

# Lubuntu Router VMWare Sphere Install

For the free video please see  
<http://itfreetraining.com/lab#lubuntu-vsphere-install>

This video will look at creating a virtual machine, which we will use for installing Lubuntu on later in the video. The video goes through the complete process of creating the virtual machine and setting up the networking. Lubuntu is a lightweight version of Ubuntu so the procedures used in this video will also work in Ubuntu and also other simpler Linux distributions.

# Demostration

## **Demonstration downloading and uploading the iso to vSphere**

Open the web site <http://www.lubuntu.net/>. On the main page there are links to the distributions for Lubuntu. These include 32bit and 64bit for pc and the 64bit mac version. In this video the 64bit pc version (iso) which was download and saved to the desktop.

In order to use the iso with vSphere, it first needs to be uploaded to the VSphere server so that it can be accessed by the virtual machine for the Lubuntu install. To do this, run the VMware vSphere Client. This is a separate download to vSphere hypervisor. In order to administer vSphere installs, this product needs to be installed on your desktop operating system.

Once the vSphere client has loaded and you are logged in, select the configuration tab and then select the option on the left under hardware called storage. In order for vSphere to access the iso it needs to be transferred to storage that is connected to vSphere. Not only can local storage be connected to vSphere, but also other storage like San's and shares connected using NFS can be used. In order to perform the upload, right click on the storage that you want to upload the file to and select the option browse datastore.

Once in the Datastore Browser, select the upload icon at the top and then choose if you want to upload a single file or a folder. It is just a matter of browsing to the file or folder and uploading it to the server.

## **Demonstration configuring networking on vSphere**

To configure networking on vSphere, open the vSphere client and select the tab configuration. On the left hand side under hardware select the option networking. In this screen this will show the networking that is currently configured in vSphere. In this case additional networks need to be added to vSphere so the virtual machines have virtual networks to communicate with each other.

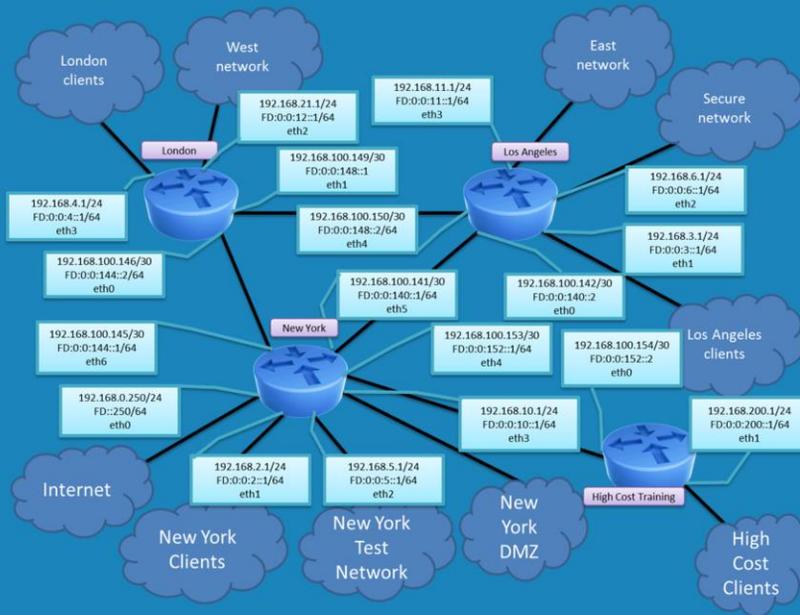
To add a new network, select the option on the far right of the screen, add networking.

The add network wizard will give you two options, virtual machine and VMKernel. In this case virtual machine is selected since the only requirement of this network is that the other virtual machines on the same network are able to communicate with each other. The VMKernel option communicates directly with the VMware hardware and thus is not virtualized like the virtual machine option.

On the next screen you need to decide if you want to create a vSphere switch or connect the network directly to a network card. In this case, the virtual machines will only be connecting to each other so there is no need to connect them to a network card so the option "Create a vSphere standard switch" will be used.

On the network screen you need to enter in the name for the virtual network. In this case the name New York Clients will be used. There is also an option for VLAN's if you have this configured on your network.

# Previous network



## Demonstration Network Layout Old Complex Way

The previous solution of networking used 4 routers. The problem with this approach was that there was so much that could go wrong with the network. The routers needed routing tables configured in order to know where to route traffic to. If you are learning networking this is not bad configuration to use. However, for courses like Active Directory, the networking gets in the way. The fact is that regardless of how simple or complex the networking is between two sites, the configuration in Active Directory does not change. For this reason, a simpler network layout was created which is easier to use.



## Demonstration simple network

This network uses only one virtual router to route traffic between 10 different networks. One network adapter is connected directly to the home network which is connected to the internet. Listed below are the different networks and what they are used for.

**Internet:** This connection is basically the physical network adapter in the server and allows the virtual router to access the internet.

**New York Client:** This is the main network for New York and is used in demonstrations whenever possible. It is the home NYDC1 which is a Domain Controller in New York. Whenever possible we attempt to use this Domain Controller.

**Los Angeles:** This is just like New York, a site in the company based in Los Angeles. In the older videos this was referred to as Washington, but was changed to make it simpler to display on maps in the videos.

**London clients:** This is the home of the clients on the London network. Essentially the same as New York and Los Angeles just a different geographic site.

**New York Test Network:** This network is for testing only. For example, if a new product were to be developed, it would be done in this network so it does not affect the other networks.

**New York DMZ:** This network is designed to host the servers that need to be directly accessed on the internet. In the real world there would be a firewall between this network and the internet.

**Secure Network:** This network is used when a higher level of security is required than

normal. For example, the company has an R&D department they want to keep as secure as possible.

East Network: This network is used to show another division of the company. Used mostly in videos that require a child domain.

West Network: This network is used to show another division of the company. Used mostly in videos that require a child domain.

High Cost Training: This network is used when an external company is doing business with ITFreeTraining. Computers in this network will generally have their own forest and are connected to the other networks by a forest trust, if at all.

### **Demonstration creating the virtual machine**

To do this, right click on the vSphere server in the left pane and select the option new virtual machine.

The virtual machine will give you two options. Typical and custom. To see all the options available select the option custom.

The first screen of the wizard asks for the name of the virtual machine, in this case the name router was used.

For storage select an area to store the virtual machine. For best performance local storage is normally used, however in some cases a San may be available which may offer far better performance.

For the virtual machine version, this will determine which hardware devices are installed in the virtual machine. If you are never planning on moving the virtual machine to another system you should always choose the highest virtual machine version. This will ensure that you get the most features. However, certain operating systems only have device drivers for certain versions of VMWare. This is because older operating systems only had device drivers for certain hardware. As the virtual machine version increases, the hardware changes and thus older operating systems may not have device drivers for that hardware. New hardware does mean more features and generally better performance. If you are not sure you can always select a lower version and then upgrade the version of the virtual machine later on, however you will not be able to down grade the virtual machine later on.

On the guest operating system screen choose the operating system that you are planning to install or the closest option that is available. The operating system that you choose here effects which options are shown later on. If for example the operating system does not support particular hardware, this hardware will not be available in the wizard. The option you choose will also configure some minor tweaks to the operating system that will help with performance.

The CPU screen lets you decide how many virtual CPU's that virtual machine will have access to and how many virtual cores those CPU's will have. Since the virtual machine will only work as a router and does not require much CPU, I will select 1 socket and 1 core.

For memory, the memory configured will be dedicated to that virtual machine. Paging

on a vSphere is a little worse than on regular machines as this can affect all the virtual machines. For this reason it does not hurt to have a little more ram than you think you will need. In this case I will select 512 megabytes. Ubuntu can run on about 384 Megabytes of ram and if you are pressed for ram you can use this value, however 512 is a safe amount and you should not have any paging for basic routing.

The networking screen you can configure which network adapters you are using. Only 4 network adapters can be added here and a total of 10 are needed. So more network adapters will be added later on.

The SCSI controller allows you to decide which virtual adapter will be used to access the virtual hard disk. Depending on which operating system you use will determine which one you should use. VMware Paravirtual will give you the best performance, however this option requires new operating system support and also if you export the virtual machine to another VMWare solution it may not support this controller.

On the select disk screen you need to decide which virtual disk you want to use for the virtual machine. If you have an existing virtual disk you can select it here. In this case a new hard disk is created so the option create a new virtual disk will be used. When creating a new virtual hard disk, a few options need to be configured. The disk provision determines how the virtual disk will be created. Thick provision, lazy zeroed will create a file the same size as the virtual hard disk but will not zero out the data until that data is used. This creates the file faster than the Thick provision eager zeroed which zeros out all the data on the hard disk when it is first created. Thin provision creates a file that is the size of only the used data. As more data is added, the file gets bigger. This uses the least amount of space but offers the worst performance compared with the other two options. In this case thin provision is selected as hard disk performance for a router is not a concern.

The advanced options for the Scsi controller should only be configured in unusual situations. In this case they will be left on the defaults.

### **Demonstration add an external network**

From the configuration tab for vSphere, press the option on the far right hand side add networking.

For the connection type “virtual machine” was selected to offer the most compatibility. If you are not planning on using this virtual machine on older versions of VMware, select the second option VMKernel which gives better performance.

On the network access screen, select the virtual switch that is displayed connected to the network adapter in your computer you want to use for external access. This should be the network card that is connected to your home network.

For the name of the network enter in the name local network.

## **Demonstration configure the networking**

To configure the routing on the virtual machine called router, select it from the pane on the left hand side and then select the option in the middle of the screen edit virtual machine settings.

In the hardware option, the network cards need to be configured as follows.

Network adapter 1 (eth0): Local network

Network adapter 2 (eth1): New York Clients

Network adapter 3 (eth2): New York Test Network

Network adapter 4 (eth3): New York DMZ

Network adapter 5 (eth4): High Cost Training

Network adapter 6 (eth5): West Network

Network adapter 7 (eth6): Los Angeles clients

Network adapter 8 (eth7): Secure Network

Network adapter 9 (eth8): East Network

Network adapter 10 (eth9): London Clients

To add additional network cards, press the button at the top, add and select Ethernet Adapter. At the top of the network adapter add screen you can select the type. You should select the same type as the other network adapters currently in the system.

## **Demonstration Lubuntu Install**

Before you start the virtual machine, the iso containing the install files needs to mount to the virtual machine virtual optical drive. This can be done by selecting the virtual machine and then selecting the option edit virtual machine settings.

In the hardware list, select CD/DVD drive 1 and then from the right hand side select the option datastore ISO file. Once selected, press browse and browse to the location of the iso file and select it.

At the top of the screen is the tick box "Connect at power on". Make sure this option is ticked, otherwise the virtual optical drive will not be available to the virtual machine when it is started up until this option is ticked.

Once everything is ready, select the option power on the virtual machine. To see the video output of the virtual machine, select the console tab.

The first screen on the Lubuntu install determines the language that will be used for the first few screens of the install. Later on in the install, you will be asked again which language you want to use and this option will be used for the rest of the install. The first screen of the Lubuntu install will give you a few options. If you want to have a look at Lubuntu before you install it, you can select the first option, try Lubuntu without installing, and this will load a copy of Lubuntu into memory allowing you to try Lubuntu first without making any changes to your hard disk. There is also an option to check the disk for defects before the install and to test memory. If you boot from the disk by mistake and want to boot to an existing operating system, select the last option, boot from first hard disk. In this case I want to install Lubuntu so I will select the option install Lubuntu.

The first screen of the install will determine which language will be used for the rest of the install.

The preparing for install screen reminds you of a few things before the install. It first reminds you that you should have at least 4.5 Gigabytes of space and an internet connection. There is also an option to download updates while installing. It is recommended that you select this option. If you wish to install 3<sup>rd</sup> party add-on's which allow for mp3 support there is an option at the bottom to do this. This is not true open source software, however it works quite well. In the case of this install, the router does not require any additional software so I will leave this option un-ticked but tick the option to download update to ensure the install has the latest updates installed.

On the installation type screen this will remind you that the disk that you are performing the install on will be erased. You also have the option to encrypt the install to make it more secure. The option LVM uses the Linux logical volume manager with the install. This provides additional features to the operating system for combining multiple drives together and resizing the drive. This means that if the drive is removed and used in another system, the system will need to support LVM. In this case the router will only be using the one drive and thus additional features provided by LVM are not required, therefore this option will not be ticked.

The "where are you" screen will ask where this computer will be running from. This will be used to configure the time zone on the computer so you should select the location where this computer will be running from.

The keyboard layout screen allows you to select which keyboard you are using and what keys are on that keyboard. If you are not sure which to select, there is an option at the bottom, detect keyboard layout which will attempt to detect which keyboard you have.

On the "who are you" screen you can enter in some details of the first user that will be created on the system. In this case, name, computer name, and username will be sent to router. If you are using the install for something other than providing services like routing, enter in a friendly user name. In this case, the password has been set as password.

Once the install is complete it will ask for a restart.

The network adapters in the operating system still need to be configured and also the operating system configured to allow routing. This will be covered in the next video in the series.

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

References

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