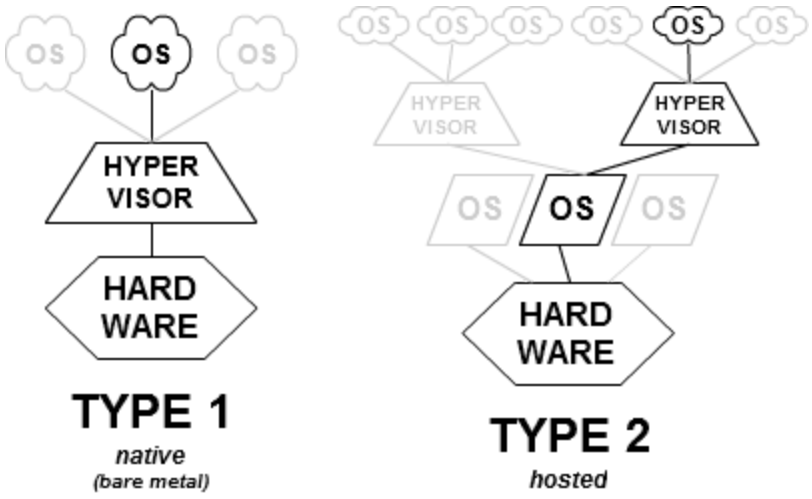
Virtualization Introduction

Virtualization allows one physical machine to be divided into many virtual machines. Many companies offer their own solution including VMware (what we'll be working with tonight), Microsoft, and Citrix. The core concept of virtualization is the the hypervisor, which is a thin software layer that intercepts operating system calls to hardware. There are two core classifications of hypervisors, Type 1 and Type 2.

Type 1 Hypervisors: More commonly known as a bare-metal hypervisors, these run directly on hardware with guest operating systems running on top of them.
Type 2 Hypervisors: More commonly known as hosted hypervisors, These run on top of an existing operating system with guests running at a third level above hardware.

For visual learners:



ESXi Installation

1. Grab a flash drive with ESXi 6.0 installer on it
2. Insert your flash drive into a USB port on your server
3. Power on your server and set it to boot from the USB
4. Once you are presented with an VMware boot menu, Select the ***ESXi Installer***
5. While the installer loads there will be a display presenting information about the hardware
6. On the initial prompt select the ***Install (enter)*** option
7. Totally read the EULA and select ***Accept and Continue (F11)***
8. On the ***Select a Disk*** screen choose to install ESXi onto the **USB stick**
9. You'll be prompted to select a keyboard layout and enter a root password
10. Confirm your installation
11. Let the glorious installation progress bar do its thing
12. Once it completes reboot your server
13. At the default display hit ***F2*** to bring up options
14. Configure your management network
    a. IP Address: ***192.168.1.X[0-9]*** (where x is your pod# ie 3-> .30-.39)
    b. Netmask: ***255.255.255.0***
    c. Gateway: ***192.168.1.254***
    d. IPv6 -> ***Set to Disabled***
    e. DNS: ***8.8.8.8***
    f. Hostname: ***XXXXXX*** (make it your group name)
15. Reboot your server

vSphere Setup

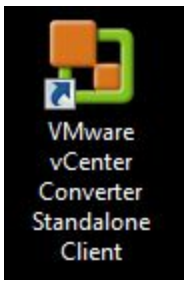
1. Connect your server and a bench PC to a switch
2. Statically set the NIC of the bench PC to ***192.168.1.X[0-9]***
3. Ask for the ***VMware vSphere Client.*** Once installed launch from your bench PC.
4. Login (ignore the certificate warning)

5. Navigate to the ***Configuration*** tab and the ***Storage*** from the hardware menu
6. Select ***Click here to create a datastore...***
7. For ***Storage Type*** select ***Disk/LUN***
8. Select the local disk
9. Use all available partitions
10. Enter a name for the datastore (with a unique name, such as *nexthop-ds*)
11. For ***capacity*** select ***maximum available space***
12. Select ***Finish***

Upload Virtual Machine

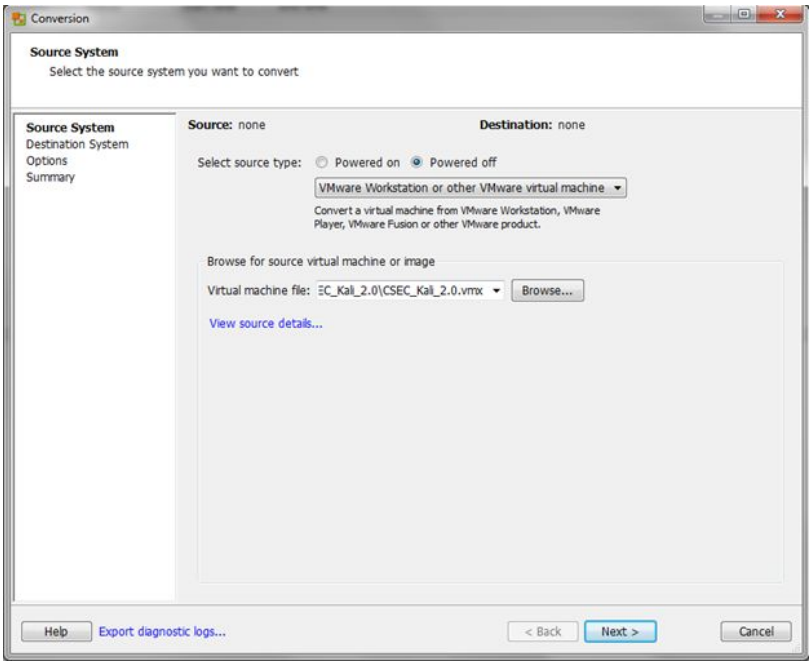
Each member of the group upload a virtual machine to the server. Connect other bench PCs to the switch if necessary so they can be uploaded at the same time.

1. Ask for the ***VMware vCenter Converter Standalone.*** Once installed launch from your bench PC

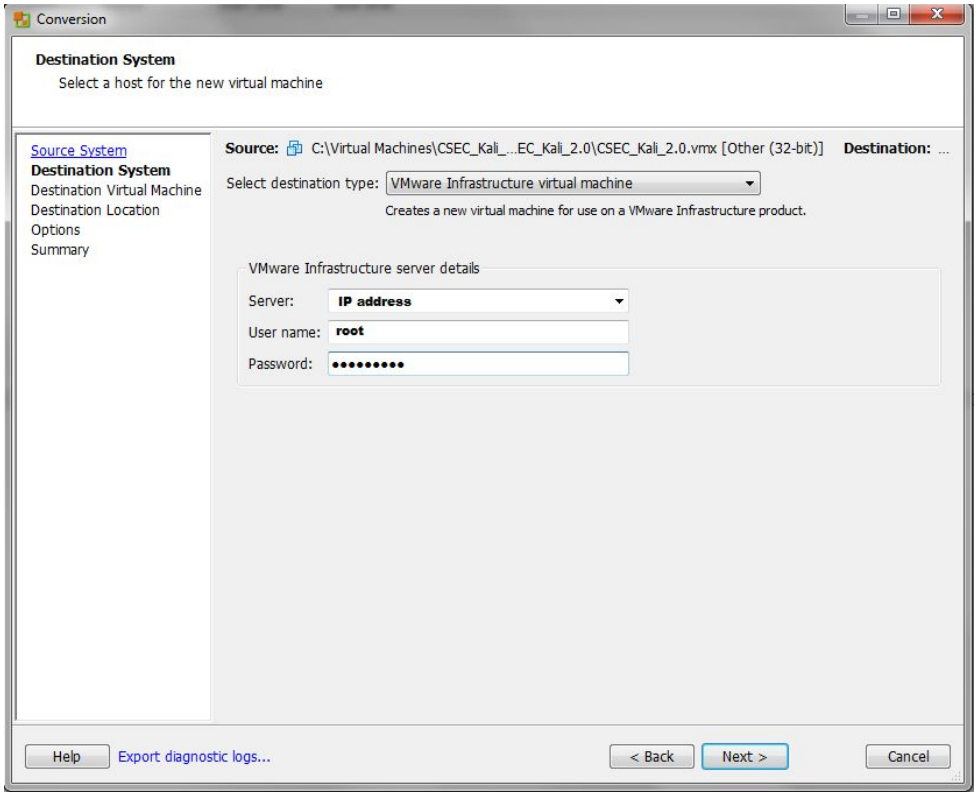


2. Select Convert Machine

3. On the **Source System page**, select machine source type as **powered off** and VMware Workstation or other VMware virtual machine. Browse and choose the .vmx file of the virtual machine you are uploading.



4. On the **Destination System** page, select the destination system type **as VMware Infrastructure virtual machine**. Enter **your IP** for the server, your username must contain root and your password.



5. On the **Destination Virtual Machine** page, name your virtual machine. Then **select the folder** you would like the virtual machine to be uploaded to.
6. On the **Options** page, edit the **disk to be thin provisioned** and **change the network to the proper Port Group** and select to auto install vmware tools.
7. Once the virtual machine has finished uploading, turn it on and ensure that it works by opening the console

Virtual Network Setup

1. Navigate to the ***Configuration*** tab in vSphere and open the ***Networking*** page under hardware
2. Select ***Add Networking…***
3. For ***Connection Type*** select ***Virtual Machine***
4. For ***Network Access*** select ***Use vSwitch0***
5. For ***Connection Settings*** create a unique name and set the VLAN between 100-200
6. Finished and repeat steps 2-6 to create a second network. Choose a different VLAN for the second network
7. Edit your uploaded virtual machines to be on the new virtual networks you created

Switch Setup

1. Create a VLAN for your bench PC and the VLANs you specified in the virtual network setup
2. Reconfigure the port that connects to the ESXi server to be a trunk and allow all VLANs
3. Enable IP routing on your switch
4. Create a VLAN interface for each of the VLANs and assign an IP address
5. Specify this VLAN interface as the Default Gateway for your VMs
6. Assign IP address to your virtual machines according to the VLAN they are in
7. Ping between your virtual machines

vCenter

1. If you made it this far please come see us and add your host to our vCenter server