Instructor Paul

Build Your Own Windows Server IT Lab from Home

eBook version

This eBook will take you step-by-step through creating an IT lab on your personal computer right from home.

Course Sections

Instructor Paul?

Instructor Paul is an IT professional who works as a full time senior systems administrator during the day and I create instructional material and online courses in the evenings!

He has taught over 100,000 students through his courses and has over 7,500 course reviews. You can get direct access to all of his amazing courses by clicking here.

In fact, this eBook is based on a FREE video course that he personally designed entitled, "Build Your Own IT Lab", which you can check out by clicking here.

You can reach Instructor Paul on his website at: InstructorPaul.com
or by email at: Paul@InstructorPaul.com.

Instructor Paul has been working in the IT (information technology) field for over a decade. He has an associate degree in IT and currently holds a Security+ certification.

At his day job he engineers computer networks based on customer requirements. It could involve integrating new services into an existing network or building an entire network from scratch. This would include planning, purchasing hardware/software, assembling hardware, installing, and configuring servers and network gear and hardening (securing) these devices.

A few of the key technologies he enjoys working on are Hyper-V/ESXI, Windows/Linux, Cisco/HP network equipment, EMC SANs (storage area networks), AWS (Amazon Web Services), pSQL and MySQL database administration, scripting and many more technologies that would be too long and boring to list here…

A quick message from Instructor Paul

Hey! Below you can find my contact information. I would love to connect with you personally! You can either email me, visit my website, join my mailing list (if you haven't already), or enroll in one of my video courses.

I began teaching video courses because I knew what it was like to struggle through dry manuals and run into show-stopping installation problems. It helps me tremendously when you let me know what you are struggling with. I want to tailor my courses to solve your problems.

Thanks for your interest in my training material! Let me know how I can improve it =)

Respectfully,
Instructor Paul

EMAIL ME

I would love to hear from you!
My email address is:

paul@instructorpaul.com

WEBSITE

My website is your
portal to knowledge!

instructorpaul.com

COURSES

Get direct access to all
of my valuable courses!

instructorpaul.com/courses

Course Overview

This eBook is a transcription of the video course *Build Your Own Windows Server IT Lab*. If you are interested in taking the video course, you may do so by clicking here.

The goal of this course is to help you create your own Windows Server IT lab so you can gain experience at home using your own personal computer.

Believe it or not, experience gained at home is just as valuable as experience gained on the job. Many people struggle with the catch-22 of not being able to get an IT job because they don't have experience, but also can't get experience because they don't have an IT job. This course will solve that problem for you the student.

How can I say that? Because this is exactly how I got my start in the IT field. In fact, my first employer substituted a 4-year degree because I had gained home experience and put it to practical use in some volunteer work that I did. This is all I had on my resume when I walked in and applied at this large, 40,000+ employee company of which I had no other advantage or inside connections to.

The sad truth is that our colleges are sending their students out with a heavy load of debt and very little practical experience. My mission is to provide affordable IT training that *does* prepare you for the IT workplace through valuable, practical experience.

Course Prerequisites

Listed below are the hardware and software requirements you will need before starting this course:

1   **64-bit Processor**

A 64-bit processor is required to install Windows Server 2016 as taught in this course. If you cannot obtain a 64-bit processor, then your only other option is to install the 32-bit Windows Server 2012r2 which can be found here. If the link is dead, run a quick google search for "Windows Server 2012r2 Download" and download the ISO from Microsoft.com.

2   **64-bit Operating system**

The 64-bit operating system is also required if you plan to install Windows Server 2016. As mentioned above, if you opt to go with the 32bit Windows Server 2012r2, you should have no issues following along with the course.

3   **Enable Virtualization in Your BIOS**

To create 64-bit VMs, you must enable virtualization in your BIOS. If you run into trouble when creating your VMs, you can assume that your virtualization is not enabled. For detailed instructions on how to enable virtualization, click here.

What is Server Virtualization

What is Virtualization?

In this course, we are going to utilize a concept called virtualization, in which we will create a software-based representation of a server instead of a physical one.

In essence, you will be running a virtual computer within your computer. These computers within a computer are referred to as a VM (virtual machine) and depending on the power of your hardware you could run several VM's at one time.

Why use a VM?

In the old days if you wanted to setup your own IT lab you actually needed to purchase a server and networking gear which can be quite expensive. Now we can just download some free virtualization software and we will get the same result.

Using a VM also allows you to easily move the VM from computer to computer. A VM is essentially made up from a hard disk file and a virtual machine file which – which makes them very easy to copy or move anywhere across the globe – I can assure this is not the same with a 60lb physical server.

A few key terms you need to understand are **VM** (which you already know) and the **Host**. The **host** computer is the computer that "hosts" the VM. Or the computer on which the VM operating.

KEY TERMS

VM – Virtual Machine (software computer)
Host – The physical computer that operates a VM

There are always additional details I could add to take up space, but my courses aren't designed to bore you to death. I have already given you the quick, down and dirty details that you'll need to understand Virtualization – so let's get virtualizing!

Downloading and Installing VirtualBox

It's time to download VirtualBox, which is a free open-source virtualization software that allows anyone to quickly and easily create virtual machines and virtual networks.

You can find the download link for VirtualBox by clicking here.

This is a screenshot of what you will see:

You should select the "VirtualBox 5.2.6" platform package. Begin the VirtualBox installation once the download is complete. You can allow the default installation option, but make sure that when the Windows Security popup appears asking you if you want to install the "Oracle Corporation Universal Serial Bus…" you must select "install".

If you do not install this device driver, you will encounter problems and issues later on in the course.

Downloading Windows Server

If you are completely new to IT you might be wondering what Windows Server is…

Let me answer that for you. Windows Server 2016 is an operating system that is designed to provide IT services to computer networks for both small and large-scale applications. Windows Server has several tools included within the operating system that allow the OS (operating system) to offer services such as user and device authentication, file and printer sharing, web hosting, computer update management, IP management and virtualization (although we won't use this service because we will be using VirtualBox) just to name a few.

Windows Server can literally do it all when it comes to IT and it is the backbone of most major companies. You will find Windows Server in almost every office building that has computers. Now you can see why it is so important for you to take this course! Now it's time to start the Windows Server download.

Again, if you are using a 32-bit operating system, then you must use the 32-bit version of Windows Server 2012r2. Windows Server 2016 will not work on a 32-bit system. When using this course, I will be assuming that you have installed Windows Server 2016 and will refer to it as such. However, each step taught in this course is nearly identical for both operating systems.

To download Windows Server 2016, google search the term **Windows Server 2016 download** or click here. Make sure you ONLY use Microsoft.com to download Windows Server operating systems and never used pirated software. In this course we will be using the free trial version of Windows Server that will work for 180 days.

After you have selected **Windows Server 2016**, you will be taken to the "Windows Evaluation" window as shown below. Choose the **ISO** option and then click continue.
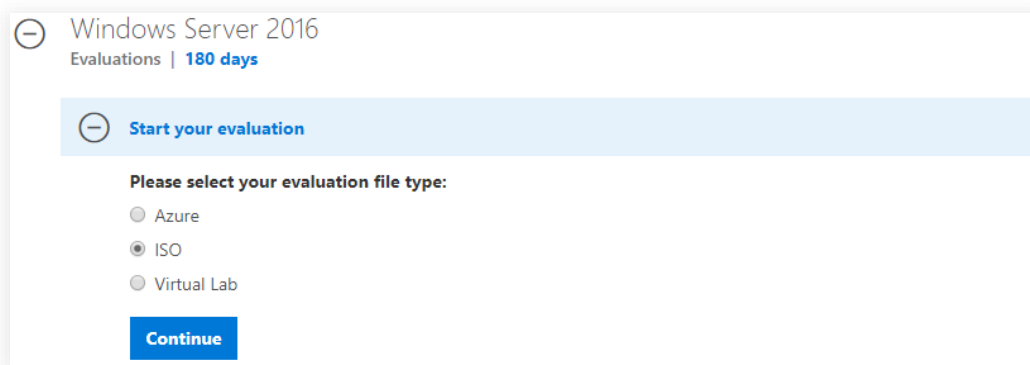
Once you click continue, you will need to register and choose various other options like your language preference. Once you are done registering you will be presented with a download link, click this download link to begin the download.

Creating a VM with VirtualBox

Now that we have started the Windows Server download we can begin creating our Virtual Machine with VirtualBox. The first thing you need to do is start VirtualBox.

Once VirtualBox is open, click the **New** button in the top left-hand corner of the screen.

Once the **Create Virtual Machine** window appears, click **Expert Mode** which is located at the bottom of the screen. Don't let the name "expert" intimidate you. It just tells VirtualBox to show more options and less pages.

Now you will need to enter the **Name**. This can be whatever you like. I'm going to enter "ITFLEE".

Under **Type**, you need to choose what type of OS will be installed on the VM. Choose **Microsoft Windows**.

Next, we need to choose the **Version**. In our case, we are going to choose either **Windows Server 2012 (64-bit)** or preferably **Windows Server 2016**. If you have an older version of VirtualBox already installed, that's OK. Go ahead and choose the option for Windows Server 2016.

NOTE

If you do not see any 64-bit options that means you either are not using a 64-bit OS, do not have a 64-bit processor or have not enabled virtualization in your BIOS.

Remember, if you don't have a 64bit OS or processor, download the 32-bit Windows Server 2012r2 instead.

If you haven't enabled virtualization, click here, and then follow the instructions.

For the **Memory Size**, you want to choose an option that is well within the green (left hand side) of the bar. My computer has 16GB of RAM so I am going to choose 4096MB (4gb). If you have less RAM, then you will want to choose a lower option.

I have seen people get away with as little as 512MB-1024MB, so if you crunched on RAM, choose an option within this range, but keep in mind that your VM will be very slow.

For the **Hard Disk** choose **Create a virtual hard disk now**. Click the create button. Now you will be brought to the **Create Virtual Hard Disk** window. There are two things you need to set here. First, set your **File Size**. This is the hard disk size of the VM. I am going to set mine to 80GB. Next, set your **Storage on physical hard disk** to **Dynamically allocated**. This will cause the hard disk file to expand and shrink as data is added / remove from the VM.

Click the create button, and then you should see your new VM has been created!

Congratulations!

Creating a Virtual Network with VirtualBox

Creating a virtual network with VirtualBox is a critical step to building your home IT lab. Thankfully, the VirtualBox software is designed to make it a very simple process.

Now, we are going to create a **NAT** (network address translation) network that will allow us to have internal VM access (connectivity between VMs) as well as internet access.

To complete this task, within VirtualBox, click **File** > **Preferences**. Select **Network** and look on the right-hand side of the window for a the plus icon that adds a new NAT network (see image below).
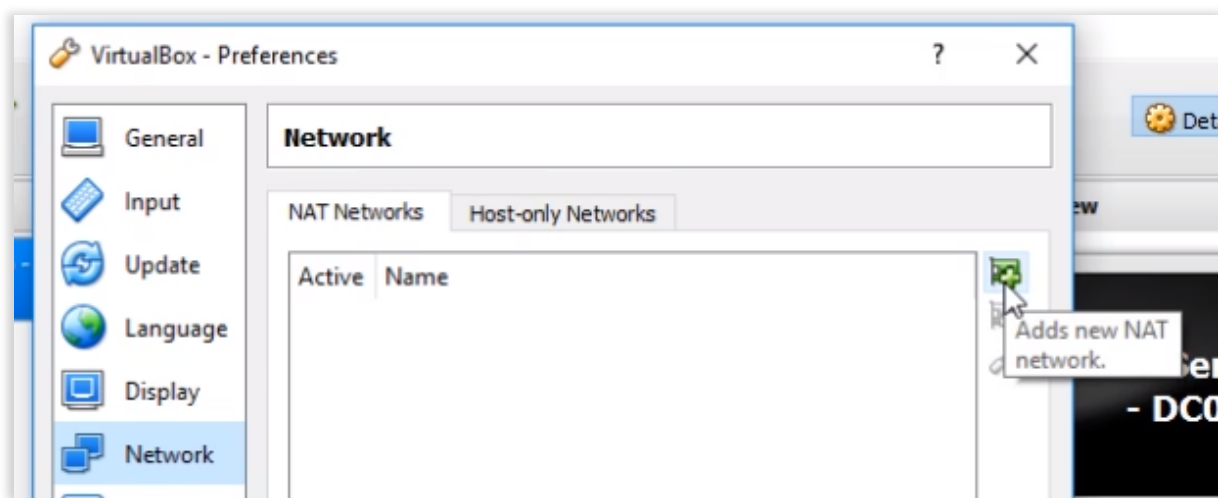
To rename the network, click the **tool wrench** that is the second icon below the button we used to add a new network. Under **Tools** you can, 1) **Name** the network, 2) Change the **CIDR** (IP address of the network), 3) Choose whether or not the network will support **DHCP** (automatic IP configuration for VMs), 4) Add **IPv6** support, 5) and even **Port Forwarding**.

I am going to **name the network** "MyNatNetwork" and **change the CIDR** to "192.168.0.0/24" then I'll click **OK**. Click **OK** again on the preferences window and you are completely done creating the network!

See… I told you it was easy =).

Configuring the Virtual Machine

In this chapter, we are going to configure our new VM. When I am at work, I perform this step every time I create a new VM. It makes no difference whether I am using VirtualBox or another virtualization technology (i.e. Hyper-V, ESXI, AWS…). I always configure the new VM.

While the required step of configuring your VM is very simple, it's important to understand the reasoning behind what you are doing when you create and configure a new VM.

In VirtualBox, right-click on our new VM and select **Settings**. The settings window will appear. The first thing we will change is to **mount the Windows Server ISO**. Mounting an ISO is like inserting a CD into your computer.

Once you are in **Settings**, 1) Select the **Storage** tab on the left. 2) Under the **Storage Tree** pane, look for the disc icon that reads **Empty** and select it. 3) With **Empty** highlighted, move to the next section on the right called the **Attributes** pane. 4) On the far right, click on the disc icon. 5) A drop-down panel will appear, then select **Choose Virtual Optical Disk File** (see image below).
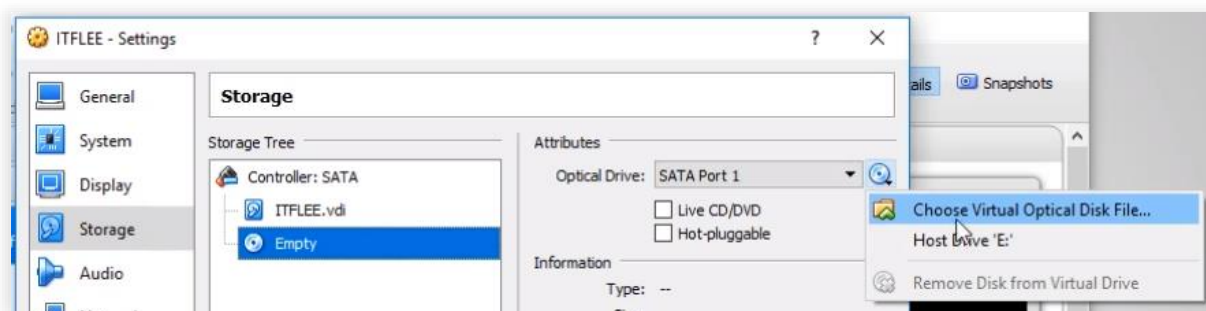
An Open File Browser will appear. Navigate to the Windows Server 2016 ISO that you downloaded earlier and click **Open**.

You will see that the ISO is now mounted to the disc under the **Storage Tree**. Now we need to connect our VM to the NAT Network that we created earlier. To do this, select the **Network** tab. A dropbox will appear that says: **Attached to**. From the pull-down menu, change the selection from **NAT** to **NAT Network**.

Now under the **Name**, make sure it lists the NAT Network that you created and intend to use for this lab. Since I renamed my NAT Network to "MyNATNetwork", I can see it listed there.
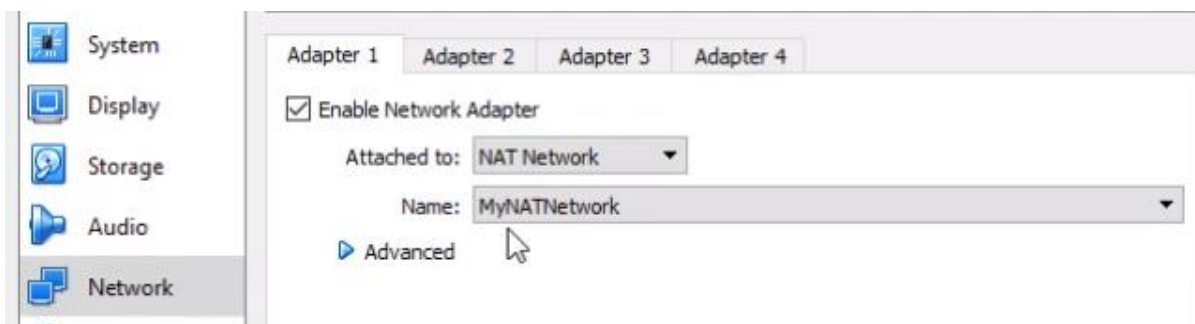

Now click **OK** to close the settings. You have successfully configured the VM! Great job!

Installing Windows Server 2016

Now that our VM has been created and configured, we are ready to launch the VM and install Windows Server 2016! In VirtualBox, select the VM and click the **Start** button. The VM window will appear. Click the Maximize button to bring the VM to full screen.

If your host computer is using a resolution of 1280x720, then the VM will not quite fit on your monitor. You will need to use the scroll bar on the right-hand side of the VM window to see the hidden parts of the VM (see the screen shot below).
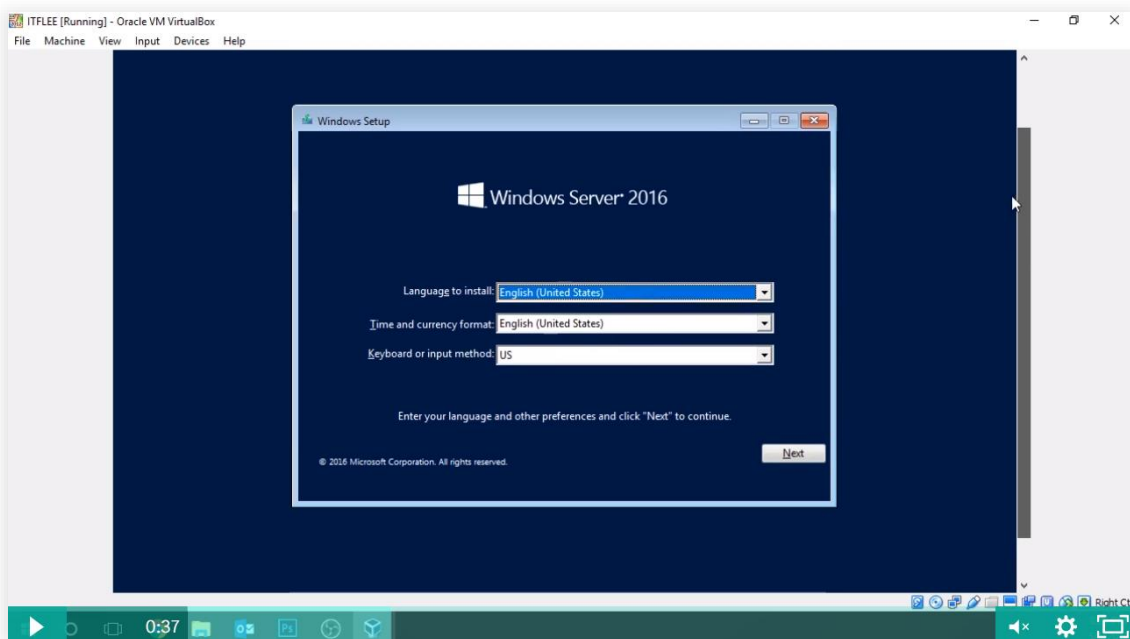
NOTE

I often use screenshots throughout my video course and that is why you may see a play button and timeline at the bottom. It is important for you to know that the play button is *not* displayed on the actual VirtualBox screen, and it only appears because these screen captures are from the video course version of this eBook.

You will get the best display results from using a 1080p resolution (1920x1080 for example) because then you won't experience the need for the scroll bar. But in either case, don't worry. This resolution issue will be resolved when we complete some post-installation tasks.

On the **Windows Setup** screen, the default options should work just fine unless you need to change the language, time, or keyboard settings. I don't recommend changing your keyboard settings.   If you unwittingly chose the wrong option, once you press a key on your keyboard, the VM might interpret that key as a different key. Correcting that issue could cost you a lot of wasted time, and we don't want that. Right?

More than likely you will not need to make any changes so just click **Next**. On the next screen, choose **Install now**.

Be patient, because it will take a few minutes for the VM to prepare for the installation. Once it is complete, you will be brought to the operating system selection. You will choose the version called **Desktop Experience**.

NOTE

If you choose an option other than the **Desktop Experience**, then you will install what is known as Windows Server 2016 **Core Edition** (Server Core). Server Core is a command line only OS that is designed to be lightweight and efficient because it includes most, but not all server roles. We are not covering the Core Edition of Windows Server in this course, but I would recommend that you take some time in the future and learn how to use Server Core.

I am going to choose the **Windows Server 2016 Datacenter Evaluation (Desktop Experience)** and I will click **Next**. On the next screen accept the license terms and click **Next**.

Now you need to choose the type of installation. An upgrade is an option that you can use if you already had Windows Server 2012r2 installed but even Microsoft doesn't recommend an upgrade. If at all possible, you should always choose **Custom**. A custom installation is a fresh install of Windows and it erases all the data (if any exists) on the HDD.
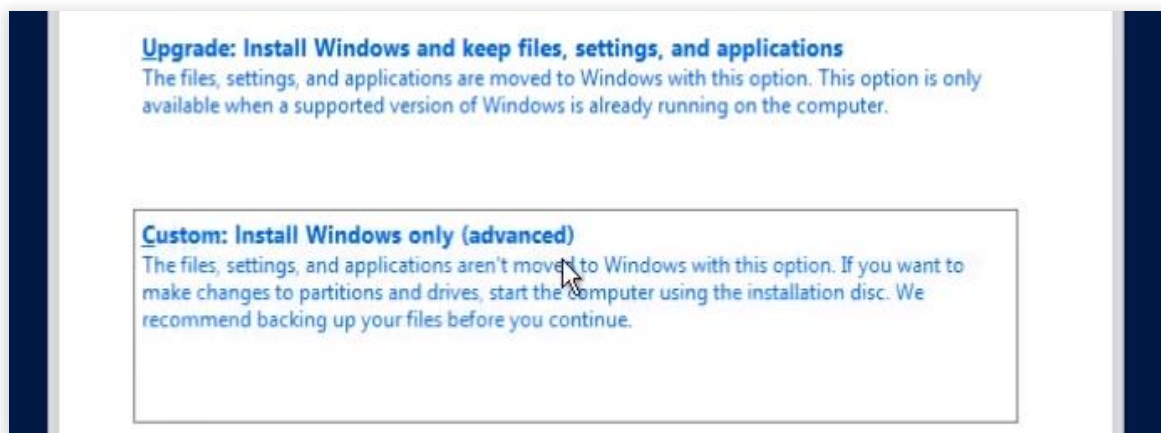
On the next window you need to select the hard drive you want to install Windows on. Since we only have the one hard drive we created when we created the VM, we can simply click **Next**.

Once the installation begins, it typically takes around 20 minutes to complete, depending on how fast your host computer is as well as how much RAM you assigned to the VM.

Once the install is complete you will be brought to the **Customize settings** screen. It's here that you'll need to create a password for the local administrator account. Make sure you remember this password! Memorization is always best, but if not, and depending on the security of your lab environment, you may feel safer writing it down. Once you have created the password press enter. There will be more processing to wait through, and then you will be brought to the login screen.

Press **right-ctrl+del** (a shortcut for crtl+alt+del) and login with the username **Administrator** and the password you just created. Once you have logged in, you will be brought to the desktop.

Great job! You have successfully installed Windows Server 2016!

Now within the VirtualBox window, select **Devices** > **Insert Guest Additions CD Image** (see the screenshot below).


This will mount an **ISO** that helps the VM function better. You need to run the installation package that is on the ISO. You can find this ISO by opening File Explorer and opening the double-clicking on the **VirtualBox Guest Additions** CD drive (from the VM).
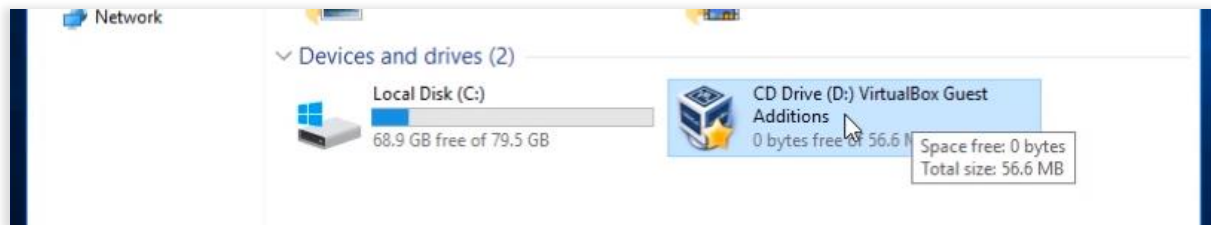
Choose the default options when going through the installation. Just make sure you click the **Install** button when you are presented with the Windows Security window.

Once this installation is complete, open Server Manager. You can do this by clicking the **Start Button** and choosing **Server Manager**. Once Server Manager opens, click the blue text next to the **Computer Name** (see the screenshot below).
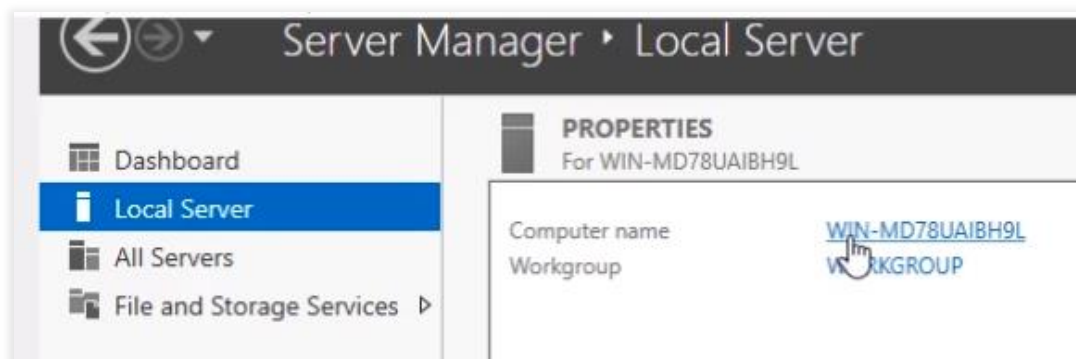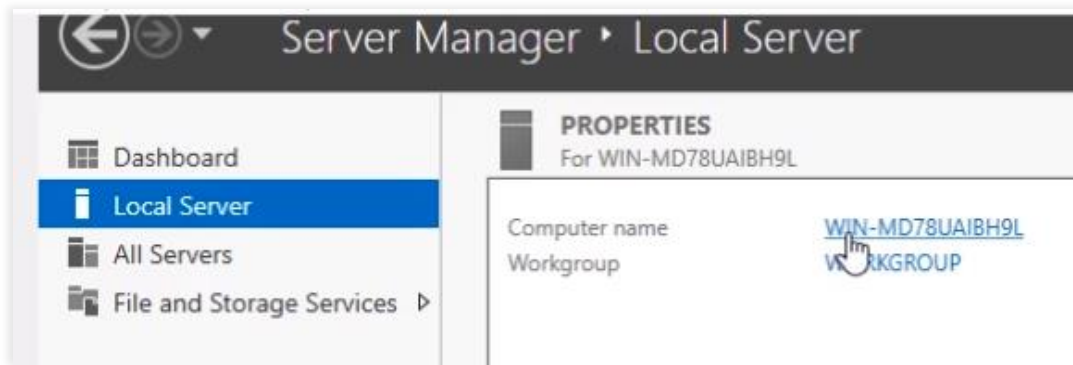
This will open the System Properties window. Click the **Change** button where it says, "To rename this computer…" Under the computer name, I am going to enter "ITFLEEDC01". You can enter whatever name you would like. Just remember it.

Once you close all the windows, you will be prompted to restart your computer. Go ahead and do that now.

Once your computer reboots you have completed your post installation tasks!

Congratulations! Your Windows Server IT Lab has been completely set up!

Course Conclusion

Below I have listed four important concepts that you should learn how to do with your new lab. My personal recommendation is that you take the FREE video version of this course which is packed full of information. You can take that course by clicking here.

These are the four very important concepts you need to learn below:

1 ADD ROLES & FEATURES
Learn how to add server roles and features to your server. You can do this from **Server Manager**.

2 WINDOWS DOMAIN
Learn how to build a Windows Domain. You can do this by adding the Active Directory Domain Services role to your server. This is the most critical role when you are working on a large corporate network – so don't skip this one!

3 ACTIVE DIRECTORY
Active Directory Users and Computers (commonly called AD) is a tool that is used in just about EVERY major IT environment. This is a MUST-HAVE skill if you want to work in the IT field. Install this on your server and learn how to use it!

4 GROUP POLICY
This is another tool you must learn. This tool works hand-in hand with Active Directory and allows you to remotely manage users and computers. Desktop backgrounds, user rights and software deployments are all part of what you can do with Group Policy.

I hope you have enjoyed this eBook! If you found it helpful, let me know by sending an email, or visit my website and check out the many other courses I offer. Thank you!

Paul Hill

EMAIL ME
I would love to hear from you! My email address is:

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WEBSITE
My website is your portal to knowledge!

instructorpaul.com

COURSES
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