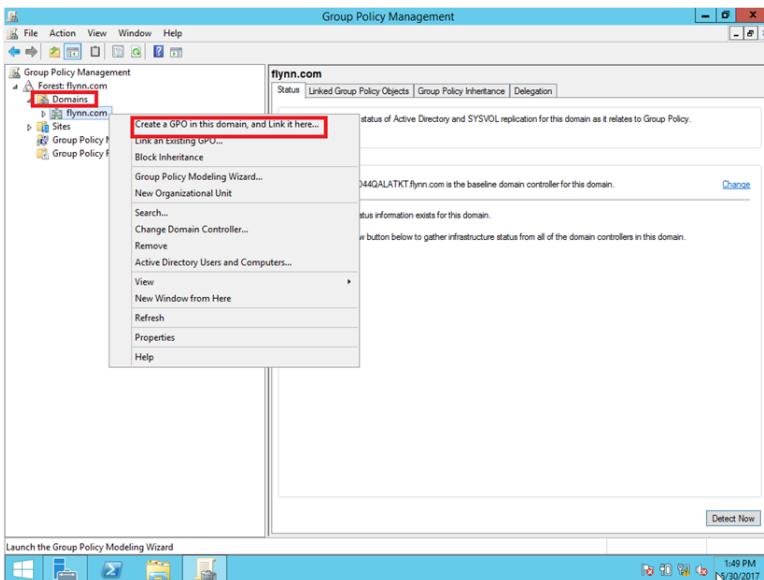
Click "tools" and select "group policy management".



Right Click Group Policy Management and select “Add forest”.

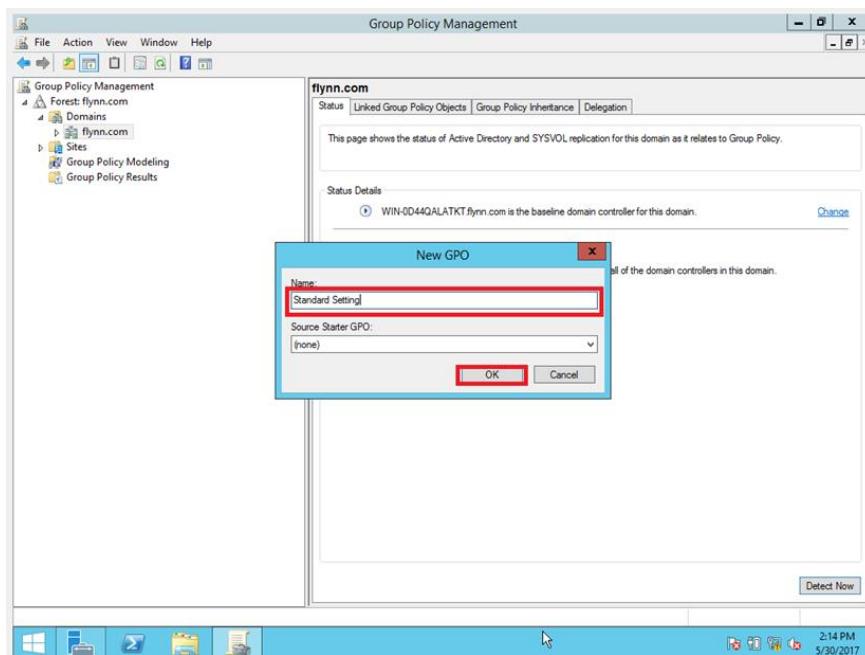


Type in the name you want your domain to be and click “Ok”.

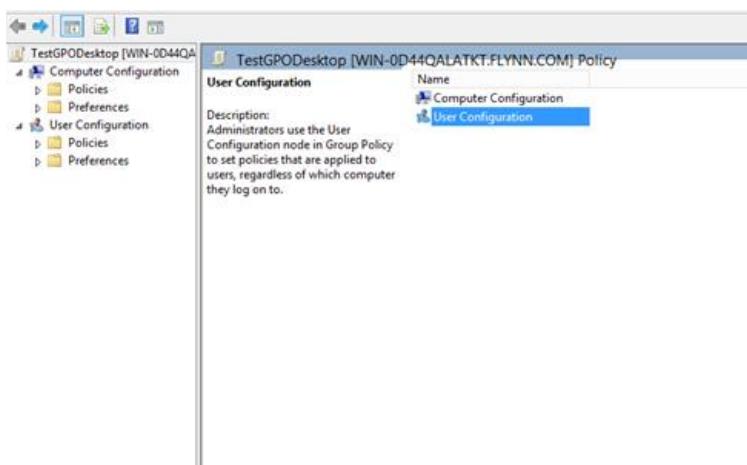


Click “Domains” then then click the domain you created. Ex: “flynn.com” would be the domain name.

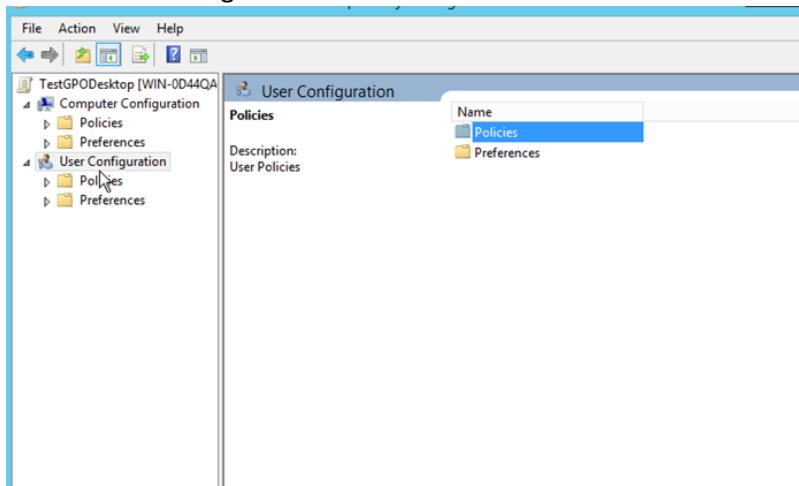
Right click and select “Create GPO in this domain, and link here”.



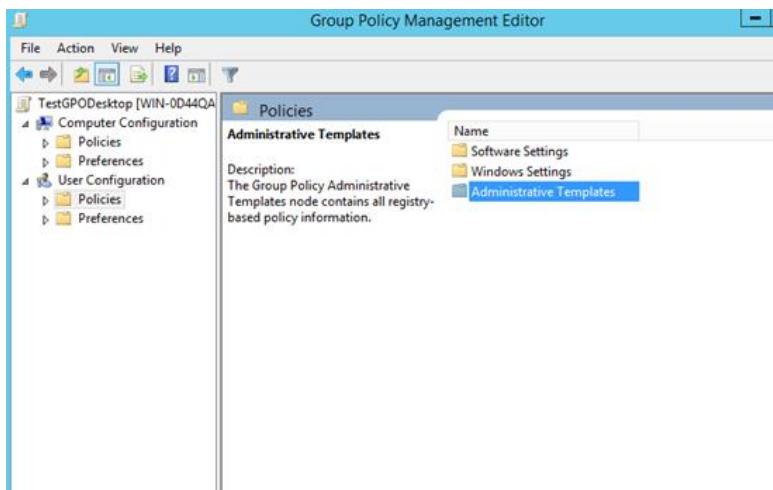
Name the GPO setting related to what the setting is going to be. Example: Standard Setting



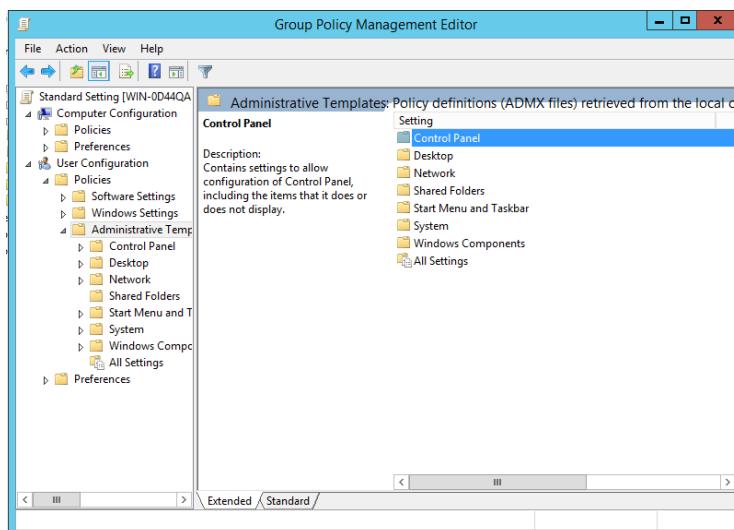
Select "User Configuration"



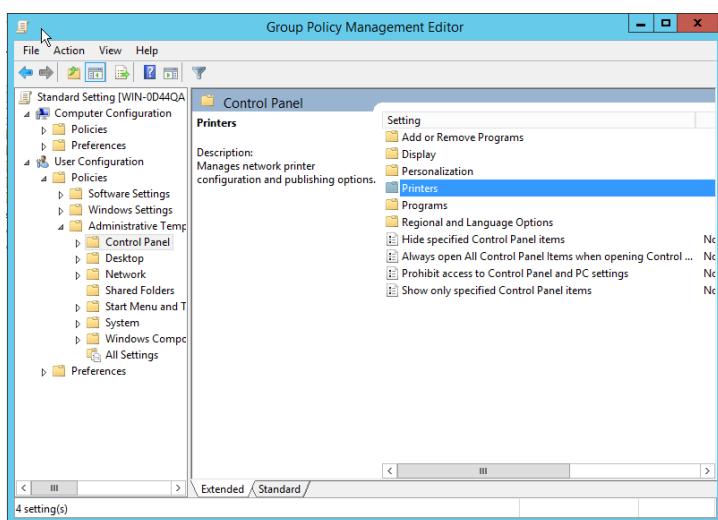
Select “Policies”



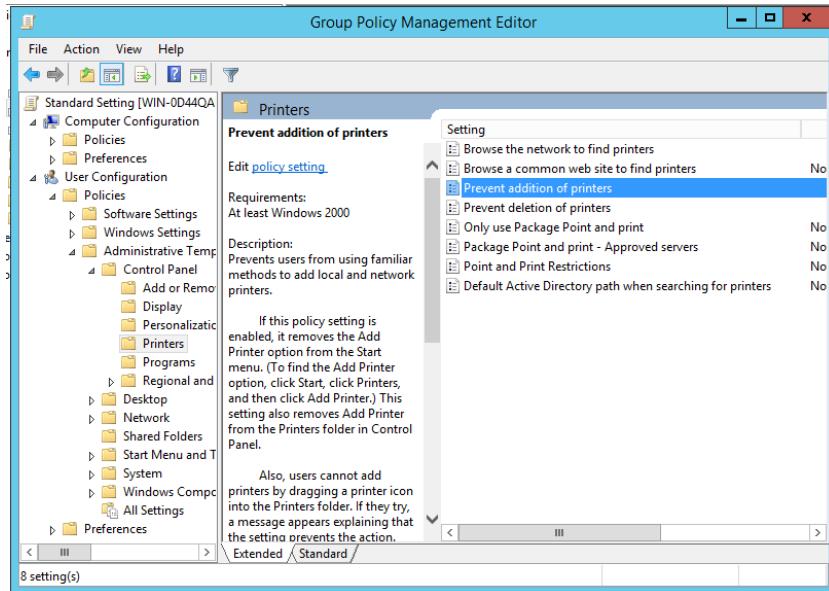
Select “Administrative Templates”



Select “Control Panel”



Select “Printers”



Double click on “Prevent addition of printers” and select “Enabled”.

This GPO will prevent a user from the domain adding another printer to the driver.

```
Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>gpupdate /force
Updating policy...
Computer Policy update has completed successfully.
User Policy update has completed successfully.

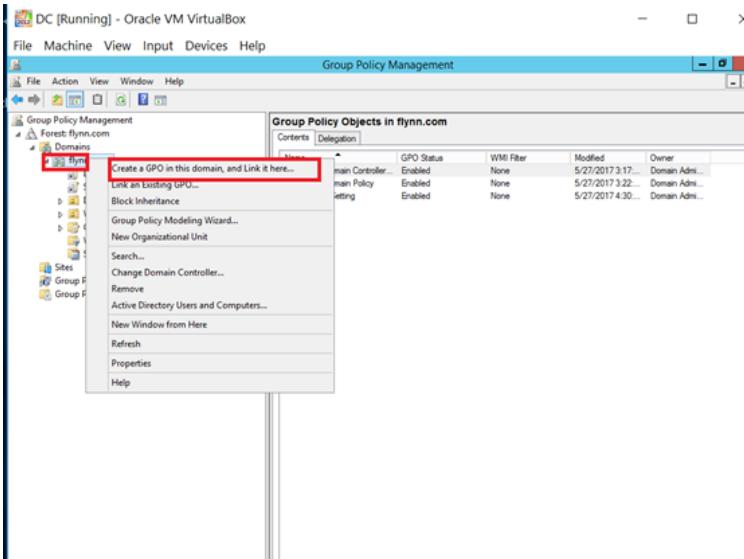
C:\Users\Administrator>
```

In the command prompt type the command: gpupdate /force

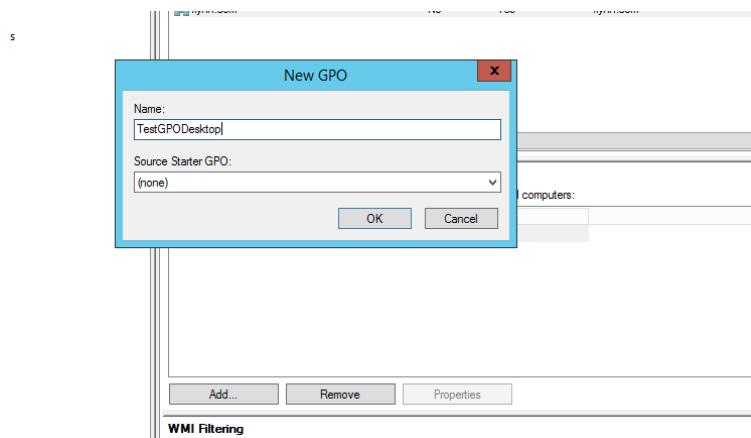
This will enable the Group Policy setting for the three Windows 7 machines that were created.

The next two GPO created will hide the Recycle Bin on the desktop. This is a good setting to enable so users are not tempted to delete any items that belong on the desktop.

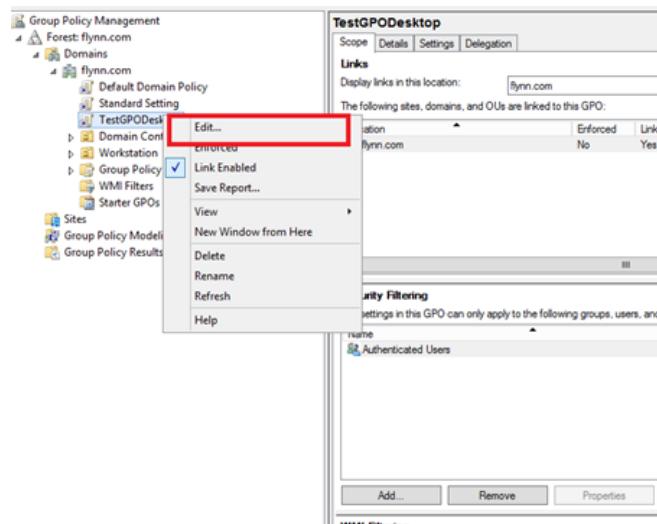
Creating additional group policy



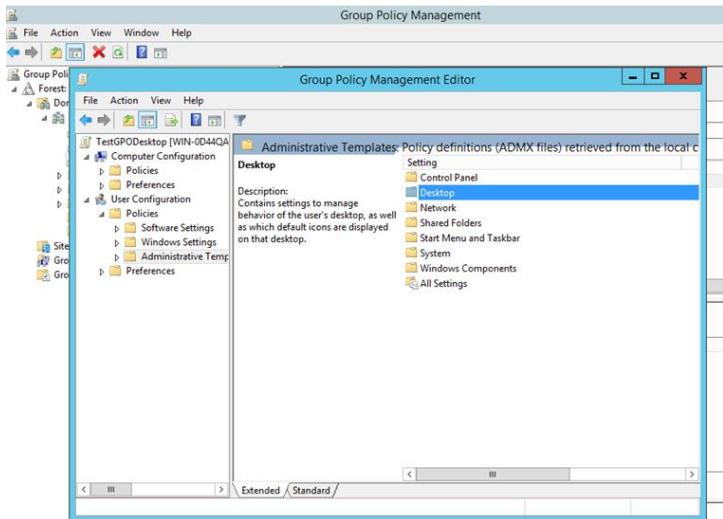
Right click on the domain and select “Create Group Policy domain and link it here”.



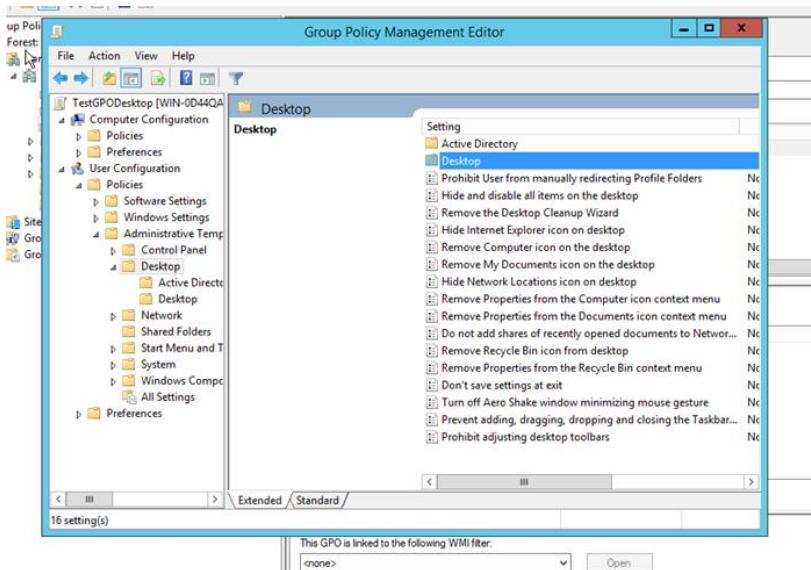
Name the New GPO.



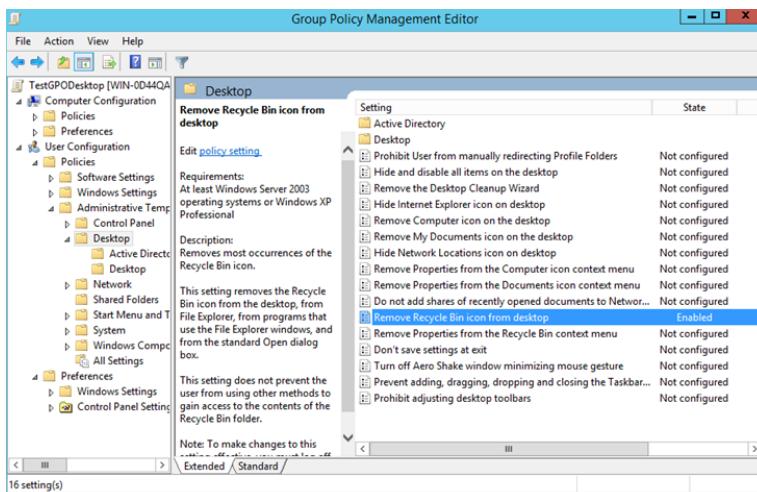
Right click on the new GPO created and select “Edit”.



Select “Desktop”



Select the other Desktop folder.



Double click “Remove Recycle Bin icon from desktop” and select “Enable”



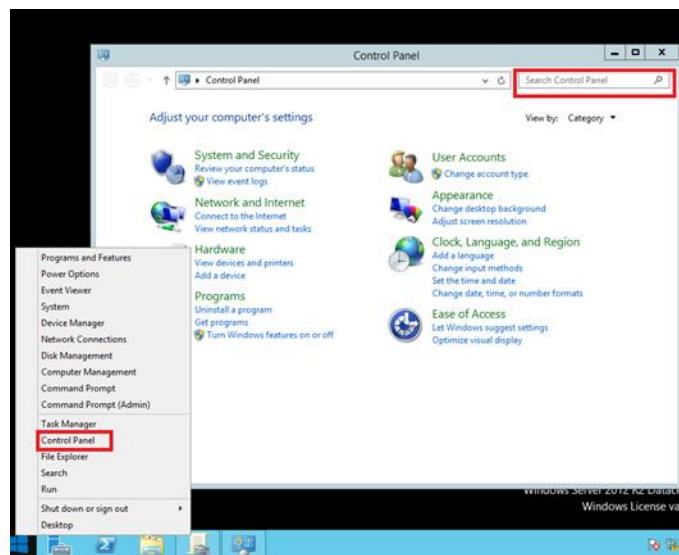
```
Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>gpupdate /force
Updating policy...
Computer Policy update has completed successfully.
User Policy update has completed successfully.

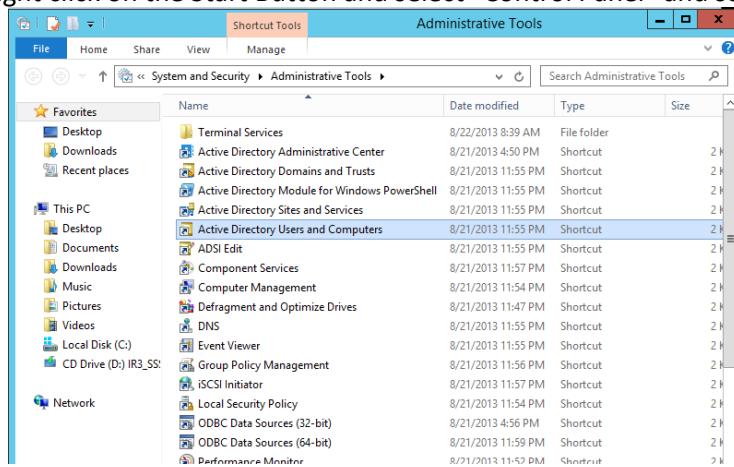
C:\Users\Administrator>
```

Type the command gpupdate /force

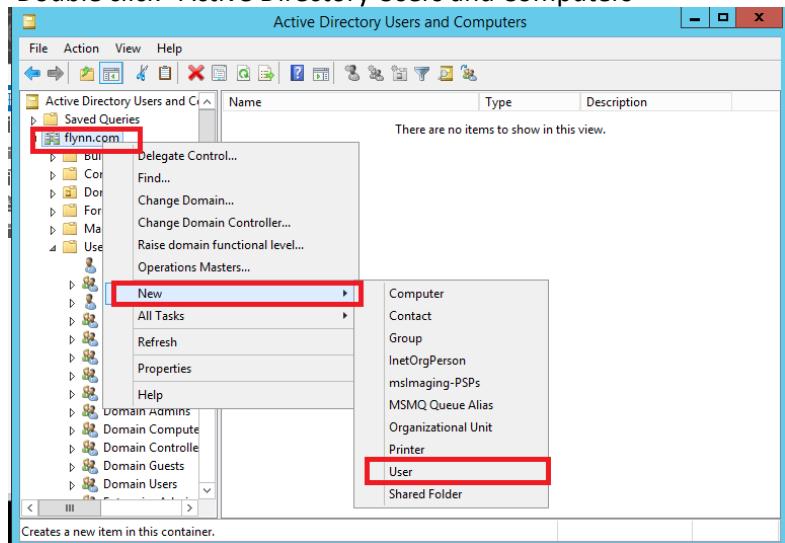
Now that a Forest is created, users are now able to be added to the domain.



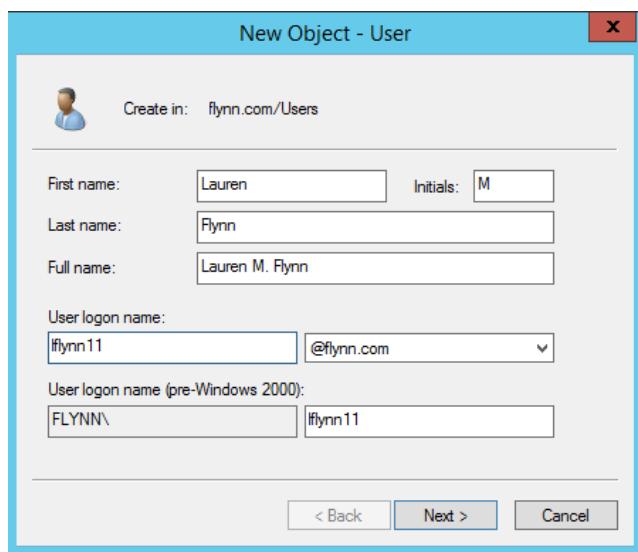
Right click on the Start Button and select “Control Panel” and search Administrative Tools and Select it.



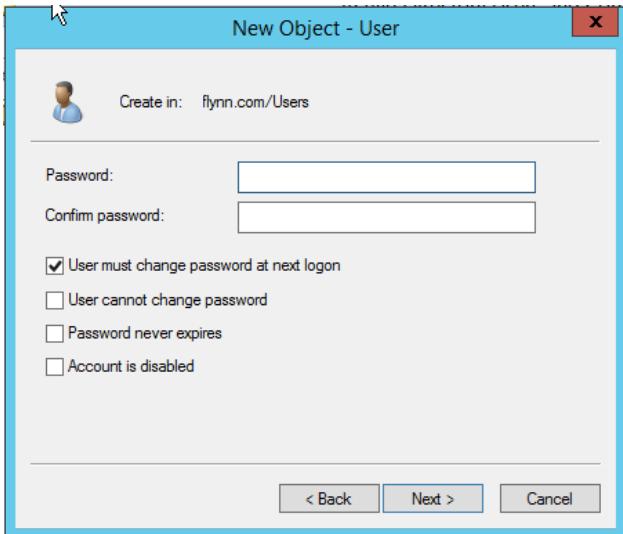
Double click “Active Directory Users and Computers”



Right click the domain, select “New” and click “User”



Fill in the requirements for the first name, initial and last name. Create a user logon name, which you will use when you log into the three windows machines. Select “Next”.

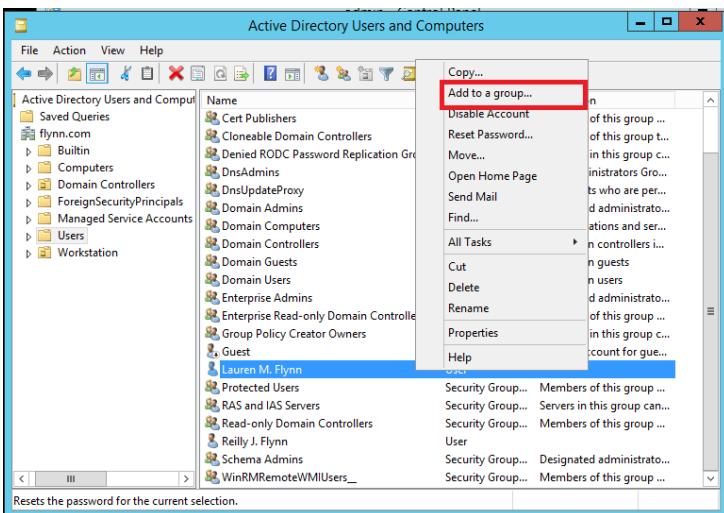


Create a password, and select the settings you would like for the user's password. Select "Next" which will give you a final review of the Username created and the password settings that were selected, and select "Finish".

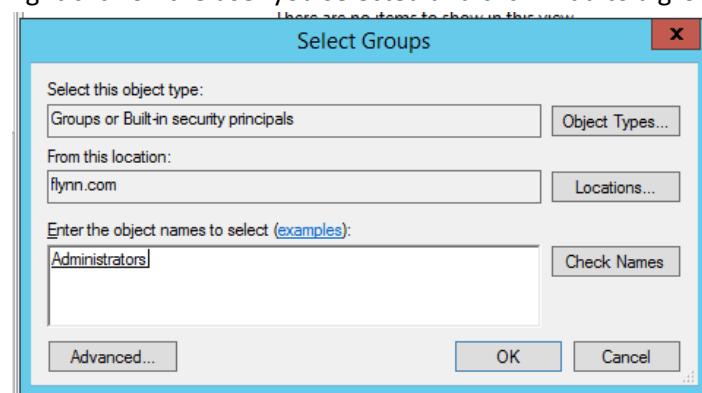
You would want to create at least three users for the domain.

Ex: lflynn11, rjflynn, cflynn are the three users I added to the domain

You will select one of the users to be a domain admin.



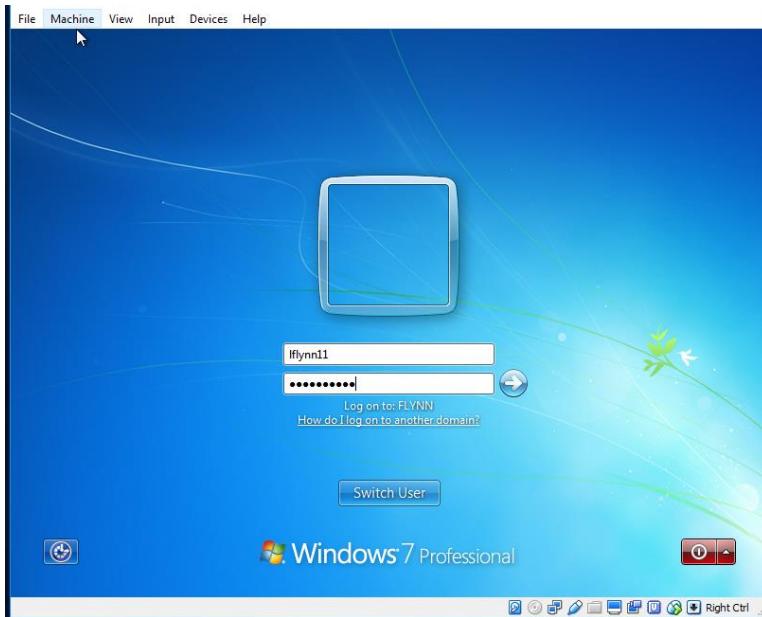
Right click on the user you selected and click "Add to a group".



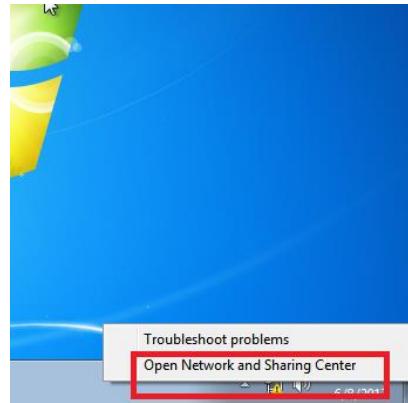
Enter “Administrators”. Click “Ok”. This assigns the user as an admin.

Restart the DC server.

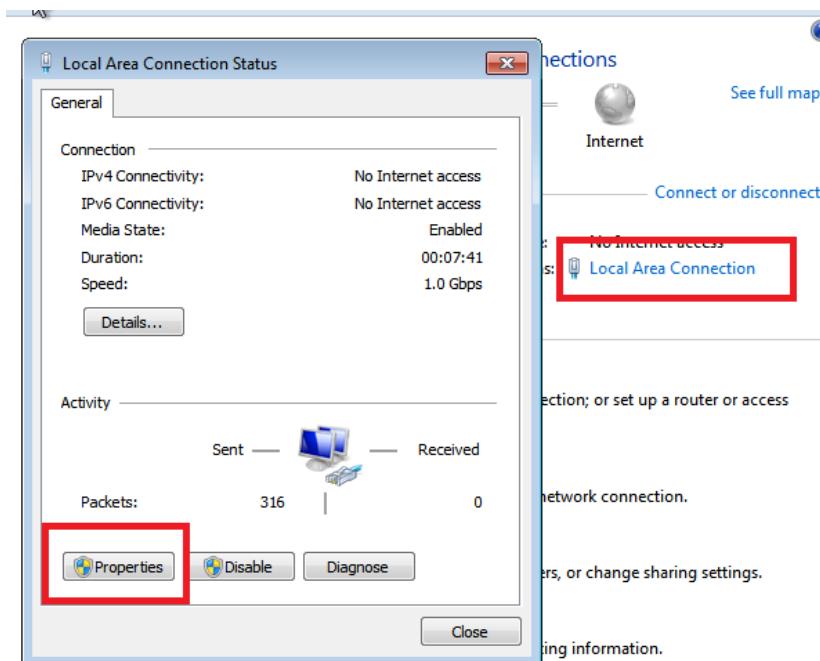
Procedure III: Adding the Windows 7 Machines to the Domain



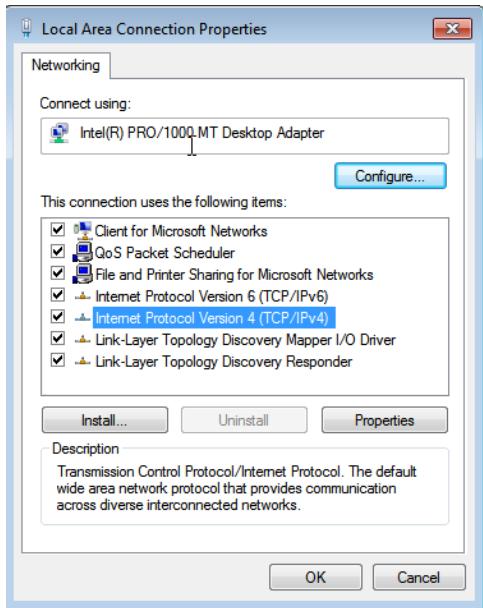
Log into the Windows 7 Machines by typing the User name and password you created after installing Windows 7.



Right Click and select “Open Network and Sharing Center”



Click "Local Area Connection" and select "Properties"

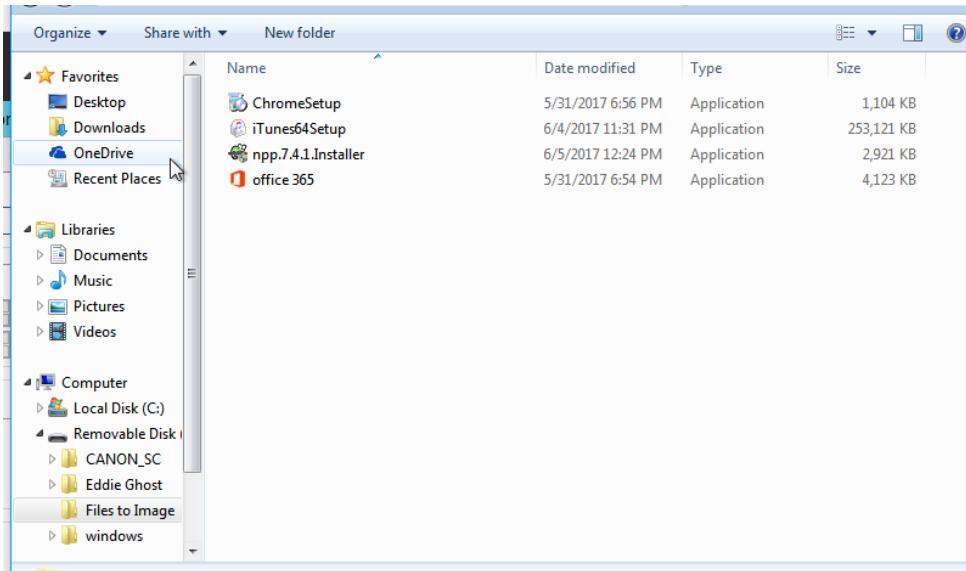


Double Click "Internet Protocol Version 4(TCP/IPv4) and set the IP address to DHCP.

You will also set Windows 7 Machines 2 and 3 to DHCP as well.

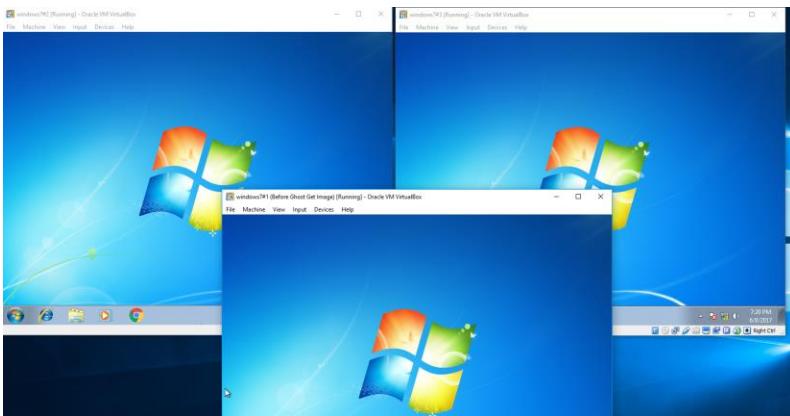
Before you move any further, you will select one Windows 7 Machine you wish to use for the Ghost Imaging. In that Machine download some files you would like to image onto the other two Windows 7 machines

EX: See picture below



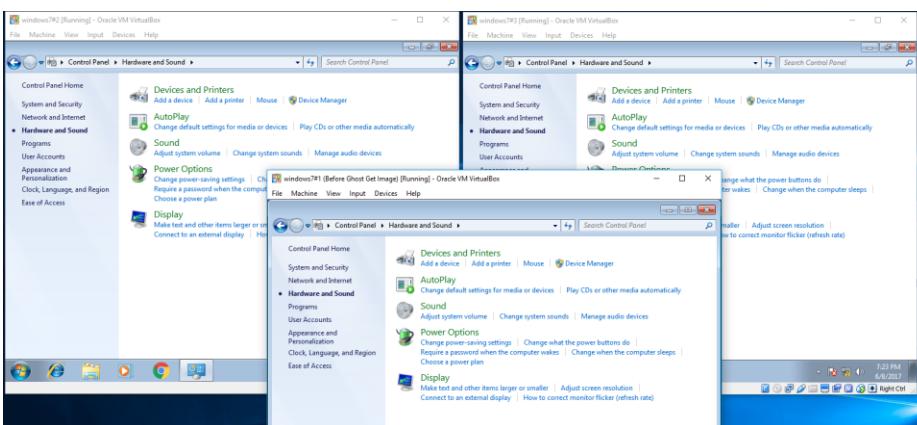
Procedure IV: Testing the GPOs

Log the administrator in one of the Windows Machine, and log the other two users in the other two Windows Machines

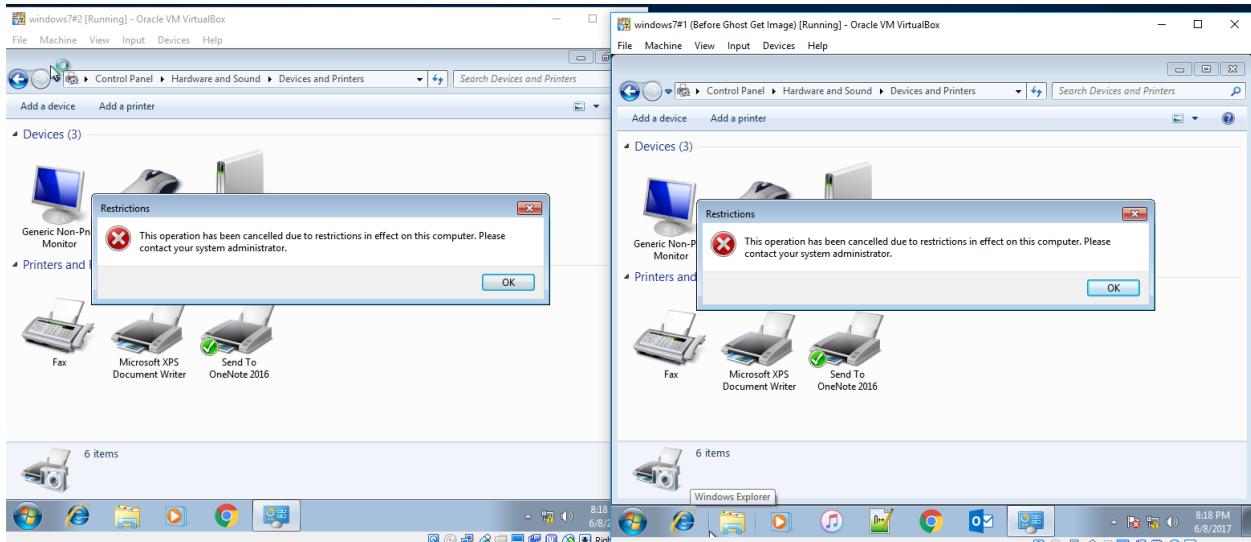


If you noticed the Recycle Bin icon is missing from the desktop. So we know the GPO “Remove Recycle Bin icon from desktop” worked.

Next we will test to see if the “Prevent addition of printers” GPO enabled properly



Go to control panel and select “Devices and Printers” and click “Add a printer”



A Restriction error should pop up.

Procedure V: Installing Ghost on the Server and Windows Machines

<https://www.symantec.com/products/endpoint-hybrid-cloud-security/endpoint-management/ghost-solutions-suite>

Symantec Ghost Solution Suite

Symantec Ghost Solution Suite is an award-winning software solution for imaging and deploying desktops, laptops, tablets and servers. Ghost Solution Suite 3.1 includes the Deployment Solution 6.9 console and its core capabilities for operating system deployment, migration and cross-platform management. Combined with key functionalities from Ghost Solution Suite 2.5, like Ghost Cast Server and DeployAnywhere, Ghost Solution Suite accelerates and simplifies imaging and deployment.

DOWNLOAD THE DATA SHEET

BUY FREE TRIAL

Download the Symantec Ghost Solution Site

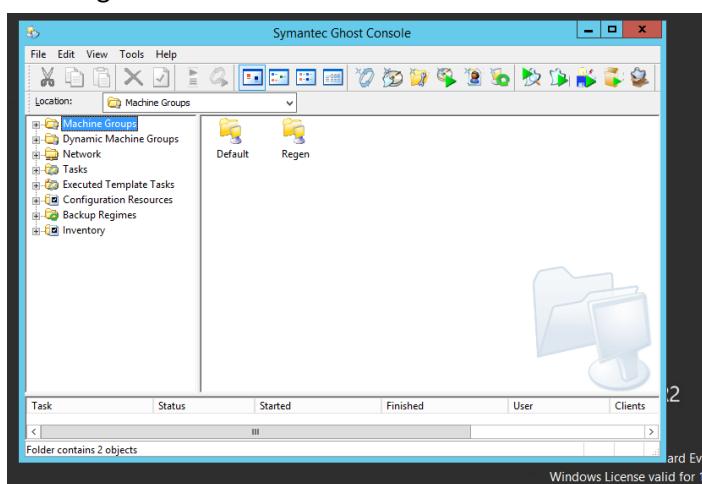
You are going to share the file with your SG Server that was previously created

Name	Date modified	Type	Size
ClientInstall	2/20/2015 3:12 PM	File folder	
GHOST	2/20/2015 3:12 PM	File folder	
NET	2/20/2015 3:12 PM	File folder	
add	4/8/2013 5:53 PM	MS-DOS Application	3 KB
beforeimage	8/29/2015 6:59 PM	Windows Batch File	17 KB
beforeimage-sc	9/10/2015 7:49 AM	Windows Batch File	12 KB
current	4/8/2013 5:53 PM	MS-DOS Application	2 KB
E.EX	4/8/2013 5:53 PM	EX File	51 KB
E	4/8/2013 5:53 PM	Application	56 KB
E	4/8/2013 5:53 PM	Configuration settings	2 KB
FINDRAMD	4/8/2013 5:53 PM	Application	7 KB
himem.sys	4/8/2013 5:53 PM	System file	33 KB
IBMBIO	4/8/2013 5:53 PM	MS-DOS Application	44 KB
IBMDOS	4/8/2013 5:53 PM	MS-DOS Application	42 KB
MOUSE	4/8/2013 5:53 PM	MS-DOS Application	37 KB
PARSE	4/8/2013 5:53 PM	Application	12 KB
RAMDRIVE.SYS	4/8/2013 5:53 PM	System file	13 KB
REBOOT	4/8/2013 5:53 PM	MS-DOS Application	1 KB
SETRAMD	4/8/2013 5:53 PM	Windows Batch File	2 KB

Select the file "Ghost"

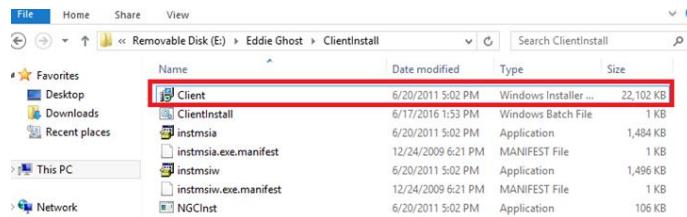
Name	Date modified	Type	Size
gdisk	4/8/2013 5:53 PM	Application	1,212 KB
ghost	4/8/2013 5:53 PM	Application	1,871 KB

Select gdisk and install Ghost.

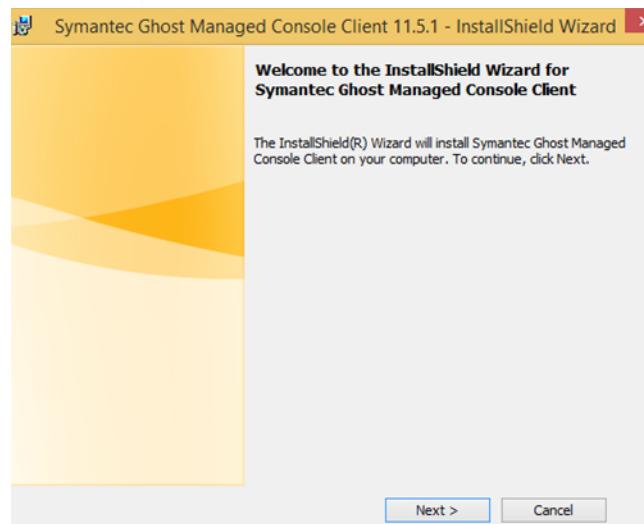


Once installed and selected the home screen of Symantec Ghost will appear.

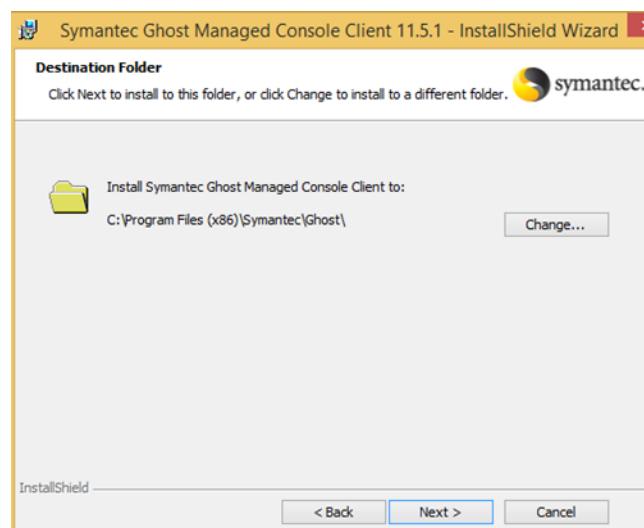
Now move to the three Windows 7 machines to install the Ghost Client, where the Ghost file will also be shared to these machines as well.



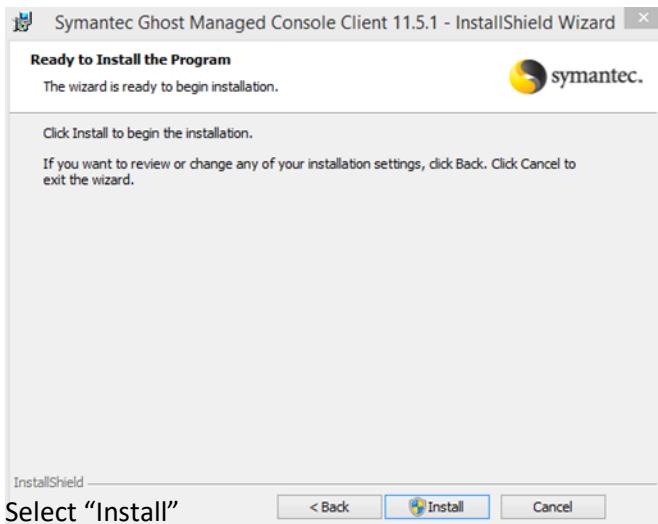
Select the ClientInstall folder and double click the Client Installer.



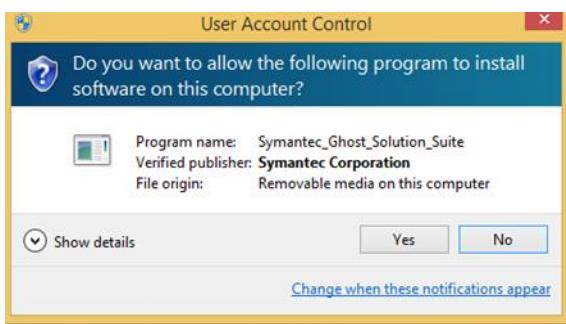
Select “Next” and for the server field leave empty and select “Next”.



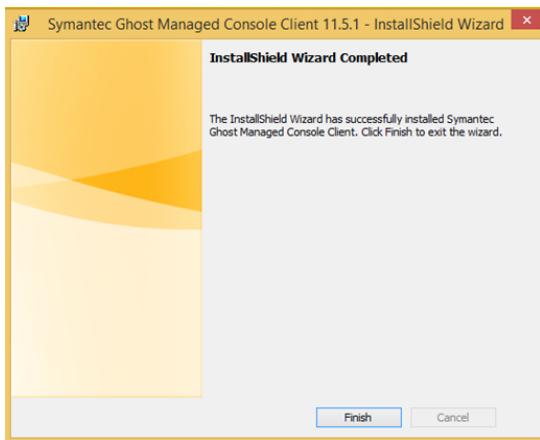
Select “Next”



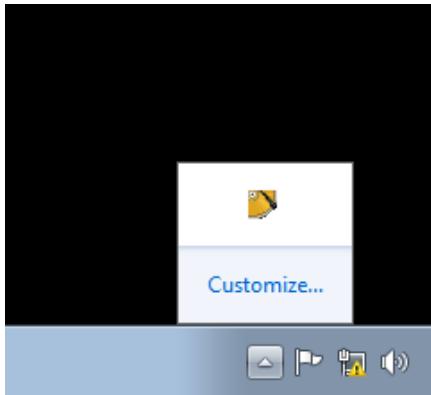
Select “Install”



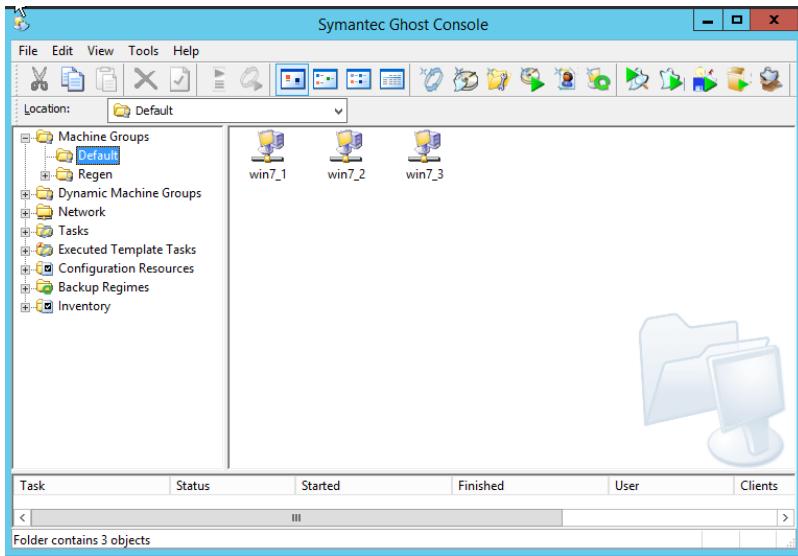
Select “Yes”



Click “Finish”



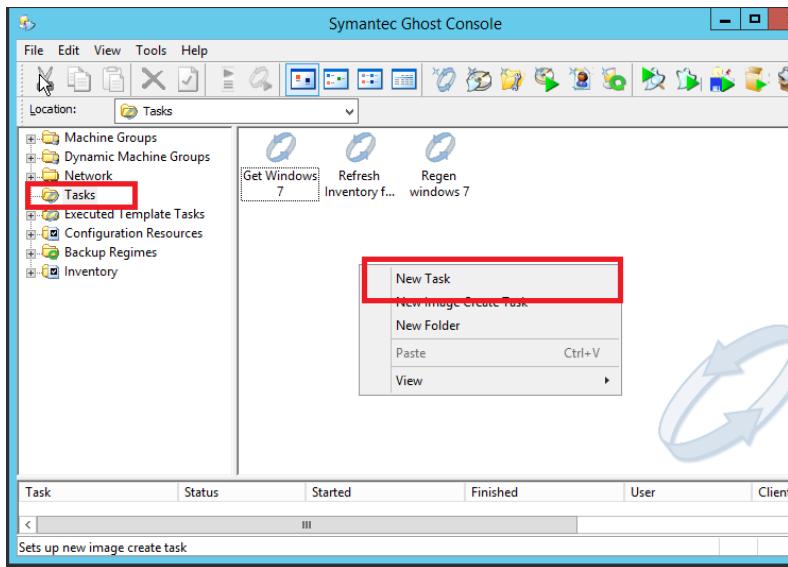
Once you have Ghost Client installed on all three of the Windows 7 machines, when you click on the arrow on the bottom right of the screen a yellow disk will appear, if you highlight your cursor over it, there will be a highlight IP address that will appear. This means that the Ghost on the SG server can locate the Windows 7 machines. If there is a red X that means it was not able to pick up the machine.



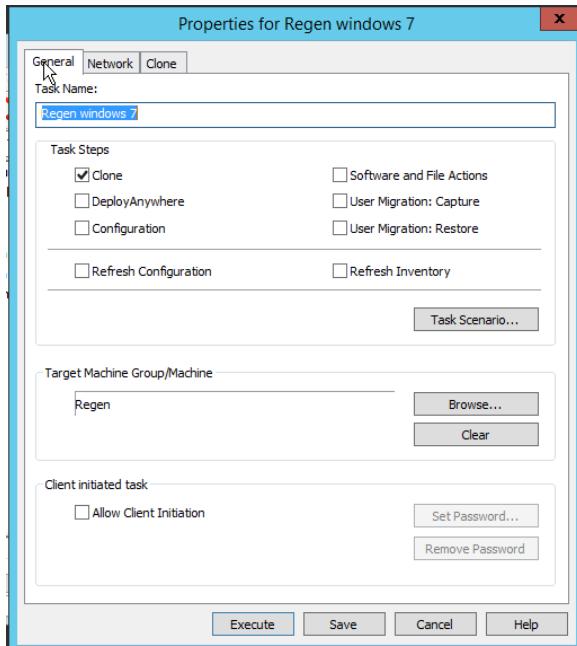
On the SG server in the Symantec Ghost Console, Select the Default folder, and all three machines that have the ghost client automatically appear. You are going to create a new folder where you are going to put the selecting machines to be cloned. Ex: Regen

The bars running across the computer display means all three machines are on. If one happens to be off, then the bottom bars will disappear. All machines must be on for the Ghost Imaging to work.

Procedure VI: Setting Up the Image to Pull

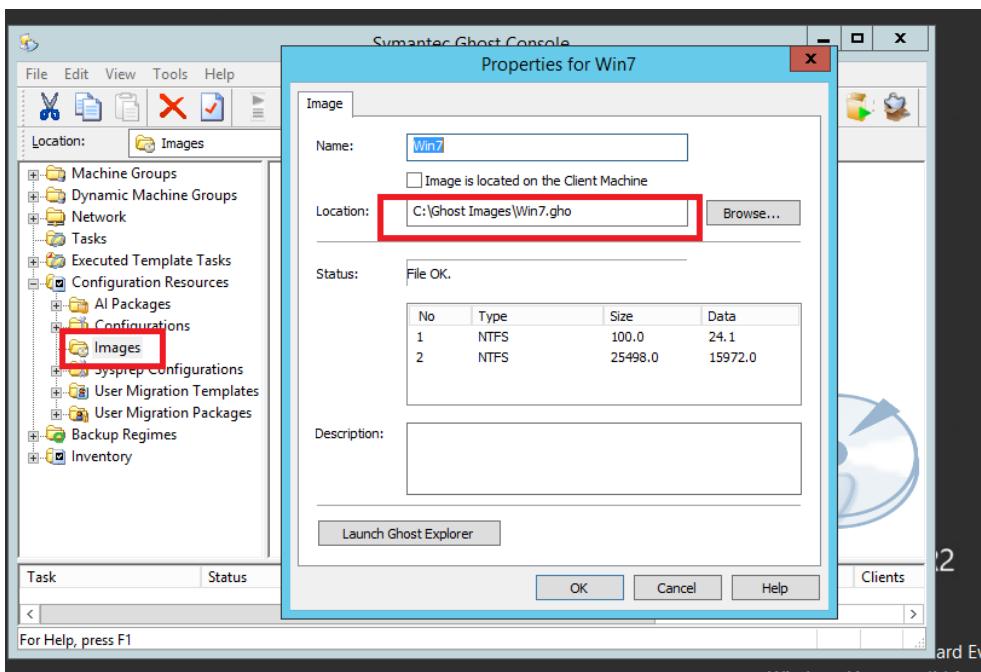


Select the Task folder and right click in the middle and select “New Task”.

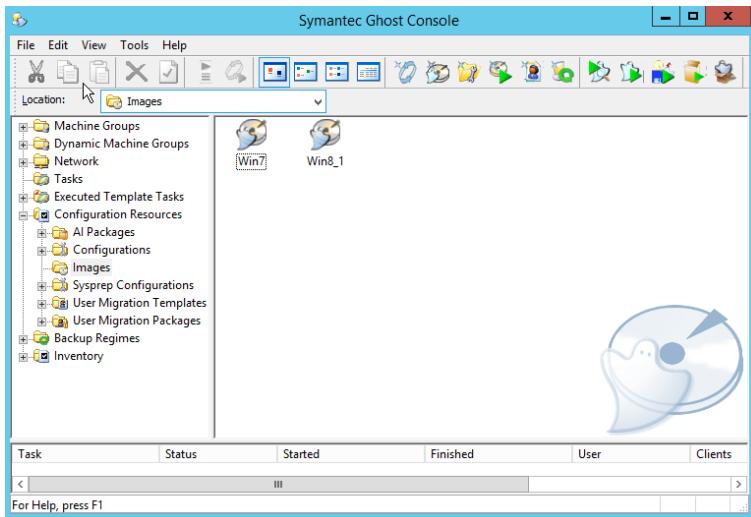


Select a Name for the new task, and for the steps select clone, target the folder name where the machines are in and click “Save”.

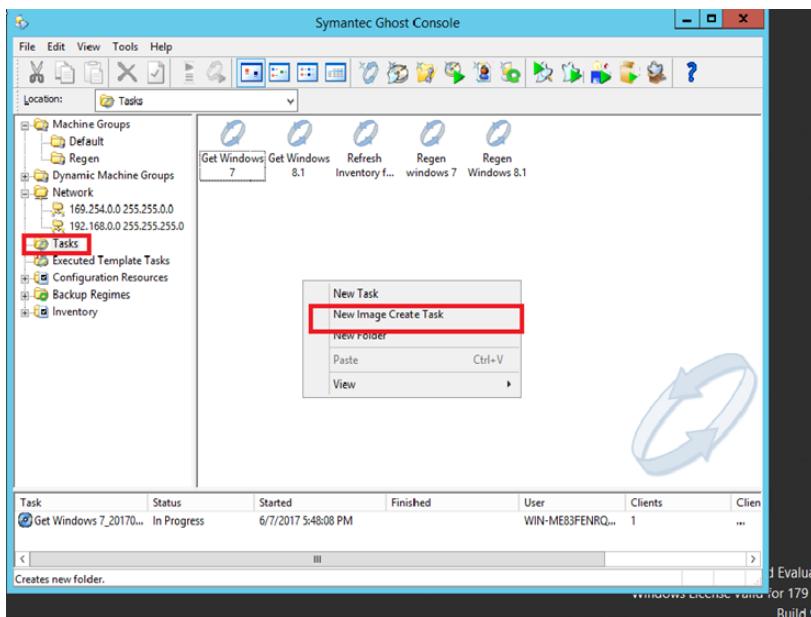
This task will take the image we created and pulled from the one machine selected and clone the other two machines with the same image files.



To create the image that will be pulled and cloned, double click the Configuration folder, select the Image folder, right click in the middle of the screen and select “New Image”. Name the Image. For the location name it as C:\Ghost Images\“Name you chose”.gho and click “Ok”.

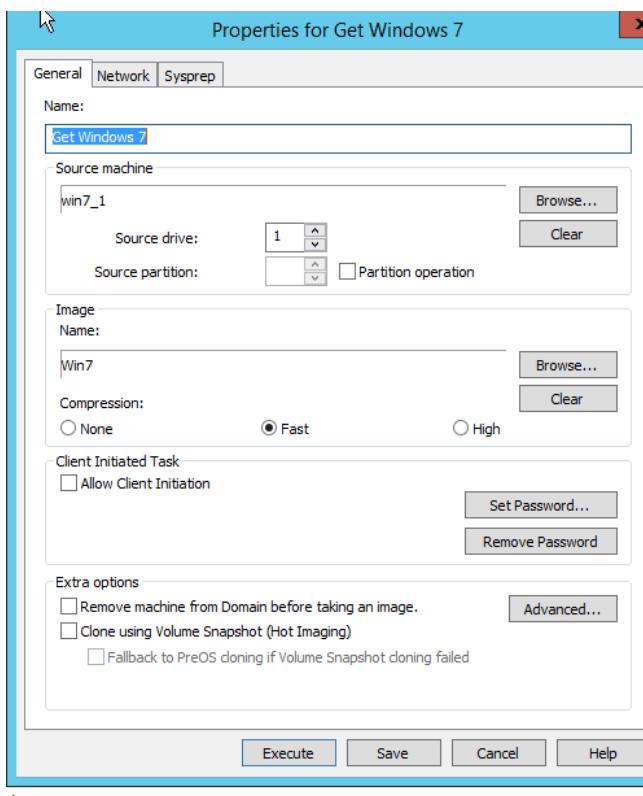


The Image you created will appear.



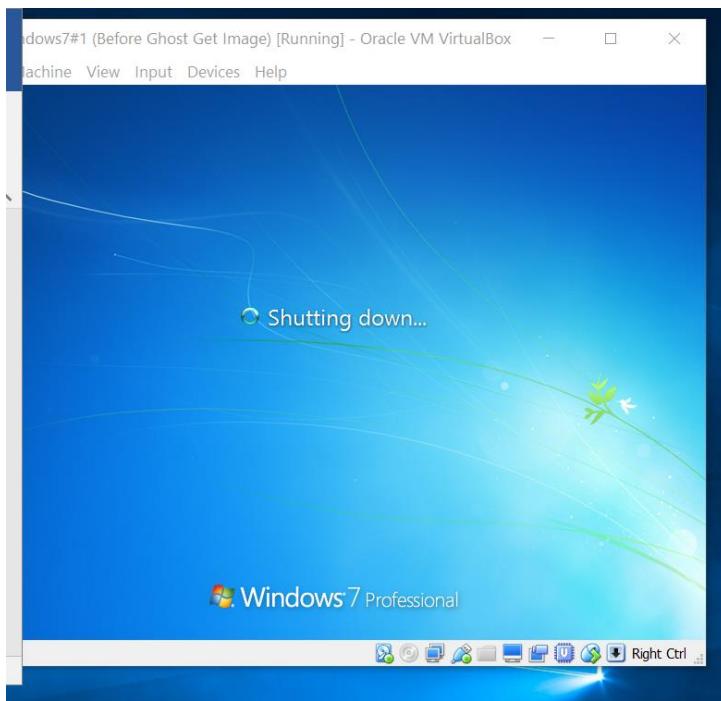
Now create an image task that will pull the image from the one machine you selected.

In the task folder, right click in the middle and select “New Image Create Task”.

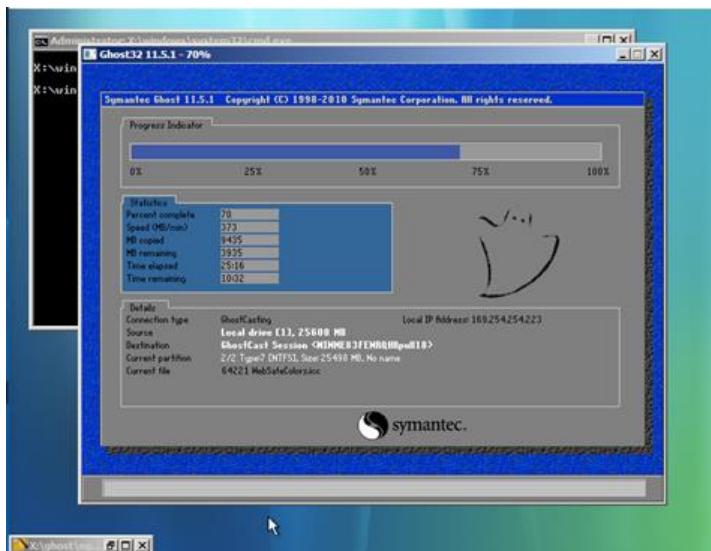


Name the Task, and select the source machine you are going to pull the image from. Click “Save”

Click “Execute”.



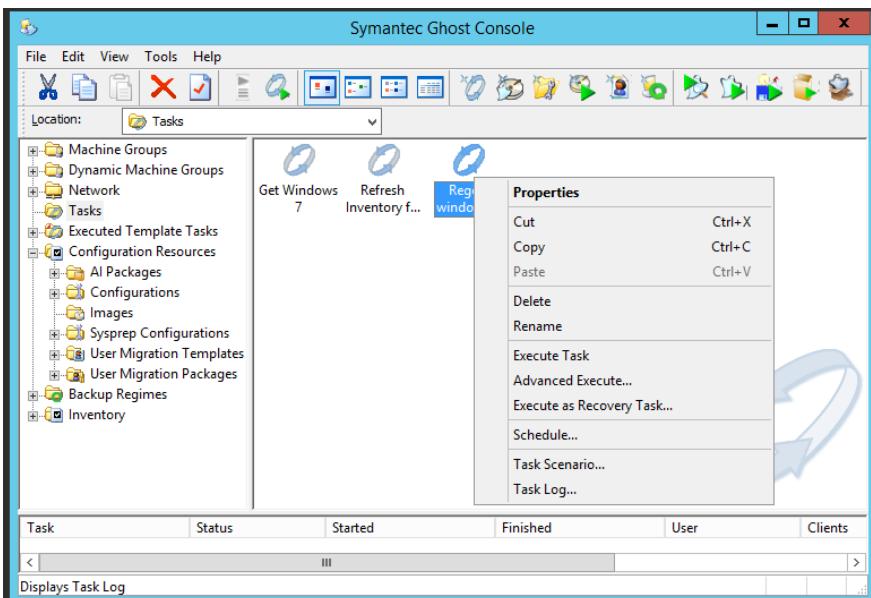
The Windows 7 machine where the image is being pulled will have a notification pop up on the screen alerting you that a task is being preformed, and the machine will shut itself down and boot itself back up. This process will take about 20 to 30 minutes.



The machine's screen will look like this displaying the process.

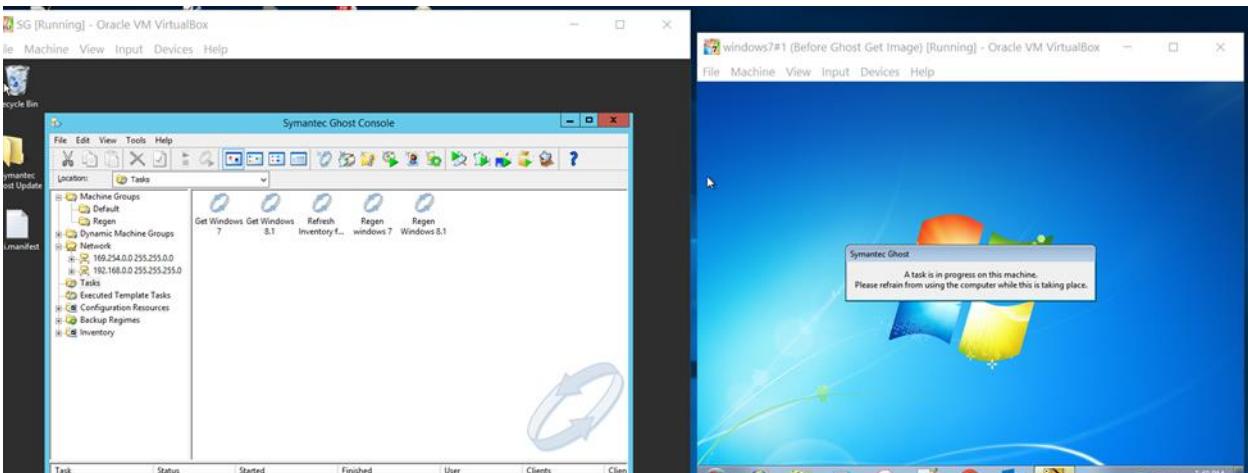
Procedure VII: Cloning the Image

Once the machine with the image pulled is booted up to its normal state, go back to the SG server.

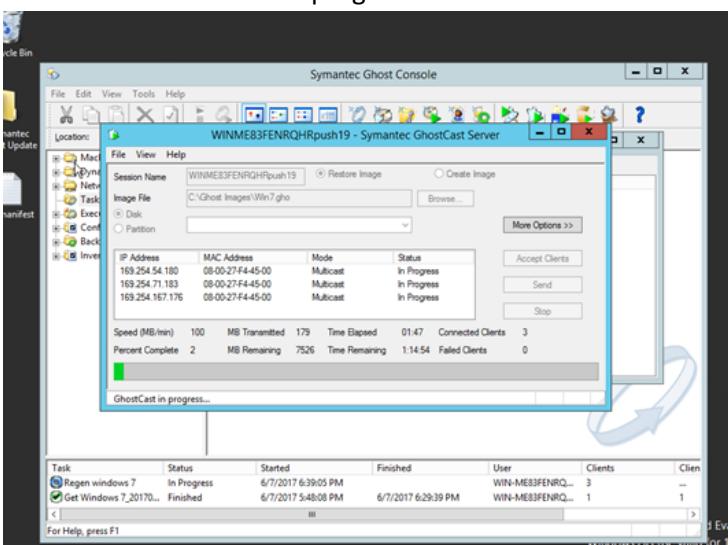


In the task folder click on the cloned task that was created, right click and select “Execute Task”.

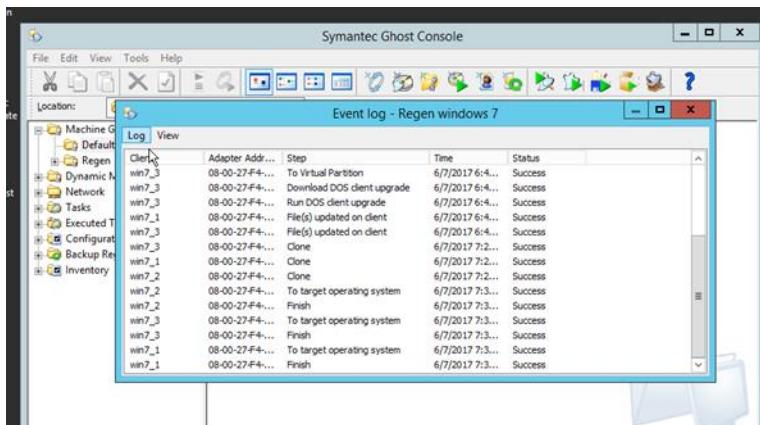
This task will clone the image onto the other two Windows 7 machines. This process will take about 45 Minutes.



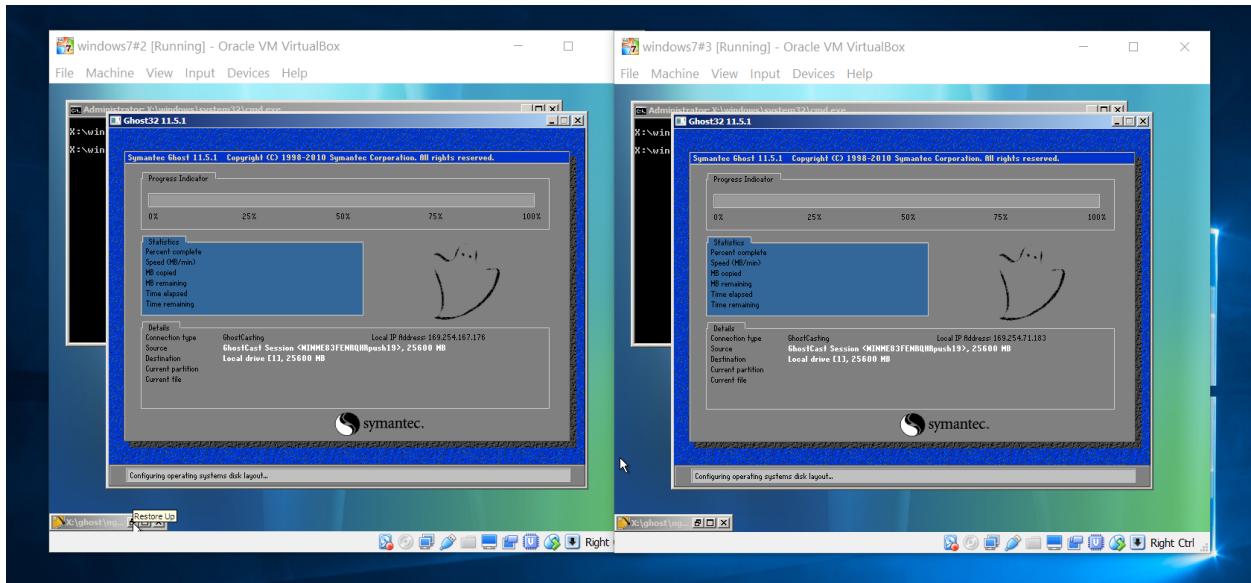
Notification about task in progress



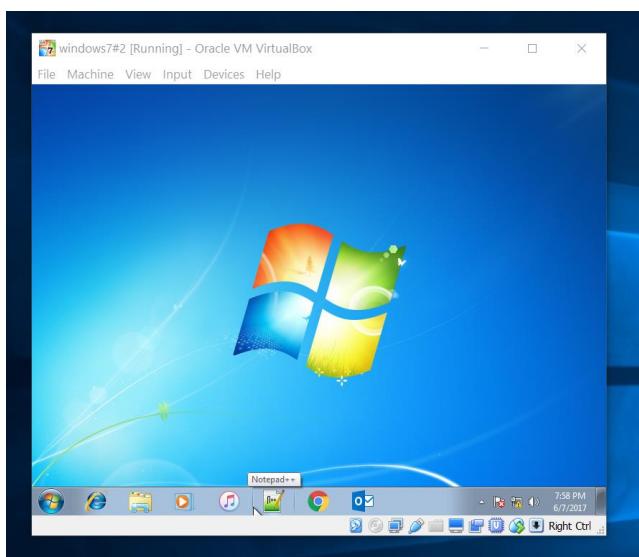
The play button is the progress of the image being pulled. Double click the blue disk at the bottom.

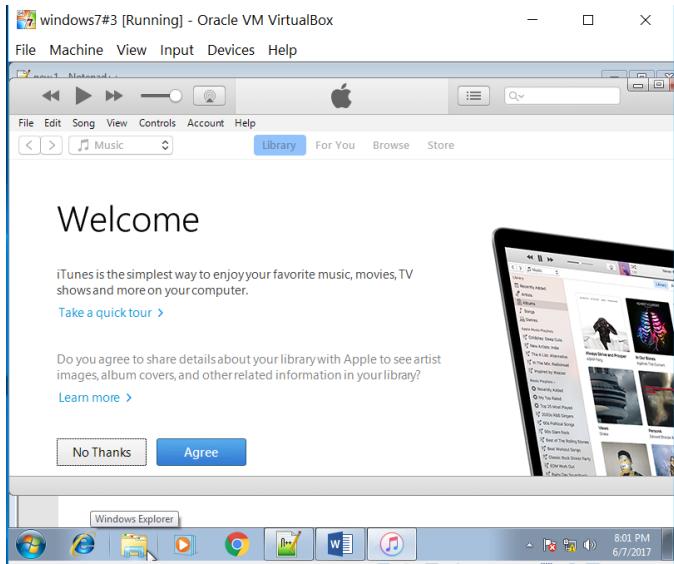


Log of what is being performed.

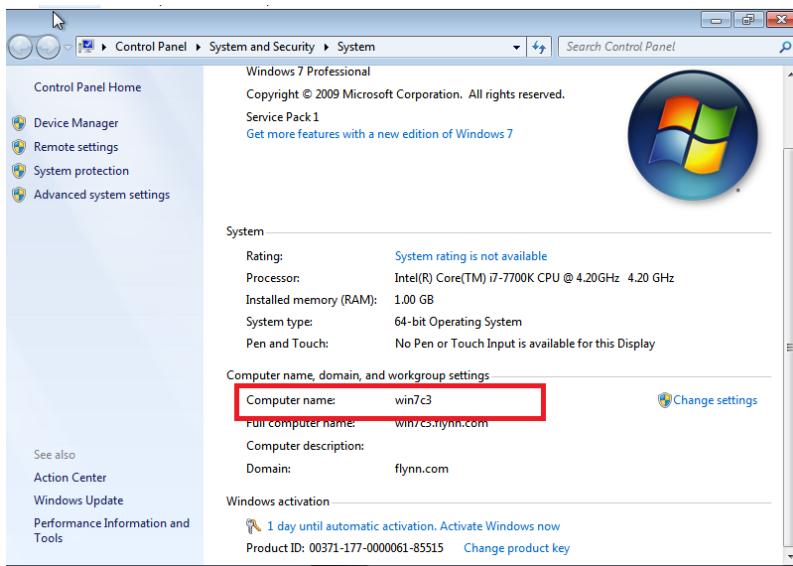


Windows machine 2 and 3 in progress.





What the event log looks like once the image is completed on machine 2 and 3.



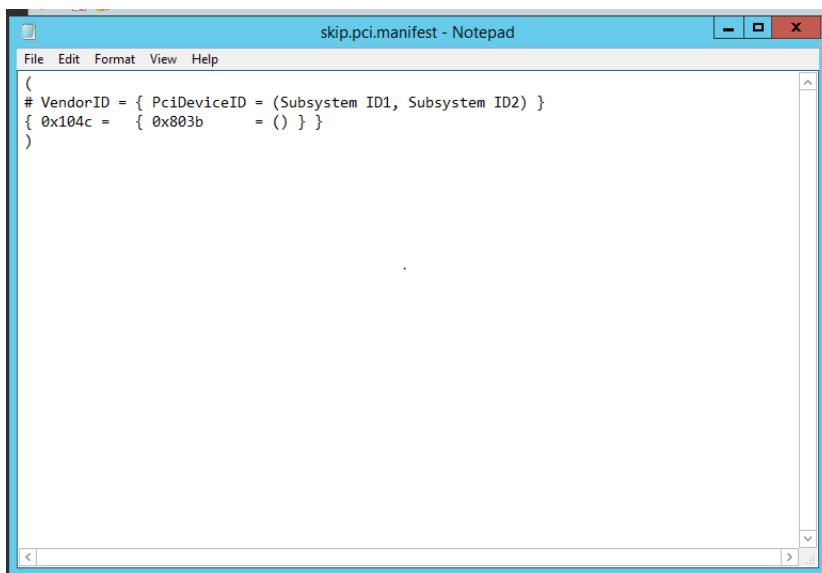
Once the image task is completed you will need to log in as the administrator you set all three windows 7 machines and change the computer name. When ghost cloned the computer files it also cloned the name of the computer. If you do not change the computer to three different names, there will be conflict error when the different users try to log in.

Troubleshooting:

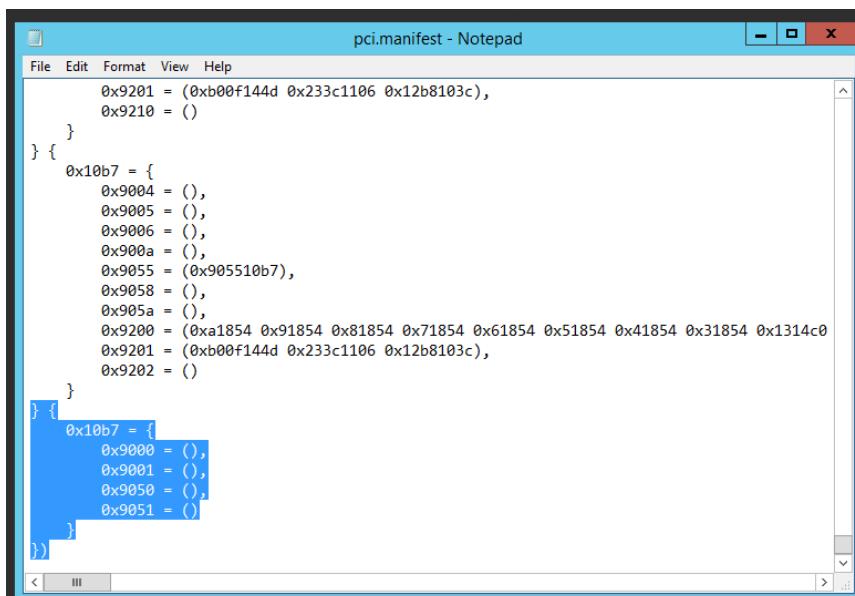
When creating this project, I ran into many issues troubleshooting which are good to point out for the future Systems Admin creating ghost imaging as well. The trouble shooting problems I ran into was that Symantec Ghost is not compatible for Windows 8.1. I originally set my Virtual Machines to Windows 8.1 and when I went to execute the image task, I kept getting numerous failures due to the windows 8.1 driver. After further research I discovered that the version I had of Symantec Ghost was not compatible with 8.1 and I had to create new machines as windows 7. After the Windows 7 machines were created, the image task still failed with an error “Drivers no found in PreOS”. When the ghost execution is booting, it will check to make sure the correct drivers and devices are on your clients. To resolve this failure you will have to add the PCI values in the event log under:

Settings\All Users\Application Data\Symantec\Ghost\Template\common\winpe and add a skip.pci.manifest.txt to the event log.

See picture below.



And in the pci.manifest.txt file add the highlighted code to the bottom



This code added shows how the existing of entries in the pci.manifest.txt file is formatted, and ignore the white spacing which was causing the error for Windows 7.

Another error I ran into after the disk image was cloned on the second and third Windows 7 virtual machines, is that the computer names were all changed to be the same name. Before the image clone, the computer names were set as win7c1, win7c2, win7c3. After the image cloning, all three windows machines were set to win7c1. This created conflict whenever one or more user would try to log into the Windows 7 machines. There would be an error restricting them access.

Benefits:

Throughout the many weeks I worked on this project I realized I had to approach the problems from different points of view. I realized that troubleshooting can take more time than imaging the computers. I not only learned how to image machines, but I also learned how to image machines virtually. This project also thought me about Group Policy Objects and how to enable them, to restrict users in certain settings. I found this project to be challenging and help me prepare how to solve problems as a System Administrator which will help me be prepared for the real world. If I were to Image machines again I would be more confident in preforming the task, and be able to image more than three machines.