

UCS Director Multi-Node Deployment on VMware

The purpose of this document is to illustrate the steps to install UCS Director 5.2 in a Multi-Node deployment. Instead of a single standalone UCS Director Appliance, we will build a Primary Node, Inventory Database Node, Monitoring Database Node and one or more Service Nodes.

Besides the basic Multi-Node installation, this document also provides steps for configuring other, optional but recommended, management options such as License Installation, Mail Setup, Self Service Policy, NTP, enable root access, change root password, change shelladmin password, change hostname, update hosts file, and changing the time zone. This document should take you to the point where you are ready to start configuring workflows.

Useful Documents:

[Cisco UCS Director Installation and Upgrade on VMware vSphere, Release 5.2](#)

Table of Contents

Table of Contents	2
1. Download UCS Director 5.2 software from Cisco.com	3
2. Create the Inventory Database Node	4
2.1. Create Inventory Database VM.....	4
2.2. Install/Update VMWare tools & VM Version.....	9
2.3. Configure Inventory Database	20
3. Create the Monitoring Database Node.....	25
3.1. Create Monitoring Database VM	25
3.2. Install/Update VMWare tools & VM Version.....	30
3.3. Configure Monitoring Database.....	41
4. Create the Primary Node	46
4.1. Create Primary Node VM	46
4.2. Install/Update VMWare tools & VM Version.....	51
4.3. Configure Primary Node.....	61
5. Create the Service Node	67
5.1. Create Service Node VM	67
5.2. Install/Update VMWare tools & VM Version.....	72
5.3. Configure Service Node.....	82
6. Setup Service Node in UCS Director GUI.....	89
7. Test and Verification	91
8. Create and assign System Task to a Service Node	92
9. Troubleshooting Service Node Connectivity.....	94
10. Add Licenses to UCS Director	98
11. Mail Setup (Required)	100
12. Create Self Service Policy	101

1. Download UCS Director 5.2 software from Cisco.com

Go to Cisco.com Downloads and navigate to UCS Director 5.2.

Download Software

Downloads Home > Products > Servers - Unified Computing > UCS Director > UCS Director 5.2 > UCS Director Virtual Appliance Software-5

UCS Director 5.2

The screenshot shows the Cisco.com Downloads interface for the UCS Director 5.2 software. On the left, there's a sidebar with a search bar, an 'Expand All' link, and a dropdown menu showing 'Latest' (version 5) and 'All Releases'. The main area is titled 'Release 5' and contains a yellow box with release notes: 'Cisco UCS Director 5.2.0.2A Patch. 5.2.0.2A patch can be applied to 5.2.0.2 only to get fix for CSCuu39815 and CSCus05194. 5.2.0.2A is not upgradable to either 5.2.0.3/5.3.0.0 (already released) or 5.3.0.1 (the next patch release for 5.3). However, it is upgradable to 5.3.1.0 and later versions to be released in the upcoming releases.' Below this is a table with columns 'File Information', 'Release Date', and 'Size'. A single row is highlighted with a red border, showing 'Cisco UCS Director 5.2 (VMWare vSphere OVF Appliance. MD5 Checksum - 06 bf06fe95aabef9c6955b535946363) CUCSD_5_2_0_0_VMWWARE_GA.zip' as the file information, '20-DEC-2014' as the release date, and '2869.15 MB' as the size. To the right of the table are three buttons: 'Download', 'Add to cart', and 'Publish'.

Login using your CCO account.

A modal dialog box titled 'Log In and Service Contract Required' appears. It contains a red 'X' icon and the text: 'To Download this software, you must [Log In](#) and have a valid service contract associated to your Cisco.com profile.' Below this, it says: 'If you do not have a service contract you can get one through:
Your Cisco Account Team if you have a direct purchase agreement with Cisco
Your Cisco Partner or Reseller'. It also states: 'Once you have the service contract you must associate your service contract to your Cisco.com user ID with [Profile Manager](#)'. At the bottom are 'Login' and 'Cancel' buttons.

Accept the license agreement.

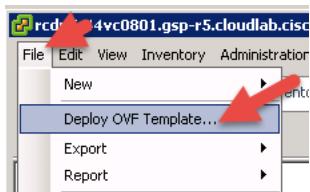
A modal dialog box titled 'End User License Agreement' appears. It contains a blue 'i' icon and the text: 'In order to download software, please indicate that you have read and agree to be bound by the [Cisco End User License Agreement](#)'. At the bottom are 'Accept License Agreement' and 'Cancel' buttons.

2. Create the Inventory Database Node

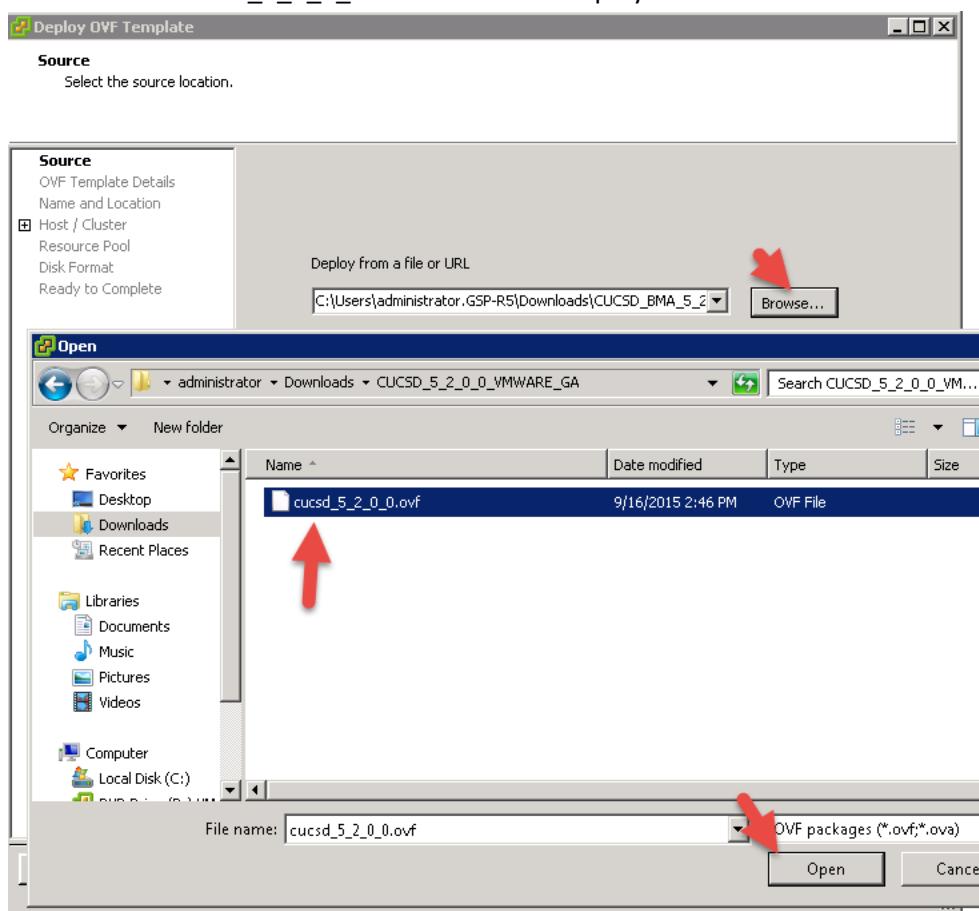
2.1. Create Inventory Database VM

Unzip the CUCSD_5_2_0_0 file that was downloaded from Cisco.com to your local machine.

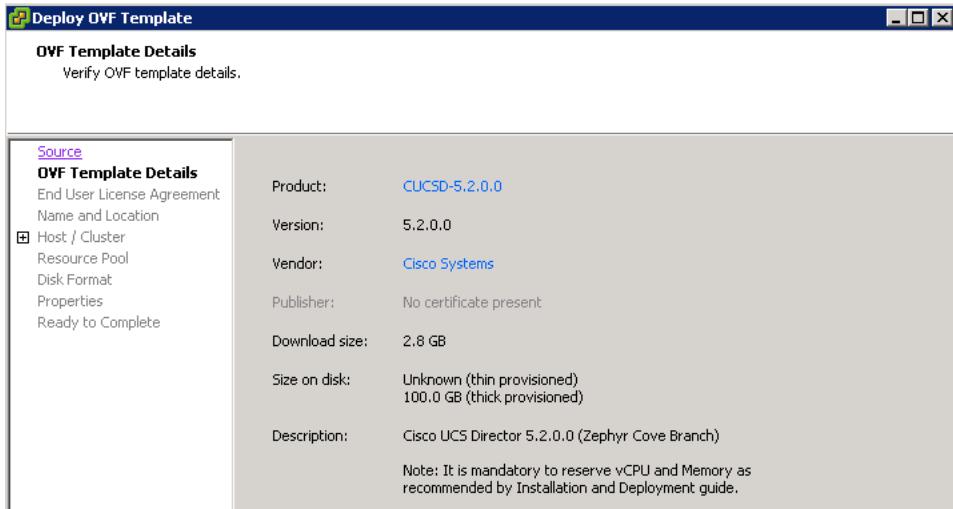
Log into vCenter and Select File -> Deploy OVF Template.



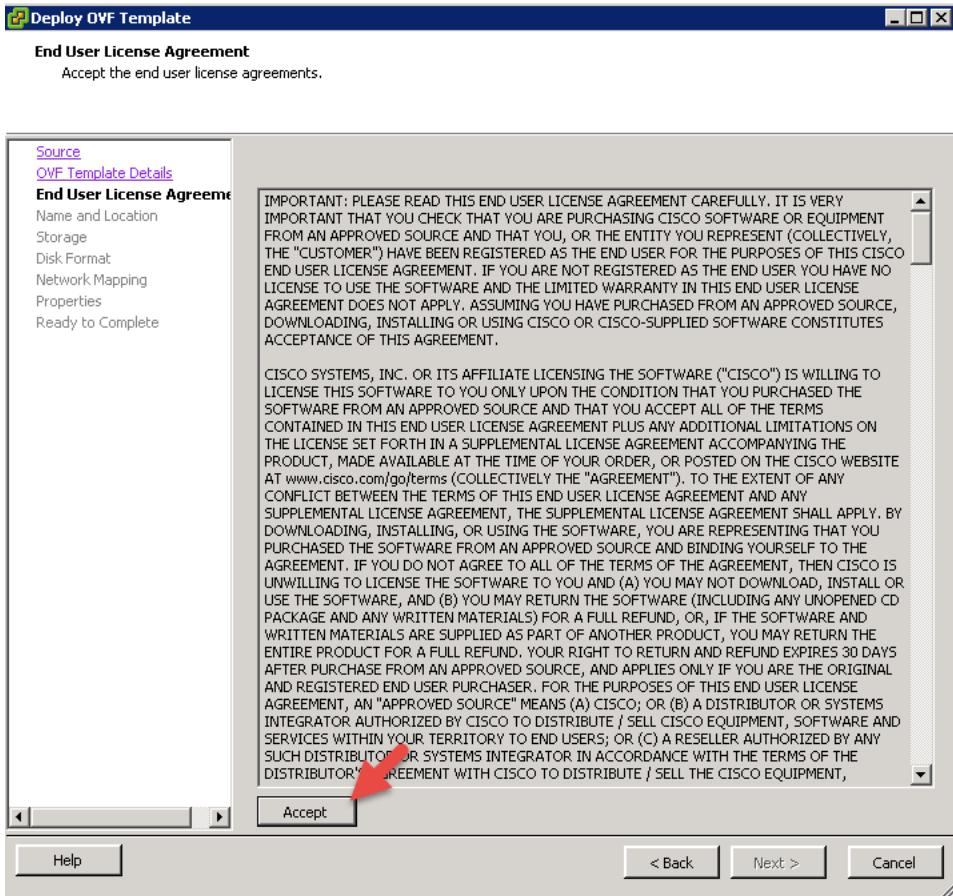
Browse to the UCSD_5_2_0_0 and select it for deployment then click Next.



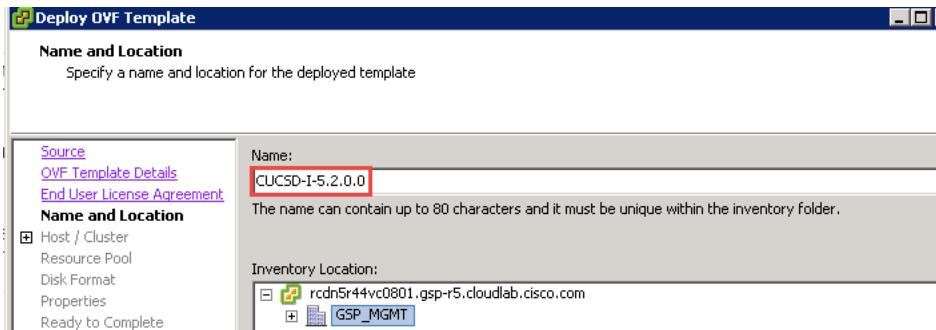
Verify details then click Next.



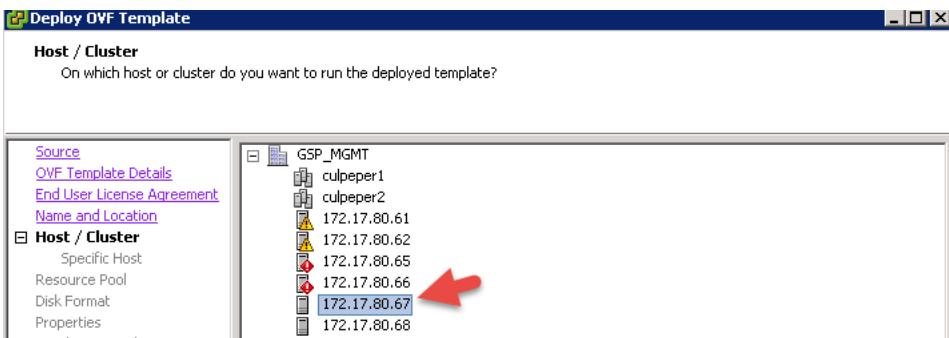
Accept the license agreement and Click Next.



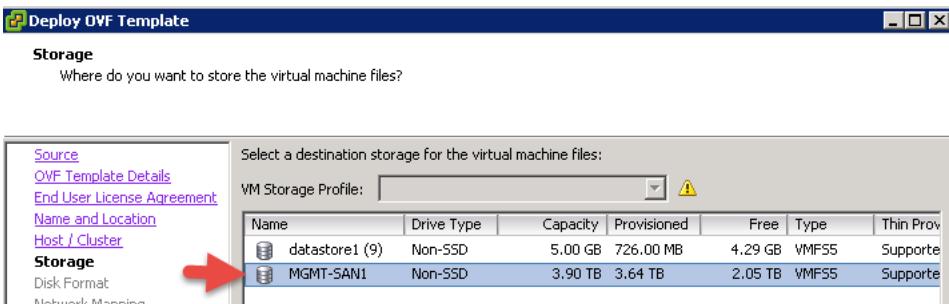
Name the VM and click Next.



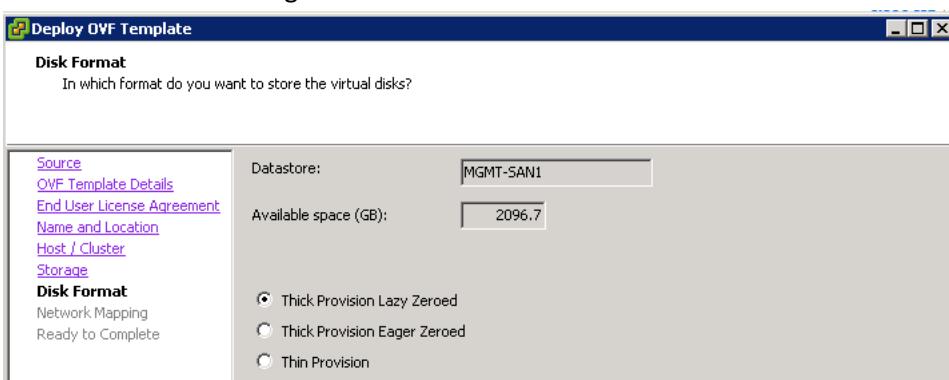
Select a Host and click Next.



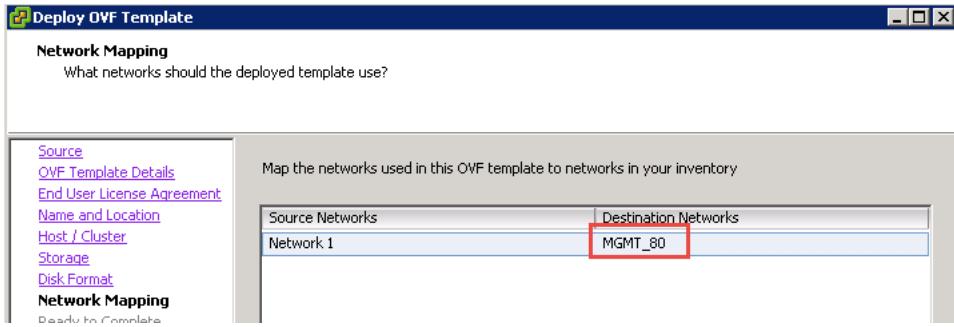
Select a storage location to install the VM and click Next.



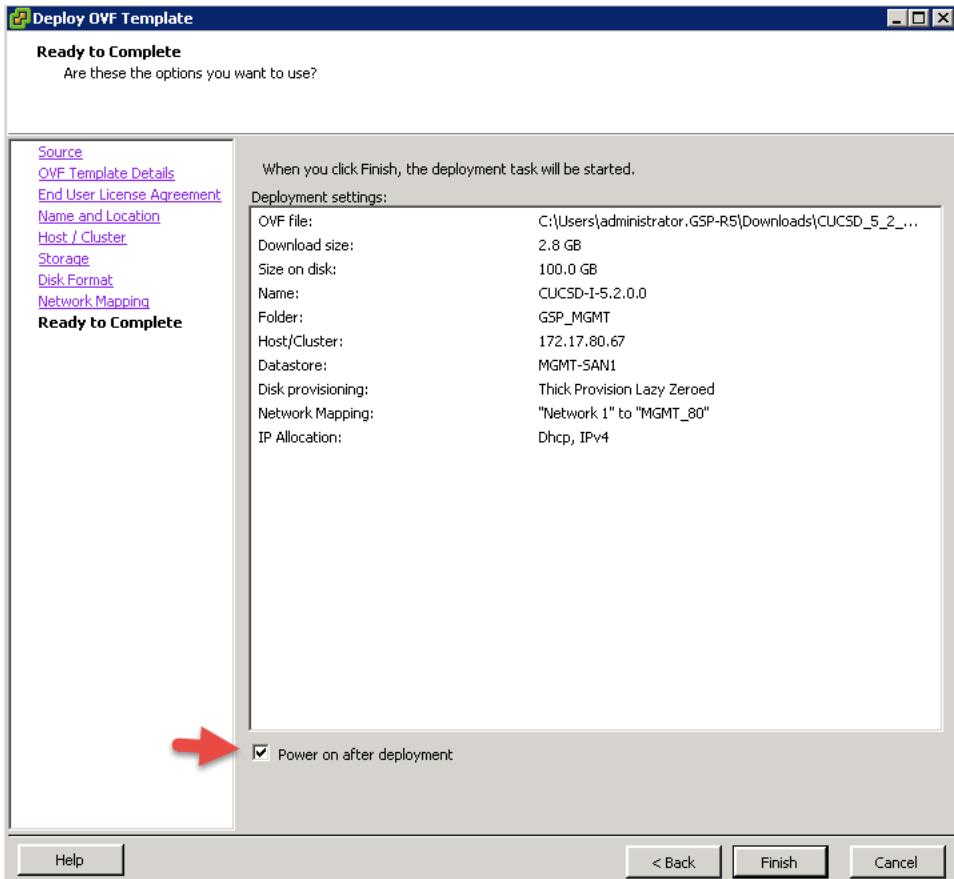
Leave the default settings for the Disk Format and click Next.



Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.



In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Inventory Database Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.

```
Regenerating keys for the root user...
Generating public/private rsa key pair.
Created directory '/root/.ssh'.
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
b4:74:0a:20:4a:7b:da:47:72:00:e6:f6:a6:b5:df:0b root@localhost.localdomain
Generating SSL certificates for sfcb in /opt/vmware/etc/sfcb
Generating SSL certificates for lighttpd in /opt/vmware/etc/lighttpd
This script is executed on first boot only.
Configuring static IP configuration

Do you want to Configure static IP [y/n]? : y
Do you want to configure IPv4/IPv6 [v4/v6] ? : v4

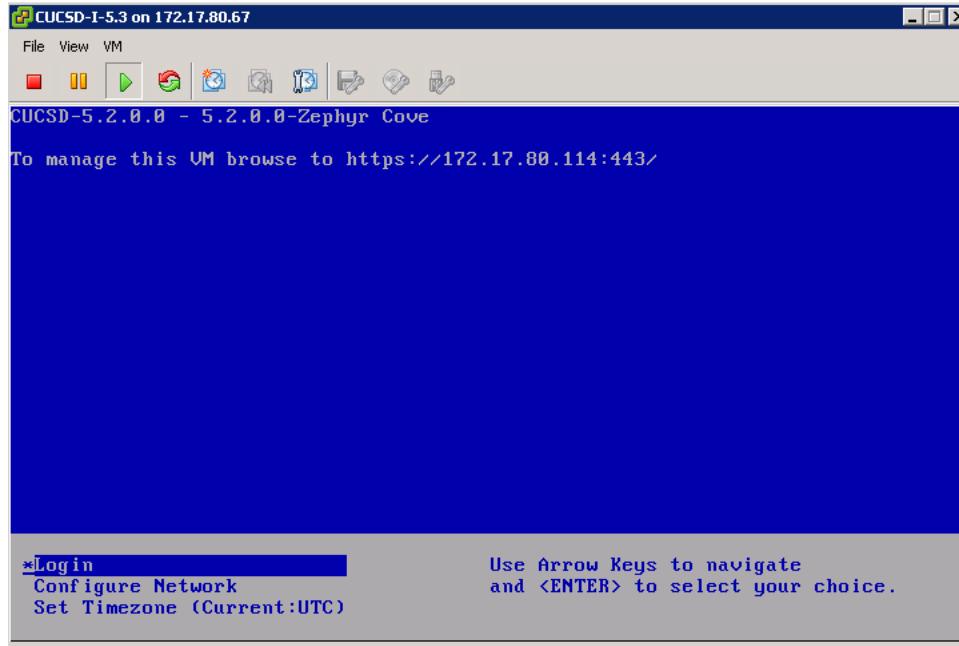
Configuring static IP for appliance. Provide the necessary access credentials

IP Address: 172.17.80.114
Netmask: 255.255.255.0
Gateway: 172.17.80.1

Configuring Network with : IP(172.17.80.114), Netmask(255.255.255.0), Gateway(172.17.80.1)

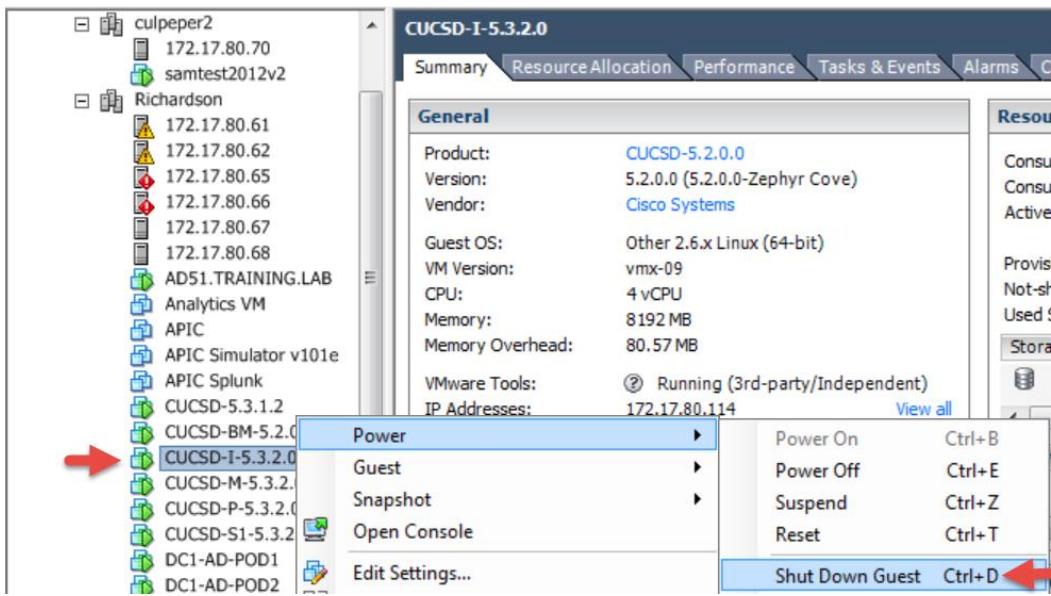
Do you want to continue [y/n]? : y_
To release cursor, press CTRL + ALT
```

After the installation is complete, you should see a screen that looks like this.

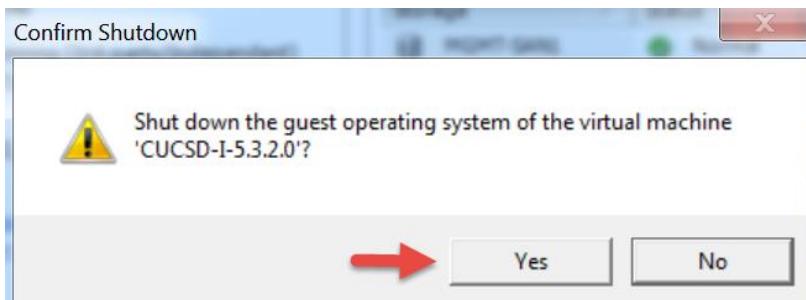


2.2. Install/Update VMWare tools & VM Version

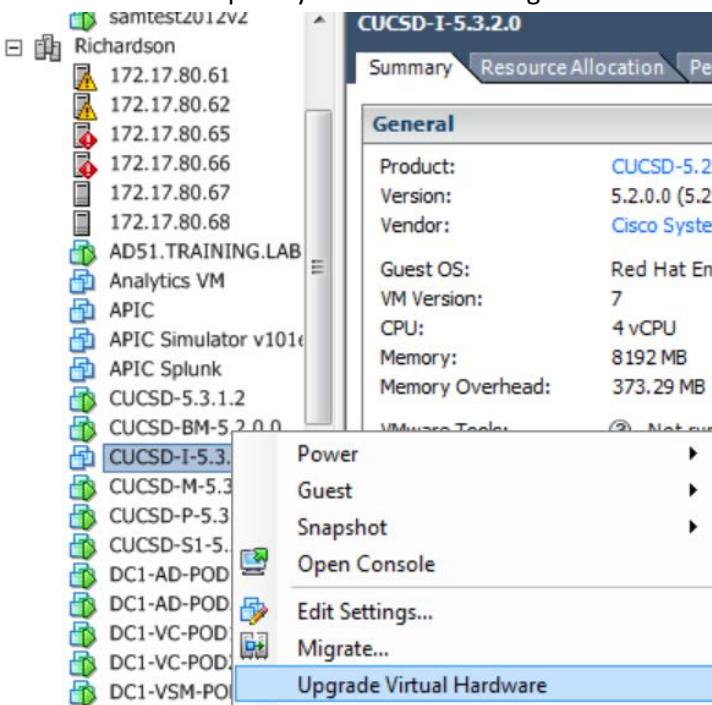
Log into vCenter, navigate to your Inventory Database VM, select 'Shutdown Guest'.



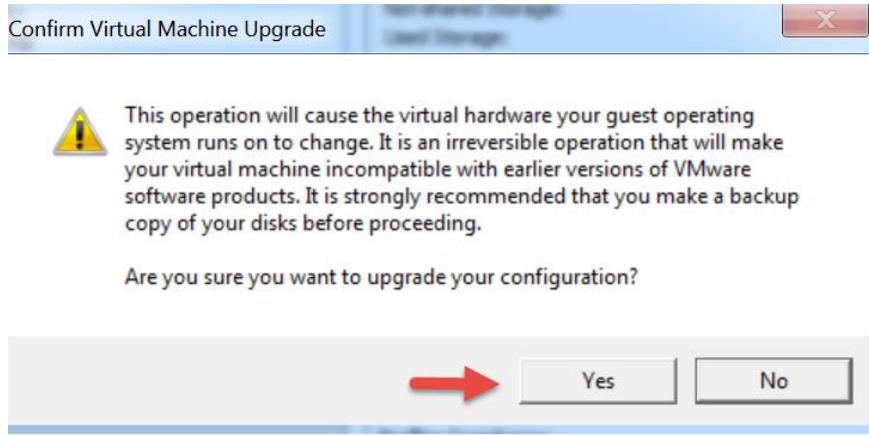
Select Yes.



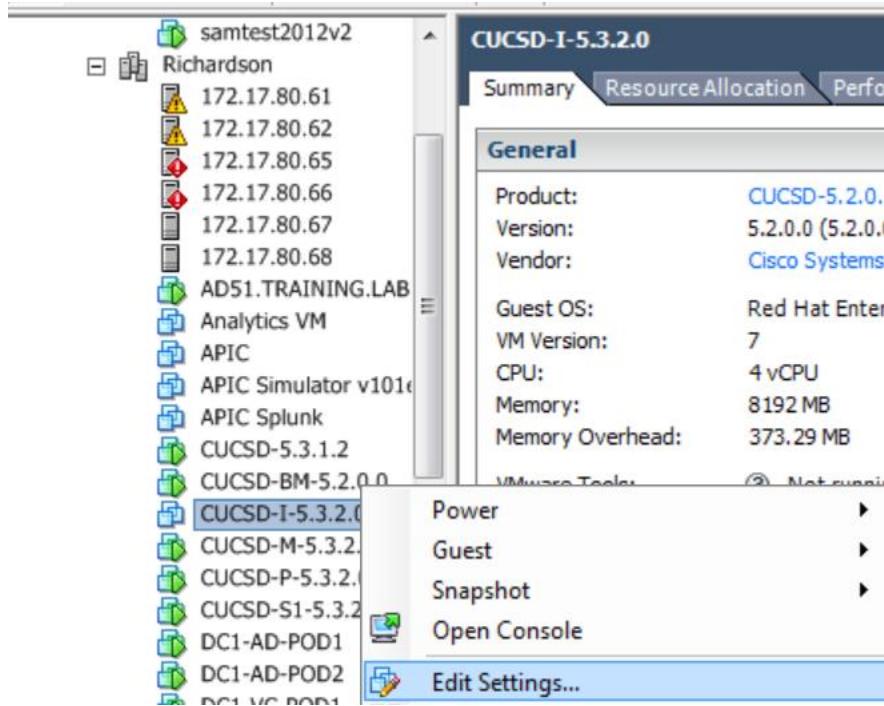
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



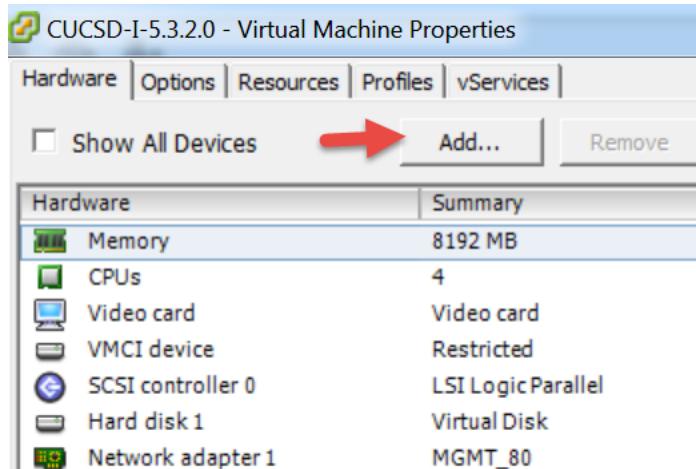
Select Yes.



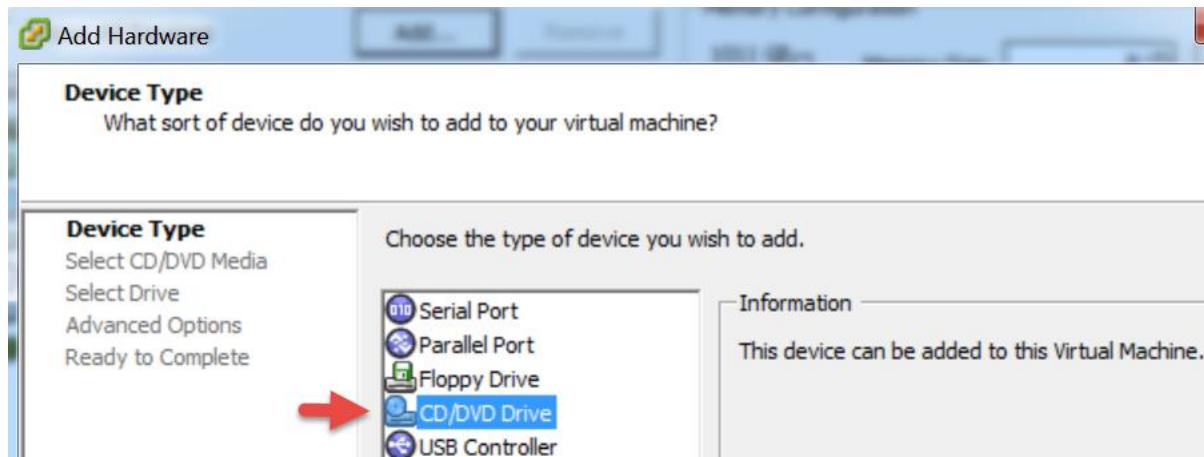
Right click on the VM and Select 'Edit Settings'



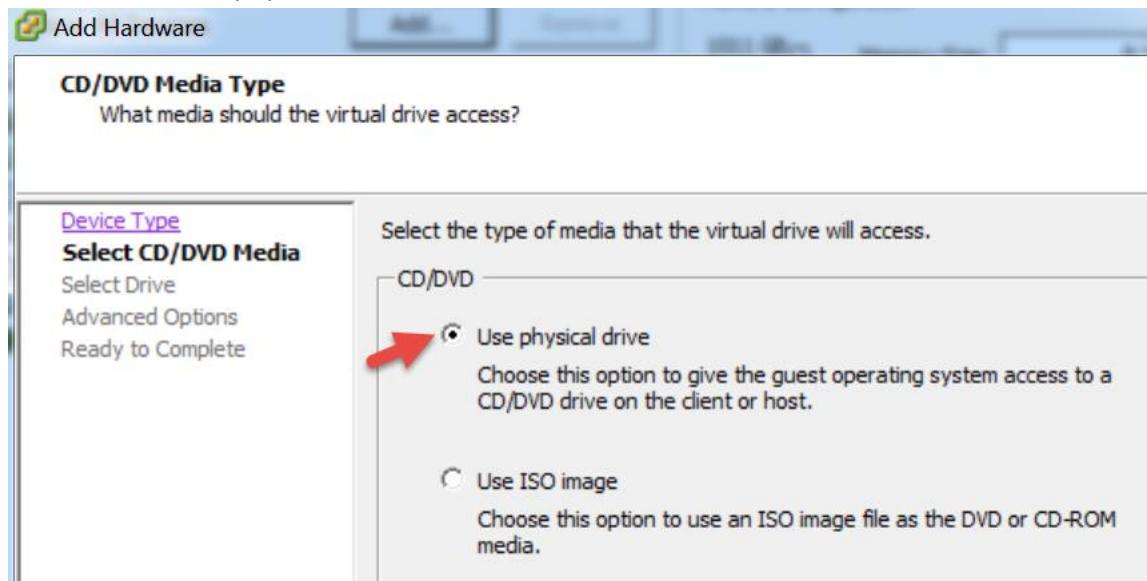
Select Add.



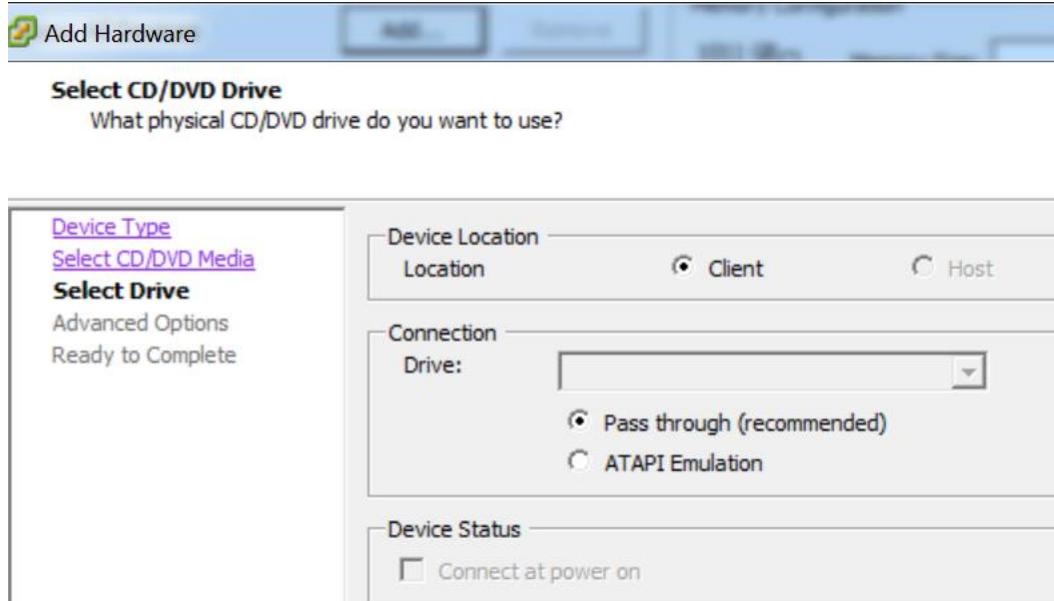
Select 'CD/DVD Drive' and click Next.



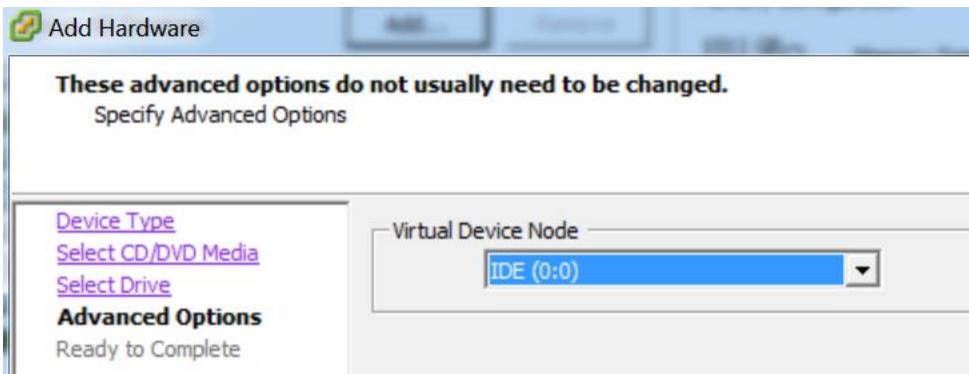
Leave default 'Use physical drive' and click Next.



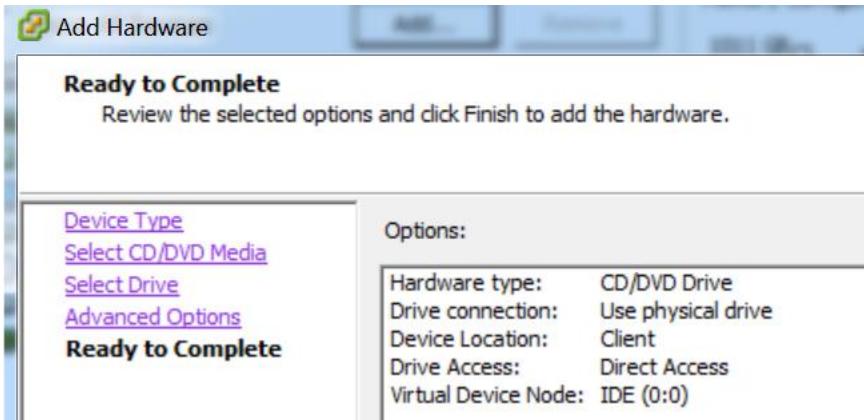
Leave default and click Next.



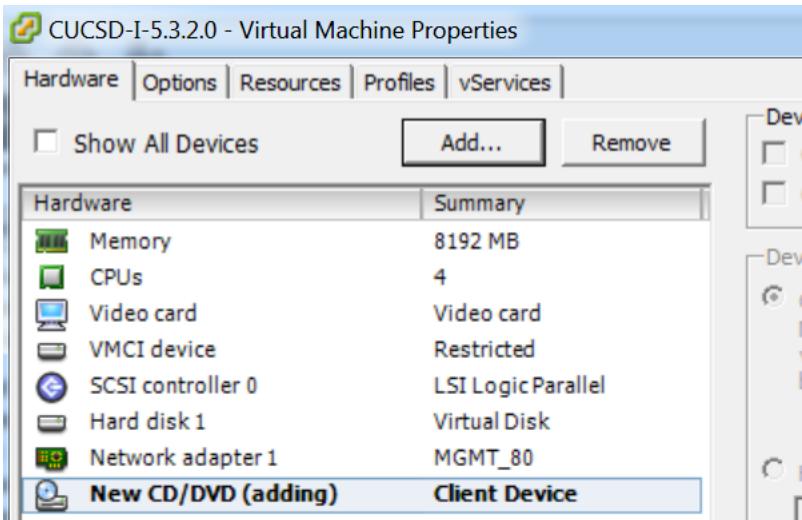
Leave default and click Next.



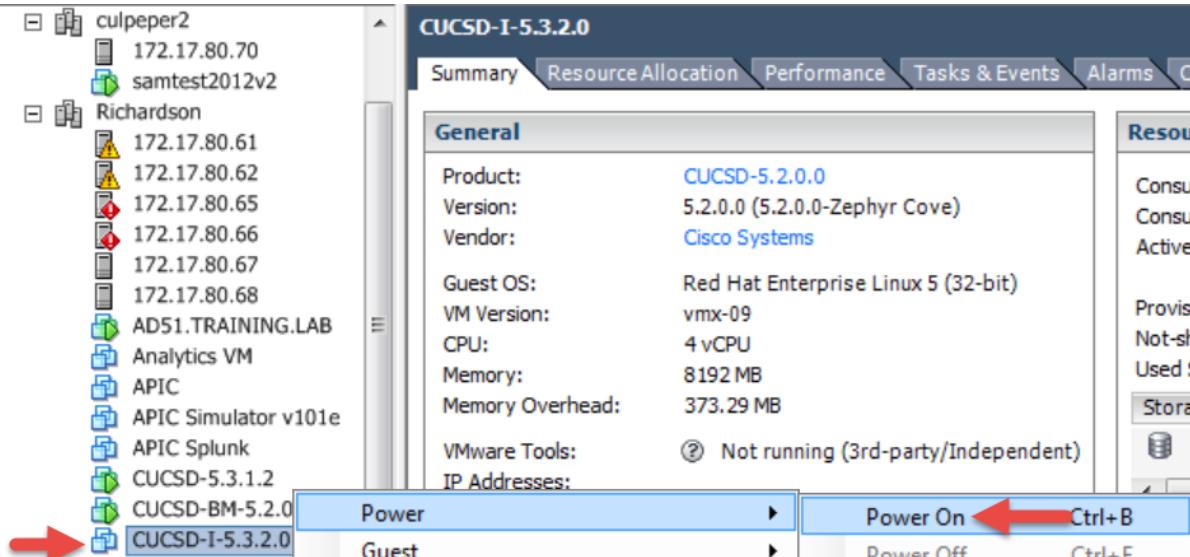
Review and click Finish.



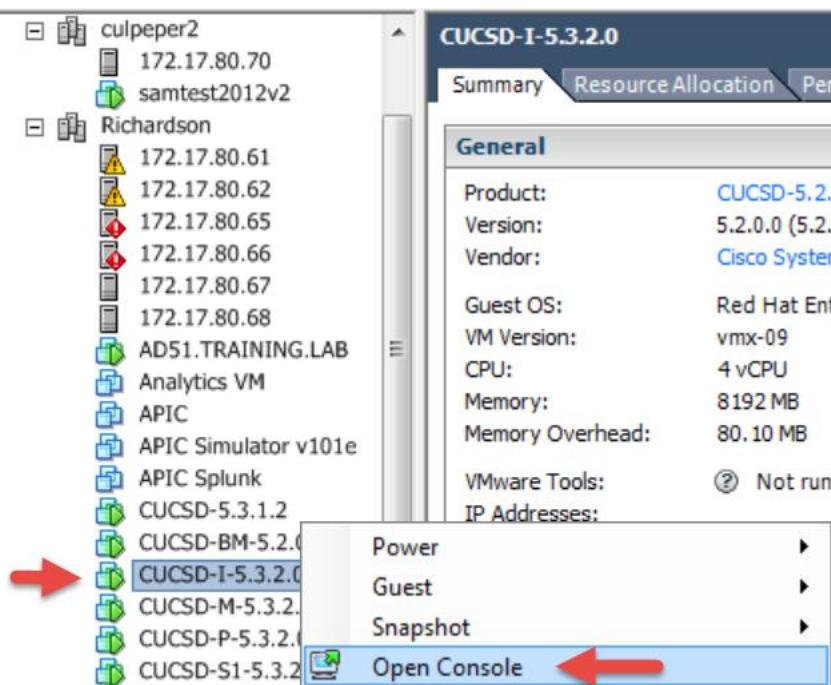
Review and click OK.



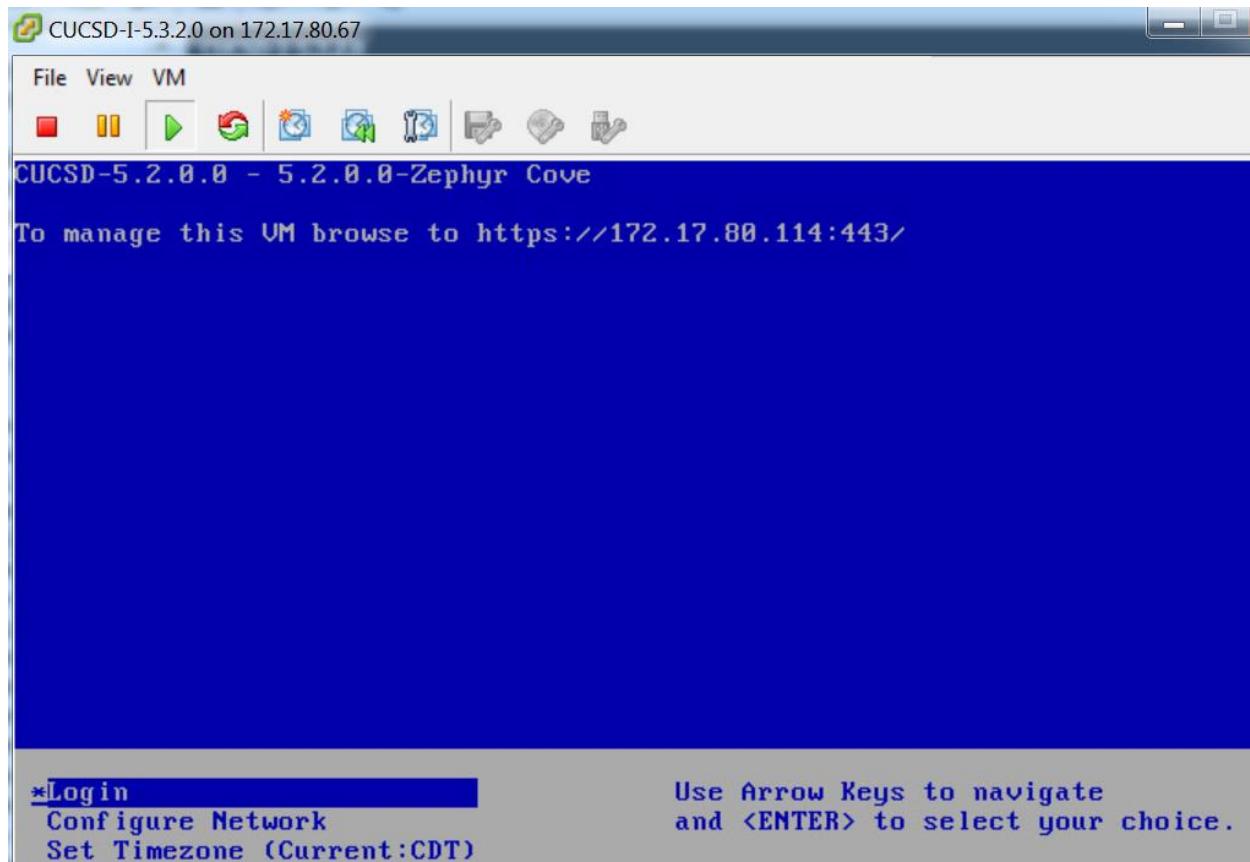
Power the VM On, right click on the VM and select 'Power On'.



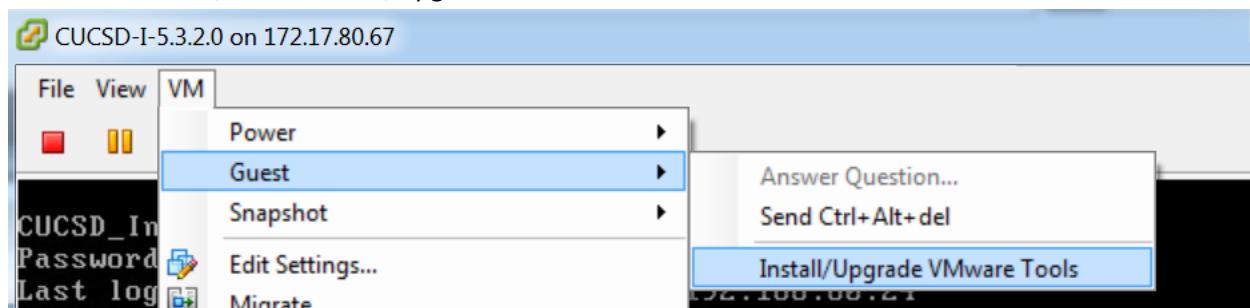
Open the VM Console to watch the VM Boot.



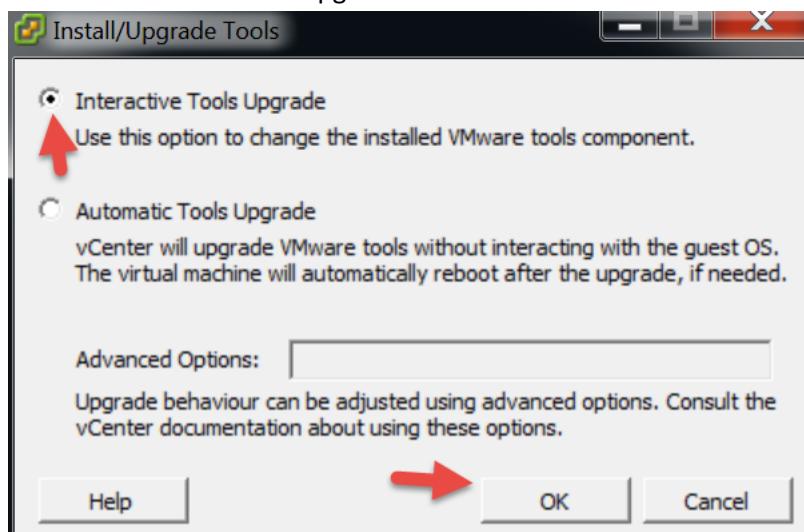
Once the VM is completely up, you should see the login screen similar to below.



From the console, select 'Install/Upgrade VMware Tools'



Select 'Interactive Tools Upgrade' and click OK.



SSH to the Inventory Database Node.

- Make a dir for cdrom: 'mkdir /mnt/cdrom'
- Mount the cdrom: 'mount /dev/cdrom /mnt/cdrom'
- Copy vmware install to /tmp: 'cp /mnt/cdrom/VMwareTools-5.0.0-<xxxx>.tar.gz /tmp' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Unzip the files in /tmp: 'tar zxf /tmp/VMwareTools-5.0.0-<xxxx>.tar.gz' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Change directory: 'cd vmware-tools-distrib'
- Run the install: './vmware-install.pl'

Note: You will probably get the following message.

VMware Tools cannot be installed, since they have already been installed using a package-based mechanism (rpm or deb) on this system. If you wish to continue, you must first remove the currently installed VMware Tools using the appropriate packaged-based mechanism, and then restart this installer

Execution aborted.

Found VMware Tools CDROM mounted at /mnt/cdrom. Ejecting device /dev/cdrom ... No eject (or equivilant) command could be located. Eject Failed: If possible manually eject the Tools installer from the guest cdrom mounted at /mnt/cdrom before canceling tools install on the host.

- If you get this message, we need to Delete the VMware tools directory: 'rm -rf /usr/lib/vmware-tools/'
- Change directory: 'cd vmware-tools-distrib/'
- Re-Run the install: './vmware-install.pl'
- Enter Yes to the 'Would you like to remove the install DB?' You will probably get a Failure and Execution aborted.
- Re-Run the install: './vmware-install.pl'
- Accept all the defaults by Pressing Enter for all the options.

```
[root@UCSD_Inventory ~]# rm -rf /usr/lib/vmware-tools/
[root@UCSD_Inventory ~]#
[root@UCSD_Inventory ~]# cd vmware-tools-distrib/
[root@UCSD_Inventory vmware-tools-distrib]# ./vmware-install.pl
A previous installation of VMware Tools has been detected.

Uninstallation of previous install failed. Would you like to remove the install
DB? [no] yes
Removing installer DB, please re-run the installer.
Failure
Execution aborted.

[root@UCSD_Inventory vmware-tools-distrib]# ./vmware-install.pl
Creating a new VMware Tools installer database using the tar4 format.

Installing VMware Tools.

The file /etc/vmware-tools/poweron-vm-default that this program was about to
install already exists. Overwrite? [yes]
The file /etc/vmware-tools/suspend-vm-default that this program was about to
install already exists. Overwrite? [yes]
The file /etc/vmware-tools/poweroff-vm-default that this program was about to
install already exists. Overwrite? [yes]
The file /etc/vmware-tools/resume-vm-default that this program was about to
install already exists. Overwrite? [yes]

In which directory do you want to install the binary files?
[/usr/bin]
The file /usr/bin/vm-support that this program was about to install already
exists. Overwrite? [yes]
What is the directory that contains the init directories (rc0.d/ to rc6.d/)?
[/etc/rc.d]
What is the directory that contains the init scripts?
[/etc/rc.d/init.d]
The file /etc/rc.d/init.d/vmware-tools that this program was about to install
already exists. Overwrite? [yes]
In which directory do you want to install the daemon files?
[/usr/sbin]
In which directory do you want to install the library files?
[/usr/lib/vmware-tools]
The path "/usr/lib/vmware-tools" does not exist currently. This program is
going to create it, including needed parent directories. Is this what you want?
[yes]
The file /sbin/mount.vmhgfs that this program was about to install already
exists. Overwrite? [yes]
In which directory do you want to install the documentation files?
[/usr/share/doc/vmware-tools]
The file /usr/share/doc/vmware-tools/open_source_licenses.txt that this program
was about to install already exists. Overwrite? [yes]
```

```
The file /usr/share/doc/vmware-tools/README that this program was about to  
install already exists. Overwrite? [yes]  
The file /usr/share/doc/vmware-tools/INSTALL that this program was about to  
install already exists. Overwrite? [yes]  
The installation of VMware Tools 9.0.0 build-782409 for Linux completed  
successfully. You can decide to remove this software from your system at any  
time by invoking the following command: "/usr/bin/vmware-uninstall-tools.pl".  
Before running VMware Tools for the first time, you need to configure it by  
invoking the following command: "/usr/bin/vmware-config-tools.pl". Do you want  
this program to invoke the command for you now? [yes]  
The file /usr/sbin/vmware-checkvm that this program was about to install  
already exists. Overwrite? [yes]  
The file /usr/sbin/vmware-rpctool that this program was about to install  
already exists. Overwrite? [yes]  
The file /usr/bin/vmware-hgfsclient that this program was about to install  
already exists. Overwrite? [yes]  
The file /usr/bin/vmware-xferlogs that this program was about to install  
already exists. Overwrite? [yes]  
Initializing...  
The file /etc/vmware-tools/icu that this program was about to install already  
exists. Overwrite? [yes]
```

Making sure services for VMware Tools are stopped.

```
Stopping VMware Tools services in the virtual machine:  
Guest operating system daemon:[ OK ]  
Unmounting HGFS shares:[ OK ]  
Guest filesystem driver:[ OK ]
```

```
The VMware Filesystem sync driver (vmsync) allows external third-party backup  
software that is integrated with vSphere to create backups of the virtual  
machine. Do you wish to enable this feature? [no]
```

Found a compatible pre-built module for vmci. Installing it...

Found a compatible pre-built module for vsock. Installing it...

Found a compatible pre-built module for vmxnet3. Installing it...

Found a compatible pre-built module for pvscsi. Installing it...

Found a compatible pre-built module for vmmemctl. Installing it...

```
The VMware Host-Guest Filesystem allows for shared folders between the host OS  
and the guest OS in a Fusion or Workstation virtual environment. Do you wish  
to enable this feature? [no]
```

Found a compatible pre-built module for vmxnet. Installing it...

```
The vmblock enables dragging or copying files between host and guest in a  
Fusion or Workstation virtual environment. Do you wish to enable this feature?  
[no]
```

```
!!! [EXPERIMENTAL] !!!  
VMware automatic kernel modules enables automatic building and installation of  
VMware kernel modules at boot that are not already present. By selecting yes,  
you will be enabling this experimental feature. You can always disable this  
feature by re-running vmware-config-tools.pl.
```

```
would you like to enable VMware automatic kernel modules?  
[no]
```

No X install found.

```
Creating a new initrd boot image for the kernel.  
Checking acpi hot plug:[ OK ]  
Starting VMware Tools services in the virtual machine:  
Switching to guest configuration:[ OK ]  
Paravirtual SCSI module:[ OK ]  
Guest memory manager:[ OK ]  
Guest vmxnet fast network device:[ OK ]  
VM communication interface:[ OK ]  
VM communication interface socket family:[ OK ]  
Guest operating system daemon:[ OK ]  
The configuration of VMware Tools 9.0.0 build-782409 for Linux for this running  
kernel completed successfully.
```

You must restart your X session before any mouse or graphics changes take
effect.

You can now run VMware Tools by invoking "/usr/bin/vmware-toolbox-cmd" from the
command line.

```
To enable advanced X features (e.g., guest resolution fit, drag and drop, and  
file and text copy/paste), you will need to do one (or more) of the following:  
1. Manually start /usr/bin/vmware-user  
2. Log out and log back into your desktop session; and,  
3. Restart your X session.
```

To use the vmxnet driver, restart networking using the following commands:

```
/etc/init.d/network stop
```

```
rmmmod pcnet32
```

```
rmmmod vmxnet
```

```
modprobe vmxnet
```

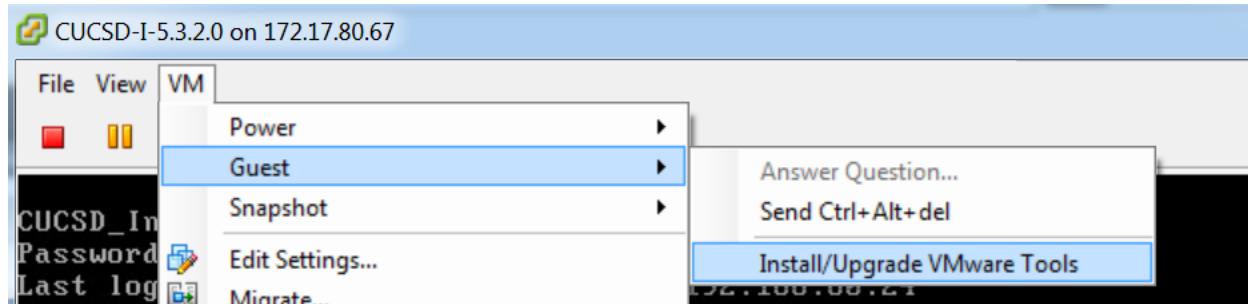
```
/etc/init.d/network start
```

Enjoy,

--the VMware team

```
[root@CUCSD_Inventory vmware-tools-distrib]#
```

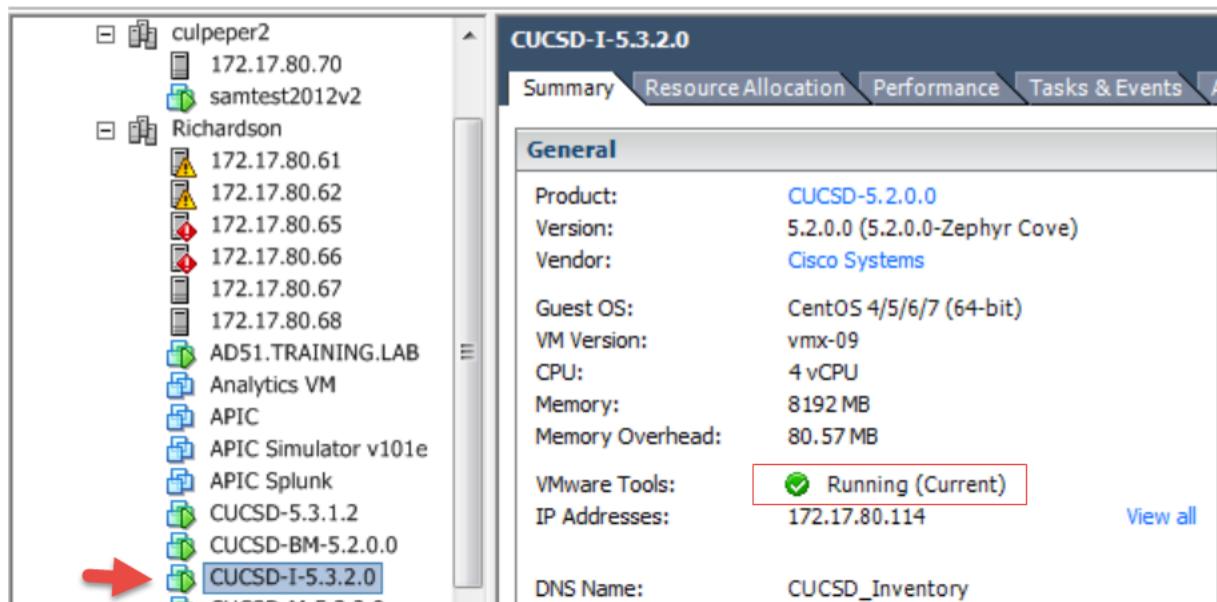
From the console, select 'Install/Upgrade VMware Tools'



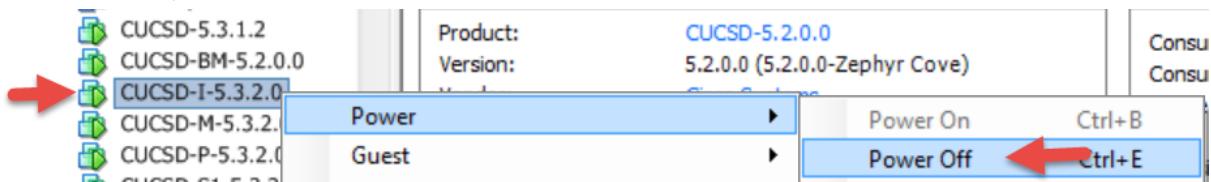
Select 'Automatic Tools Upgrade' and click OK.



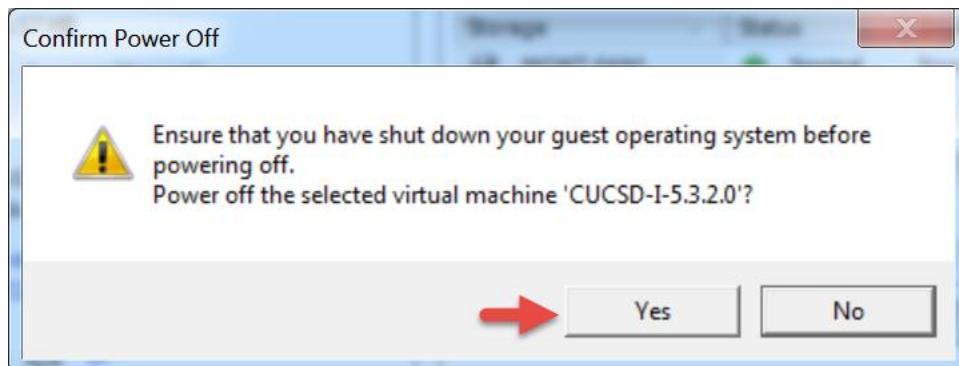
Verify Tools have been installed and currently Running as shown below.



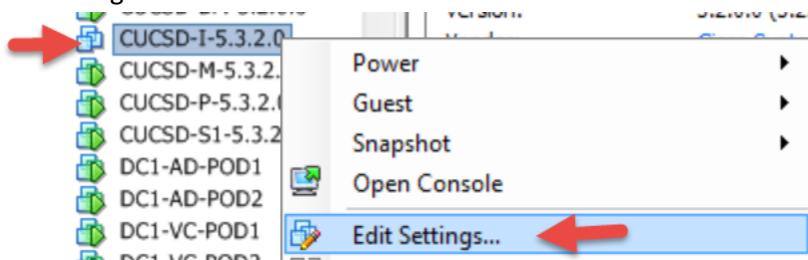
Power off the VM, select 'Power Off'.



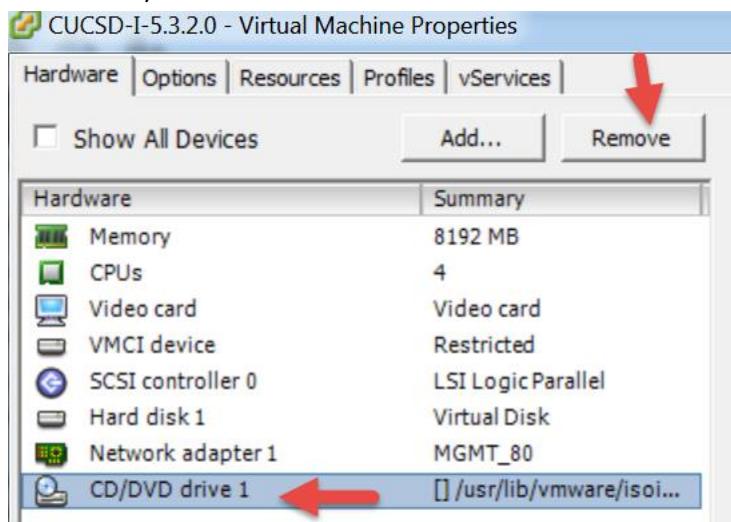
Select Yes.



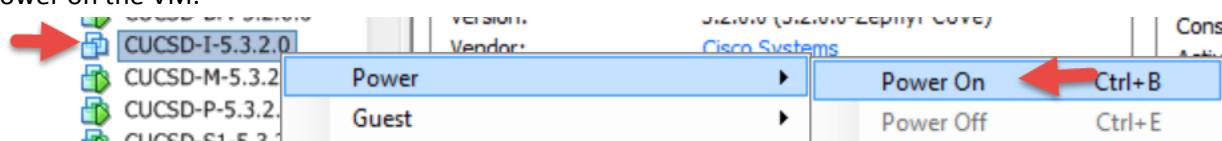
Edit Settings.



Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.

The screenshot shows a list of virtual machines on the left and their detailed configuration on the right. A red arrow points to the 'CUCSD-I-5.3.2.0' entry in the list.

APIC	Product:	CUCSD-5.2.0.0
APIC Simulator v101e	Version:	5.2.0.0 (5.2.0.0-Zephyr Cove)
APIC Splunk	Vendor:	Cisco Systems
CUCSD-5.3.1.2	Guest OS:	CentOS 4/5/6/7 (64-bit)
CUCSD-BM-5.2.0.0	VM Version:	vmx-09
CUCSD-I-5.3.2.0	CPU:	4 vCPU
CUCSD-M-5.3.2.0	Memory:	8192 MB
CUCSD-P-5.3.2.0	Memory Overhead:	80.57 MB
CUCSD-S1-5.3.2.0	VMware Tools:	Running (Current)
DC1-AD-POD1	IP Addresses:	172.17.80.114
DC1-AD-POD2		View all
DC1-VC-POD1	DNS Name:	CUCSD_Inventory
DC1-VC-POD2	EVC Mode:	N/A
DC1-VSM-POD1	State:	Available
DC1-VSM-POD2	Host:	172.17.80.67
gsp-ucsc-131a		
rcdn5r44ad0801		

2.3. Configure Inventory Database

SSH to the Inventory Database Node using the shelladmin account and the default password of changeme.

Change the shelladmin password.

```
Select a number from the menu below
1) Change ShellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Stop Database
6) Start Database
7) Backup Database
8) Restore Database
9) Time Sync
10) Ping Hostname/IP Address
11) Show Version
12) Import CA Cert (JKS) File
13) Import CA Cert(PEM) File for VNC
14) Configure Network Interface
15) Display Network Details
16) Enable Database for Cisco UCS Director Baremetal Agent
17) Add Cisco UCS Director Baremetal Agent Hostname/IP
18) Tail Inframgr Logs
19) Apply Patch
20) Shutdown Appliance
21) Reboot Appliance
22) Manage Root Access
23) Login as Root
24) Configure Multi Node Setup (Advanced Deployment)
25) Clean-up Patch Files
26) Collect logs from a Node
27) Collect Diagnostics
28) Quit

SELECT> 1
Changing password for user shelladmin.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Press return to continue ...■
```

Configure and change the root password.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : c
Do you want to Configure/Set Root Privilege/Password [y/n]? : y
Changing root password...
Changing password for user root.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Root passwd changed sucessfully
Press return to continue ...■
```

Enable root access.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : e
Do you want to Enable Root Access [y/n]? : y
Enabling root access...
Unlocking password for user root.
passwd: Success.
Root access enabled successfully
Press return to continue ...■
```

Configure NTP Server. Replace the 1.1.1.1 with your NTP Server.

```
17) Quit

SELECT> 7
Time Sync...
System time is Thu Sep 17 14:15:43 UTC 2015
Hardware time is Thu Sep 17 14:15:44 2015 -0.707240 seconds
Do you want to sync systemtime [y/n]? n
Do you want to sync to NTP [y/n]? y
NTP Server IP Address: 1.1.1.1
```

From the menu, choose ‘Configure Multi Node Setup (Advanced Deployment)’ and press Enter. When prompted, press 1 to configure the current node. Then press y and then select the option to configure the node as the inventory database node. From the menu, choose ‘Configure Inventory Database’ and press Enter. When prompted, press Enter to Continue. When prompted to logout, enter y and press enter then log back into the Inventory Database Node via SSH.

```

28) Quit
SELECT> 24
*****
This wizard helps to do Multi Node setup
*****
Configuration Options :
Current Node --> Select '1'
Remote Node --> Select '2'
exit --> Select '3'

Please enter an option: 1
*****
*** Cisco UCS Director Multi Node Setup requires multiple instances of UCS Director OVF deployed with different configurations. Following are the required configurations:
* UCS Director Primary Node (1 Instance) . This node also acts as a front end UI node
* UCS Director Service Node (1 or more instances ). Service node can be reconfigured as Primary Node when necessary.
* UCS Director Inventory DB Node (1 Instance)
* UCS Director Monitoring DB Node (1 Instance)

Refer to UCS Director documentation for additional details on Multi Node Setup.
*****
This is a standalone Node

Do you want to configure multi node setup [y/n]? y
Select a option from the menu below
a) Configure as Primary Node
b) Configure as Service Node
c) Configure as Inventory DB
d) Configure as Monitoring DB
x) Exit

Enter: [a/b/c/d/x]? c
Do you want to configure this node as Inventory Database [y/n]? y
Configuring Inventory DB
This will reinitialize database and you will lose all your data. Do you still want to continue? [y/n] y
user selected 'y' reinitialize database
Checking DB Status
 3427 ? 00:00:00 mysqld_safe
 3848 ? 00:06:27 mysqld
Stopping Services
Disabling UCS Director services at startup
Enabling Remote Database access to Primary Node and Service Node
Re-initializing Database
Configured Inventory Database successfully
In order for changes to take effect logout and login back
Do you want to logout [y/n]? y

```

To verify the services for the inventory database are up and running, choose ‘Display Service Status’ and press Enter. You should see the lines in the red box below. Note: After you return to the shelladmin, the menu options change to those available for an inventory database node.

```

Cisco UCS Director Shell Menu
Inventory Database
Select a number from the menu below
1) Change ShellAdmin Password
2) Display Services Status
3) Stop Database
4) Start Database
5) Backup Database
6) Restore Database
7) Time Sync
8) Ping Hostname/IP Address
9) Configure Network Interface
10) Display Network Details
11) Enable Database for Cisco UCS Director Baremetal Agent
12) Add Cisco UCS Director Baremetal Agent Hostname/IP
13) Shutdown Appliance
14) Reboot Appliance
15) Manage Root Access
16) Login as Root
17) Quit

SELECT> 2
3427 ? 00:00:00 mysqld_safe
3848 ? 00:08:04 mysqld
Press return to continue ...

```

Edit the /etc/hosts file to update the name and IP address of the host. SSH to the Inventory Database Node using the root account.

- vi /etc/hosts
- shift a
- press return
- enter your host details
- when done: press esc
- enter :wq
- cat /etc/hosts

```
~/etc/hosts" 5L, 168C written
[root@localhost ~]# cat /etc/hosts
127.0.0.1 localhost.localdomain localhost localhost
172.17.80.114 CUCSD_Inventory
172.17.80.115 CUCSD_Monitoring
172.17.80.116 CUCSD_Service1
172.17.80.113 CUCSD_Primary
[root@localhost ~]#
```

Edit the /etc/resolv.conf to update the DNS servers

- vi /etc/resolv.conf
- press 'i' for insert
- enter 'search localhost *your domain name*', **Note:** Sometime search localhost is already there
- enter dns server ip address after nameserver, **Note:** if you have multiple DNS servers, enter on separate lines
- when done: press esc
- enter :wq

```
[root@CUCSD_Inventory ~]# vi /etc/resolv.conf
search LocalHost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
[root@CUCSD_Inventory ~]# cat /etc/resolv.conf
search LocalHost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
[root@CUCSD_Inventory ~]#
```

Edit the hostname in /etc/sysconfig/network

- vi /etc/sysconfig/network
- Move cursor to the beginning of localhost where it is on the l and enter cw (change word)
- Enter the Host name for the Inventory Database Node.
- when done: press esc
- enter :wq
- cat /etc/sysconfig/network

```
[root@localhost ~]# cat /etc/sysconfig/network
NETWORKING=yes
NETWORKING_IPV6=yes
HOSTNAME=CUCSD_Inventory
DOMAINNAME=localdomain
[root@localhost ~]#
```

Change the hostname

```
[root@localhost ~]# hostname CUCSD_Inventory
[root@localhost ~]# hostname
CUCSD_Inventory
[root@localhost ~]#
```

Log out and log back into the Inventory Database and you will see the new hostname.

```
[root@CUCSD_Inventory ~]#
```

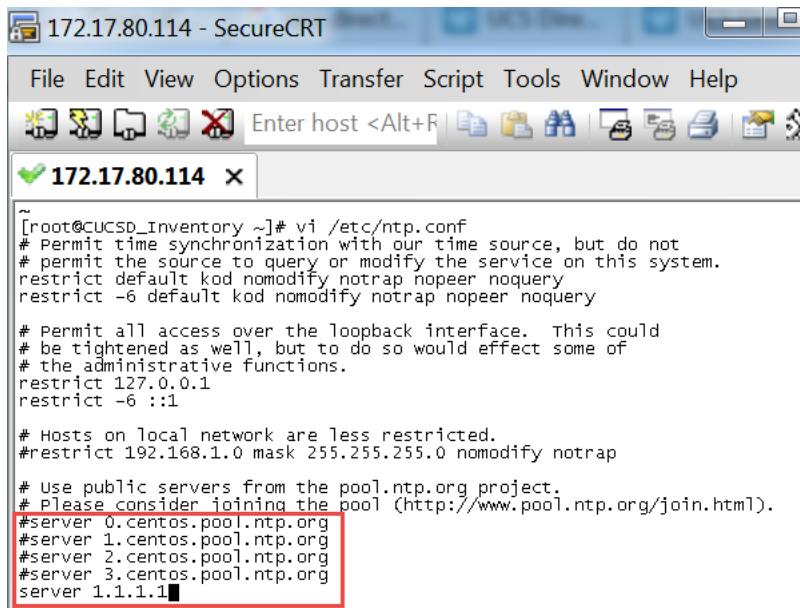
Configure NTP servers for Inventory Database Node. SSH into Inventory Database Node using root account.

Create ntp user

```
[root@CUCSD_Inventory ~]# useradd ntp
[root@CUCSD_Inventory ~]# service ntpd restart
Shutting down ntpd: [FAILED]
Starting ntpd: [ OK ]
[root@CUCSD_Inventory ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
time-b.timefreq .INIT.    16 u    - 64    0    0.000  0.000  0.000
173.44.32.10  .INIT.    16 u    - 64    0    0.000  0.000  0.000
resolver2.level .INIT.    16 u    - 64    0    0.000  0.000  0.000
blue.cif.net   .INIT.    16 u    - 64    0    0.000  0.000  0.000
LOCAL(0)       .LOCL.    10 l    - 64    0    0.000  0.000  0.001
[root@CUCSD_Inventory ~]#
```

Edit the ntp.conf file to include your NTP server. You can simple comment out the existing NTP servers by placing a # in front of them.

- vi /etc/ntp.conf
- cursor down to the first NTP server line
- press i for insert
- enter # then move your cursor down to each of the other NTP servers and enter #
- create a new line for your NTP server by pressing enter after the last NTP server
- enter server and the ip address of your NTP server. Replace 1.1.1.1 with your ntp server
- press esc, then enter :wq to quit and write the info



The screenshot shows a SecureCRT window titled "172.17.80.114 - SecureCRT". The menu bar includes File, Edit, View, Options, Transfer, Script, Tools, Window, and Help. The toolbar has icons for copy, paste, select, and others. The main terminal window shows the command-line interface for editing the ntp.conf file. The file contains several commented-out lines starting with '#'. A red box highlights the line "#server 1.1.1.1" which is being added as a new entry at the bottom of the list.

```
[root@CUCSD_Inventory ~]# vi /etc/ntp.conf
# Permit time synchronization with our time source, but do not
# permit the source to query or modify the service on this system.
restrict default kod nomodify notrap nopeer noquery
restrict -6 default kod nomodify notrap nopeer noquery

# Permit all access over the loopback interface. This could
# be tightened as well, but to do so would effect some of
# the administrative functions.
restrict 127.0.0.1
restrict -6 ::1

# Hosts on local network are less restricted.
#restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap

# use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
#server 0.centos.pool.ntp.org
#server 1.centos.pool.ntp.org
#server 2.centos.pool.ntp.org
#server 3.centos.pool.ntp.org
server 1.1.1.1
```

Restart the nptd service and check the NTP synchronization. It may take a while but when the clock is synced with the NTP server there will be a * to the left of the IP address.

```
[root@CUCSD_Inventory ~]# service ntpd restart
Shutting down ntpd: [ OK ]
Starting ntpd: [ OK ]
[root@CUCSD_Inventory ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
*? 37.202.75. LOCAL(1)    5 u    11  64    1    1.354  -29.804  0.001
LOCAL(0)       .LOCL.    10 l    10  64    1    0.000  0.000  0.001
[root@CUCSD_Inventory ~]#
```

Change the time zone to the local timezone where the Primary Node, Inventory Database and the Monitoring Database reside. Use this timezone for all the service Nodes as well even though they may not reside in this timezone. This will ensure the logs will match everywhere.

- Determine the current timezone by entering 'ls -l /etc/localtime'
- To determine your timezone, 'cd /usr/share/zoneinfo/America/'

```
[root@CUCSD_Inventory ~]# ls -l /etc/localtime
[root@CUCSD_Inventory ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 35 Dec 20 2014 /etc/localtime -> /usr/share/zoneinfo/Etc
[UTC]
[root@CUCSD_Inventory ~]# cd /usr/share/zoneinfo/
[root@CUCSD_Inventory zoneinfo]# ls
Africa      Brazil    Egypt     GB        Hongkong   Jamaica   MST      Portugal   ROK       WET
America    Canada    Eire      GB-Eire   HST       Japan     MST7MDT  posix     Singapore  W-SU
Antarctica CET       EST       GMT      Iceland   Kwajalein Navajo   posixrules Turkey   zone.tab
Arctic     Chile     EST5EDT  GMT0     Indian    Libya    NZ       PRC      UCT      Zulu
Asia       CST6CDT  Etc      GMT-0    Iran     MET      NZ-CHAT PST8PDT Universal
Atlantic   Cuba      Europe   GMT+0   iso3166.tab Mexico   Pacific  right    US       UTC
Australia  EET      Factory  Greenwich Israel   Mideast  Poland   ROC      ROC
[root@CUCSD_Inventory zoneinfo]# cd America/
[root@CUCSD_Inventory America]# ls
Adak          Cambridge_Bay  Dominica  Indiana  Mendoza  Phoenix  St_Barthelemy
Anchorage    Campo_Grande  Edmonton  Indianapolis  Menominee Port_a-Prince St_Johns
Anguilla      Cancun     Eirunope  Irvinik  Merida   Porto_Acre  St_Kitts
Antigua       Caracas    El_Salvador Iqaluit  Mexico_city Port_of_Spain St_Lucia
Argentina    Catamarca  Ensenada  Fortaleza Jujuy   Monterrey Rainy_River St_Thomas
Argentina    Cayenne    Fort_Wayne Juneau   Mexico_City Rankin_Inlet St_Vincent
Aruba         Cayman    Fort_Wayne Juneau   Moncton   Porto_Velho Tegucigalpa
Asuncion     Chicago    Glace_Bay Kentucky Knox_IN  Montreal  Recife   Thule
Atikokan     Chihuahua  Godthab   Goose_Bay La_Paz   Montserrat Regina  Thunder_Bay
Atka          Coral_Harbour Grand_Turk Lima    Nassau   New_York  Resolute Tijuana
Bahia         Cordoba   Grand_Turk Grenada Los_Angeles Nassau   Rio_Branco Toronto
Barbados      Costa Rica Guadeloupe Louisville Maceio   Noronha  Santo_Domingo Whitehorse
Belem         Cuiaba   Guadeloupe Guatemala Manaus  North_Dakota Sao_Paulo Winnipeg
Belize        Curacao   Guayaquil Managua  Parana   Pangnirtung Scoresbysund Yakutat
Blanc-Sablone Denmarkshavn Dawson   Guyana   Manaus  North_Dakota Santo_Domingo Virgin
Boa_Vista    Dawson   Dawson_Creek Halifax  Marigot  Parana   Paramaribo Shiprock Yellowknife
Bogota        Dawson   Dawson_Creek Halifax  Marigot  Parana   Santo_Domingo
Boise         Denver   Havana   Martinique Mazatlan Paramaribo
Buenos_Aires Detroit  Hermosillo
[root@CUCSD_Inventory America]#
```

Change the timezone and verify. I have chosen the Central Time Zone for my location.

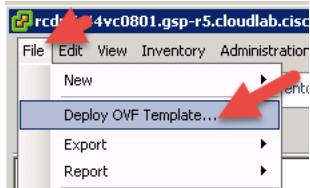
- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timezone is what you set it to: 'date'
- Verify the link: 'ls -l /etc/localtime'

```
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R> | 
172.17.80.114 x
Last Login: Thu Sep 17 15:38:48 2014 from 192.168.80.14
[root@CUCSD_Inventory ~]# cp /etc/localtime /root/old.timezone
[root@CUCSD_Inventory ~]# rm /etc/localtime
rm: remove symbolic link '/etc/localtime'? y
[root@CUCSD_Inventory ~]# ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime
[root@CUCSD_Inventory ~]# date
Thu Sep 17 12:19:20 CDT 2015
[root@CUCSD_Inventory ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 35 Sep 17 12:19 /etc/localtime -> /usr/share/zoneinfo/America/chicago
[root@CUCSD_Inventory ~]#
```

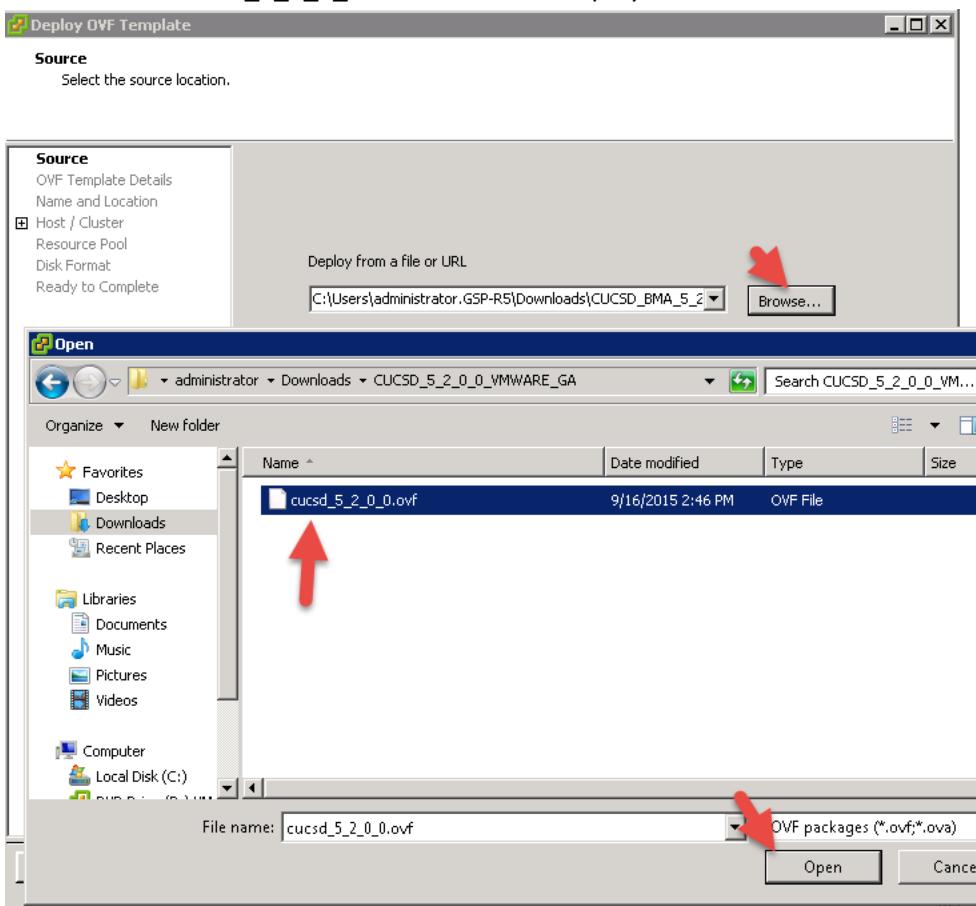
3. Create the Monitoring Database Node

3.1. Create Monitoring Database VM

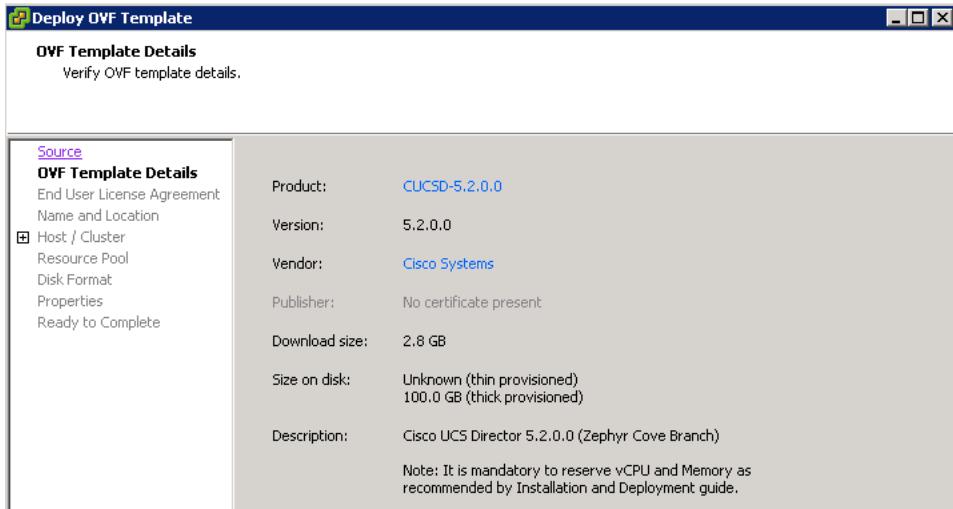
Log into vCenter and Select File -> Deploy OVF Template.



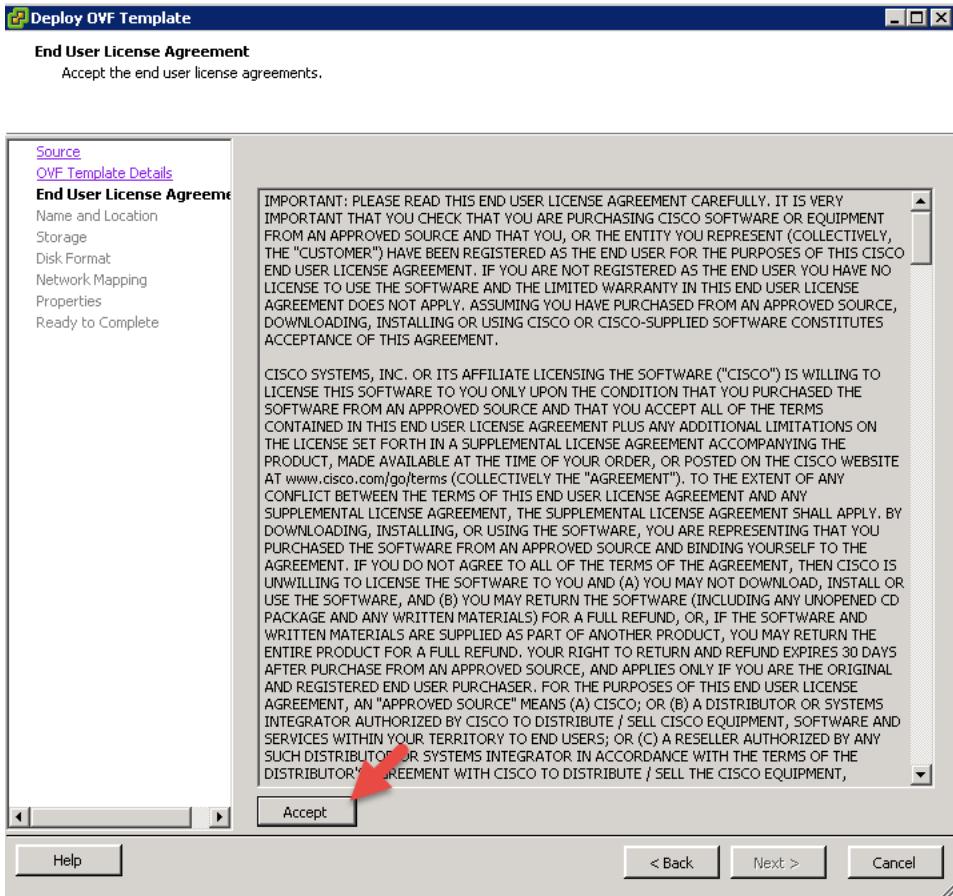
Browse to the UCSD_5_2_0_0 and select it for deployment then click Next.



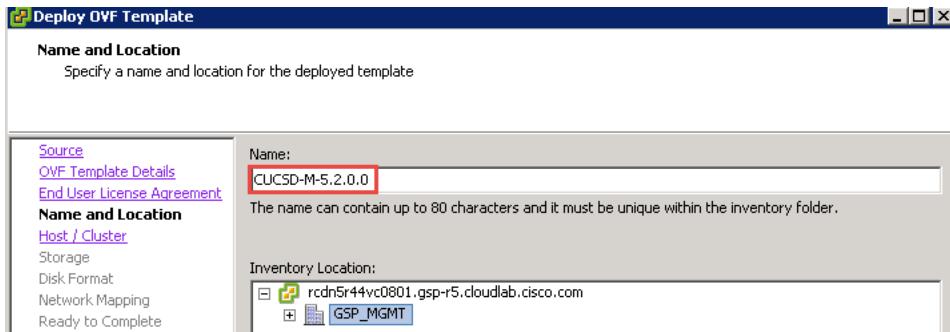
Verify details then click Next.



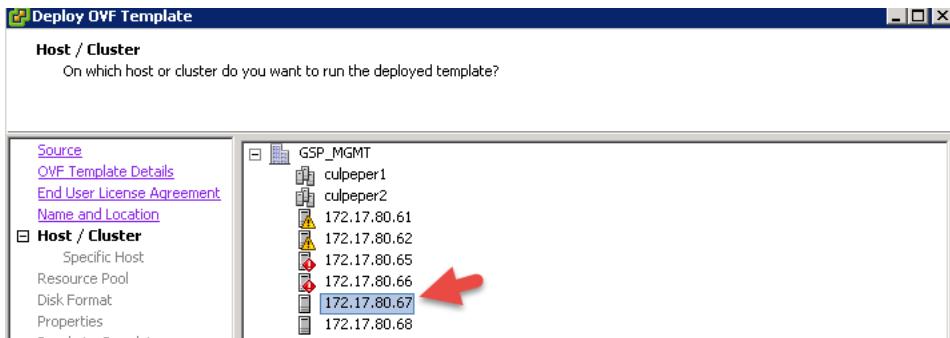
Accept the license agreement and Click Next.



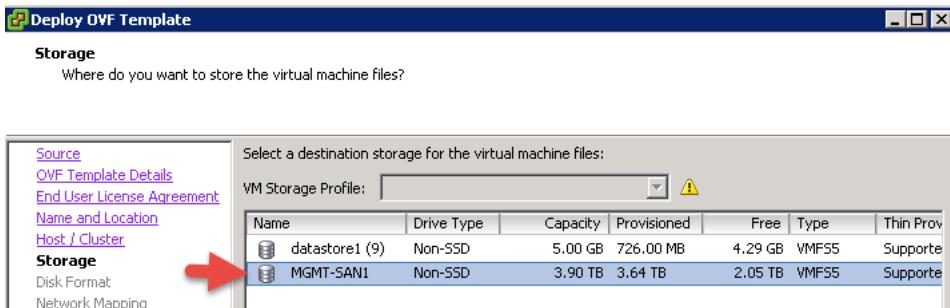
Name the VM and click Next.



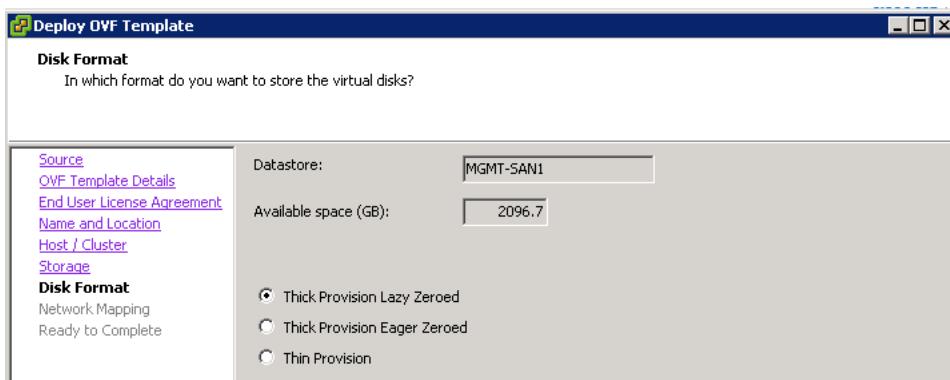
Select a Host and click Next.



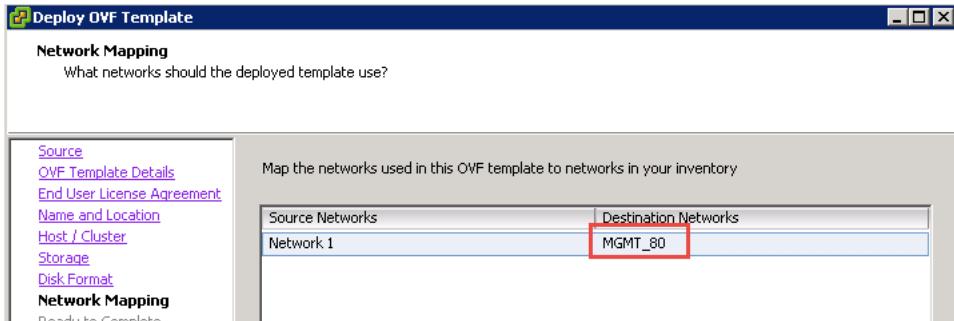
Select a storage location to install the VM and click Next.



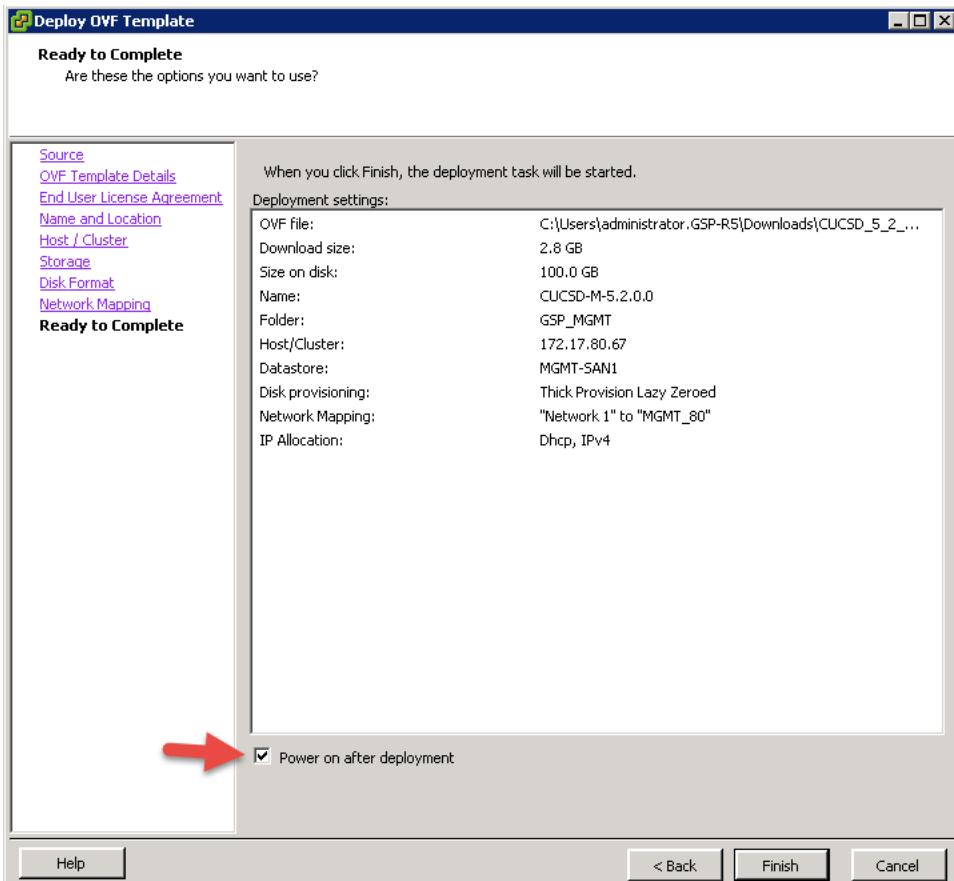
Leave the default settings for the Disk Format and click Next.



Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.



In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Monitoring Database Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.

```
CUCSD-M-5.3 on 172.17.80.67
File View VM
[ OK ]
Starting sshd:
Regenerating keys for the root user...
Generating public/private rsa key pair.
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
4f:6e:c2:d8:83:1f:6f:2d:ba:0c:36:12:44:56:23:9e root@localhost
Generating SSL certificates for sfcb in /opt/vmware/etc/sfcb
Generating SSL certificates for lighttpd in /opt/vmware/etc/lighttpd
This script is executed on first boot only.
Configuring static IP configuration

Do you want to Configure static IP [y/n]? :y
Do you want to configure IPv4/IPv6 [v4/v6] ? :v4

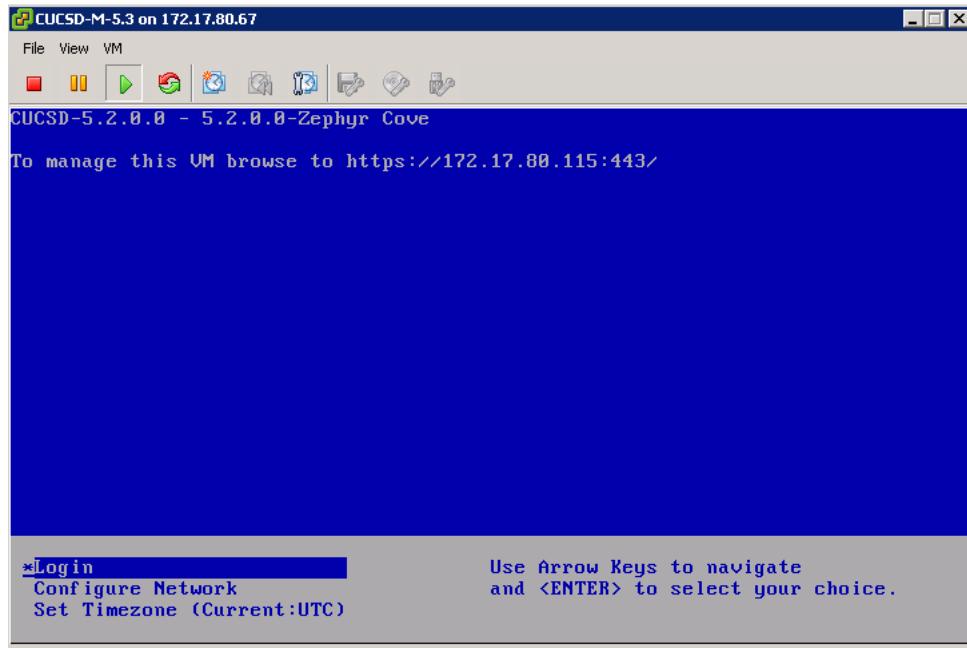
Configuring static IP for appliance. Provide the necessary access credentials

IP Address:172.17.80.115
Netmask:255.255.255.0
Gateway:172.17.80.1

Configuring Network with : IP(172.17.80.115), Netmask(255.255.255.0), Gateway(172.17.80.1)

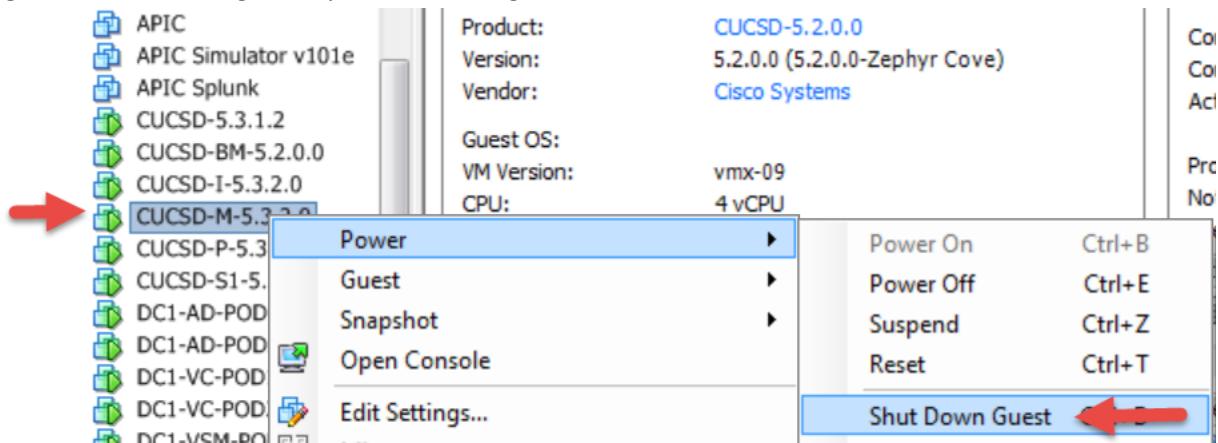
Do you want to continue [y/n]? :y
```

After the installation is complete, you should see a screen that looks like this.

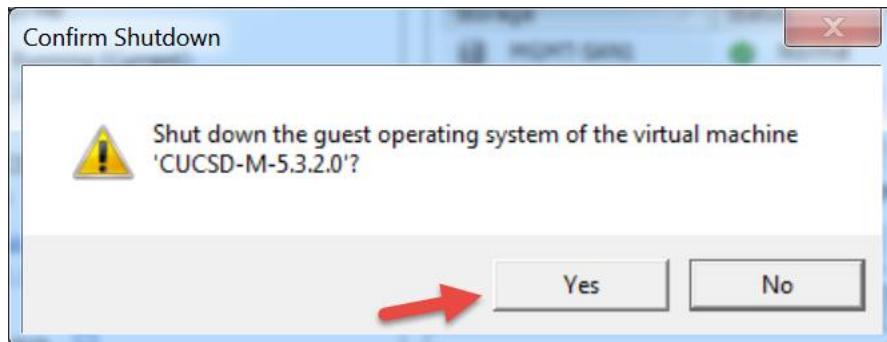


3.2. Install/Update VMWare tools & VM Version

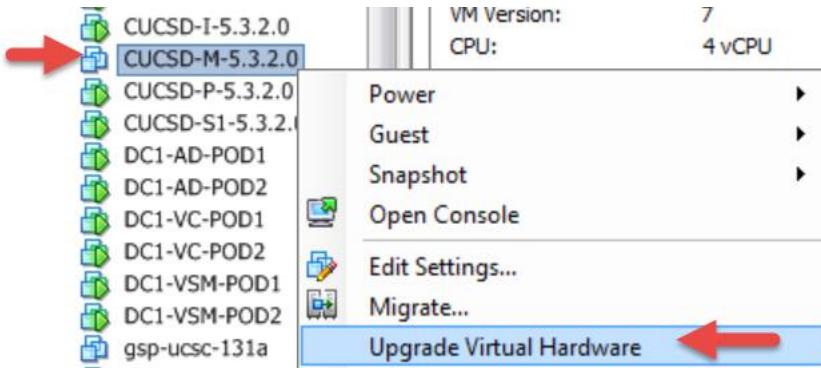
Log into vCenter, navigate to your Monitoring Database VM, select 'Shutdown Guest'.



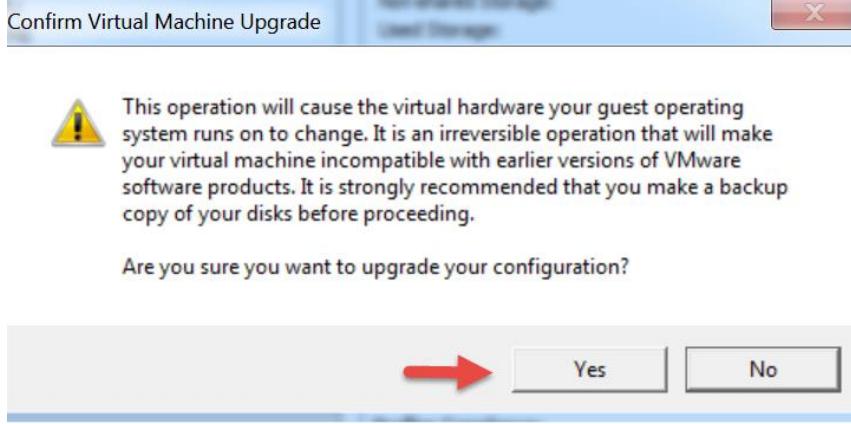
Select Yes.



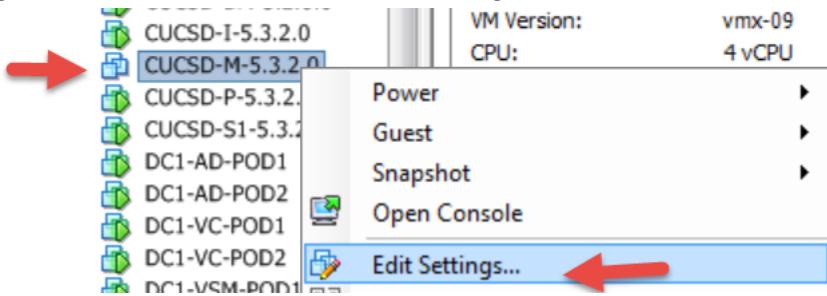
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



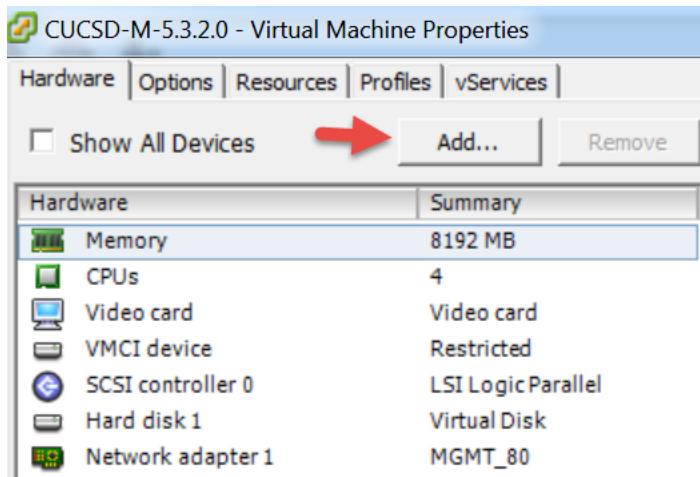
Select Yes.



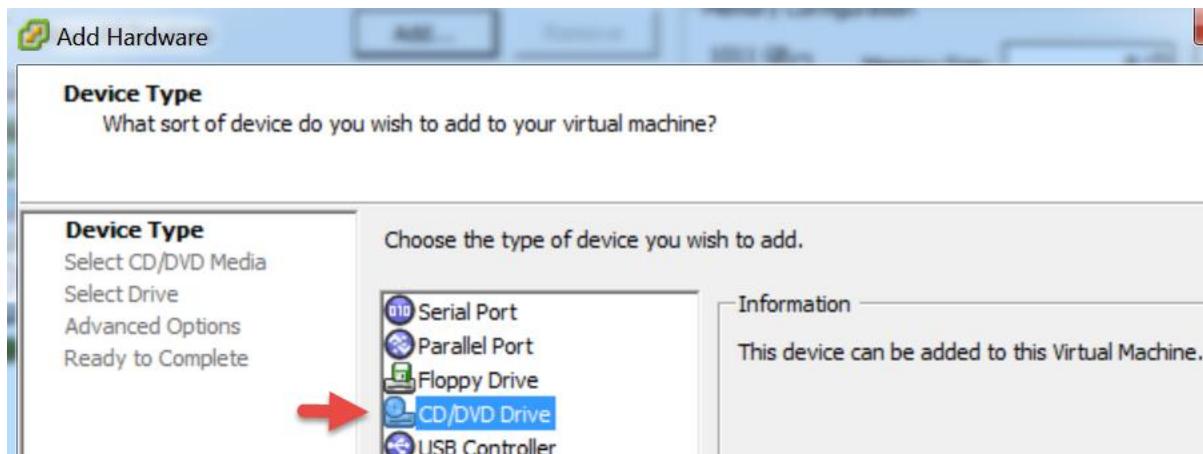
Right click on the VM and Select 'Edit Settings'



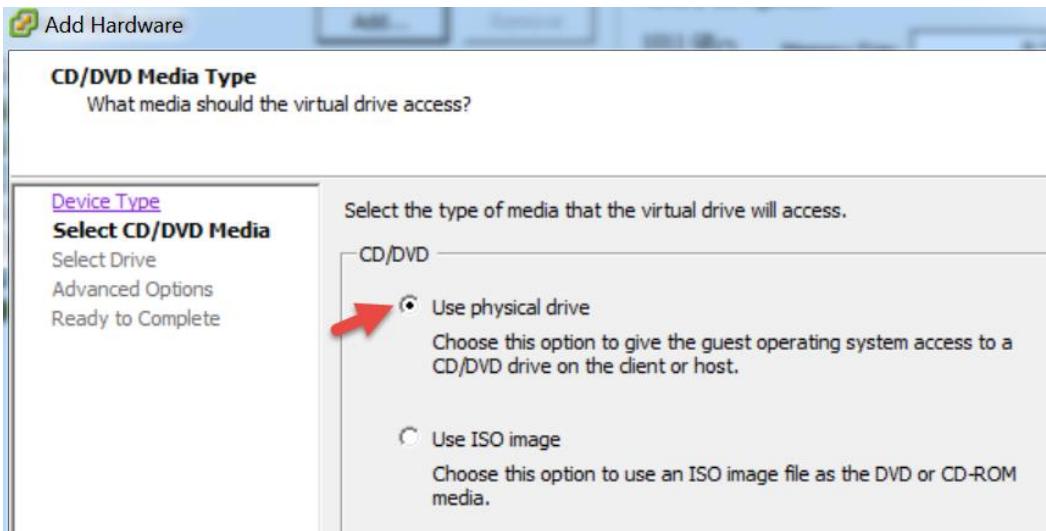
Select Add.



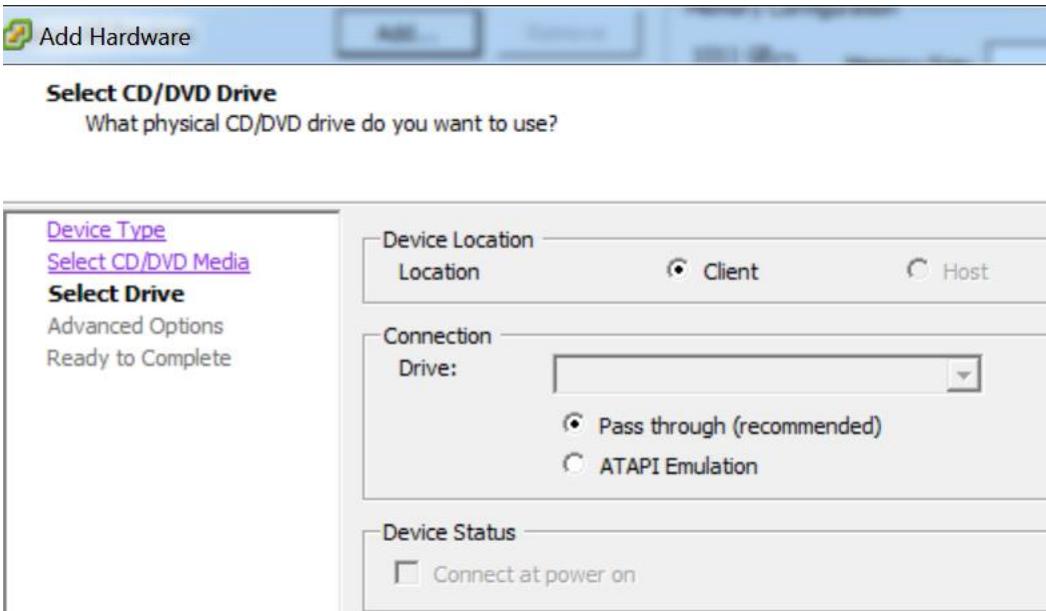
Select 'CD/DVD Drive' and click Next.



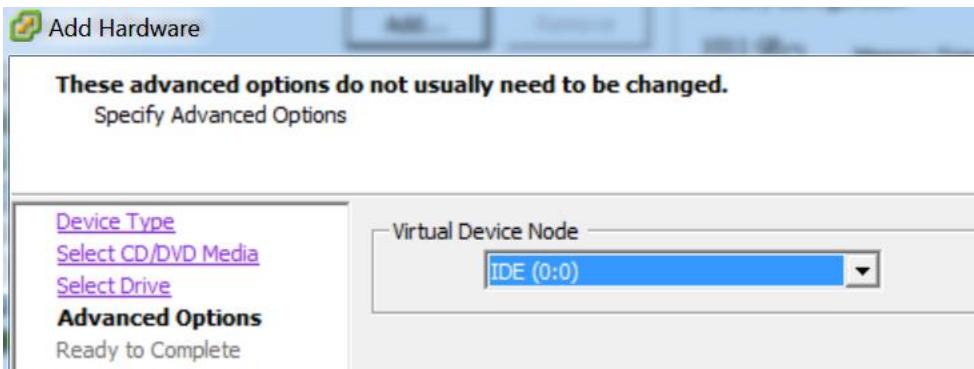
Leave default 'Use physical drive' and click Next.



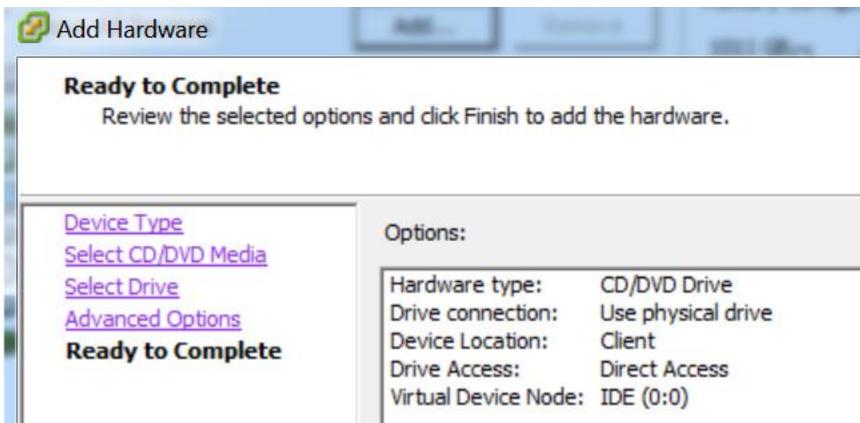
Leave default and click Next.



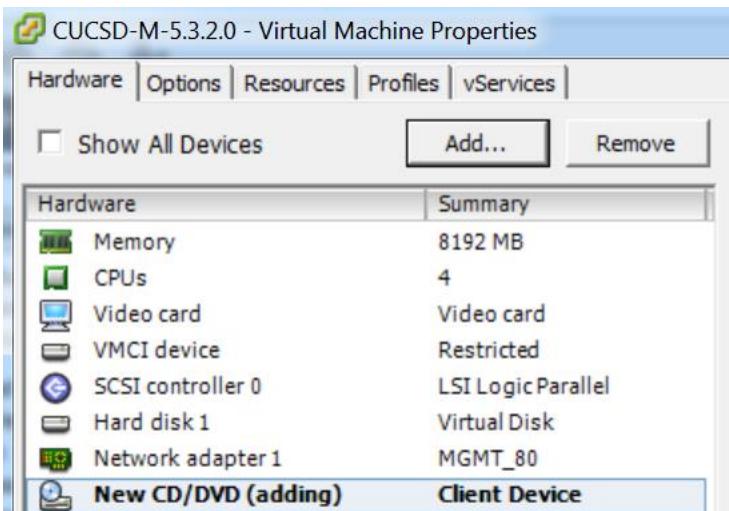
Leave default and click Next.



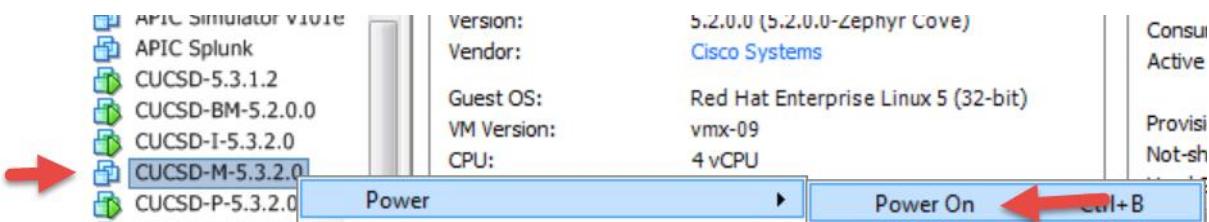
Review and click Finish.



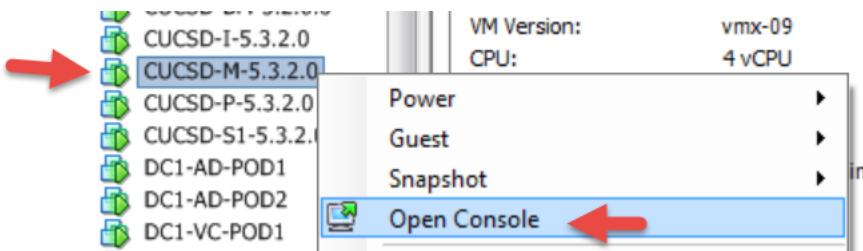
Review and click OK.



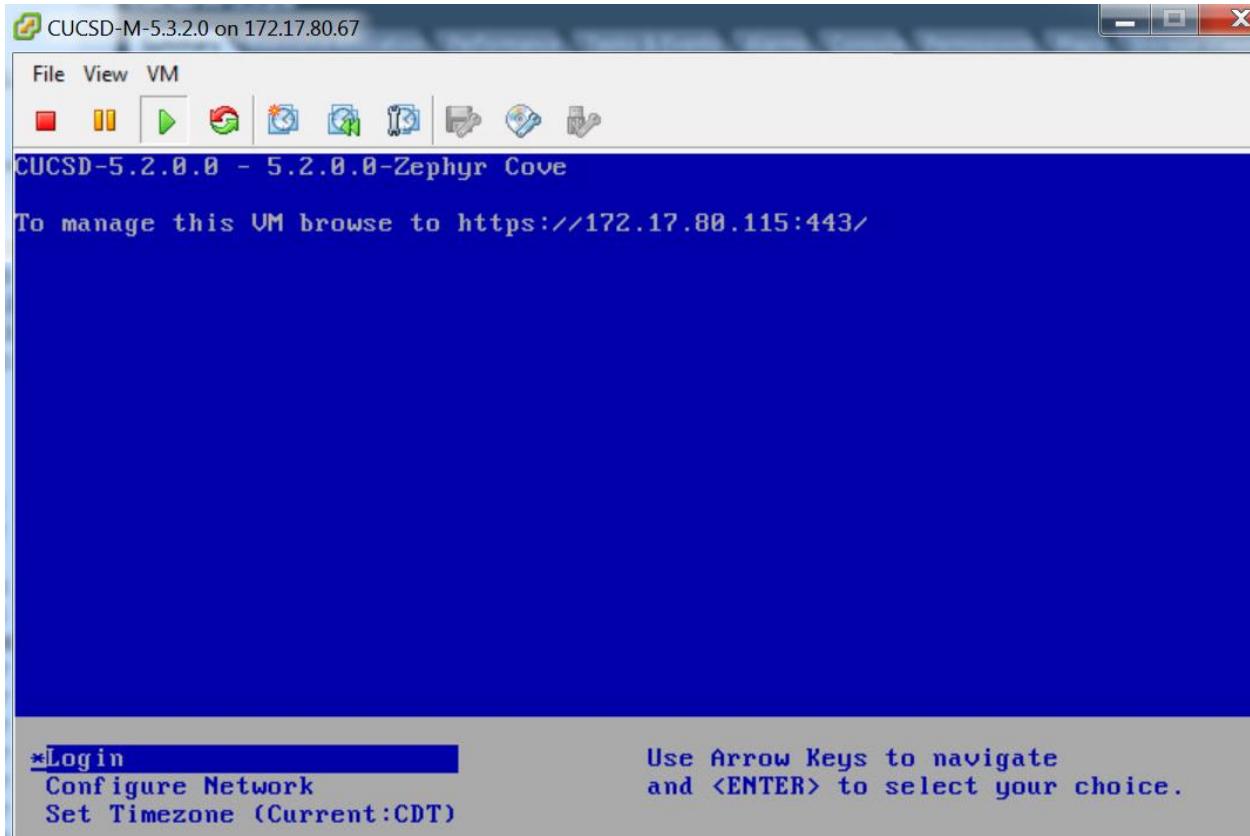
Power the VM On, right click on the VM and select 'Power On'.



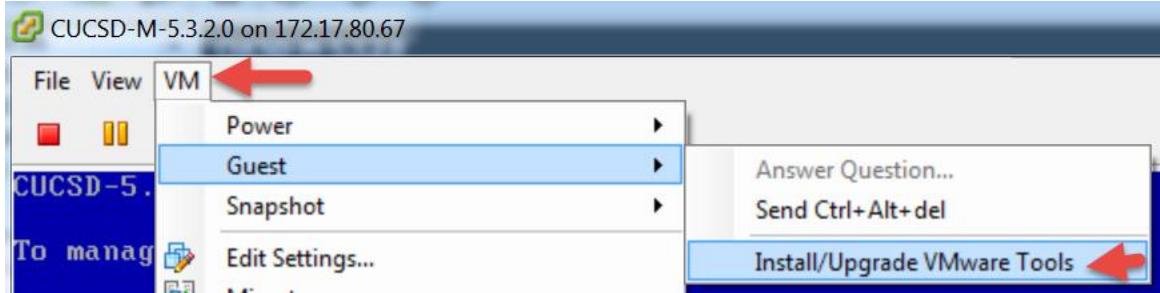
Open the VM Console to watch the VM Boot.



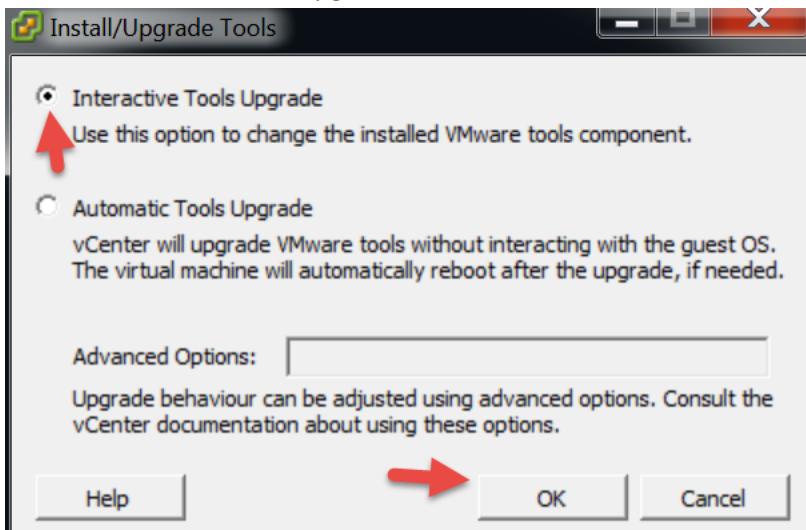
Once the VM is completely up, you should see the login screen similar to below.



From the console, select 'Install/Upgrade VMware Tools'



Select 'Interactive Tools Upgrade' and click OK.



SSH to the Monitoring Database Node.

- Make a dir for cdrom: 'mkdir /mnt/cdrom'
- Mount the cdrom: 'mount /dev/cdrom /mnt/cdrom'
- Copy vmware install to /tmp: 'cp /mnt/cdrom/VMwareTools-5.0.0-<xxxx>.tar.gz /tmp' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Unzip the files in /tmp: 'tar zxf /tmp/VMwareTools-5.0.0-<xxxx>.tar.gz' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Change directory: 'cd vmware-tools-distrib'
- Run the install: './vmware-install.pl'

Note: You will probably get the following message.

VMware Tools cannot be installed, since they have already been installed using a package-based mechanism (rpm or deb) on this system. If you wish to continue, you must first remove the currently installed VMware Tools using the appropriate packaged-based mechanism, and then restart this installer

Execution aborted.

Found VMware Tools CDROM mounted at /mnt/cdrom. Ejecting device /dev/cdrom ... No eject (or equivilant) command could be located. Eject Failed: If possible manually eject the Tools installer from the guest cdrom mounted at /mnt/cdrom before canceling tools install on the host.

- If you get this message, we need to Delete the VMware tools directory: 'rm -rf /usr/lib/vmware-tools/'
- Change directory: 'cd vmware-tools-distrib/'
- Re-Run the install: './vmware-install.pl'
- Enter Yes to the 'Would you like to remove the install DB?' You will probably get a Failure and Execution aborted.
- Re-Run the install: './vmware-install.pl'
- Accept all the defaults by Pressing Enter for all the options.

```
[root@UCSD_Monitoring vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@UCSD_Monitoring vmware-tools-distrib]# ./vmware-install.pl
A previous installation of VMware Tools has been detected.

Uninstallation of previous install failed. Would you like to remove the install
DB? [no] yes
Removing installer DB, please re-run the installer.

Failure

Execution aborted.

[root@UCSD_Monitoring vmware-tools-distrib]# ./vmware-install.pl
Creating a new VMware Tools installer database using the tar4 format.

Installing VMware Tools.

The file /etc/vmware-tools/poweron-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/suspend-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/poweroff-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/resume-vm-default that this program was about to
install already exists. Overwrite? [yes]

In which directory do you want to install the binary files?
[/usr/bin]

The file /usr/bin/vm-support that this program was about to install already
exists. Overwrite? [yes]

What is the directory that contains the init directories (rc0.d/ to rc6.d/)?
[/etc/rc.d]

What is the directory that contains the init scripts?
[/etc/rc.d/init.d]

The file /etc/rc.d/init.d/vmware-tools that this program was about to install
already exists. Overwrite? [yes]

In which directory do you want to install the daemon files?
[/usr/sbin]

In which directory do you want to install the library files?
[/usr/lib/vmware-tools]

The path "/usr/lib/vmware-tools" does not exist currently. This program is
going to create it, including needed parent directories. Is this what you want?
[yes]

The file /sbin/mount.vmhgfs that this program was about to install already
exists. Overwrite? [yes]

In which directory do you want to install the documentation files?
[/usr/share/doc/vmware-tools]

The file /usr/share/doc/vmware-tools/open_source_licenses.txt that this program
was about to install already exists. Overwrite? [yes]
```

```
The file /usr/share/doc/vmware-tools/README that this program was about to
install already exists. Overwrite? [yes]

The file /usr/share/doc/vmware-tools/INSTALL that this program was about to
install already exists. Overwrite? [yes]

The installation of VMware Tools 9.0.0 build-782409 for Linux completed
successfully. You can decide to remove this software from your system at any
time by invoking the following command: "/usr/bin/vmware-uninstall-tools.pl".

Before running VMware Tools for the first time, you need to configure it by
invoking the following command: "/usr/bin/vmware-config-tools.pl". Do you want
this program to invoke the command for you now? [yes]

The file /usr/sbin/vmware-checkvm that this program was about to install
already exists. Overwrite? [yes]

The file /usr/sbin/vmware-rpctool that this program was about to install
already exists. Overwrite? [yes]

The file /usr/bin/vmware-hgfsclient that this program was about to install
already exists. Overwrite? [yes]

The file /usr/bin/vmware-xferlogs that this program was about to install
already exists. Overwrite? [yes]

Initializing...

The file /etc/vmware-tools/icu that this program was about to install already
exists. Overwrite? [yes]

Making sure services for VMware Tools are stopped.

Stopping VMware Tools services in the virtual machine:
  Guest operating system daemon:[ OK ]
  Unmounting HGFS shares:[ OK ]
  Guest filesystem driver:[ OK ]

The VMware Filesystem sync driver (vmsync) allows external third-party backup
software that is integrated with vSphere to create backups of the virtual
machine. Do you wish to enable this feature? [no]

Found a compatible pre-built module for vmci. Installing it...

Found a compatible pre-built module for vsock. Installing it...

Found a compatible pre-built module for vmxnet3. Installing it...

Found a compatible pre-built module for pvscsi. Installing it...

Found a compatible pre-built module for vmmemctl. Installing it...

The VMware Host-Guest Filesystem allows for shared folders between the host OS
and the guest OS in a Fusion or Workstation virtual environment. Do you wish
to enable this feature? [no]

Found a compatible pre-built module for vmxnet. Installing it...

The vmblock enables dragging or copying files between host and guest in a
Fusion or Workstation virtual environment. Do you wish to enable this feature?
[no]

!!! [EXPERIMENTAL] !!!
VMware automatic kernel modules enables automatic building and installation of
VMware kernel modules at boot that are not already present. By selecting yes,
you will be enabling this experimental feature. You can always disable this
feature by re-running vmware-config-tools.pl.

Would you like to enable VMware automatic kernel modules?
[no]

No X install found.

Creating a new initrd boot image for the kernel.
  Checking acpi hot plug[ OK ]
Starting VMware Tools services in the virtual machine:
  Switching to guest configuration:[ OK ]
  Paravirtual SCSI module:[ OK ]
  Guest memory manager:[ OK ]
  Guest vmxnet fast network device:[ OK ]
  VM communication interface:[ OK ]
  VM communication interface socket family:[ OK ]
  Guest operating system daemon:[ OK ]

The configuration of VMware Tools 9.0.0 build-782409 for Linux for this running
kernel completed successfully.

You must restart your X session before any mouse or graphics changes take
effect.

You can now run VMware Tools by invoking "/usr/bin/vmware-toolbox-cmd" from the
command line.

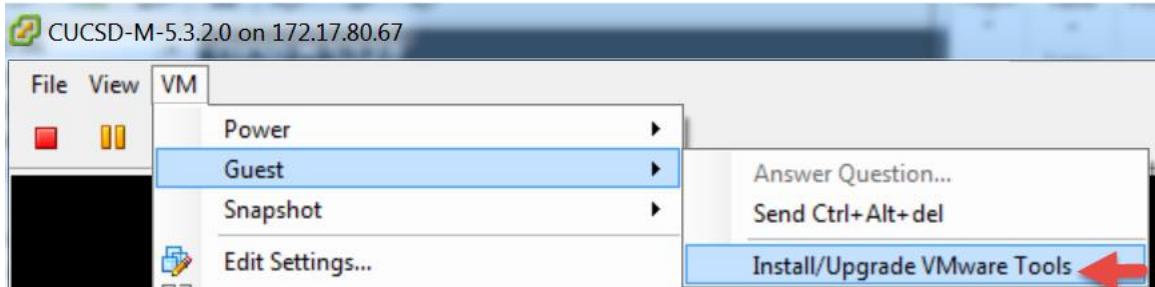
To enable advanced X features (e.g., guest resolution fit, drag and drop, and
file and text copy/paste), you will need to do one (or more) of the following:
1. Manually start /usr/bin/vmware-user
2. Log out and log back into your desktop session; and,
3. Restart your X session.

To use the vmxnet driver, restart networking using the following commands:
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start

Enjoy,
--the VMware team
```

```
[root@CUCSD_Monitoring vmware-tools-distrib]#
[root@CUCSD_Monitoring vmware-tools-distrib]#
```

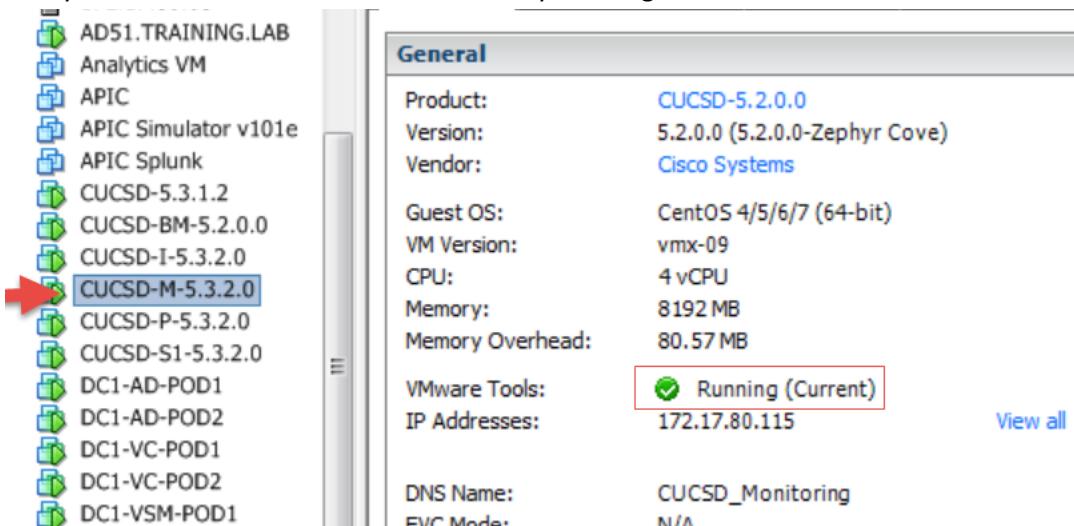
From the console, select 'Install/Upgrade VMware Tools'



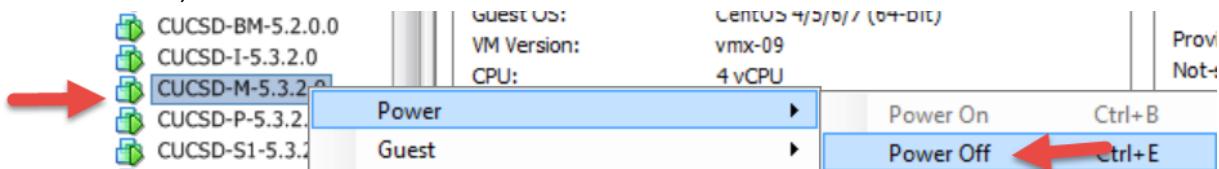
Select 'Automatic Tools Upgrade' and click OK.



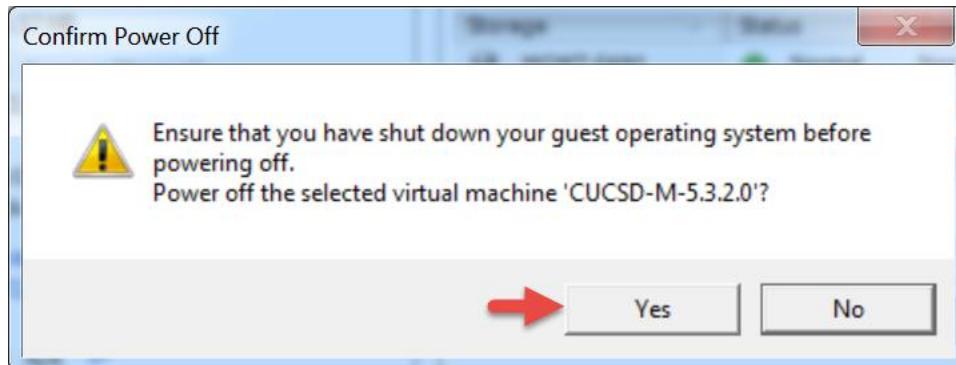
Verify Tools have been installed and currently Running as shown below.



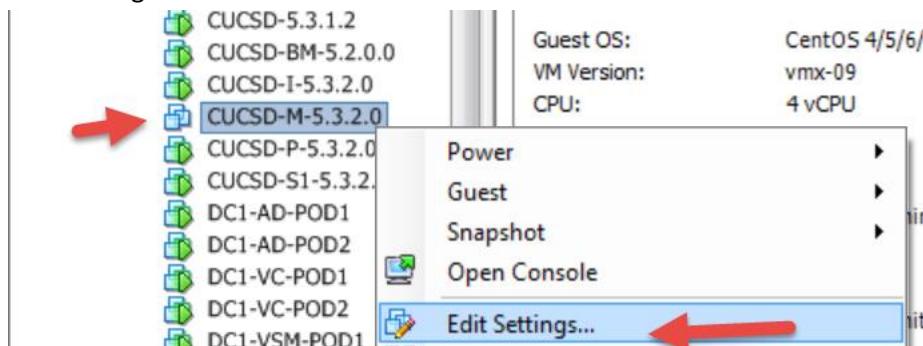
Power off the VM, select 'Power Off'.



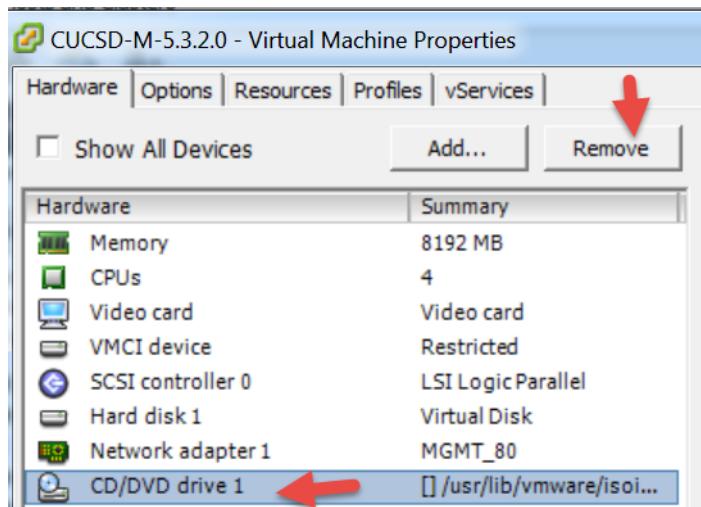
Select Yes.



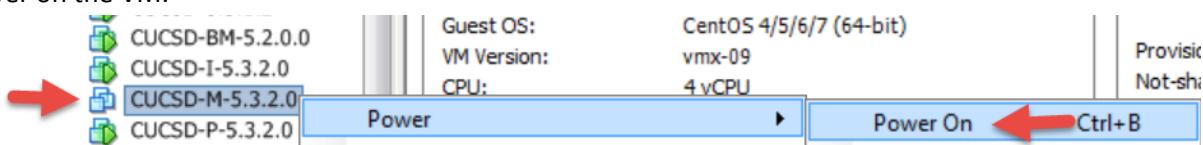
Edit Settings.



Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.

The screenshot shows a list of virtual machines on the left and detailed configuration information for one specific VM on the right. The VM listed on the right is 'CUCSD-M-5.3.2.0'. A red arrow points to this VM in the list on the left.

General	
Product:	CUCSD-5.2.0.0
Version:	5.2.0.0 (5.2.0.0-Zephyr Cove)
Vendor:	Cisco Systems
Guest OS:	CentOS 4/5/6/7 (64-bit)
VM Version:	vmx-09
CPU:	4 vCPU
Memory:	8192 MB
Memory Overhead:	80.57 MB
VMware Tools:	Running (Current)
IP Addresses:	172.17.80.115
DNS Name:	CUCSD Monitoring

[View all](#)

3.3. Configure Monitoring Database

SSH to the Monitoring Database Node using the shelladmin account and the default password of changeme.

Change the shelladmin password.

```
Select a number from the menu below
1) Change ShellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Stop Database
6) Start Database
7) Backup Database
8) Restore Database
9) Time Sync
10) Ping Hostname/IP Address
11) Show Version
12) Import CA Cert (JKS) File
13) Import CA Cert(PEM) File for VNC
14) Configure Network Interface
15) Display Network Details
16) Enable Database for Cisco UCS Director Baremetal Agent
17) Add Cisco UCS Director Baremetal Agent Hostname/IP
18) Tail Inframgr Logs
19) Apply Patch
20) Shutdown Appliance
21) Reboot Appliance
22) Manage Root Access
23) Login as Root
24) Configure Multi Node Setup (Advanced Deployment)
25) Clean-up Patch Files
26) Collect logs from a Node
27) Collect Diagnostics
28) Quit

SELECT> 1
Changing password for user shelladmin.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Press return to continue ...■
```

Configure and change the root password.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : c
Do you want to Configure/Set Root Privilege/Password [y/n]? : y
Changing root password...
Changing password for user root.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Root passwd changed sucessfully
Press return to continue ...■
```

Enable root access.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : e
Do you want to Enable Root Access [y/n]? : y
Enabling root access...
Unlocking password for user root.
passwd: Success.
Root access enabled successfully
Press return to continue ...■
```

Configure NTP Server. Replace the 1.1.1.1 with your NTP Server.

```
17) Quit

SELECT> 7
Time Sync...
System time is Thu Sep 17 14:15:43 UTC 2015
Hardware time is Thu Sep 17 14:15:44 2015 -0.707240 seconds
Do you want to sync systemtime [y/n]? n
Do you want to sync to NTP [y/n]? y
NTP Server IP Address: 1.1.1.1
```

From the menu, choose 'Configure Multi Node Setup (Advanced Deployment)' and press Enter. When prompted, press 1 to configure the current node. Then press y and then select the option to configure the node as the monitoring database node. From the menu, choose 'Configure Monitoring Database' and press Enter. When prompted, press Enter to Continue. When prompted to logout, enter y and press enter then log back into the Monitoring Database Node via SSH.

```

28) quit
***** SELECT> 24 *****
***** This wizard helps to do Multi Node setup *****
***** Configuration Options : *****
Current Node --> Select '1'
Remote Node --> Select '2'
exit --> Select '3'

Please enter an option: 1
*****
Cisco UCS Director Multi Node setup requires multiple instances of UCS Director OVF deployed with different configurations. Following are the required configurations:

* UCS Director Primary Node (1 Instance) . This node also acts as a front end UI node
* UCS Director Service Node (1 or more instances) . Service node can be reconfigured as Primary Node when necessary.
* UCS Director Inventory DB Node (1 Instance)
* UCS Director Monitoring DB Node (1 Instance)

Refer to UCS Director documentation for additional details on Multi Node Setup.

This is a Standalone Node

Do you want to configure multi node setup [y/n]? y
Select a option from the menu below

a) Configure as Primary Node
b) Configure as Service Node
c) Configure as Inventory DB
d) Configure as Monitoring DB
x) Exit

Enter: [a/b/c/d/x]? d
Do you want to configure this node as Monitoring Database [y/n]? y
Configuring Monitoring DB
This will reinitialize database and you will lose all your data. Do you still want to continue? [y/n]? y
user selected 'y' reinitialize database
Checking DB Status
 3430 ? 00:00:00 mysqld_safe
 3851 ? 00:06:43 mysqld
Stopping services
Disabling UCS Director services at startup
Enabling Remote Database access to Primary Node and Service Node
Re-initializing Database
Configured Monitoring Database successfully
In order for changes to take effect logout and login back
Do you want to logout [y/n]? y

```

To verify the services for the monitoring database are up and running, choose 'Display Service Status' and press Enter. You should see the lines in the red box below. Note: After you return to the shelladmin, the menu options change to those available for an inventory database node.

```

Cisco UCS Director Shell Menu
Monitoring Database

Select a number from the menu below

1) Change ShellAdmin Password
2) Display Services Status
3) Stop Database
4) Start Database
5) Backup Database
6) Restore Database
7) Time Sync
8) Ping Hostname/IP Address
9) Configure Network Interface
10) Display Network Details
11) Enable Database for Cisco UCS Director Baremetal Agent
12) Add Cisco UCS Director Baremetal Agent Hostname/IP
13) Shutdown Appliance
14) Reboot Appliance
15) Manage Root Access
16) Login as Root
17) Quit

SELECT> 2
3430 ? 00:00:00 mysqld_safe
3851 ? 00:06:47 mysqld
Press return to continue ...■

```

Edit the /etc/hosts file to update the name and IP address of the host. SSH to the Inventory Database Node using the root account.

- vi /etc/hosts
- shift a
- press return
- enter your host details
- when done: press esc
- enter :wq
- cat /etc/hosts

```
"/etc/hosts" 5L, 168C written
[root@localhost ~]# cat /etc/hosts
127.0.0.1 localhost.localdom localhost localhost
172.17.80.114 CUCSD_Inventory
172.17.80.115 CUCSD_Monitoring
172.17.80.116 CUCSD_Service1
172.17.80.113 CUCSD_Primary
[root@localhost ~]#
```

Edit the /etc/resolv.conf to update the DNS servers

- vi /etc/resolv.conf
- press 'i' for insert
- enter 'search localhost *your domain name*', **Note:** Sometime search localhost is already there
- enter dns server ip address after nameserver, **Note:** if you have multiple DNS servers, enter on separate lines
- when done: press esc
- enter :wq

```
[root@CUCSD_Monitoring ~]# vi /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
```

- cat /etc/resolv.conf

```
[root@CUCSD_Monitoring ~]# cat /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
[root@CUCSD_Monitoring ~]#
```

Edit the hostname in /etc/sysconfig/network

- vi /etc/sysconfig/network
- Move cursor to the beginning of localhost where it is on the l and enter cw (change word)
- Enter the Host name for the Inventory Database Node.
- when done: press esc
- enter :wq
- cat /etc/sysconfig/network

```
"/etc/sysconfig/network" 4L, 81C written
[root@localhost ~]# cat /etc/sysconfig/network
NETWORKING=yes
NETWORKING_IPV6=yes
HOSTNAME=CUCSD_Monitoring
DOMAINNAME=localdom
[root@localhost ~]#
```

Change the hostname

```
[root@localhost ~]# hostname CUCSD_Inventory
[root@localhost ~]# hostname
CUCSD_Inventory
[root@localhost ~]#
```

Log out and log back into the Inventory Database and you will see the new hostname.

```
[root@CUCSD_Monitoring ~]#
```

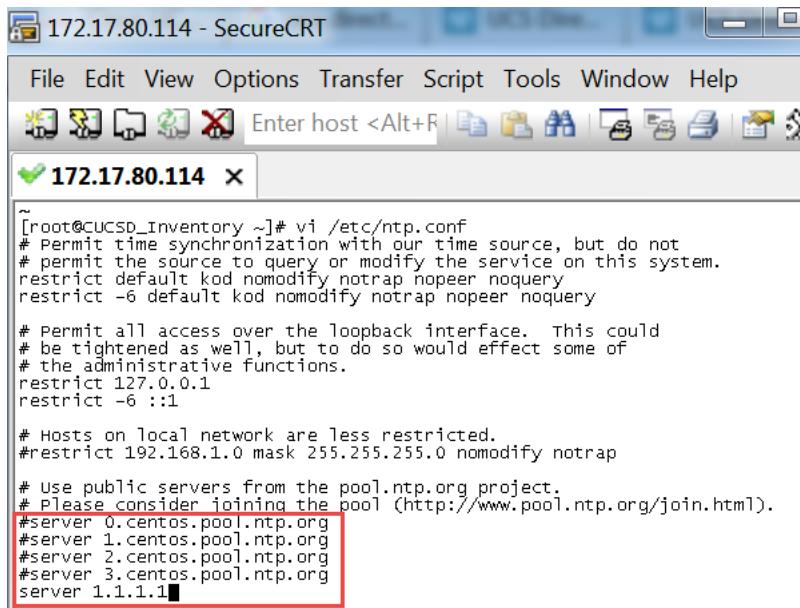
Configure NTP servers for Inventory Database Node. SSH into Inventory Database Node using root account.

Create ntp user

```
[root@CUCSD_Inventory ~]# useradd ntp
[root@CUCSD_Inventory ~]# service ntpd restart
Shutting down ntpd: [FAILED]
Starting ntpd: [ OK ]
[root@CUCSD_Inventory ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
time-b.timefreq .INIT.    16 u    - 64     0    0.000  0.000  0.000
173.44.32.10  .INIT.    16 u    - 64     0    0.000  0.000  0.000
resolver2.level .INIT.    16 u    - 64     0    0.000  0.000  0.000
blue.cif.net   .INIT.    16 u    - 64     0    0.000  0.000  0.000
LOCAL(0)        .LOCL.   10 l    - 64     0    0.000  0.000  0.001
[root@CUCSD_Inventory ~]#
```

Edit the ntp.conf file to include your NTP server. You can simple comment out the existing NTP servers by placing a # in front of them.

- vi /etc/ntp.conf
- cursor down to the first NTP server line
- press i for insert
- enter # then move your cursor down to each of the other NTP servers and enter #
- create a new line for your NTP server by pressing enter after the last NTP server
- enter server and the ip address of your NTP server. Replace 1.1.1.1 with your ntp server
- press esc, then enter :wq to quit and write the info



The screenshot shows a SecureCRT session window titled "172.17.80.114 - SecureCRT". The menu bar includes File, Edit, View, Options, Transfer, Script, Tools, Window, and Help. The toolbar has icons for New, Open, Save, Copy, Paste, Find, and others. The main terminal window shows the command-line interface for editing the ntp.conf file. The file contains several commented-out lines starting with '#'. A new line is added at the bottom with "server 1.1.1.1" followed by a red rectangular box highlighting the IP address "1.1.1.1".

```
[root@CUCSD_Inventory ~]# vi /etc/ntp.conf
# Permit time synchronization with our time source, but do not
# permit the source to query or modify the service on this system.
restrict default kod nomodify notrap nopeer noquery
restrict -6 default kod nomodify notrap nopeer noquery

# Permit all access over the loopback interface. This could
# be tightened as well, but to do so would effect some of
# the administrative functions.
restrict 127.0.0.1
restrict -6 ::1

# Hosts on local network are less restricted.
#restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap

# use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
#server 0.centos.pool.ntp.org
#server 1.centos.pool.ntp.org
#server 2.centos.pool.ntp.org
#server 3.centos.pool.ntp.org
server 1.1.1.1
```

Restart the nptd service and check the NTP synchronization. It may take a while but when the clock is synced with the NTP server there will be a * to the left of the IP address.

```
[root@CUCSP_Monitoring ~]# service ntpd restart
Shutting down ntpd: [ OK ]
Starting ntpd: [ OK ]
[root@CUCSP_Monitoring ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
*1.1.1.1. 1.1.1.1 LOCAL(1)    5 u    4 64     1    1.407  284.617  0.001
LOCAL(0)        .LOCL.   10 l    3 64     1    0.000  0.000  0.001
```

Change the time zone to the local timezone where the Primary Node, Inventory Database and the Monitoring Database reside. Use this timezone for all the service Nodes as well even though they may not reside in this timezone. This will ensure the logs will match everywhere.

- Determine the current timezone by entering 'ls -l /etc/localtime'
- To determine your timezone, 'cd /usr/share/zoneinfo/America/'

```
[root@CUCSD_Monitoring ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 27 Dec 20 2014 /etc/localtime -> /usr/share/zoneinfo/Etc/UTC
[root@CUCSD_Monitoring ~]#
[root@CUCSD_Monitoring ~]# cd /usr/share/zoneinfo/America/
[root@CUCSD_Monitoring America]#
[root@CUCSD_Monitoring America]# ls
Adak          Catamarca      GothaB       Louisville    Panama        St_Johns
Anchorage     Cayenne        Goose_Bay   Maceio       Pangnirtung  St_Kitts
Anguilla      Cayman        Grand_Turk  Managua     Paramaribo   St_Lucia
Antigua       Chicago        Grenada     Manaus      Phoenix      St_Thomas
Araguaiana    Chihuahua     Guadeloupe Marigot     Port-au-Prince St_Vincent
Argentina     Coral_Harbour Guatemala   Martinique Porto_Acre   Swift_Current
Aruba         Cordoba       Guayaquil   Mazatlan    Port_of_Spain Tegucigalpa
Asuncion      Costa_Rica    Guyana     Mendoza   Porto_Velho Thule
Atikokan     Cuiaba        Halifax     Menominee Puerto_Rico Thunder_Bay
Atka          Curacao       Havana     Merida     Rainy_River Tijuana
Bahia         Denmarkshavn Hermosillo Mexico_City Rankin_Inlet Toronto
Barbados      Dawson        Indiana    Miquelon   Recife      Tortola
Belem         Dawson_Creek Indianapolis Moncton    Regina     Vancouver
Belize        Denver         Inuvik     Monterrey Resolute  Virgin
Blanc-Sablon Detroit       Iqaluit    Montevideo Rio_Branco Whitehorse
Boa_Vista    Dominica     Jamaica   Montreal   Rosario   Winnipeg
Bogota        Edmonton     Jujuy     Montserrat Santarem  Yakutat
Boise         Eirunepe     Juneau    Nassau     Santo_Domingo Yellowknife
Buenos_Aires El_Salvador  Kentucky  New_York   Nipigon   Sao_Paulo
Cambridge_Bay Ensenada     Knox_IN   Nome      Scoresbysund
Campo_Grande Fortaleza    La_Paz    Noronha   North_Dakota St_Bartelemy
Cancun        Fort_Wayne   Lima     Shiprock
Caracas       Glace_Bay    Los_Angeles North_Dakota
[root@CUCSD_Monitoring America]#
```

Change the timezone and verify. I have chosen the Central Time Zone for my location.

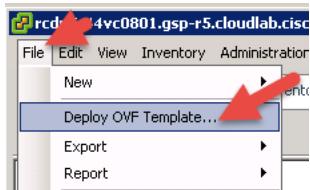
- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timzone is what you set it to: 'date'
- Verify the link: 'ls -l /etc/localtime'

```
[root@CUCSD_Monitoring ~]# cp /etc/localtime /root/old.timezone
[root@CUCSD_Monitoring ~]# rm /etc/localtime
rm: remove symbolic link '/etc/localtime'? y
[root@CUCSD_Monitoring ~]#
[root@CUCSD_Monitoring ~]# ln -s /usr/share/zoneinfo/America/chicago /etc/localtime
[root@CUCSD_Monitoring ~]#
[root@CUCSD_Monitoring ~]# date
Thu Sep 17 12:48:28 CDT 2015
[root@CUCSD_Monitoring ~]#
[root@CUCSD_Monitoring ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 35 sep 17 12:48 /etc/localtime -> /usr/share/zoneinfo/America/chicago
[root@CUCSD_Monitoring ~]#
```

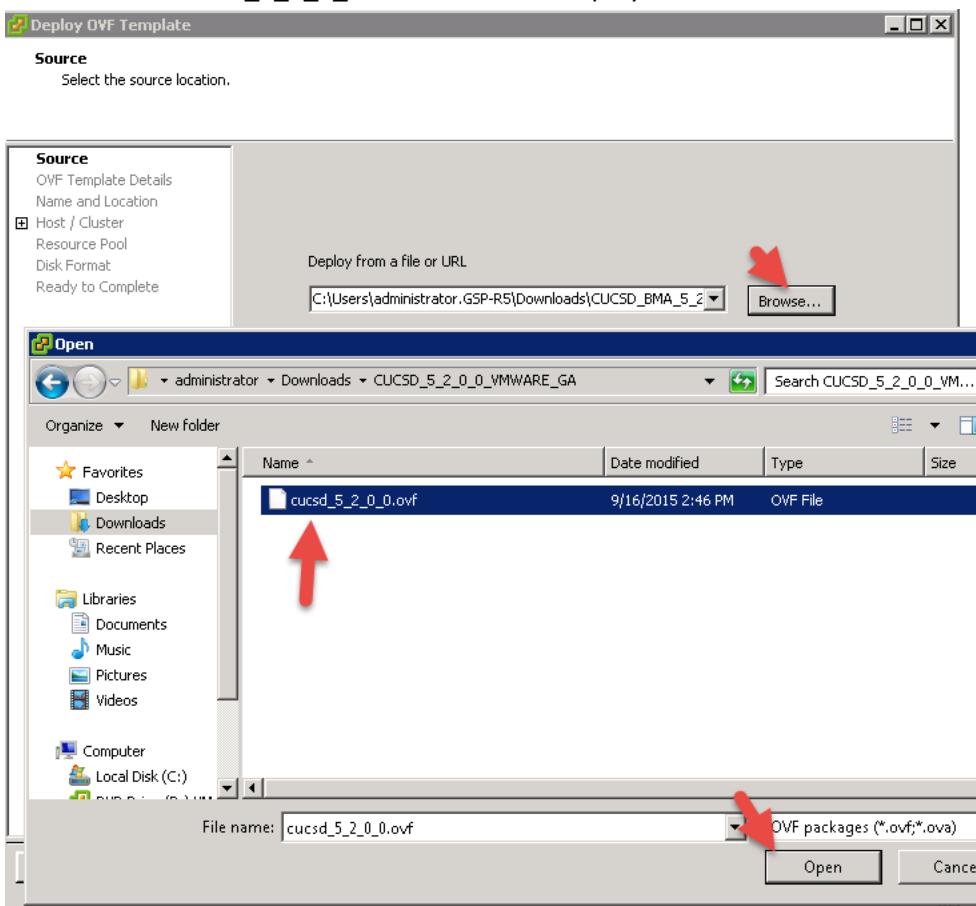
4. Create the Primary Node

4.1. Create Primary Node VM

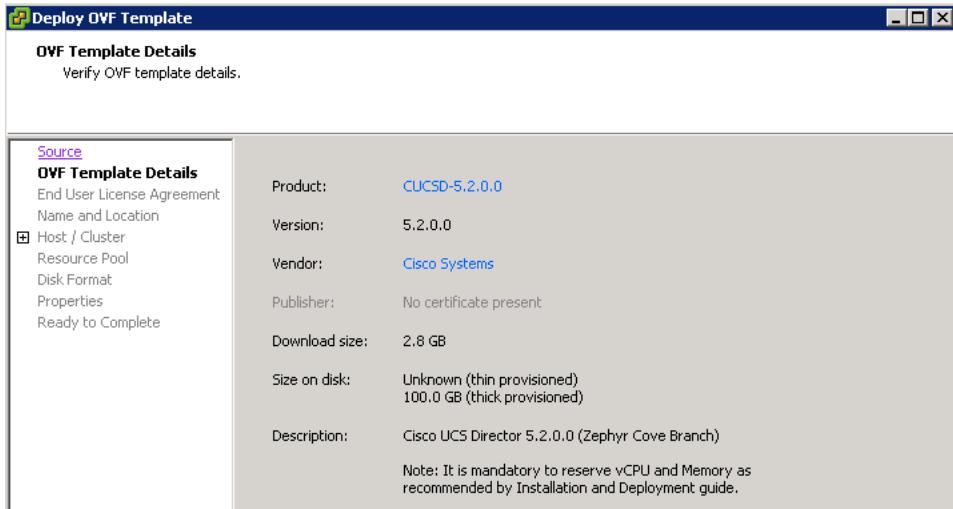
Log into vCenter and Select File -> Deploy OVF Template.



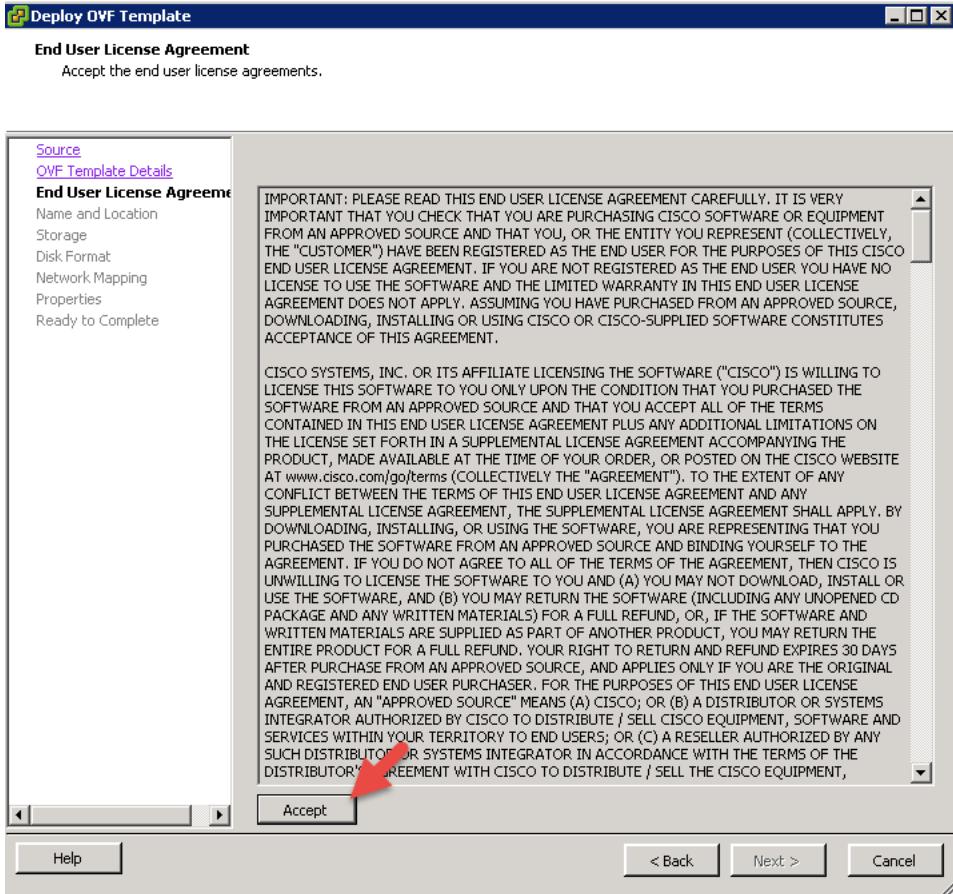
Browse to the UCSD_5_2_0_0 and select it for deployment then click Next.



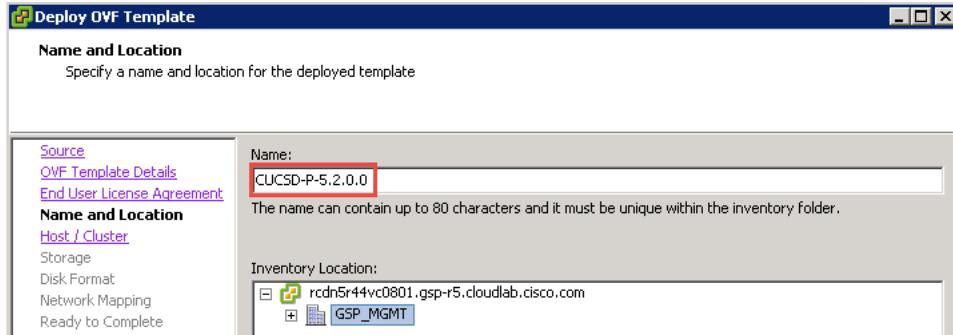
Verify details then click Next.



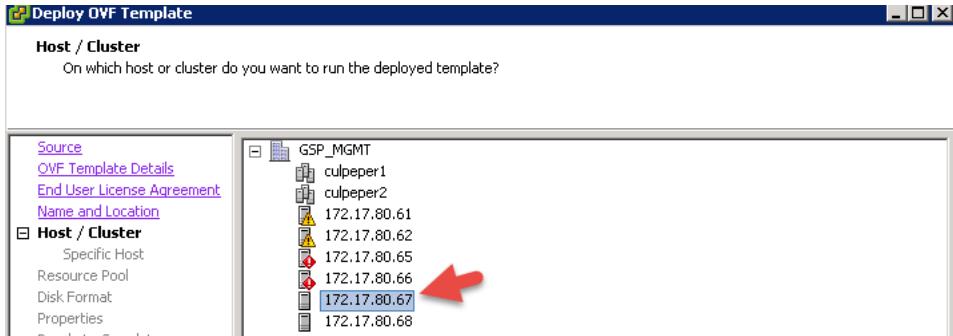
Accept the license agreement and Click Next.



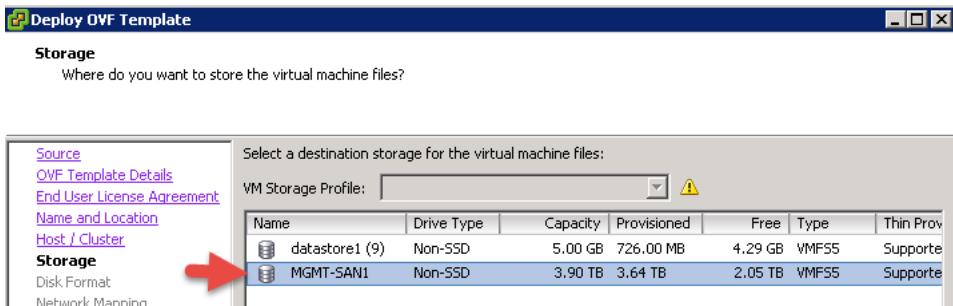
Name the VM and click Next.



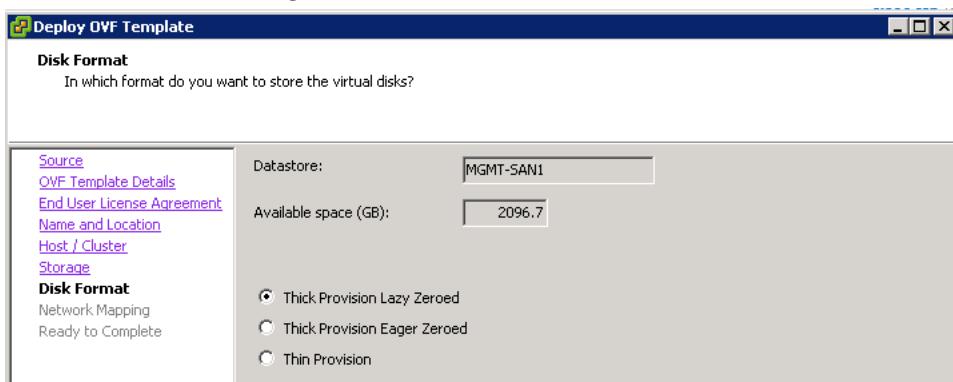
Select a Host and click Next.



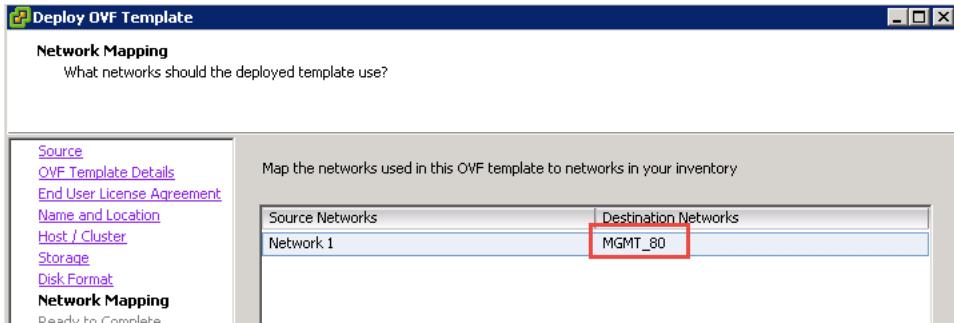
Select a storage location to install the VM and click Next.



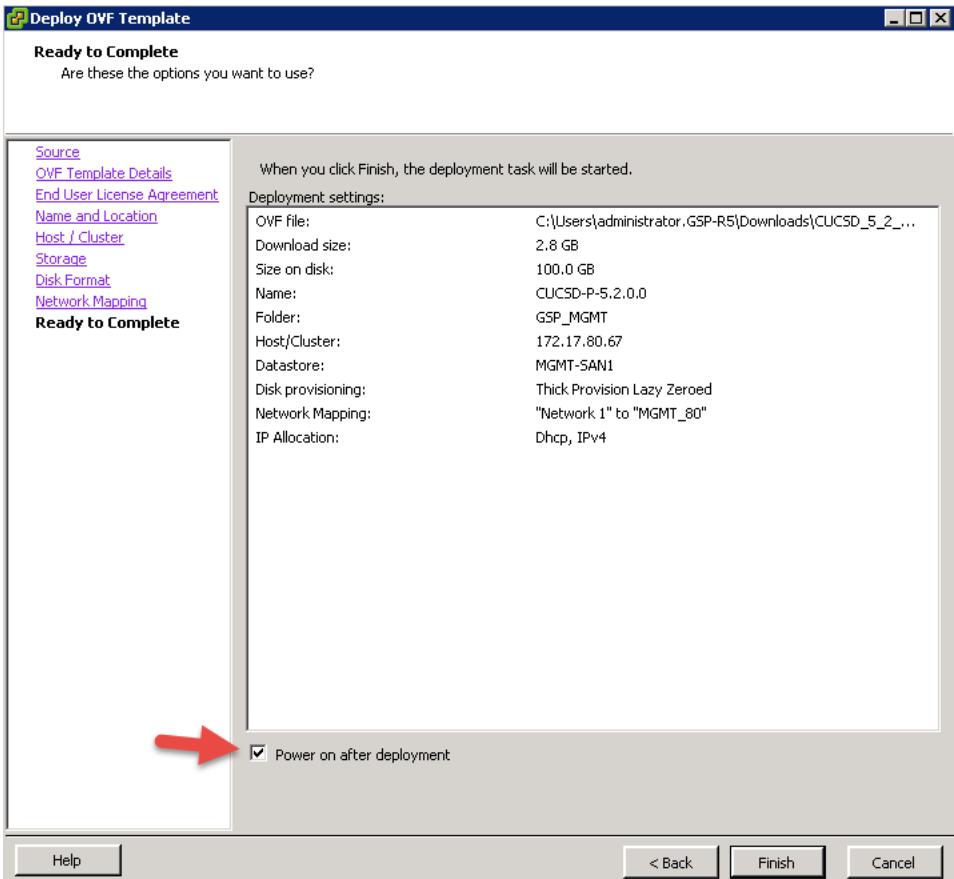
Leave the default settings for the Disk Format and click Next.



Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.



In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Primary Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.

```
Regenerating keys for the root user...
Generating public/private rsa key pair.
Created directory '/root/.ssh'.
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
57:86:f6:e4:4c:67:7e:10:38:3c:8f:27:bf:46:7a:1d root@localhost.localdomain
Generating SSL certificates for sfcb in /opt/vmware/etc/sfcb
Generating SSL certificates for lighttpd in /opt/vmware/etc/lighttpd
This script is executed on first boot only.
Configuring static IP configuration

Do you want to Configure static IP [y/n]? : y
Do you want to configure IPv4/IPv6 [v4/v6] ? : v4

Configuring static IP for appliance. Provide the necessary access credentials

IP Address: 172.17.80.113
Netmask: 255.255.255.0
Gateway: 172.17.80.1

Configuring Network with : IP(172.17.80.113), Netmask(255.255.255.0), Gateway(172.17.80.1)

Do you want to continue [y/n]? : y
```

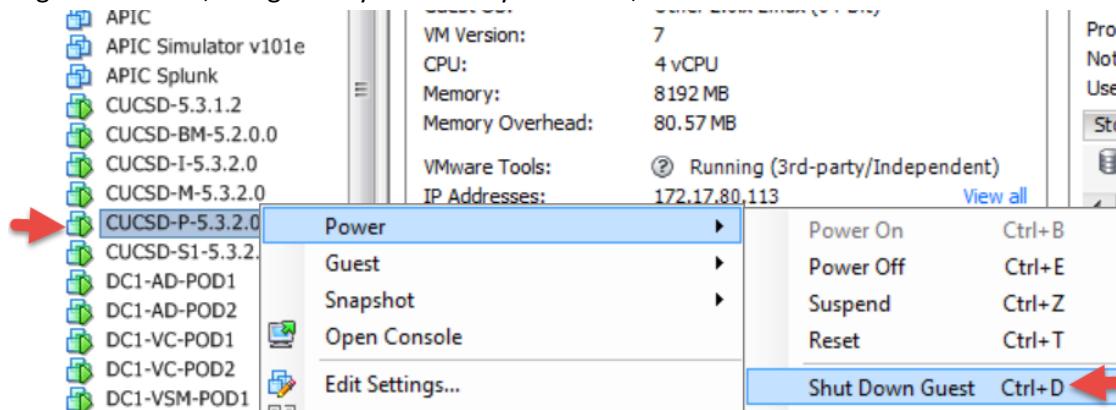
After the installation is complete, you should see a screen that looks like this.

```
CUCSD-5.2.0.0 - 5.2.0.0-Zephyr Core
To manage this VM browse to https://172.17.80.113:443/

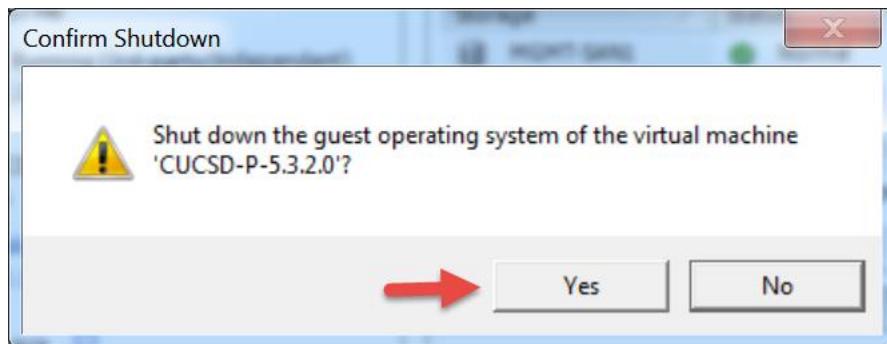
*Login      Use Arrow Keys to navigate
Configure Network and <ENTER> to select your choice.
Set Timezone (Current:UTC)
```

4.2. Install/Update VMWare tools & VM Version

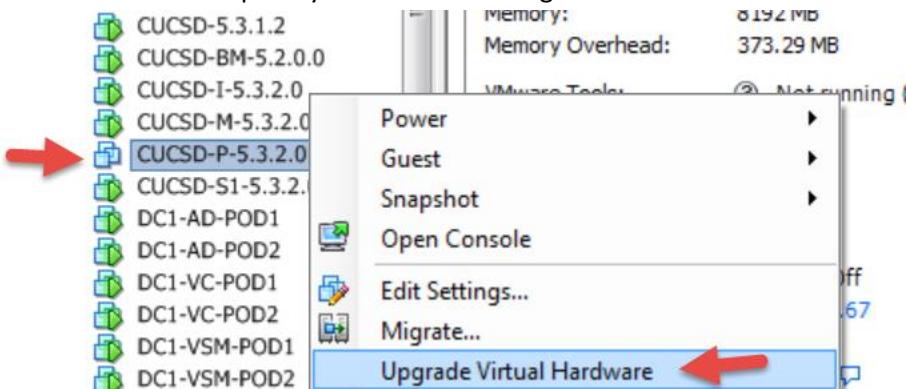
Log into vCenter, navigate to your Primary Node VM, select 'Shutdown Guest'.



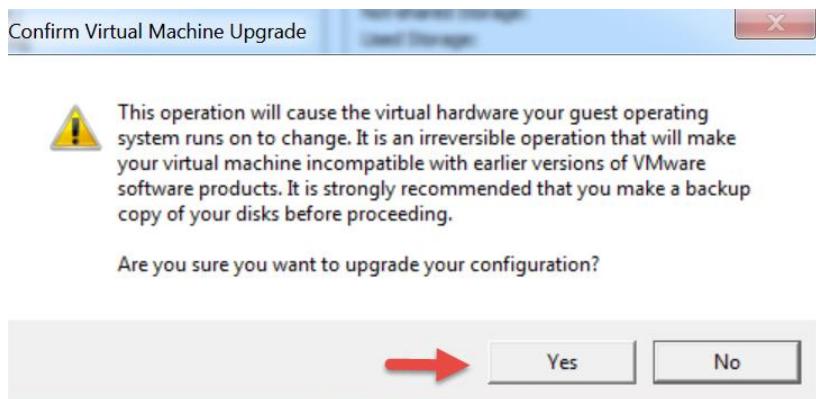
Select Yes.



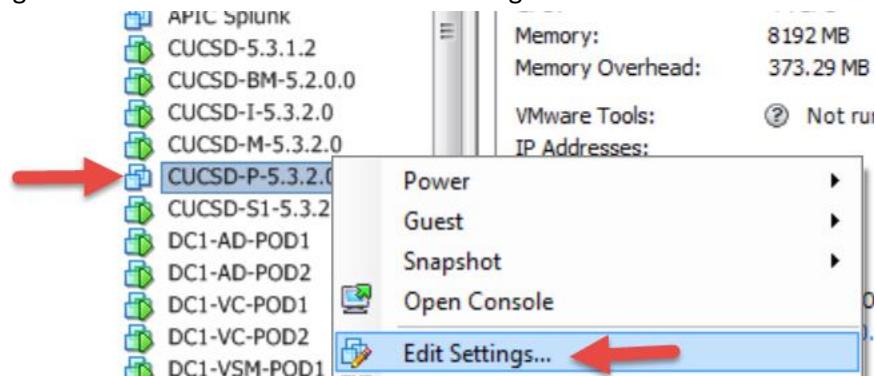
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



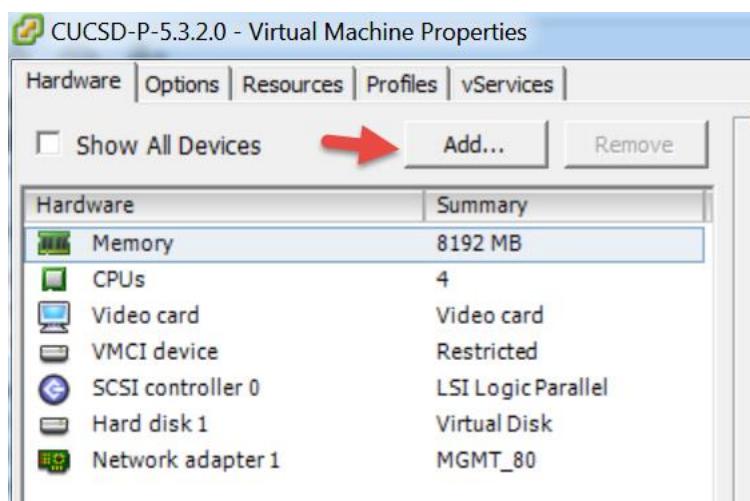
Select Yes.



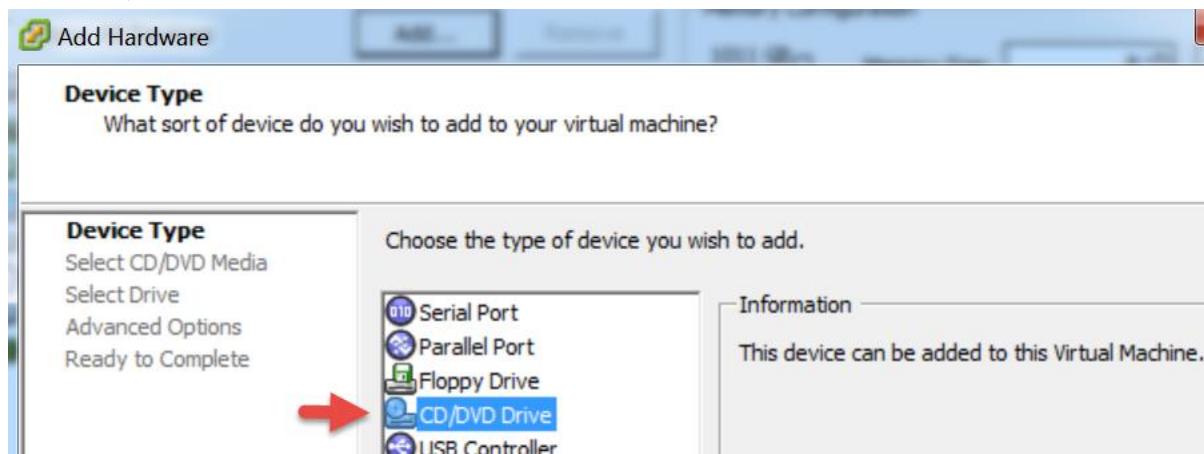
Right click on the VM and Select 'Edit Settings'



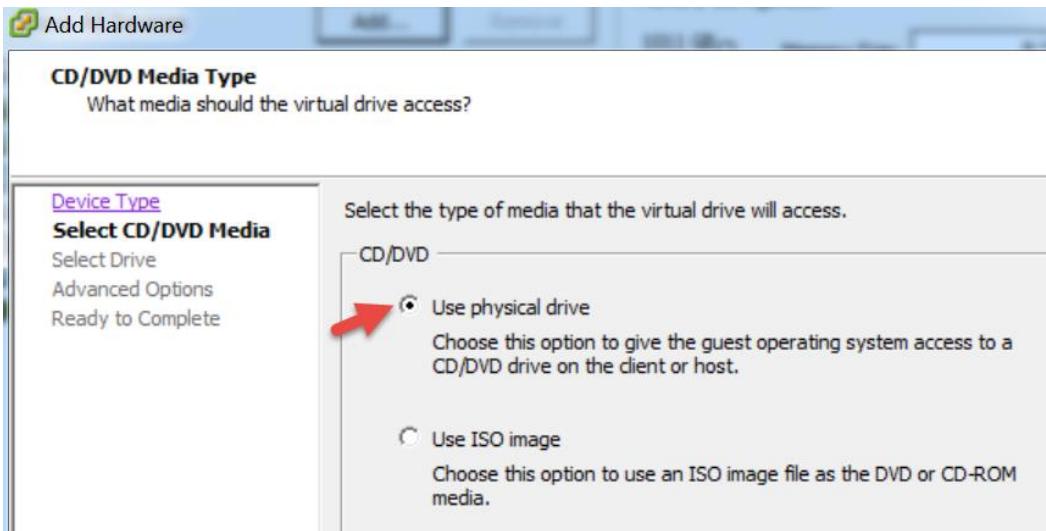
Select Add.



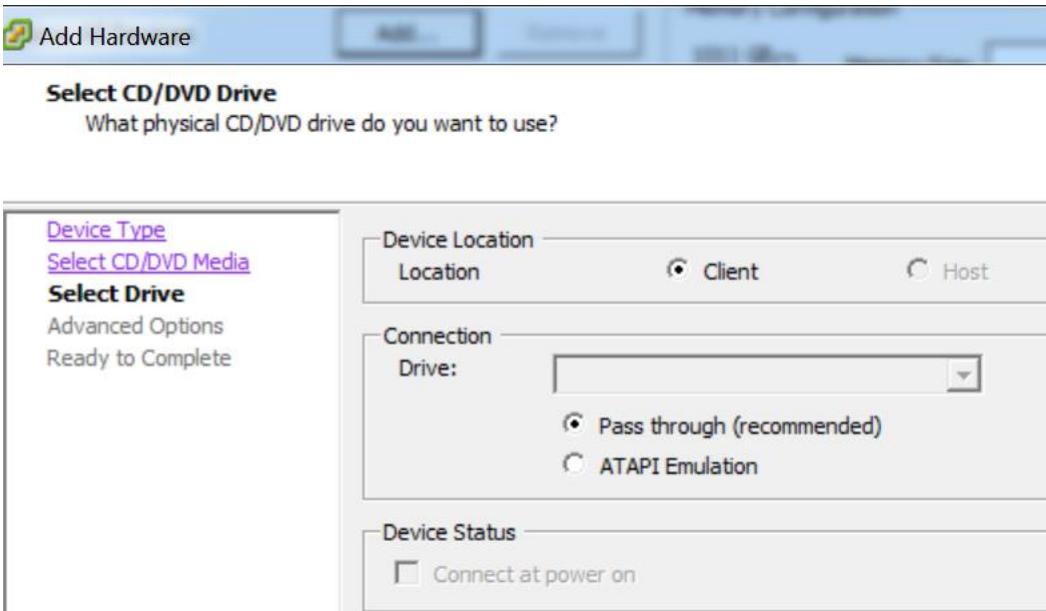
Select 'CD/DVD Drive' and click Next.



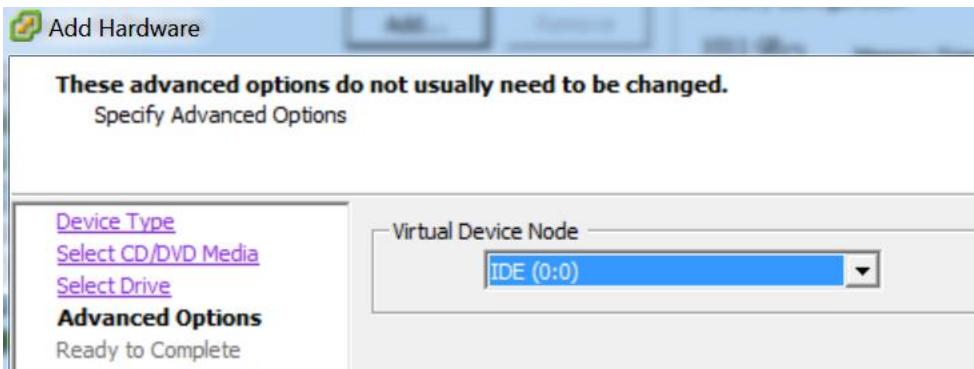
Leave default 'Use physical drive' and click Next.



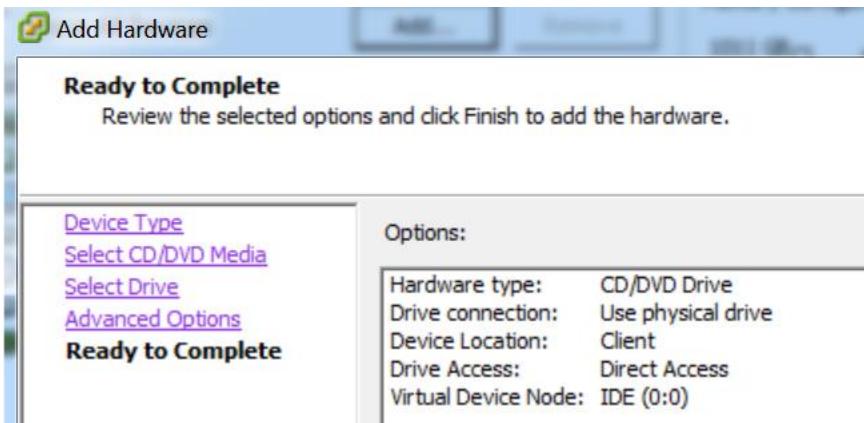
Leave default and click Next.



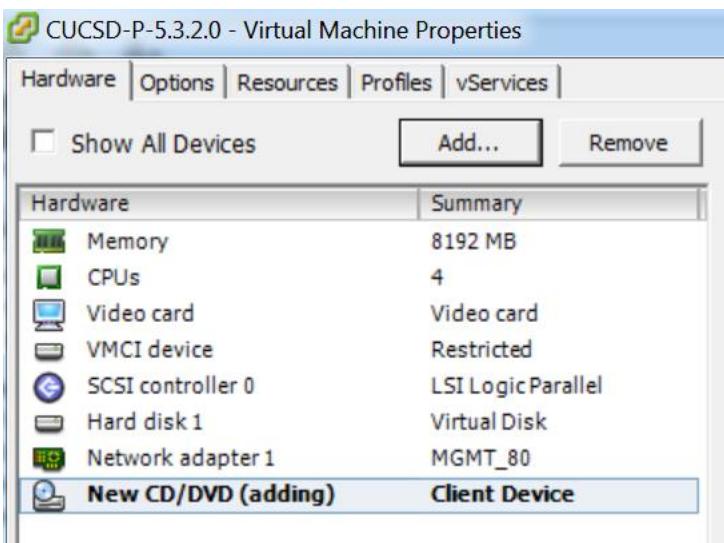
Leave default and click Next.



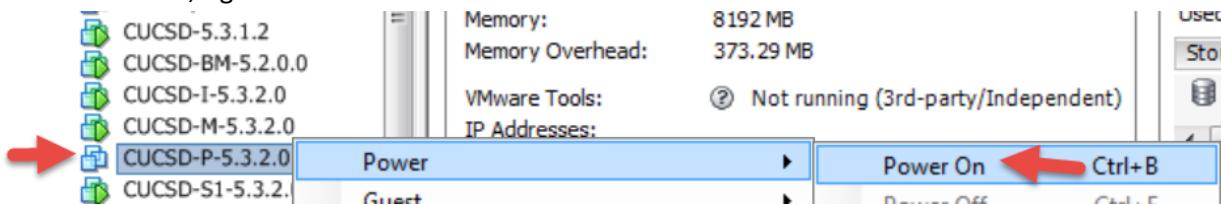
Review and click Finish.



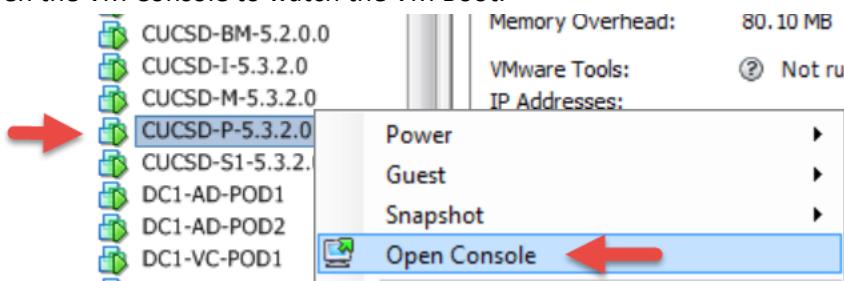
Review and click OK.



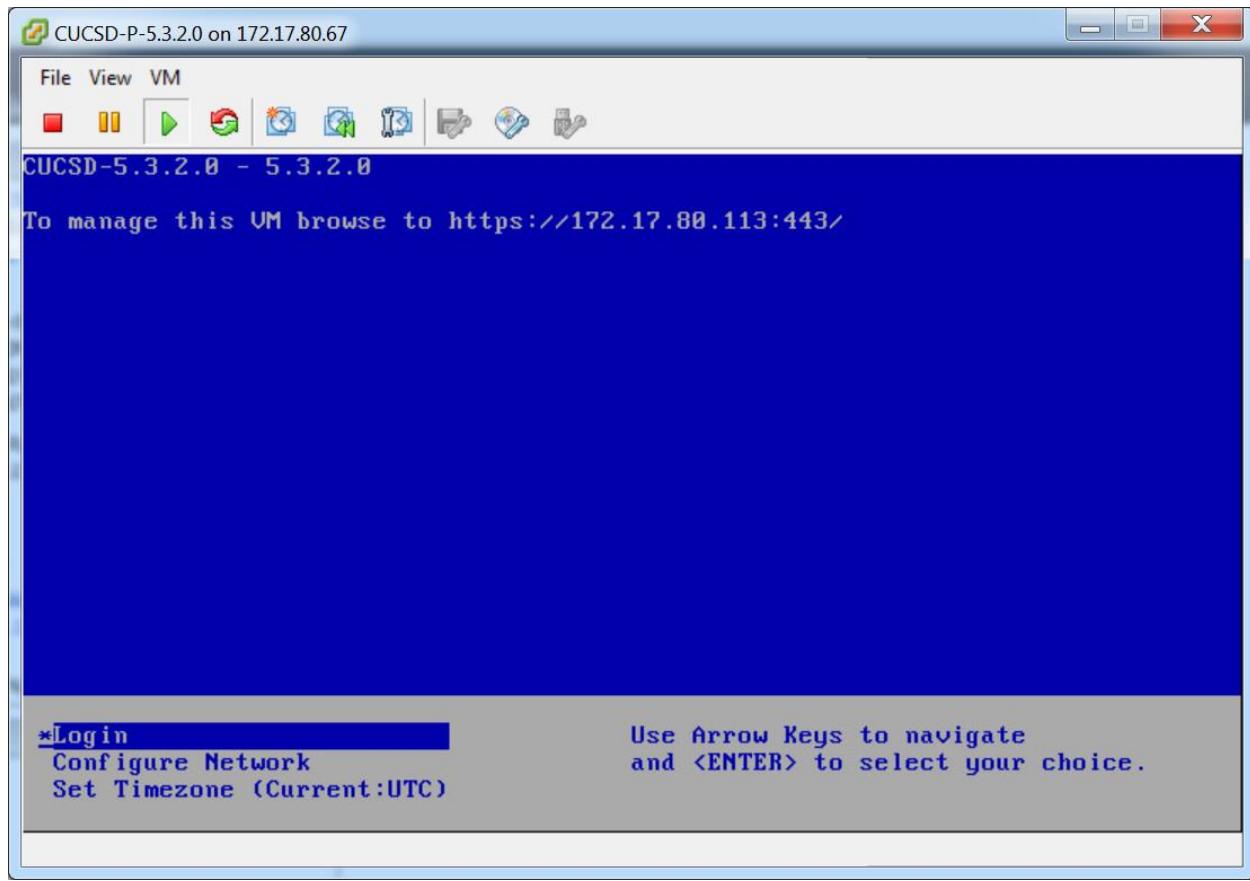
Power the VM On, right click on the VM and select 'Power On'.



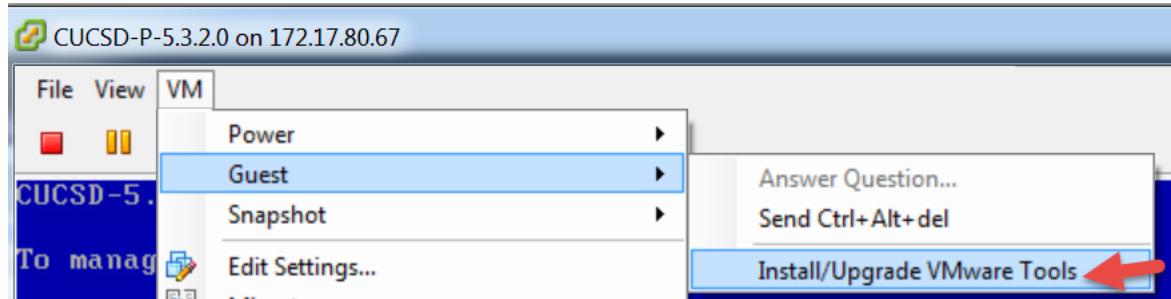
Open the VM Console to watch the VM Boot.



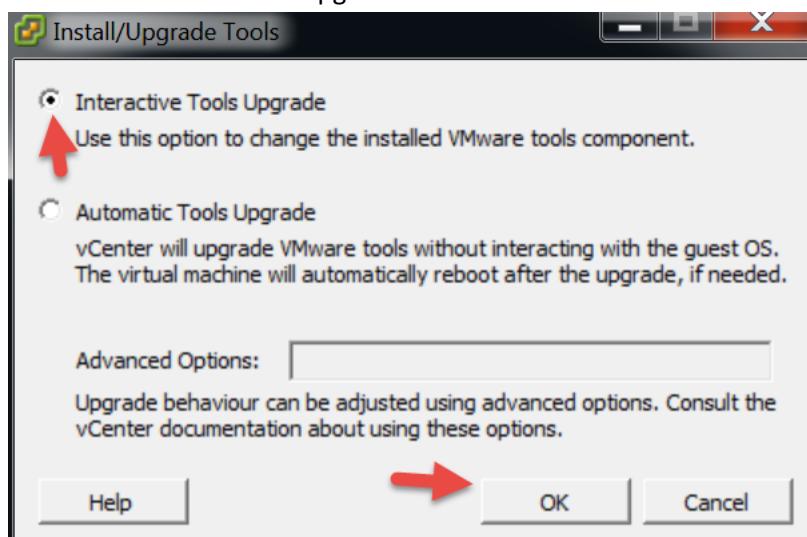
Once the VM is completely up, you should see the login screen similar to below.



From the console, select 'Install/Upgrade VMware Tools'



Select 'Interactive Tools Upgrade' and click OK.



SSH to the Primary Node.

- Make a dir for cdrom: 'mkdir /mnt/cdrom'
- Mount the cdrom: 'mount /dev/cdrom /mnt/cdrom'
- Copy vmware install to /tmp: 'cp /mnt/cdrom/VMwareTools-5.0.0-<xxxx>.tar.gz /tmp' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Unzip the files in /tmp: 'tar zxf /tmp/VMwareTools-5.0.0-<xxxx>.tar.gz' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Change directory: 'cd vmware-tools-distrib'
- Run the install: './vmware-install.pl'

Note: You will probably get the following message.

VMware Tools cannot be installed, since they have already been installed using a package-based mechanism (rpm or deb) on this system. If you wish to continue, you must first remove the currently installed VMware Tools using the appropriate packaged-based mechanism, and then restart this installer

Execution aborted.

Found VMware Tools CDROM mounted at /mnt/cdrom. Ejecting device /dev/cdrom ... No eject (or equivilant) command could be located. Eject Failed: If possible manually eject the Tools installer from the guest cdrom mounted at /mnt/cdrom before canceling tools install on the host.

- If you get this message, we need to Delete the VMware tools directory: 'rm -rf /usr/lib/vmware-tools/'
- Change directory: 'cd vmware-tools-distrib/'
- Re-Run the install: './vmware-install.pl'
- Enter Yes to the 'Would you like to remove the install DB?' You will probably get a Failure and Execution aborted.
- Re-Run the install: './vmware-install.pl'
- Accept all the defaults by Pressing Enter for all the options.

```
[root@UCSD_Primary vmware-tools-distrib]#
[root@UCSD_Primary vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@UCSD_Primary vmware-tools-distrib]# ./vmware-install.pl
A previous installation of VMware Tools has been detected.

Uninstallation of previous install failed. Would you like to remove the install
DB? [no] yes
Removing installer DB, please re-run the installer.

Failure

Execution aborted.

[root@UCSD_Primary vmware-tools-distrib]# ./vmware-install.pl
Creating a new VMware Tools installer database using the tar4 format.

Installing VMware Tools.

The file /etc/vmware-tools/poweron-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/suspend-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/poweroff-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/resume-vm-default that this program was about to
install already exists. Overwrite? [yes]

In which directory do you want to install the binary files?
[/usr/bin]

The file /usr/bin/vm-support that this program was about to install already
exists. Overwrite? [yes]

What is the directory that contains the init directories (rc0.d/ to rc6.d/)?
[/etc/rc.d]

What is the directory that contains the init scripts?
[/etc/rc.d/init.d]

The file /etc/rc.d/init.d/vmware-tools that this program was about to install
already exists. Overwrite? [yes]

In which directory do you want to install the daemon files?
[/usr/sbin]

In which directory do you want to install the library files?
[/usr/lib/vmware-tools]

The path "/usr/lib/vmware-tools" does not exist currently. This program is
going to create it, including needed parent directories. Is this what you want?
[yes]

The file /sbin/mount.vmhgfs that this program was about to install already
exists. Overwrite? [yes]

In which directory do you want to install the documentation files?
[/usr/share/doc/vmware-tools]

The file /usr/share/doc/vmware-tools/open_source_licenses.txt that this program
was about to install already exists. Overwrite? [yes]
```

```
The file /usr/share/doc/vmware-tools/README that this program was about to
install already exists. Overwrite? [yes]

The file /usr/share/doc/vmware-tools/INSTALL that this program was about to
install already exists. Overwrite? [yes]

The installation of VMware Tools 9.0.0 build-782409 for Linux completed
successfully. You can decide to remove this software from your system at any
time by invoking the following command: "/usr/bin/vmware-uninstall-tools.pl".

Before running VMware Tools for the first time, you need to configure it by
invoking the following command: "/usr/bin/vmware-config-tools.pl". Do you want
this program to invoke the command for you now? [yes]

The file /usr/sbin/vmware-checkvm that this program was about to install
already exists. Overwrite? [yes]

The file /usr/sbin/vmware-rpctool that this program was about to install
already exists. Overwrite? [yes]

The file /usr/bin/vmware-hgfsclient that this program was about to install
already exists. Overwrite? [yes]

The file /usr/bin/vmware-xferlogs that this program was about to install
already exists. Overwrite? [yes]

Initializing...

The file /etc/vmware-tools/icu that this program was about to install already
exists. Overwrite? [yes]

Making sure services for VMware Tools are stopped.

Stopping VMware Tools services in the virtual machine:
  Guest operating system daemon:[ OK ]
  Unmounting HGFS shares:[ OK ]
  Guest filesystem driver:[ OK ]

The VMware Filesystem sync driver (vmsync) allows external third-party backup
software that is integrated with vSphere to create backups of the virtual
machine. Do you wish to enable this feature? [no]

Found a compatible pre-built module for vmci. Installing it...

Found a compatible pre-built module for vsock. Installing it...

Found a compatible pre-built module for vmxnet3. Installing it...

Found a compatible pre-built module for pvscsi. Installing it...

Found a compatible pre-built module for vmmemctl. Installing it...

The VMware Host-Guest Filesystem allows for shared folders between the host OS
and the guest OS in a Fusion or Workstation virtual environment. Do you wish
to enable this feature? [no]

Found a compatible pre-built module for vmxnet. Installing it...

The vmblock enables dragging or copying files between host and guest in a
Fusion or Workstation virtual environment. Do you wish to enable this feature?
[no]

!!! [EXPERIMENTAL] !!!
VMware automatic kernel modules enables automatic building and installation of
VMware kernel modules at boot that are not already present. By selecting yes,
you will be enabling this experimental feature. You can always disable this
feature by re-running vmware-config-tools.pl.

Would you like to enable VMware automatic kernel modules?
[no]

No X install found.

Creating a new initrd boot image for the kernel.
  Checking acpi hot plug[ OK ]
Starting VMware Tools services in the virtual machine:
  Switching to guest configuration:[ OK ]
  Paravirtual SCSI module:[ OK ]
  Guest memory manager:[ OK ]
  Guest vmxnet fast network device:[ OK ]
  VM communication interface:[ OK ]
  VM communication interface socket family:[ OK ]
  Guest operating system daemon:[ OK ]
The configuration of VMware Tools 9.0.0 build-782409 for Linux for this running
kernel completed successfully.

You must restart your X session before any mouse or graphics changes take
effect.

You can now run VMware Tools by invoking "/usr/bin/vmware-toolbox-cmd" from the
command line.

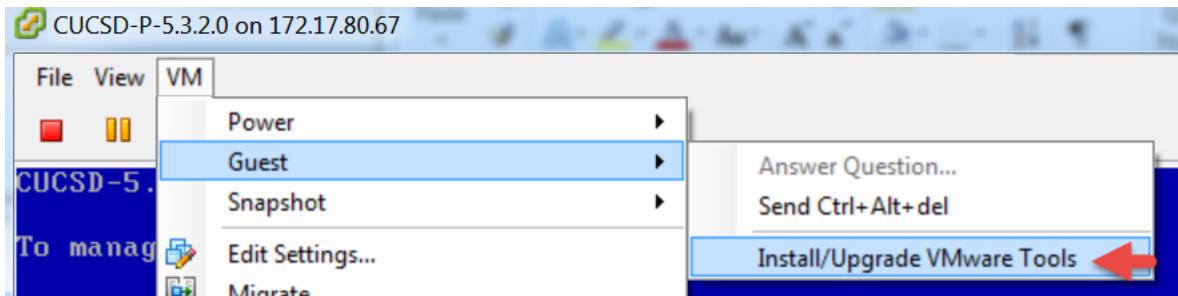
To enable advanced X features (e.g., guest resolution fit, drag and drop, and
file and text copy/paste), you will need to do one (or more) of the following:
1. Manually start /usr/bin/vmware-user
2. Log out and log back into your desktop session; and,
3. Restart your X session.

To use the vmxnet driver, restart networking using the following commands:
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start

Enjoy,
--the VMware team

[root@CUCSD_Primary vmware-tools-distrib]#
```

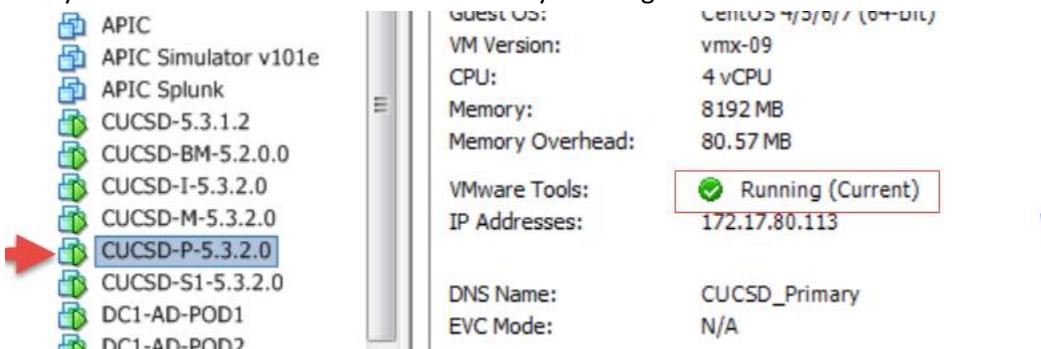
From the console, select 'Install/Upgrade VMware Tools'



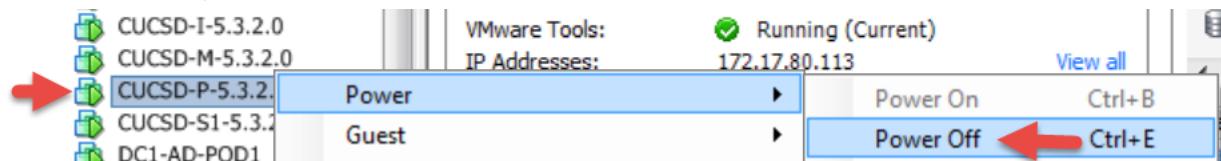
Select 'Automatic Tools Upgrade' and click OK.



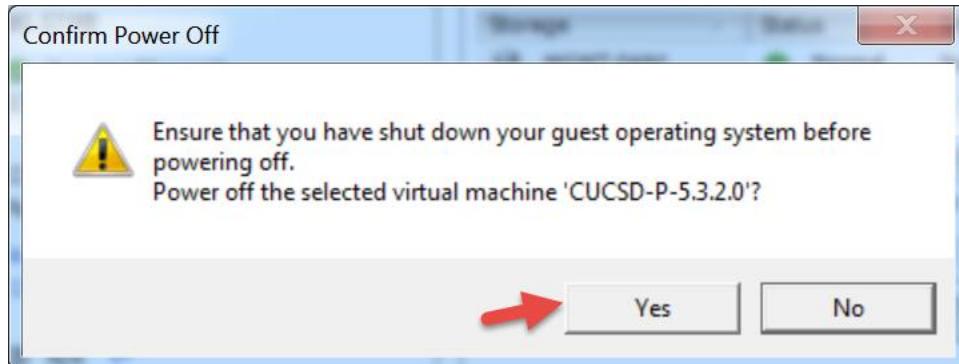
Verify Tools have been installed and currently Running as shown below.



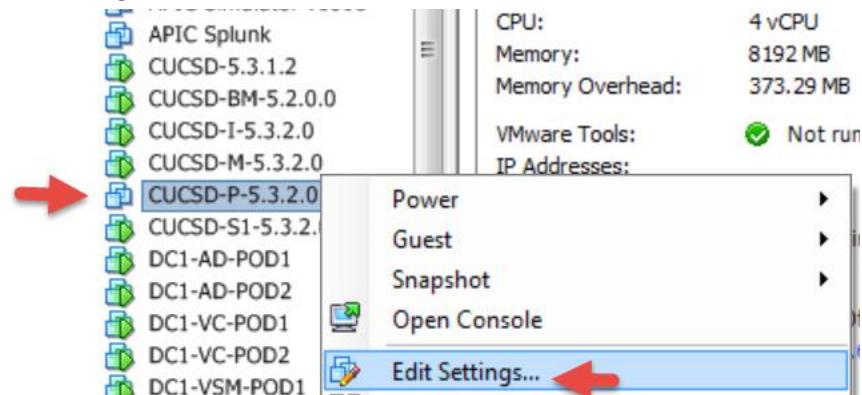
Power off the VM, select 'Power Off'.



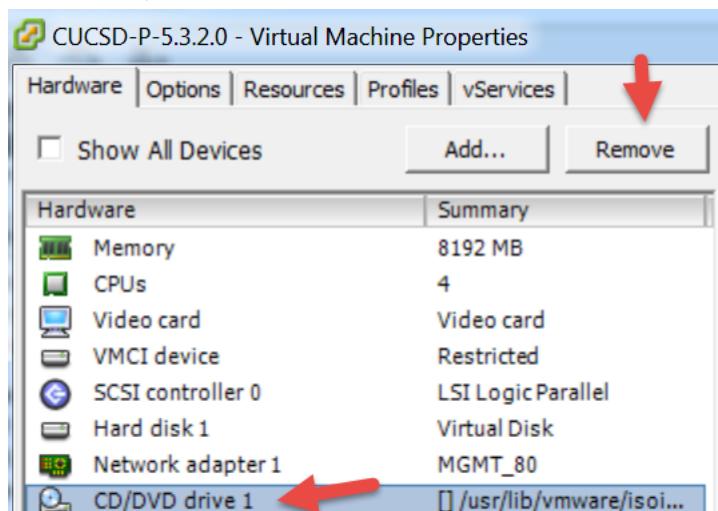
Select Yes.



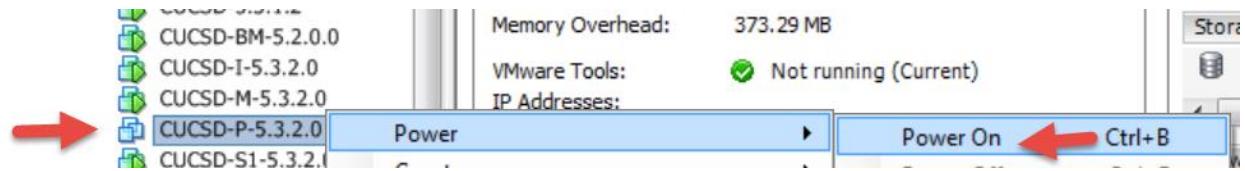
Edit Settings.



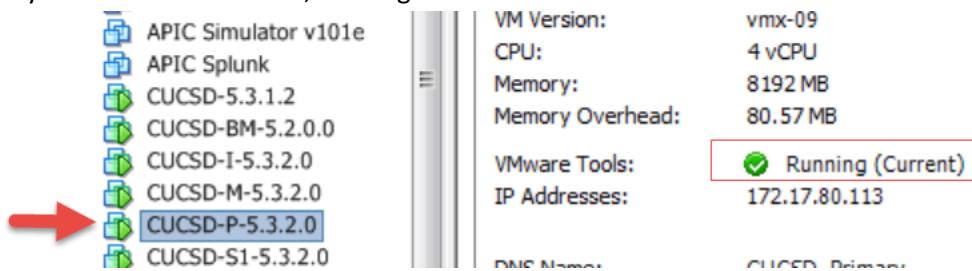
Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.



4.3. Configure Primary Node

SSH to the Primary Node using the shelladmin account and the default password of changeme.

Change the shelladmin password.

```
Select a number from the menu below
1) Change ShellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Stop Database
6) Start Database
7) Backup Database
8) Restore Database
9) Time Sync
10) Ping Hostname/IP Address
11) Show Version
12) Import CA Cert (JKS) File
13) Import CA Cert(PEM) File for VNC
14) Configure Network Interface
15) Display Network Details
16) Enable Database for Cisco UCS Director Baremetal Agent
17) Add Cisco UCS Director Baremetal Agent Hostname/IP
18) Tail Inframgr Logs
19) Apply Patch
20) Shutdown Appliance
21) Reboot Appliance
22) Manage Root Access
23) Login as Root
24) Configure Multi Node Setup (Advanced Deployment)
25) Clean-up Patch Files
26) Collect logs from a Node
27) Collect Diagnostics
28) Quit

SELECT> 1
Changing password for user shelladmin.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Press return to continue ...■
```

Configure and change the root password.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : c
Do you want to Configure/Set Root Privilege/Password [y/n]? : y
Changing root password...
Changing password for user root.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Root passwd changed sucessfully
Press return to continue ...■
```

Enable root access.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : e
Do you want to Enable Root Access [y/n]? : y
Enabling root access...
Unlocking password for user root.
passwd: Success.
Root access enabled successfully
Press return to continue ...■
```

Configure NTP Server. Replace the 1.1.1.1 with your NTP Server.

```
SELECT> 5
Time sync.....
System time is Thu Sep 17 13:41:46 UTC 2015
Hardware time is Thu Sep 17 13:41:47 2015 -0.391844 seconds
Do you want to sync systemtime [y/n]? n
Do you want to sync to NTP [y/n]? y
NTP Server IP Address: 1.1.1.1
```

From the menu, choose 'Configure Multi Node Setup (Advanced Deployment)' and press Enter. When prompted, press 1 to configure the current node. Then press y and then select the option to configure the node as the Primary node. From the menu, choose 'Configure Primary Node' and press Enter. At the Provide Inventory DB IP prompt, enter the IP address assigned to the Cisco UCS Director VM for the inventory database. This step registers the VM as a primary node with the inventory database. At the Provide Monitoring DB IP Prompt, enter the IP address assigned to the Cisco UCS Director VM for the monitoring database. This step registers the VM as a primary node with the monitoring database. When prompted, press Enter to Continue. When prompted to logout, enter y and press enter then log back into the Primary Node via SSH.

```
27) Collect Diagnostics
28) quit

SELECT> 24
*****
This wizard helps to do Multi Node setup
*****
Configuration Options :
Current Node --> Select '1'
Remote Node  --> Select '2'
exit         --> Select '3'

Please enter an option: 1
*****
Cisco UCS Director Multi Node Setup requires multiple instances of ucs director
OVF deployed with different configurations. Following are the required configura-
tions:
* UCS Director Primary Node (1 Instance) . This node also acts as a front end UI
node
* UCS Director Service Node (1 or more instances ). Service node can be reconfig-
ured as Primary Node when necessary.
* UCS Director Inventory DB Node (1 Instance)
* UCS Director Monitoring DB Node (1 Instance)

Refer to ucs director documentation for additional details on Multi Node setup.
*****
***

This is a standalone Node

Do you want to configure multi node setup [y/n]? y
Select a option from the menu below
a) Configure as Primary Node
b) Configure as Service Node
c) Configure as Inventory DB
d) Configure as Monitoring DB
x) Exit

Enter: [a/b/c/d/x]? a
Do you want to configure this node as Primary Node [y/n]? y
Configuring Primary Node
Stopping uCS Director Services
Select the IP version you want to configure [a) IPV4, b) IPV6] a/b : a
Provide Inventory DB IP:172.17.80.114
Provide Monitoring DB IP:172.17.80.115
Disabling database service at startup
Starting uCS Director Services
Configured Primary Node successfully
In order for changes to take effect logout and login back
Do you want to logout [y/n]? y
```

To verify the services for the monitoring database are up and running, choose ‘Display Service Status’ and press Enter. You should see the lines in the red box below. Note: After you return to the shelladmin, the menu options change to those available for an inventory database node.

```
Cisco UCS Director Shell Menu
Primary Node
Select a number from the menu below
1) Change shellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Time Sync
6) Ping Hostname/IP Address
7) Show Version
8) Import CA Cert (JKS) File
9) Import CA Cert(PEM) File for VNC
10) Configure Network Interface
11) Display Network Details
12) Add Cisco UCS Director Baremetal Agent Hostname/IP
13) Tail Inframgr Logs
14) Apply Patch
15) Shutdown Appliance
16) Reboot Appliance
17) Manage Root Access
18) Login as Root
19) Configure Multi Node Setup (Advanced deployment)
20) Clean-up Patch Files
21) collect logs from a Node
22) quit

SELECT> 2
-----

| Service     | Status  | PID  |
|-------------|---------|------|
| broker      | RUNNING | 6829 |
| controller  | RUNNING | 6867 |
| eventmgr    | RUNNING | 6901 |
| client      | RUNNING | 6963 |
| idaccessmgr | RUNNING | 7010 |
| inframgr    | RUNNING | 7072 |
| TOMCAT      | RUNNING | 7133 |
| websock     | RUNNING | 7162 |


Node Type : primary
Inventory DB( 172.17.80.114:3306 ) status : UP
Monitor DB( 172.17.80.115:3306 ) status : UP
Press return to continue ...
```

Edit the /etc/hosts file to update the name and IP address of the host. SSH to the Inventory Database Node using the root account.

- vi /etc/hosts
- shift a
- press return
- enter your host details
- when done: press esc
- enter :wq
- cat /etc/hosts

```
"/etc/hosts" 5L, 168C written
[root@localhost ~]# cat /etc/hosts
127.0.0.1 localhost.localdom localhost localhost
172.17.80.114 CUCSD_Inventory
172.17.80.115 CUCSD_Monitoring
172.17.80.116 CUCSD_Service1
172.17.80.113 CUCSD_Primary
[root@localhost ~]#
```

Edit the /etc/resolv.conf to update the DNS servers

- vi /etc/resolv.conf
- press 'i' for insert
- enter 'search localhost *your domain name*', **Note:** Sometime search localhost is already there
- enter dns server ip address after nameserver, **Note:** if you have multiple DNS servers, enter on separate lines
- when done: press esc
- enter :wq

```
[root@cUCSD_Primary ~]# vi /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
```

- cat /etc/resolv.conf

```
[root@cUCSD_Primary ~]# cat /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
[root@cUCSD_Primary ~]#
```

Edit the hostname in /etc/sysconfig/network

- vi /etc/sysconfig/network
- Move cursor to the beginning of localhost where it is on the l and enter cw (change word)
- Enter the Host name for the Inventory Database Node.
- when done: press esc
- enter :wq
- cat /etc/sysconfig/network

```
[root@localhost ~]# cat /etc/sysconfig/network
NETWORKING=yes
NETWORKING_IPV6=yes
HOSTNAME=CUCSD_Primary
DOMAINNAME=localdom
[root@localhost ~]#
```

Change the hostname

```
[root@localhost ~]# hostname CUCSD_Primary
[root@localhost ~]# hostname
CUCSD_Primary
[root@localhost ~]#
```

Log out and log back into the Primary and you will see the new hostname.

```
[root@cUCSD_Primary ~]#
```

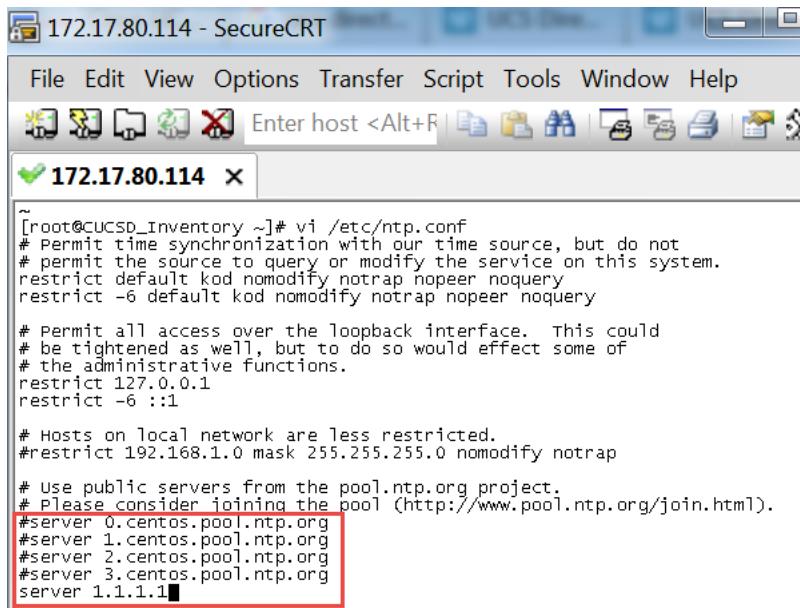
Configure NTP servers for the Primary Node. SSH into Primary Node using root account.

Create ntp user

```
[root@CUCSD_Inventory ~]# useradd ntp
[root@CUCSD_Inventory ~]# service ntpd restart
Shutting down ntpd: [FAILED]
starting ntpd: [ OK ]
[root@CUCSD_Inventory ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
time-b.timefreq .INIT.    16 u    -  64    0    0.000  0.000  0.000
173.44.32.10  .INIT.    16 u    -  64    0    0.000  0.000  0.000
resolver2.level .INIT.    16 u    -  64    0    0.000  0.000  0.000
blue.cif.net   .INIT.    16 u    -  64    0    0.000  0.000  0.000
LOCAL(0)       .LOCL.    10 l    -  64    0    0.000  0.000  0.001
[root@CUCSD_Inventory ~]#
```

Edit the ntp.conf file to include your NTP server. You can simple comment out the existing NTP servers by placing a # in front of them.

- vi /etc/ntp.conf
- cursor down to the first NTP server line
- press i for insert
- enter # then move your cursor down to each of the other NTP servers and enter #
- create a new line for your NTP server by pressing enter after the last NTP server
- enter server and the ip address of your NTP server. Replace 1.1.1.1 with your ntp server
- press esc, then enter :wq to quit and write the info



The screenshot shows a SecureCRT window titled "172.17.80.114 - SecureCRT". The menu bar includes File, Edit, View, Options, Transfer, Script, Tools, Window, and Help. The toolbar has icons for New, Open, Save, Copy, Paste, Find, and others. The main terminal window shows the command-line interface for editing the ntp.conf file. The file contains several commented-out lines starting with '#'. A new line is added at the bottom with "Server 1.1.1.1".

```
[root@CUCSD_Inventory ~]# vi /etc/ntp.conf
# Permit time synchronization with our time source, but do not
# permit the source to query or modify the service on this system.
restrict default kod nomodify notrap nopeer noquery
restrict -6 default kod nomodify notrap nopeer noquery

# Permit all access over the loopback interface. This could
# be tightened as well, but to do so would effect some of
# the administrative functions.
restrict 127.0.0.1
restrict -6 ::1

# Hosts on local network are less restricted.
#restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap

# use public servers from the pool.ntp.org project,
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
#server 0.centos.pool.ntp.org
#server 1.centos.pool.ntp.org
#server 2.centos.pool.ntp.org
#server 3.centos.pool.ntp.org
server 1.1.1.1
```

Restart the nptd service and check the NTP synchronization. It may take a while but when the clock is synced with the NTP server there will be a * to the left of the IP address.

```
[root@cucsp_primary ~]# service ntpd restart
Shutting down ntpd: [ OK ]
starting ntpd: [ OK ]
[root@cucsp_primary ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
===== 
172.37.1.2.74  LOCAL(1)    5 u    2  64    1    1.148  297.593  0.001
LOCAL(0)       .LOCL.    10 l    1  64    1    0.000  0.000  0.001
```

Change the time zone to the local timezone where the Primary Node, Inventory Database and the Monitoring Database reside. Use this timezone for all the service Nodes as well even though they may not reside in this timezone. This will ensure the logs will match everywhere.

- Determine the current timezone by entering 'ls -l /etc/localtime'
- To determine your timezone, 'cd /usr/share/zoneinfo/America/'

```
[root@CUCSD_Primary ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 27 Dec 20 2014 /etc/localtime -> /usr/share/zoneinfo/Etc/UTC
[root@CUCSD_Primary ~]#
[root@CUCSD_Primary ~]# cd /usr/share/zoneinfo/America/
[root@CUCSD_Primary America]#
[root@CUCSD_Primary America]# ls
Adak          Catamarca      Godthab        Louisville     Panama        St_Johns
Anchorage     Cayenne        Goose_Bay     Maceio        Pangnirtung  St_Kitts
Anguilla       Cayman         Grand_Turk   Managua      Paramaribo   St_Lucia
Antigua        Chicago        Grenada       Manaus       Phoenix      St_Thomas
Araguaina      Chihuahua     Guadeloupe   Marigot      Port_ae_Prince  St_Vincent
Argentina      Coral_Harbour Guatemala    Martinique  Porto_Acre   Swift_Current
Aruba          Cordoba       Guayaquil    Mazatlan    Port_of_Spain  Tegucigalpa
Asuncion       Costa_Rica    Guyana       Mendoza    Porto_Velho  Thule
Atikokan      Cuiaba        Halifax      Menominee  Puerto_Rico  Thunder_Bay
Atka           Curacao       Havana       Merida      Rainy_River  Tijuana
Bahia          Denmarkshavn Hermosillo   Mexico_city Rankin_Inlet  Toronto
Barbados       Dawson        Indiana      Miquelon    Recife      Tortola
Belem          Dawson_Creek Indianapolis Moncton     Regina      Vancouver
Belize          Denver        Inuvik      Monterrey   Resolute   Virgin
Blanc-Sablón  Detroit       Iqaluit     Montevideo Rosario    Winnipeg
Boa_Vista      Dominica     Jamaica     Montreal    Montserrat Santiago
Bogota          Edmonton     Jujuy      Nassau      Santo_Domingo
Boise          Eirunepo     Juneau      New_York    Sao_Paulo
Buenos_Aires   El_Salvador  Kentucky   Nipigon    Scoresbysund
Cambridge_Bay  Ensenada     Knox_IN     La_Paz      Nome
Campo_Grande  Fortaleza    Lima       Noronha    Shiprock
Cancun         Fort_Wayne   Los_Angeles North_Dakota St_Bartelemy
Caracas        Glace_Bay    Los_Angeles
[root@CUCSD_Primary America]#
```

Change the timezone and verify. I have chosen the Central Time Zone for my location.

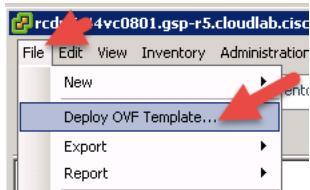
- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timezone is what you set it to: 'date'
- Verify the link: 'ls -l /etc/localtime'

```
[root@CUCSD_Primary ~]# cp /etc/localtime /root/old.timezone
[root@CUCSD_Primary ~]#
[root@CUCSD_Primary ~]# rm /etc/localtime
rm: remove regular file '/etc/localtime'? y
[root@CUCSD_Primary ~]#
[root@CUCSD_Primary ~]# ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime
[root@CUCSD_Primary ~]#
[root@CUCSD_Primary ~]# date
Thu Sep 17 13:05:35 CDT 2015
[root@CUCSD_Primary ~]#
[root@CUCSD_Primary ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 35 sep 17 13:05 /etc/localtime -> /usr/share/zoneinfo/America/chicago
[root@CUCSD_Primary ~]#
```

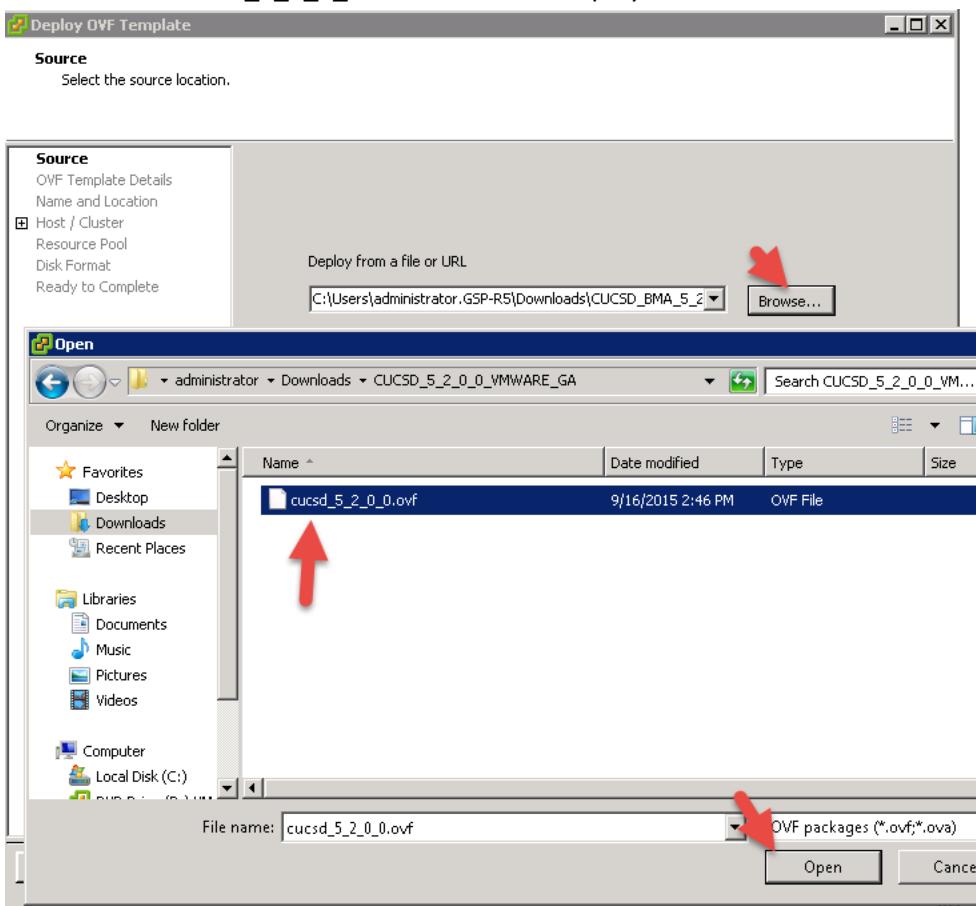
5. Create the Service Node

5.1. Create Service Node VM

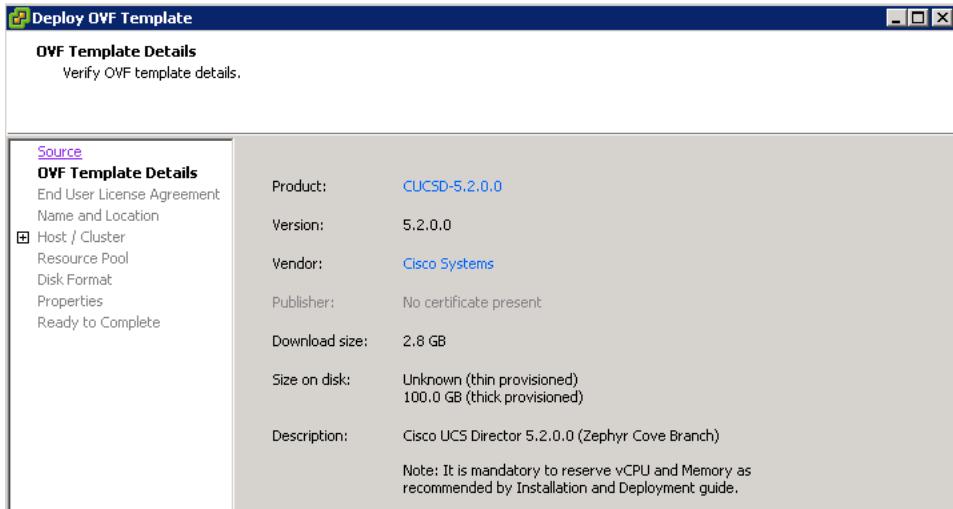
Log into vCenter and Select File -> Deploy OVF Template.



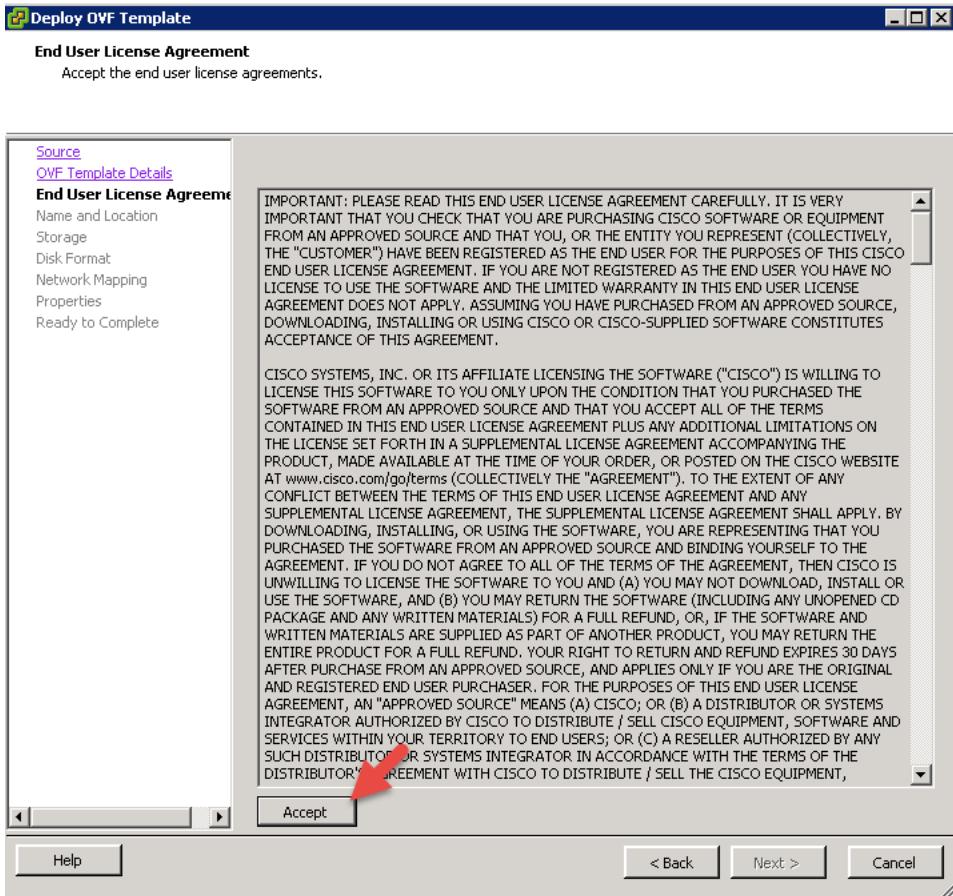
Browse to the UCSD_5_2_0_0 and select it for deployment then click Next.



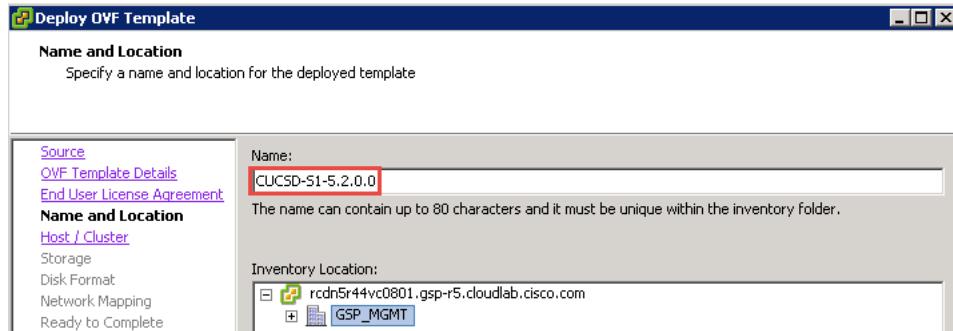
Verify details then click Next.



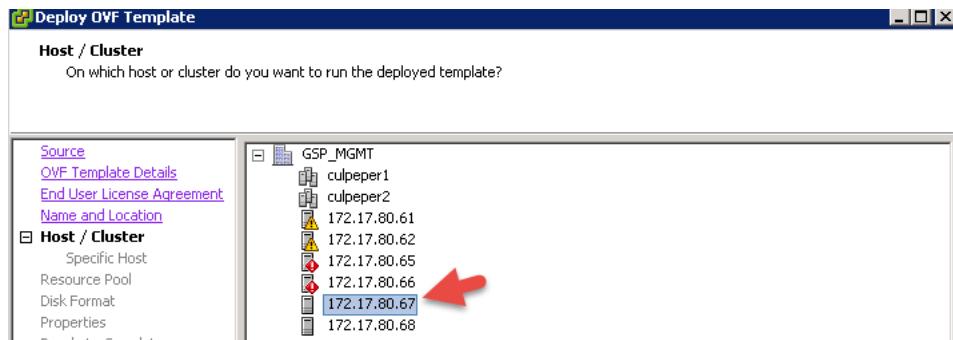
Accept the license agreement and Click Next.



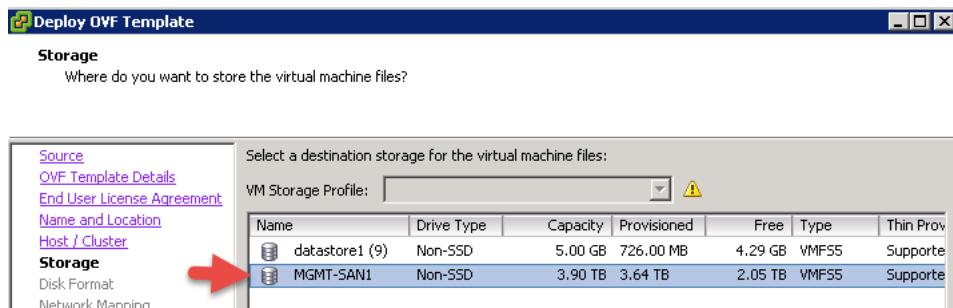
Name the VM and click Next.



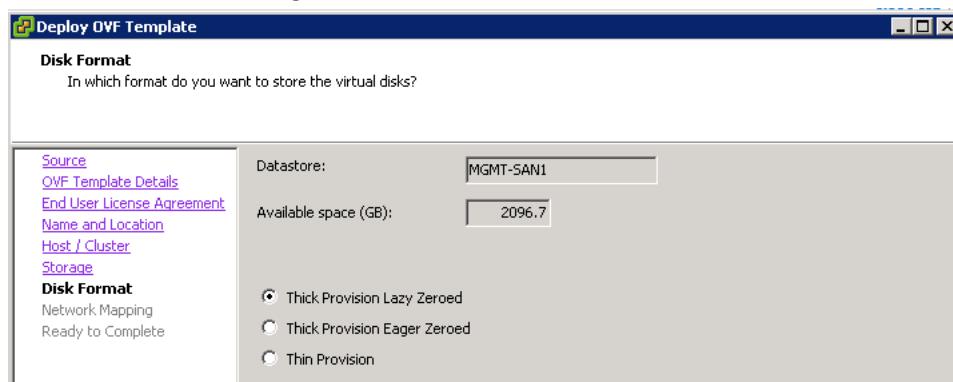
Select a Host and click Next.



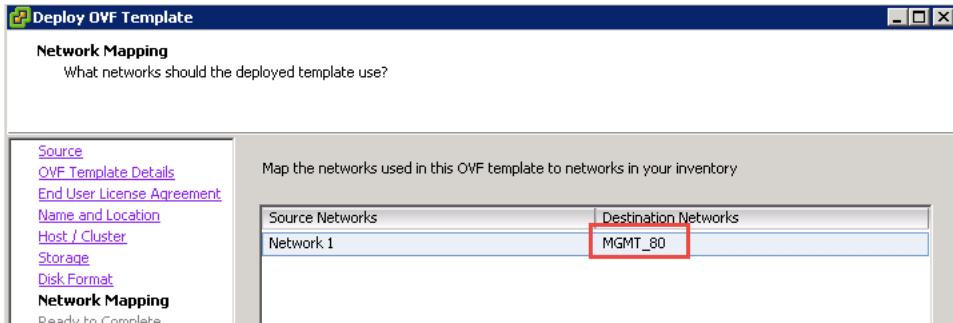
Select a storage location to install the VM and click Next.



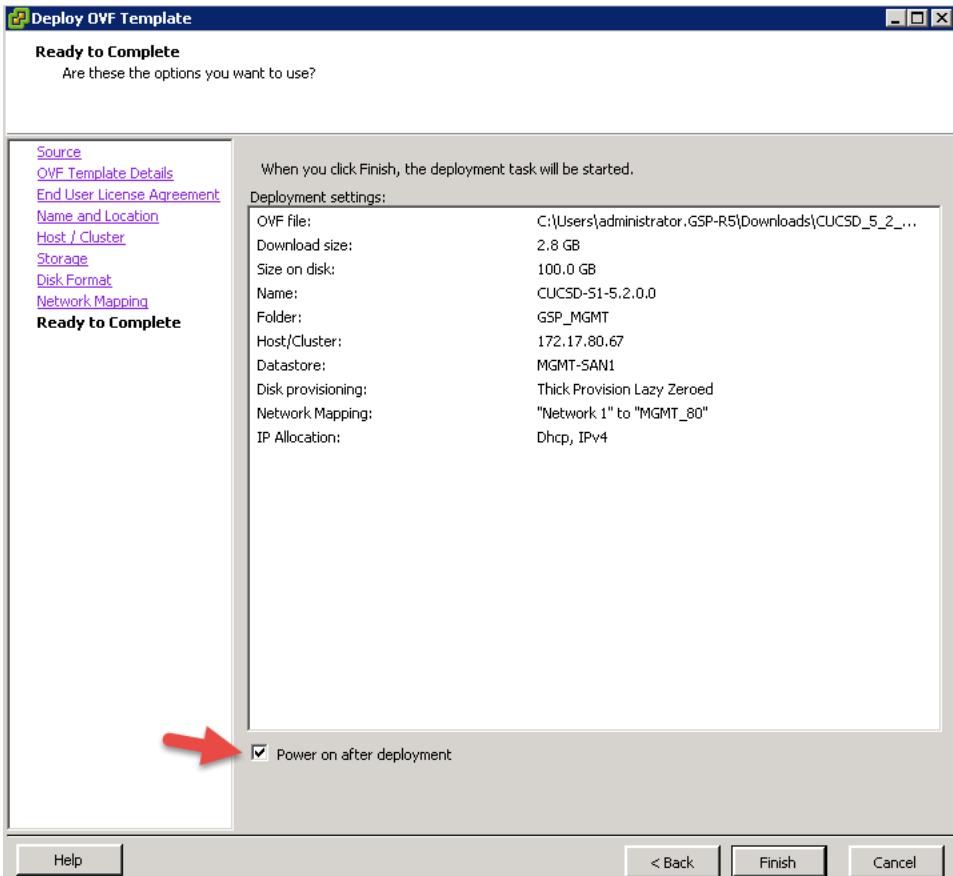
Leave the default settings for the Disk Format and click Next.



Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.



In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Service Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.

```
CUCSD-51-5.3 on 172.17.80.67
File View VM
Regenerating keys for the root user...
Generating public/private rsa key pair.
Created directory '/root/.ssh'.
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
9b:0d:47:38:86:90:fe:75:44:16:8d:d2:67:6e:1d:27 root@localhost.localdomain
Generating SSL certificates for sfcb in /opt/vmware/etc/sfcb
Generating SSL certificates for lighttpd in /opt/vmware/etc/lighttpd
This script is executed on first boot only.
Configuring static IP configuration

Do you want to Configure static IP [y/n]? :y
Do you want to configure IPv4/IPv6 [v4/v6] ? :v4

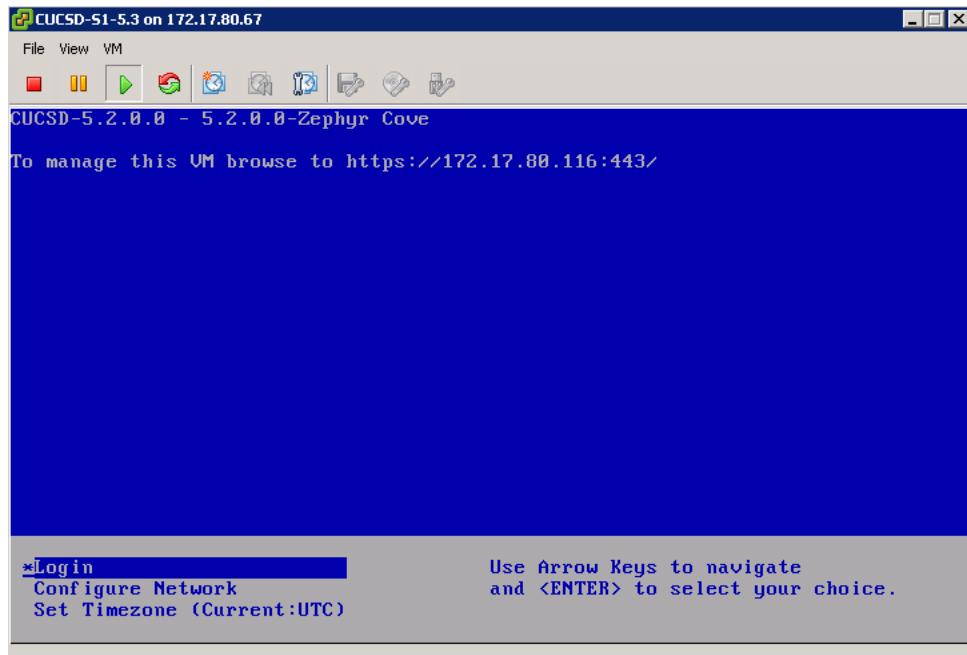
Configuring static IP for appliance. Provide the necessary access credentials

IP Address: 172.17.80.116
Netmask: 255.255.255.0
Gateway: 172.17.80.1

Configuring Network with : IP(172.17.80.116), Netmask(255.255.255.0), Gateway(172.17.80.1)

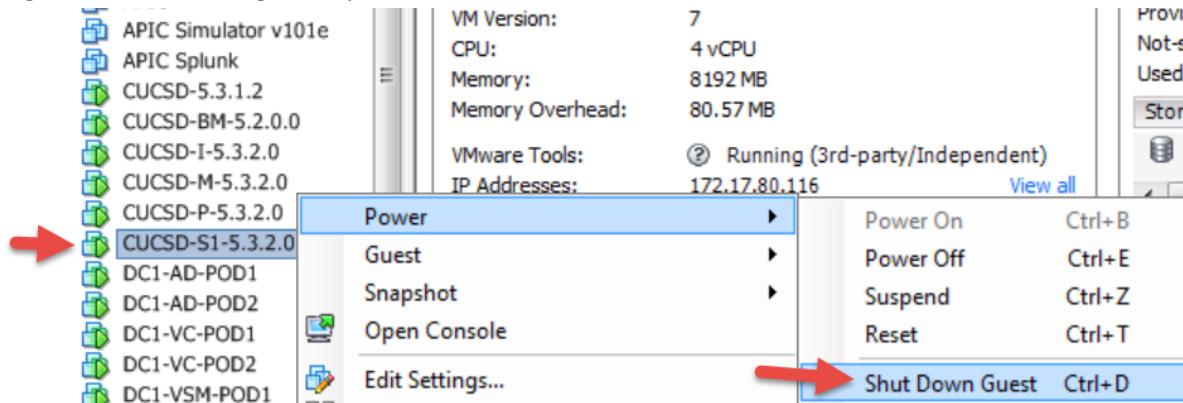
Do you want to continue [y/n]? :y
To release cursor, press CTRL + ALT.
```

After the installation is complete, you should see a screen that looks like this.

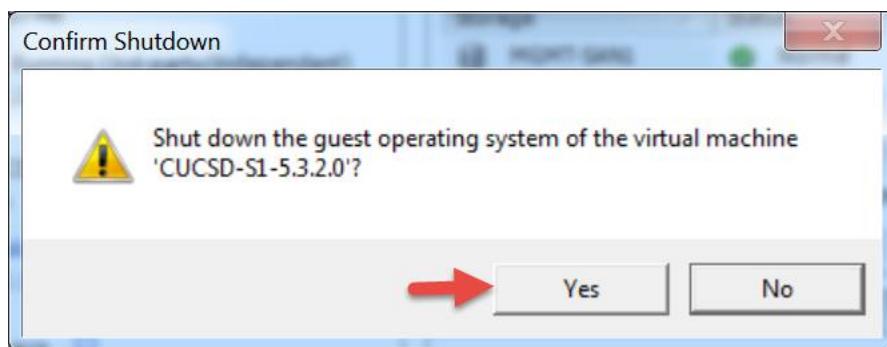


5.2. Install/Update VMWare tools & VM Version

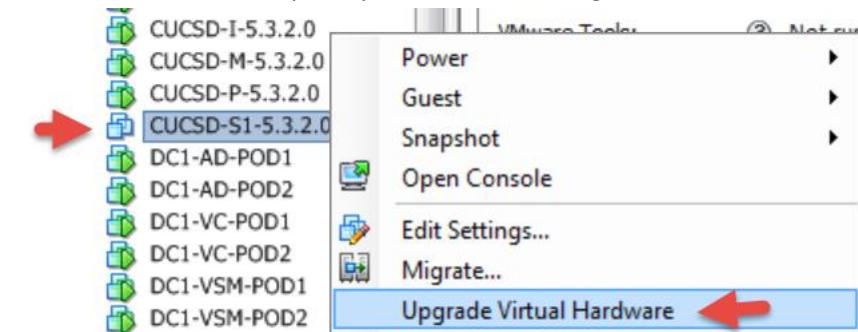
Log into vCenter, navigate to your Service Node VM, select 'Shutdown Guest'.



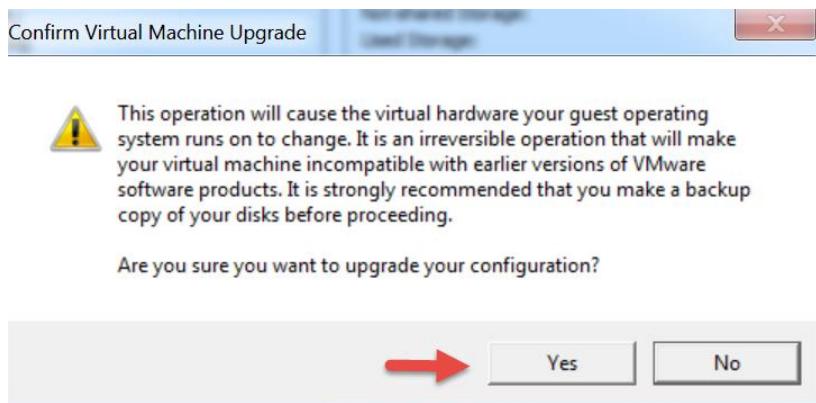
Select Yes.



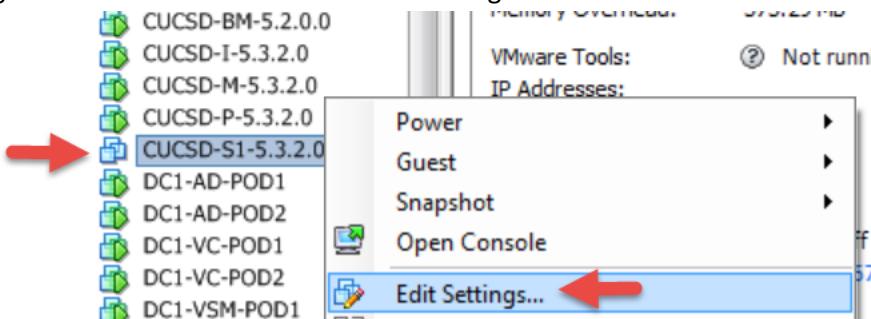
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



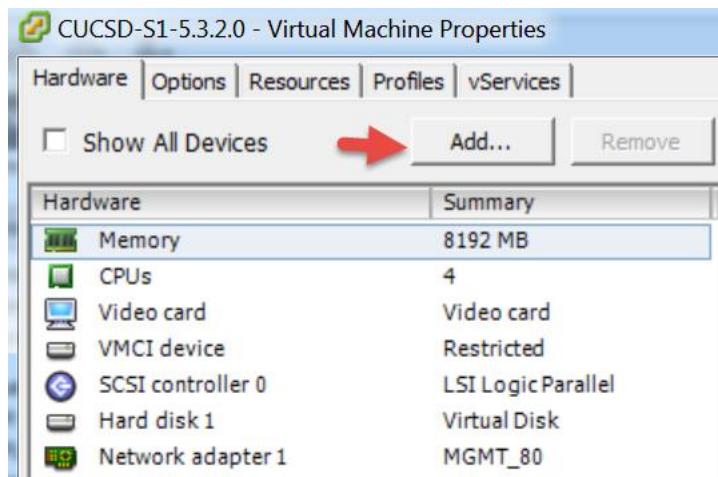
Select Yes.



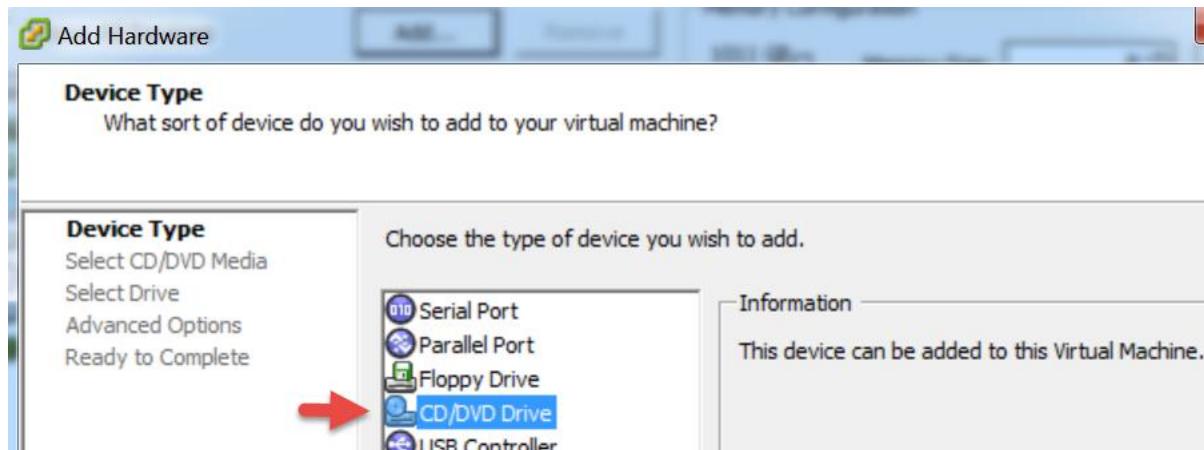
Right click on the VM and Select 'Edit Settings'



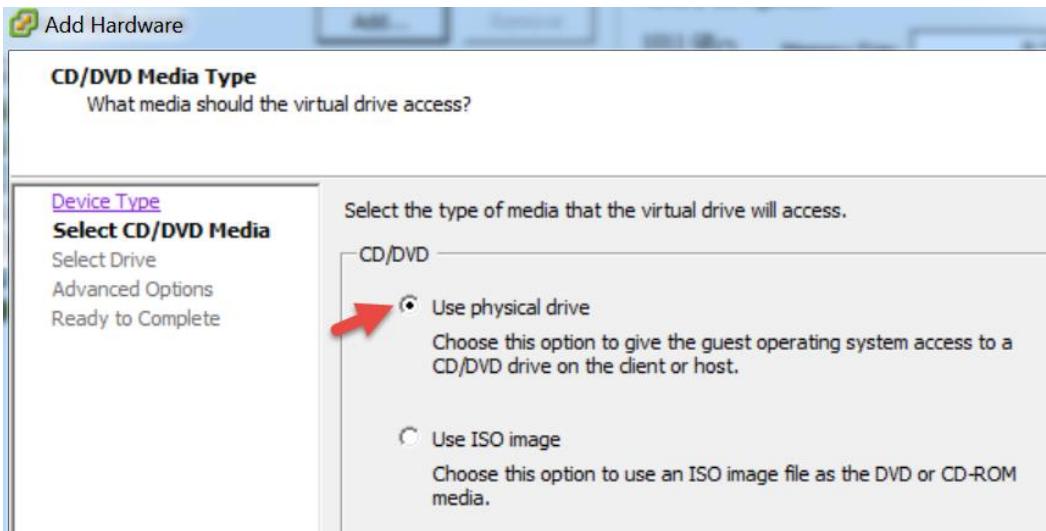
Select Add.



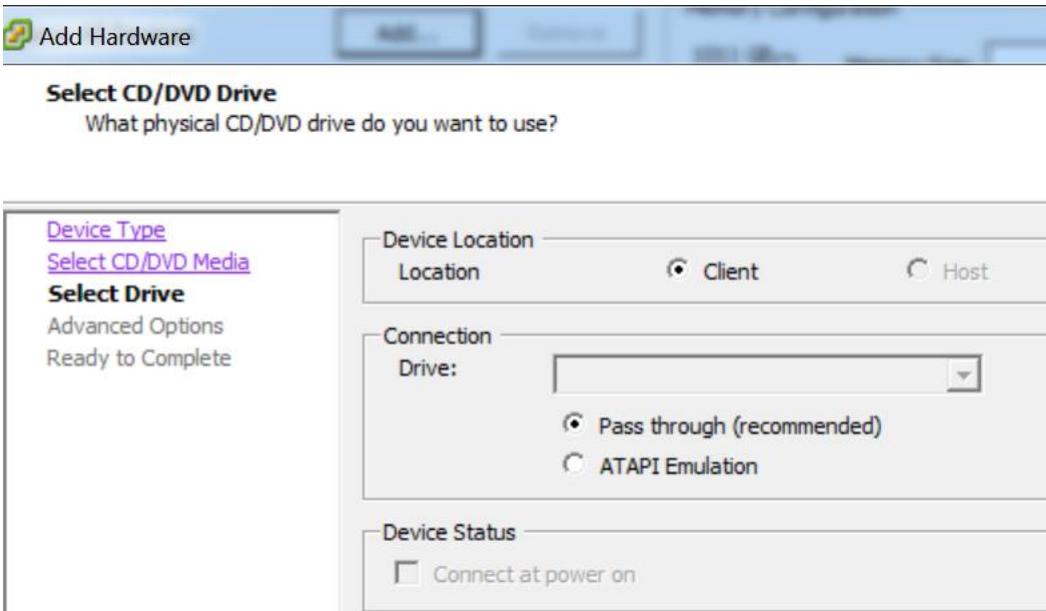
Select 'CD/DVD Drive' and click Next.



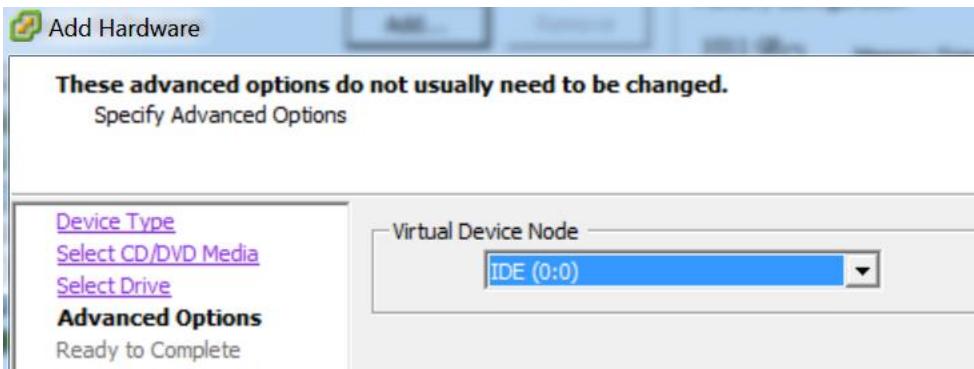
Leave default 'Use physical drive' and click Next.



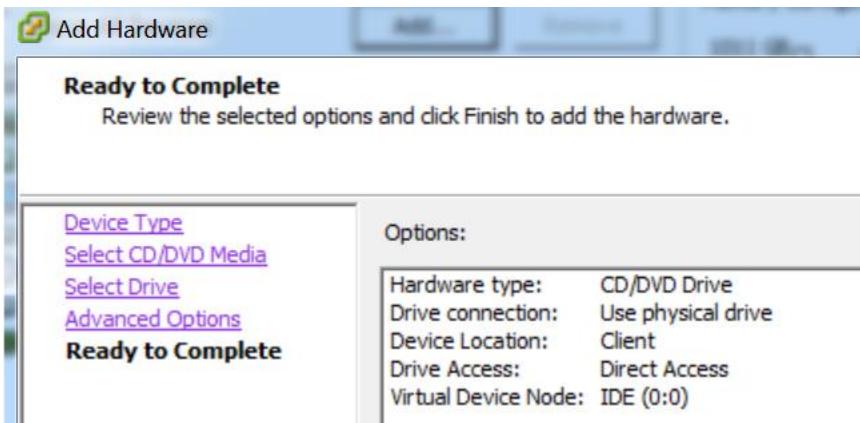
Leave default and click Next.



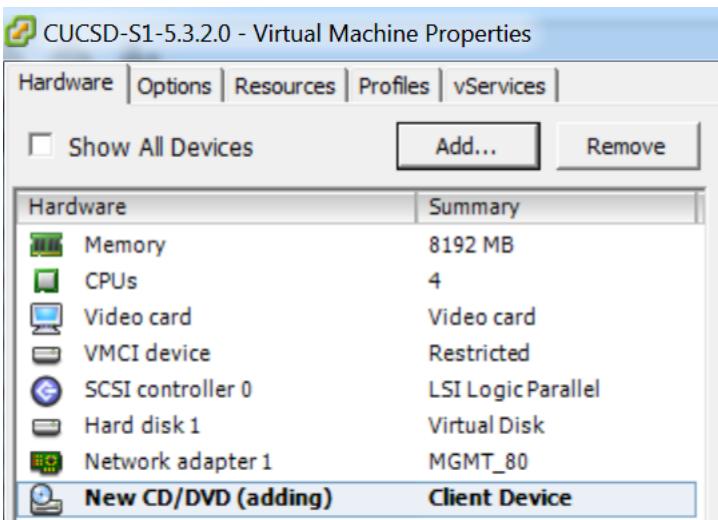
Leave default and click Next.



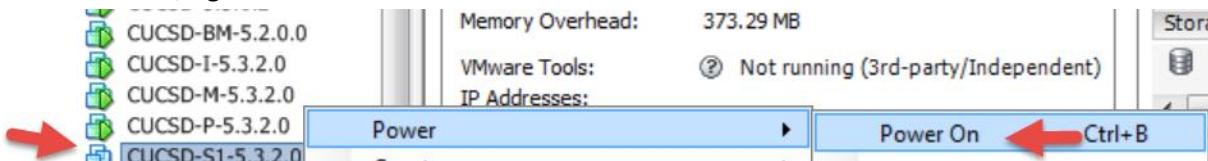
Review and click Finish.



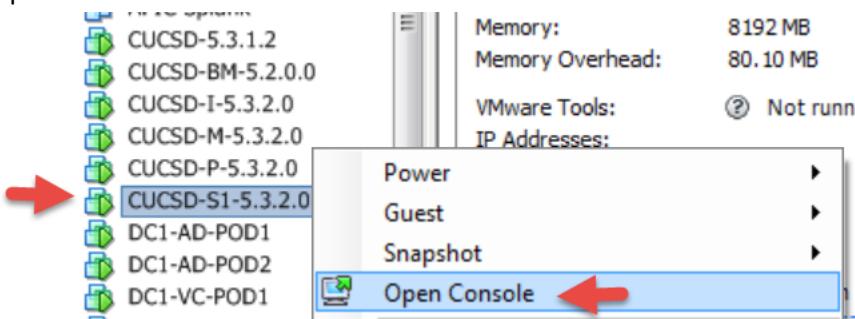
Review and click OK.



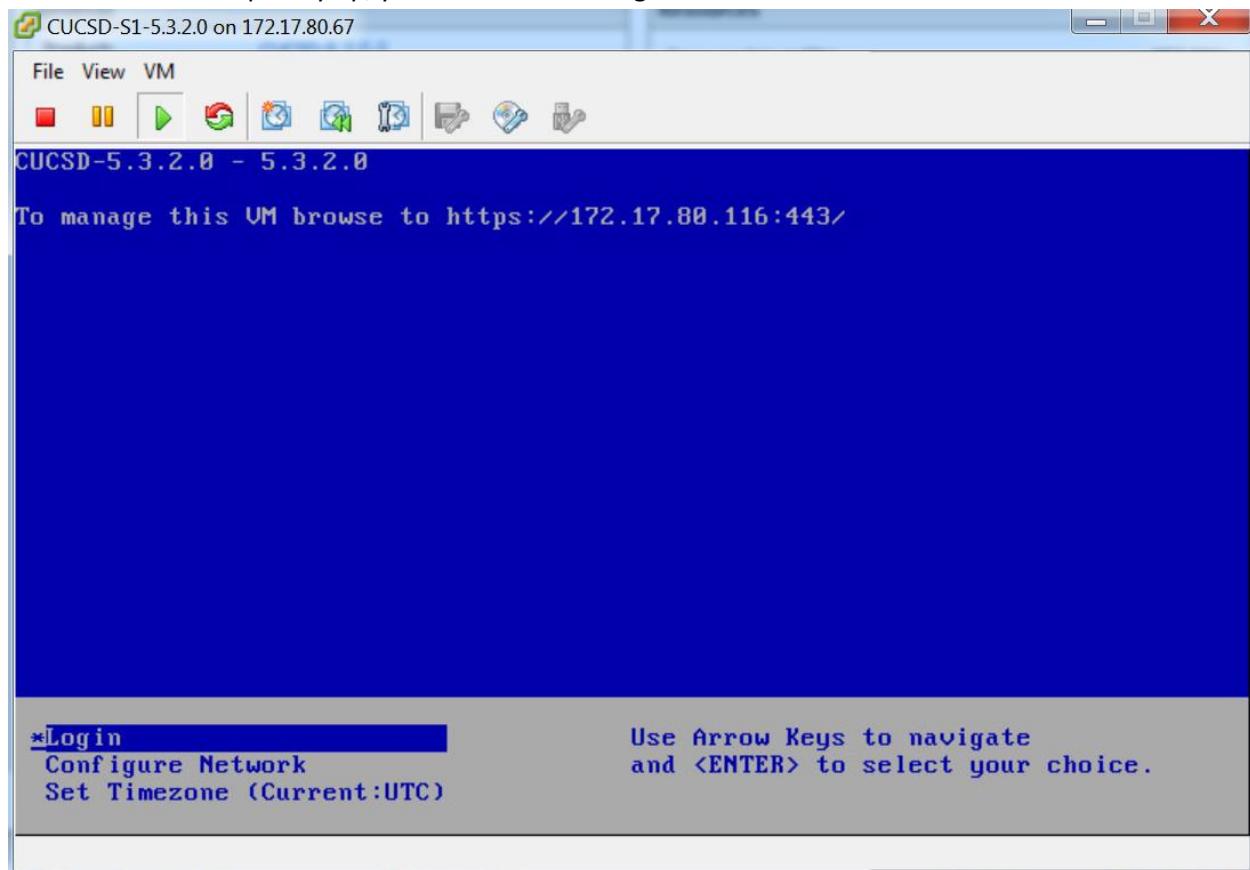
Power the VM On, right click on the VM and select 'Power On'.



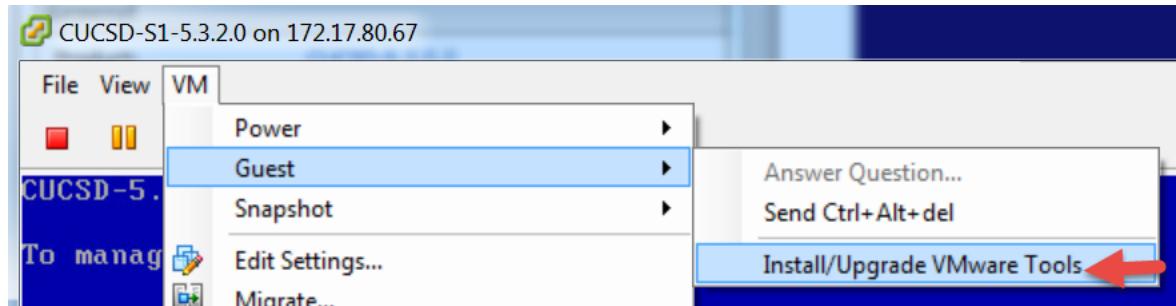
Open the VM Console to watch the VM Boot.



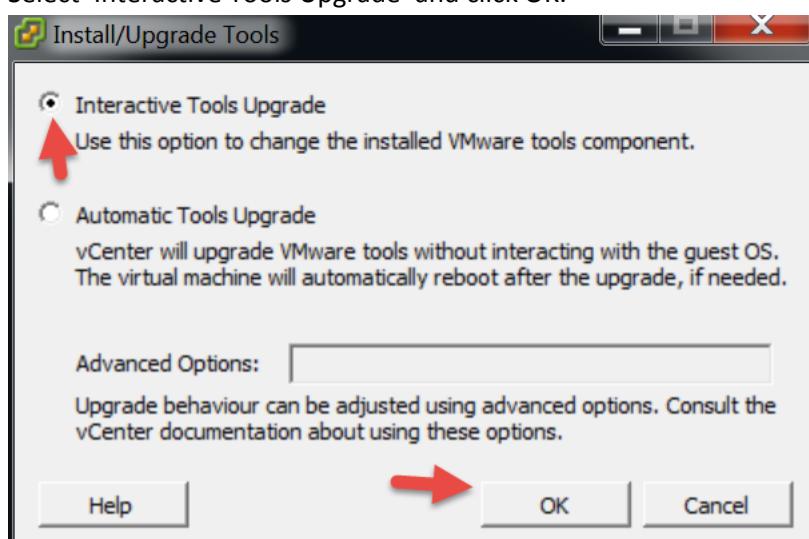
Once the VM is completely up, you should see the login screen similar to below.



From the console, select 'Install/Upgrade VMware Tools'



Select 'Interactive Tools Upgrade' and click OK.



SSH to the Primary Node.

- Make a dir for cdrom: 'mkdir /mnt/cdrom'
- Mount the cdrom: 'mount /dev/cdrom /mnt/cdrom'
- Copy vmware install to /tmp: 'cp /mnt/cdrom/VMwareTools-5.0.0-<xxxx>.tar.gz /tmp' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Unzip the files in /tmp: 'tar zxf /tmp/VMwareTools-5.0.0-<xxxx>.tar.gz' **Note:** tab out the VMware tools part so you don't have to figure out the correct name.
- Change directory: 'cd vmware-tools-distrib'
- Run the install: './vmware-install.pl'

Note: You will probably get the following message.

VMware Tools cannot be installed, since they have already been installed using a package-based mechanism (rpm or deb) on this system. If you wish to continue, you must first remove the currently installed VMware Tools using the appropriate packaged-based mechanism, and then restart this installer

Execution aborted.

Found VMware Tools CDROM mounted at /mnt/cdrom. Ejecting device /dev/cdrom ... No eject (or equivilant) command could be located. Eject Failed: If possible manually eject the Tools installer from the guest cdrom mounted at /mnt/cdrom before canceling tools install on the host.

- If you get this message, we need to Delete the VMware tools directory: 'rm -rf /usr/lib/vmware-tools/'
- Change directory: 'cd vmware-tools-distrib/'
- Re-Run the install: './vmware-install.pl'
- Enter Yes to the 'Would you like to remove the install DB?' You will probably get a Failure and Execution aborted.
- Re-Run the install: './vmware-install.pl'
- Accept all the defaults by Pressing Enter for all the options.

```
[root@UCSD_Service1 vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@UCSD_Service1 vmware-tools-distrib]#
[root@UCSD_Service1 vmware-tools-distrib]# ./vmware-install.pl
A previous installation of VMware Tools has been detected.

Uninstallation of previous install failed. Would you like to remove the install
DB? [no] yes
Removing installer DB, please re-run the installer.

Failure

Execution aborted.

[root@UCSD_Service1 vmware-tools-distrib]# ./vmware-install.pl
Creating a new VMware Tools installer database using the tar4 format.

Installing VMware Tools.

The file /etc/vmware-tools/poweron-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/suspend-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/poweroff-vm-default that this program was about to
install already exists. Overwrite? [yes]

The file /etc/vmware-tools/resume-vm-default that this program was about to
install already exists. Overwrite? [yes]

In which directory do you want to install the binary files?
[/usr/bin]

The file /usr/bin/vm-support that this program was about to install already
exists. Overwrite? [yes]

What is the directory that contains the init directories (rc0.d/ to rc6.d/)?
[/etc/rc.d]

What is the directory that contains the init scripts?
[/etc/rc.d/init.d]

The file /etc/rc.d/init.d/vmware-tools that this program was about to install
already exists. Overwrite? [yes]

In which directory do you want to install the daemon files?
[/usr/sbin]

In which directory do you want to install the library files?
[/usr/lib/vmware-tools]

The path "/usr/lib/vmware-tools" does not exist currently. This program is
going to create it, including needed parent directories. Is this what you want?
[yes]

The file /sbin/mount.vmhgfs that this program was about to install already
exists. Overwrite? [yes]

In which directory do you want to install the documentation files?
[/usr/share/doc/vmware-tools]

The file /usr/share/doc/vmware-tools/open_source_licenses.txt that this program
was about to install already exists. Overwrite? [yes]
```

The file /usr/share/doc/vmware-tools/README that this program was about to install already exists. Overwrite? [yes]

The file /usr/share/doc/vmware-tools/INSTALL that this program was about to install already exists. Overwrite? [yes]

The installation of VMware Tools 9.0.0 build-782409 for Linux completed successfully. You can decide to remove this software from your system at any time by invoking the following command: "/usr/bin/vmware-uninstall-tools.pl".

Before running VMware Tools for the first time, you need to configure it by invoking the following command: "/usr/bin/vmware-config-tools.pl". Do you want this program to invoke the command for you now? [yes]

The file /usr/sbin/vmware-checkvm that this program was about to install already exists. Overwrite? [yes]

The file /usr/sbin/vmware-rpctool that this program was about to install already exists. Overwrite? [yes]

The file /usr/bin/vmware-hgfsclient that this program was about to install already exists. Overwrite? [yes]

The file /usr/bin/vmware-xferlogs that this program was about to install already exists. Overwrite? [yes]

Initializing...

The file /etc/vmware-tools/icu that this program was about to install already exists. Overwrite? [yes]

Making sure services for VMware Tools are stopped.

Stopping VMware Tools services in the virtual machine:

Guest operating system daemon:[OK]
Unmounting HGFS shares:[OK]
Guest filesystem driver:[OK]

The VMware Filesystem sync driver (vmsync) allows external third-party backup software that is integrated with vSphere to create backups of the virtual machine. Do you wish to enable this feature? [no]

Found a compatible pre-built module for vmci. Installing it...

Found a compatible pre-built module for vsock. Installing it...

Found a compatible pre-built module for vmxnet3. Installing it...

Found a compatible pre-built module for pvscsi. Installing it...

Found a compatible pre-built module for vmmemctl. Installing it...

The VMware Host-Guest Filesystem allows for shared folders between the host OS and the guest OS in a Fusion or Workstation virtual environment. Do you wish to enable this feature? [no]

Found a compatible pre-built module for vmxnet. Installing it...

The vmblock enables dragging or copying files between host and guest in a Fusion or workstation virtual environment. Do you wish to enable this feature? [no]

!!! [EXPERIMENTAL] !!!
VMware automatic kernel modules enables automatic building and installation of VMware kernel modules at boot that are not already present. By selecting yes, you will be enabling this experimental feature. You can always disable this feature by re-running vmware-config-tools.pl.

would you like to enable VMware automatic kernel modules?
[no]

No X install found.

Creating a new initrd boot image for the kernel.
Checking acpi hot plug[OK]
Starting VMware Tools services in the virtual machine:
Switching to guest configuration:[OK]
Paravirtual SCSI module:[OK]
Guest memory manager:[OK]
Guest vmxnet fast network device:[OK]
VM communication interface:[OK]
VM communication interface socket family:[OK]
Guest operating system daemon:[OK]

The configuration of VMware Tools 9.0.0 build-782409 for Linux for this running kernel completed successfully.

You must restart your X session before any mouse or graphics changes take effect.

You can now run VMware Tools by invoking "/usr/bin/vmware-toolbox-cmd" from the command line.

To enable advanced X features (e.g., guest resolution fit, drag and drop, and file and text copy/paste), you will need to do one (or more) of the following:
1. Manually start "/usr/bin/vmware-user"
2. Log out and log back into your desktop session; and,
3. Restart your X session.

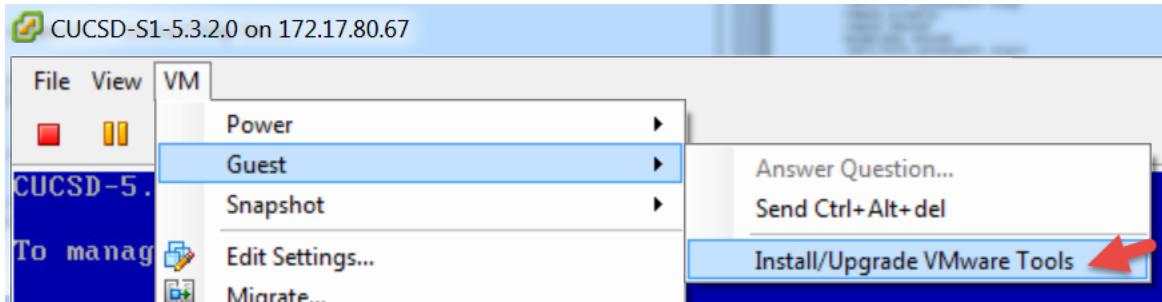
To use the vmxnet driver, restart networking using the following commands:
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start

Enjoy,

--the VMware team

[root@cucsd_service1 vmware-tools-distrib]#

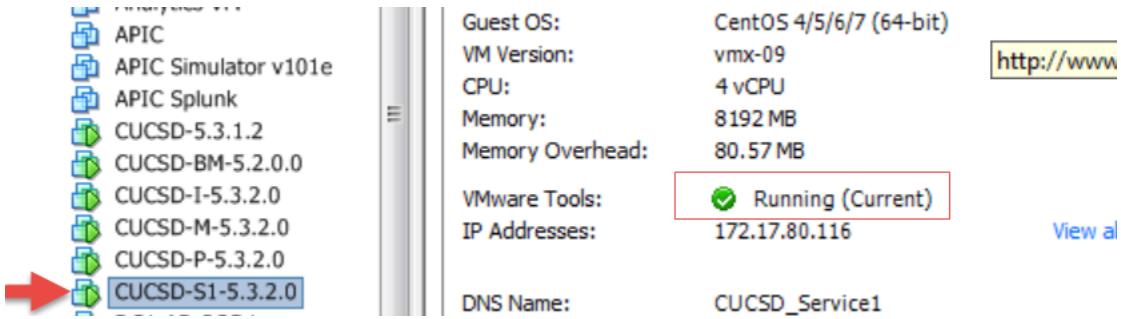
From the console, select 'Install/Upgrade VMware Tools'



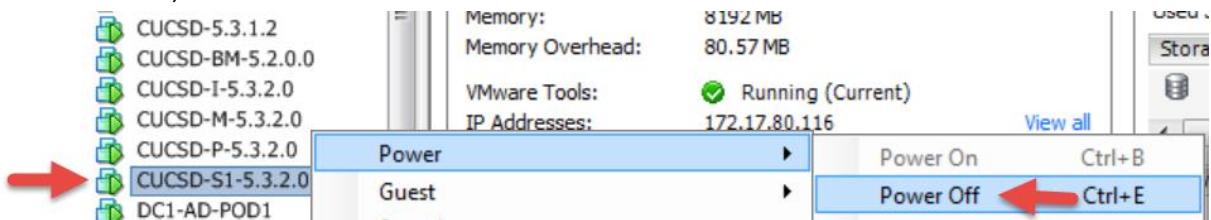
Select 'Automatic Tools Upgrade' and click OK.



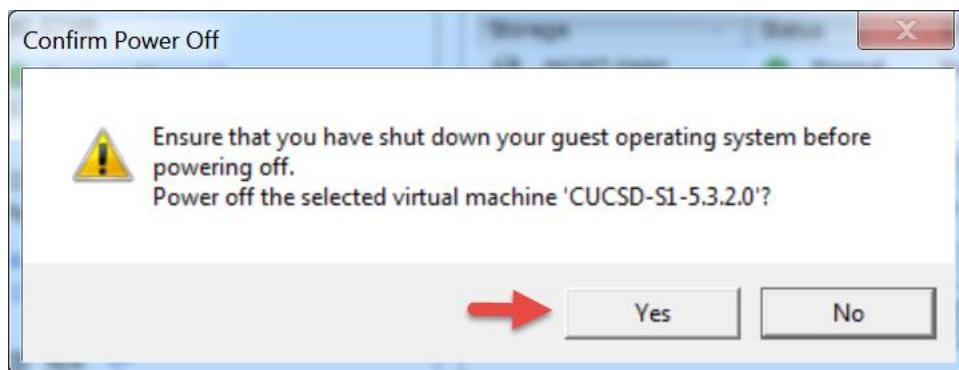
Verify Tools have been installed and currently Running as shown below.



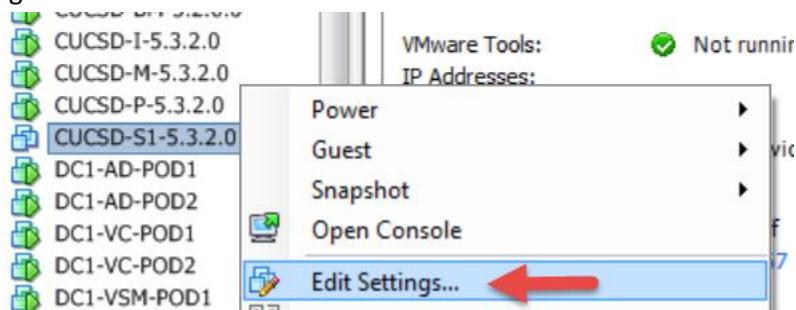
Power off the VM, select 'Power Off'.



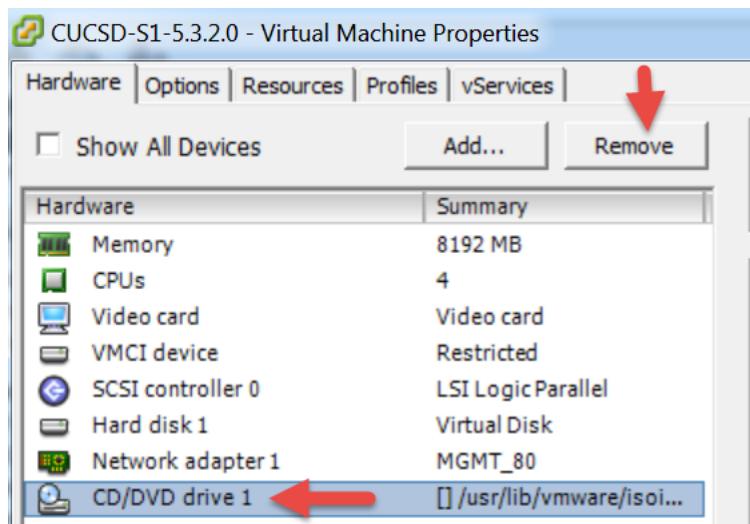
Select Yes.



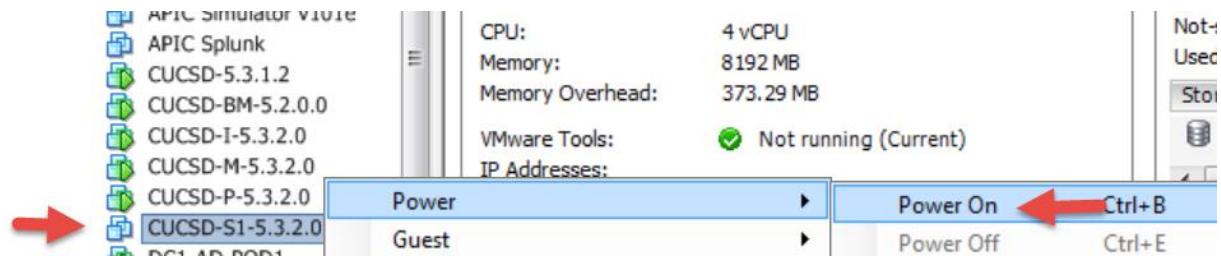
Edit Settings.



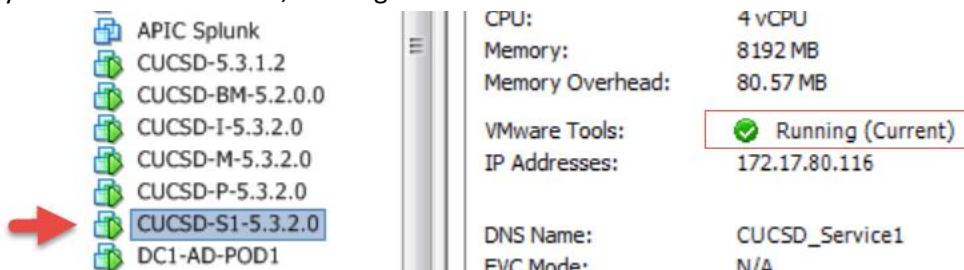
Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.



5.3. Configure Service Node

SSH to the Service Node using the shelladmin account and the default password of changeme.

Change the shelladmin password.

```
Select a number from the menu below
1) Change ShellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Stop Database
6) Start Database
7) Backup Database
8) Restore Database
9) Time Sync
10) Ping Hostname/IP Address
11) Show Version
12) Import CA Cert (JKS) File
13) Import CA Cert(PEM) File for VNC
14) Configure Network Interface
15) Display Network Details
16) Enable Database for Cisco UCS Director Baremetal Agent
17) Add Cisco UCS Director Baremetal Agent Hostname/IP
18) Tail Inframgr Logs
19) Apply Patch
20) Shutdown Appliance
21) Reboot Appliance
22) Manage Root Access
23) Login as Root
24) Configure Multi Node Setup (Advanced Deployment)
25) Clean-up Patch Files
26) Collect logs from a Node
27) Collect Diagnostics
28) Quit

SELECT> 1
Changing password for user shelladmin.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Press return to continue ...■
```

Configure and change the root password.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : c
Do you want to Configure/Set Root Privilege/Password [y/n]? : y
Changing root password...
Changing password for user root.
New UNIX password: [REDACTED]
Retype new UNIX password: [REDACTED]
passwd: all authentication tokens updated successfully.
Root passwd changed sucessfully
Press return to continue ...■
```

Enable root access.

```
28) Quit

SELECT> 22
Enable/disable/Configure (root privilege) [e/d/c] : e
Do you want to Enable Root Access [y/n]? : y
Enabling root access...
Unlocking password for user root.
passwd: Success.
Root access enabled successfully
Press return to continue ...■
```

Configure NTP Server. Replace the 1.1.1.1 with your NTP Server.

```
SELECT> 5
Time sync.....
System time is Thu Sep 17 13:41:46 UTC 2015
Hardware time is Thu Sep 17 13:41:47 2015 -0.391844 seconds
Do you want to sync systemtime [y/n]? n
Do you want to sync to NTP [y/n]? y
NTP Server IP Address: 1.1.1.1
```

From the menu, choose 'Configure Multi Node Setup (Advanced Deployment)' and press Enter. When prompted, press 1 to configure the current node. Then press y and then select the option to configure the node as the Service node.

From the menu, choose 'Configure Service Node' and press Enter. At the Provide Inventory DB IP prompt, enter the IP address assigned to the Cisco UCS Director VM for the inventory database. This step registers the VM as a primary node with the inventory database. At the Provide Monitoring DB IP Prompt, enter the IP address assigned to the Cisco UCS Director VM for the monitoring database. This step registers the VM as a primary node with the monitoring database.

When prompted, press Enter to Continue. When prompted to logout, enter y and press enter then log back into the Primary Node via SSH.

```
28) Quit
*****
SELECT> 24
*****
This wizard helps to do Multi Node setup
*****
Configuration Options :
Current Node --> Select '1'
Remote Node --> Select '2'
exit --> Select '3'

Please enter an option: 1
*****
*** Cisco UCS Director Multi Node Setup requires multiple instances of ucs director OVF deployed with different configurations. Following are the required configurations:
* UCS Director Primary Node (1 Instance) . This node also acts as a front end UI node
* UCS Director Service Node (1 or more instances) . Service node can be reconfigured as Primary Node when necessary.
* UCS Director Inventory DB Node (1 Instance)
* UCS Director Monitoring DB Node (1 Instance)

Refer to UCS Director documentation for additional details on Multi Node setup.
*****
*** This is a standalone Node
Do you want to configure multi node setup [y/n]? y
Select a option from the menu below
a) Configure as Primary Node
b) Configure as Service Node
c) Configure as Inventory DB
d) Configure as Monitoring DB
x) Exit

Enter: [a/b/c/d/x]? b
Do you want to configure this node as Service Node [y/n]? y
Configuring Service Node
Stopping UCS Director Services
Select the IP version you want to configure [a) IPv4, b) IPv6] a/b a
Provide Inventory DB IP: 172.17.80.114
Provide Monitoring DB IP: 172.17.80.115
Disabling Database service at startup
Starting UCS Director Services
Configured Service Node successfully
In order for changes to take effect logout and login back
Do you want to logout [y/n]? y
```

To verify the services for the monitoring database are up and running, choose 'Display Service Status' and press Enter. You should see the lines in the red box below. Note: After you return to the shelladmin, the menu options change to those available for an inventory database node.

```
Cisco UCS Director Shell Menu
Service Node
Select a number from the menu below
1) Change shellAdmin Password
2) Display Services Status
3) Stop Services
4) Start Services
5) Time Sync
6) Ping Hostname/IP Address
7) Show Version
8) Import CA Cert (JKS) File
9) Import CA Cert(PEM) File for VNC
10) Configure Network Interface
11) Display Network Details
12) Add Cisco UCS Director Baremetal Agent Hostname/IP
13) Tail Inframgr Logs
14) Apply Patch
15) Shutdown Appliance
16) Reboot Appliance
17) Manage Root Access
18) Login as Root
19) Configure Multi Node Setup (Advanced deployment)
20) Clean-up Patch Files
21) Collect logs from a Node
22) Quit

SELECT> 2
-----+-----+-----+
Service |      Status      |      PID
-----+-----+-----+
broker  | RUNNING        | 6607
controller | RUNNING        | 6632
eventmgr | RUNNING        | 6679
client   | RUNNING        | 6728
idaccessmgr | RUNNING        | 6788
inframgr | RUNNING        | 6837
TOMCAT   | RUNNING        | 6911
websock  | RUNNING        | 6940

Node Type : service
Inventory DBC( 172.17.80.114:3306 ) status : UP
Monitor DB( 172.17.80.115:3306 ) status : UP
Press return to continue ...■
```

Edit the /etc/hosts file to update the name and IP address of the host. SSH to the Inventory Database Node using the root account.

- vi /etc/hosts
- shift a
- press return
- enter your host details
- when done: press esc
- enter :wq
- cat /etc/hosts

```
[root@localhost ~]# cat /etc/hosts
127.0.0.1 localhost.localdomain localhost
172.17.80.114 CUCSD_Inventory
172.17.80.115 CUCSD_Monitoring
172.17.80.116 CUCSD_Service1
172.17.80.113 CUCSD_Primary
[root@localhost ~]#
```

Edit the /etc/resolv.conf to update the DNS servers

- vi /etc/resolv.conf
- press 'i' for insert
- enter 'search localhost *your domain name*', **Note:** Sometime search localhost is already there
- enter dns server ip address after nameserver, **Note:** if you have multiple DNS servers, enter on separate lines
- when done: press esc
- enter :wq

```
[root@CUCSD_Service1 ~]# vi /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
```

- cat /etc/resolv.conf

```
[root@CUCSD_Service1 ~]# cat /etc/resolv.conf
search localhost gsp-r5.cloudlab.cisco.com
nameserver 172.17.80.104
[root@CUCSD_Service1 ~]#
```

Edit the hostname in /etc/sysconfig/network

- vi /etc/sysconfig/network
- Move cursor to the beginning of localhost where it is on the l and enter cw (change word)
- Enter the Host name for the Inventory Database Node.
- when done: press esc
- enter :wq
- cat /etc/sysconfig/network

```
[root@localhost ~]# cat /etc/sysconfig/network
NETWORKING=yes
NETWORKING_IPV6=yes
HOSTNAME=CUCSD_Service1
DOMAINNAME=localdom
[root@localhost ~]#
```

Change the hostname

```
[root@localhost ~]# hostname CUCSD_Service1
[root@localhost ~]#
[root@localhost ~]# hostname
CUCSD_Service1
[root@localhost ~]#
```

Log out and log back into the Service Node and you will see the new hostname.

```
[root@CUCSD_Service1 ~]#
```

Configure NTP servers for Service Node. SSH into Service Node using root account.

Create ntp user

```
[root@CUCSD_Service1 ~]# useradd ntp
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# service ntpd restart
Shutting down ntpd: [FAILED]
Starting ntpd: [ OK ]
[root@CUCSD_Service1 ~]# ntpq -p
  remote          refid      st t when poll reach   delay    offset  jitter
=====
y.ns.gin.ntt.ne .INIT.        16 u    - 64    0    0.000    0.000  0.000
pegasus.latt.ne .INIT.        16 u    - 64    0    0.000    0.000  0.000
time.b.nist.gov .INIT.        16 u    - 64    0    0.000    0.000  0.000
utcnist2.colora .INIT.       16 u    - 64    0    0.000    0.000  0.000
LOCAL(0)         .LOCL.       10 l    2 64    1    0.000    0.000  0.001
[root@CUCSD_Service1 ~]#
```

Edit the ntp.conf file to include your NTP server. You can simple comment out the existing NTP servers by placing a # in front of them.

- vi /etc/ntp.conf
- cursor down to the first NTP server line
- press i for insert
- enter # then move your cursor down to each of the other NTP servers and enter #
- create a new line for your NTP server by pressing enter after the last NTP server
- enter server and the ip address of your NTP server. Replace 1.1.1.1 with your ntp server
- press esc, then enter :wq to quit and write the info

```
[root@CUCSD_Service1 ~]# vi /etc/ntp.conf
# Permit time synchronization with our time source, but do not
# permit the source to query or modify the service on this system.
restrict default kod nomodify notrap nopeer noquery
restrict -6 default kod nomodify notrap nopeer noquery

# Permit all access over the loopback interface. This could
# be tightened as well, but to do so would effect some of
# the administrative functions.
restrict 127.0.0.1
restrict -6 ::1

# Hosts on local network are less restricted.
#restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap

# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
server 0.centos.pool.ntp.org
server 1.centos.pool.ntp.org
server 2.centos.pool.ntp.org
server 3.centos.pool.ntp.org
server 1.1.1.1
```

Restart the nptd service and check the NTP synchronization. It may take a while but when the clock is synced with the NTP server there will be a * to the left of the IP address.

```
[root@CUCSD_Service1 ~]# service ntpd restart
Shutting down ntpd: [ OK ]
Starting ntpd: [ OK ]
[root@CUCSD_Service1 ~]# ntpq -p
  remote          refid      st t when poll reach   delay    offset  jitter
=====
172.17.200.174 LOCAL(1)        5 u    8 64    1    1.401  314.182  0.001
LOCAL(0)         .LOCL.       10 l    7 64    1    0.000    0.000  0.001
[root@CUCSD_Service1 ~]#
```

Change the time zone to the local timezone where the Primary Node, Inventory Database and the Monitoring Database reside. Use this timezone for all the service Nodes as well even though they may not reside in this timezone. This will ensure the logs will match everywhere.

- Determine the current timezone by entering 'ls -l /etc/localtime'
- To determine your timezone, 'cd /usr/share/zoneinfo/America/'

```
[root@CUCSD_Service1 ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 27 Dec 20 2014 /etc/localtime -> /usr/share/zoneinfo/Etc/UTC
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# ls /usr/share/zoneinfo/America/
Adak          Catamarca   Godthab    Louisville  Panama      St_Johns
Anchorage     Cayenne     Goose_Bay  Maceio     Pangnirtung  St_Kitts
Anguilla       Cayman     Grand_Turk Managua   Paramaribo   St_Lucia
Antigua        Chicago    Grenada    Manaus    Phoenix     St_Thomas
Araguaina      Chihuahua Guadeloupe Marigot   Port_ae_Prince St_Vincent
Argentina      Coral_Harbour Guatemala Martinique Porto_Acre Swift_Current
Aruba          Cordoba   Guayaquil Mazatlan  Port_of_Spain Tegucigalpa
Asuncion       Costa_Rica Guyana    Mendoza  Porto_Velho Thule
Atikokan       Cuiaba    Halifax   Menominee Puerto_Rico Thunder_Bay
Atka           Curacao   Havana   Merida    Rainy_River Tijuana
Bahia          Danmarkshavn Hermosillo Mexico_City Rankin_Inlet Toronto
Barbados       Dawson    Indiana   Miquelon Recife    Tortola
Belem          Dawson_Creek Indianapolis Moncton Regina   Vancouver
Belize          Denver    Inuvik    Monterrey Resolute Virgin
Blanc-Sablón  Detroit   Igualuit  Montevideo Rio_Branco Whitehorse
Boa_Vista      Dominica Jamaica   Montreal Rosario  Winnipeg
Bogota          Edmonton Jujuy    Montserrat Santarem Yakutat
Boise          Eirunepo Juneaup   Nassau   Santiago Yellowknife
Buenos_Aires   El_Salvador Kentucky New_York Santo_Domingo
Cambridge_Bay   Ensenada Knox_IN Nipigon Sao_Paulo
Campo_Grande  Fortaleza La_Paz   Nome    Scoresbysund
Cancun         Fort_Wayne Lima    Noronha Shiprock
Caracas        Glace_Bay Los_Angeles North_Dakota St_Bartelemy
[root@CUCSD_Service1 ~]#
```

Change the timezone and verify. I have chosen the Central Time Zone for my location.

- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timezone is what you set it to: 'date'
- Verify the link: 'ls -l /etc/localtime'

```
[root@CUCSD_Service1 ~]# cp /etc/localtime /root/old.timezone
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# rm /etc/localtime
rm: remove symbolic link '/etc/localtime'? y
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# date
Thu Sep 17 13:23:18 CDT 2013
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 35 Sep 17 13:23 /etc/localtime -> /usr/share/zoneinfo/America/Chicago
[root@CUCSD_Service1 ~]#
```

Example of NTP Time Synced: Notice the * in front of the NTP Server IP Address.

```
[root@CUCSD_Service1 ~]# ntpq -p
      remote          refid      st t when poll reach   delay    offset  jitter
=====
*172.17.0.4 LOCAL(1)        5 u 26 64 77  1.137  315.245  0.699
LOCAL(0)          .LOCL.      10 l 30 64 77  0.000  0.000  0.001
[root@CUCSD_Service1 ~]#
```

Verify the Service Node is completely up before moving on to the next section. Do not move on until you see the From the Service Node CLI, 'vi /opt/infra/inframgr/logfile.txt'

- Go to the end/bottom of the log file: press shift + g
- Look for 'Ready to send announcement' starting from the bottom: enter '?Ready to send announcement'

```
2015-10-18 23:32:35,184 [pool-1-thread-24] INFO userAPIAgentConnectivityCheck(RemoteScheduleTaskAPI.java:480) - inside rem  
onnectivity check
```

```
?Ready to send announcement
```

- Press enter/return

```
2015-10-13 15:09:08,682 [AS-InfraMgr:A130BA99DB] INFO run(Announcementsender.java:35) - Ready to send announcements.
```

- Type ':q!' to exit vi editor

Optional: Determine how long it took for the Service Node to come up.

From the Service Node CLI, 'vi /opt/infra/inframgr/logfile.txt'

- Go to the end/bottom of the log file: press shift + g
- Look for 'Ready to send announcement' starting from the bottom: enter '?Choosing MySQL DB'

```
2015-10-18 23:47:55,161 [pool-1-thread-27] INFO userAPIAgentConnectivityCheck(RemoteScheduleTaskAPI.java:480) - inside rem  
onnectivity check
```

```
?Choosing MySQL DB
```

- Press enter/return

```
2015-10-13 15:03:50,467 [main] INFO init(DB.java:81) - Choosing MySQL DB
```

Type ':q!' to exit vi editor

Using the time from 'Choosing MySQL DB' of 15:03 subtract the from the time 'Ready to send announcement' of 15:09 and the result is the time it took for the Node to come completely up.

6. Setup Service Node in UCS Director GUI

Log into UCS Director GUI using the Primary Node IP address and go to Administration -> System -> Service Nodes -> Add. In my case it is 172.17.80.113.

The screenshot shows the Cisco UCS Director interface. At the top, there's a navigation bar with tabs: Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar, a secondary menu bar has items: Advanced Controls, Service Provider Feature, System Tasks, System Task Policy, Service Nodes (which is highlighted in red), User Roles, and Organizations. In the center, there's a toolbar with icons for Refresh, Favorite, Add (highlighted with a red arrow), Service Node Pools, and View Cluster Connectivity. The main content area is titled 'Service Nodes' and contains a table with one row. The table columns are: Node Name, Role, Node Pool, Description, Network Name, Protocol, and Status. The single entry is 'localhost' with 'Primary' role and 'localhost' description. The 'Protocol' column shows 'Yes'. At the bottom of the page, there are links for 'Service Node Pools' and 'View Cluster Connectivity'.

Enter the following details and click Submit.

The screenshot shows the 'Service Node' configuration dialog. It includes the following fields:

- Node Name: CUCSD-S1-5_2_0_0 (highlighted with a red box)
- Role: Service
- Service Node Pool: default-service-node-pool (dropdown menu)
- DNS Name: 172.17.80.116 (highlighted with a red box)
- Description: (empty input field)
- Protocol: https (dropdown menu)
- Port: 443
- UserName: infraUser

Below the UserName field, a note says: "This user's API Key is used to authenticate with the Service Node". At the bottom right of the dialog are two buttons: 'Submit' (highlighted with a red arrow) and 'Close'.

Test Service Node Connectivity.

The screenshot shows the Cisco UCS Director web interface. At the top, there's a navigation bar with tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar is a secondary menu with links for Advanced Controls, Service Provider Feature, System Tasks, System Task Policy, Service Nodes (which is highlighted with a red arrow), User Roles, and Orchestration Pol. Under the Service Nodes link, there are icons for Refresh, Favorite, Add, Service Node Pools, View Cluster Connectivity, Edit, Delete, and Test Connectivity. The main content area is titled "Service Nodes" and contains a table with two rows. The first row has "Node Name" as "localhost", "Role" as "Primary", "Description" as "localhost", "Network Name" as "", "Protocol" as "Yes". The second row has "Node Name" as "CUCSD-S1-5_2", "Role" as "Service", "Node Pool" as "default-service-", "Description" as "", "Network Name" as "172.17.80.116", "Protocol" as "https", and "Status" as "Not Verified".

Node Name	Role	Node Pool	Description	Network Name	Protocol	Status
localhost	Primary		localhost		https	Yes
CUCSD-S1-5_2	Service	default-service-		172.17.80.116	https	Not Verified

Verify Service Node is in sync with UCS Director.

The screenshot shows the Cisco UCS Director web interface. At the top, there's a navigation bar with tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar is a secondary menu with links for License Status, System Information (which is highlighted with a red arrow), Mail Setup, System Parameters, Infrastructure System Parameters, and Infrastructure. Under the System Information link, there are icons for Refresh. The main content area is titled "System Information" and contains two sections. On the left, under "Primary Node", it shows "Name" as "172.17.80.113", "IP Address" as "172.17.80.113", and "Up Time" as "0 Day (s) 12 hour (s) 27 Min". On the right, under "Service Node(s)", it shows a table with two rows: "Reachable" with value "1" and "Non Reachable" with value "0".

Primary Node	Service Node(s)
Name IP Address Up Time	Reachable Non Reachable
172.17.80.113 172.17.80.113 0 Day (s) 12 hour (s) 27 Min	1 0

7. Test and Verification

Verify UCS Director is fully integrated with the Service Node(s), Inventory Database Node and the Monitoring Database Node.

The screenshot shows the Cisco UCS Director interface. At the top, there's a navigation bar with tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. On the far right, it shows the user 'admin' with a notification count of 4, a Log Out link, and the Cisco logo. Below the navigation bar, there's a sub-navigation bar with tabs for License Status, System Information (which is selected and highlighted in red), Mail Setup, System Parameters, Infrastructure System Parameters, Advanced Controls, Service Provider Feature, and System Ta. A 'Refresh' button is also present. The main content area is divided into several sections: Primary Node (with details like Name: 172.17.80.113, IP Address: 172.17.80.113, Up Time: 0 Day (s) 12 hour (s) 27 Min, System Time: September 17, 2015 14:45:3, Total Service Nodes: 1), Service Node(s) (with Reachable: 1 and Non Reachable: 0), DB Node(s) (with Inventory(172.17.80.114) status Ok and Monitoring(172.17.80.115) status Ok), System Memory (with Memory Capacity (MB): 10030, Memory Used (MB): 6827, Memory Free (MB): 3202), and System Disk (with Disk Info (File system root): /, Disk Capacity (MB): 101184, Disk Used (MB): 5725, Disk Free (MB): 90442).

8. Create and assign System Task to a Service Node

Create a Service Node Pool.

The screenshot shows the Cisco UCS Director interface. At the top, there's a navigation bar with tabs: Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar, a red arrow points to the 'Administration' tab. Another red arrow points to the 'Service Nodes' tab in the main menu. The main content area is titled 'Service Nodes'. It contains a table with columns: Node Name, Role, Node Pool, Description, Network Name, and Protocol. There are two entries: 'LocalHost' (Primary, Node Pool: localhost) and 'CUCSD-S1-5_2' (Service, Node Pool: default-service-node-pool, Description: Default Service Node Pool, Network Name: 172.17.80.116, Protocol: https). A red arrow points to the 'Add' button in the toolbar below the table.

Click the + to Add a Service Node Pool, then fill in the details below and click Submit.

The screenshot shows a modal dialog box titled 'Add Entry to Service Node Pools'. It has fields for 'Name' (containing 'Culpeper') and 'Description' (containing 'Culpeper Service Node Pool'). A red arrow points to the 'Name' field. Another red arrow points to the 'Description' field. A third red arrow points to the 'Submit' button at the bottom right of the dialog.

When prompted, click OK and finally click Close to close the Service Node Pool window.

The screenshot shows a modal dialog box titled 'Submit Result'. It displays the message 'Added entry successfully'. A red arrow points to the 'OK' button at the bottom left of the dialog.

Move your service not from the Default Service Node Pool to the newly created Culpeper Service Node Pool. Select the service Node and select Edit then change the service node pool in the drop down. Click OK when prompted.

Service Node

Node Name	CUCSD-S1-5_2_0_0
Role	Service
Service Node Pool	Culpeper
DNS Name	172.17.80.116
Description	
Protocol	https
Port	443
UserName	infraUser

Select a Service Node Pool to associate this Service node with

This user's API Key is used to authenticate with the Service Node

Submit Close

Verify Service Node Pool and Reachability.

Service Nodes

Node Name	Role	Node Pool	Description	Network Nam	Protocol	Reachability
LocalHost	Primary	localhost				Yes
CUCSD-S1-5_2_Service	Service	Culpeper		172.17.80.116	https	Yes

9. Troubleshooting Service Node Connectivity

If your Primary Node is across the US or just has a lot of latency, you may need to adjust the NodeHttpConnectivity timeout on the Primary Node located in the service properties. This timeout needs to be set to 3000. **Note:** You may have to repeat this process after you upgrade/path the system. You should check after upgrades/patches.

- Log into the Primary Node as root
- cd /opt/infra/inframgr
- grep -i http *.properties
- cat service.properties
- vi service.properties
- Cursor down to the beginning of line 'systemTask.NodeHttpConnectivity.timeout=30' and press i for insert
- Comment out the line by entering # at the beginning of that line and copy the entire line without the #
- Cursor down to the next line and press enter to create a new line
- Cursor back up and paste the copied line and change the 30 to 3000
- When done, press esc then :wq to write and quit the vi session

```
[root@CUCSD_Primary ~]# cd /opt/infra/inframgr/  
[root@CUCSD_Primary inframgr]#
```

```
[root@CUCSD_Primary inframgr]# vi service.properties
```

```
[#systemTask.NodeHttpConnectivity.timeout=30  
systemTask.NodeHttpConnectivity.timeout=3000]
```

```
[root@CUCSD_Primary inframgr]# grep -i http *.properties  
service.properties:#systemTask.NodeHttpConnectivity.timeout=30  
service.properties:systemTask.NodeHttpConnectivity.timeout=3000  
service.properties:# Primary URL to which the HTTP requests will be redirected to.  
[root@CUCSD_Primary inframgr]#
```

Reboot the Primary Node. Log in as shelladmin and select option 16.

```
SELECT> 16  
Do you want to Reboot appliance [y/n]? : y  
Rebooting the Cisco UCS Director Appliance...  
Broadcast message from root (pts/0) (Thu Sep 17 20:07:34 2015):  
The system is going down for reboot NOW!  
Rebooting sucessful  
Press return to continue ...■
```

Ping the Service Node from the Primary Node. If you are using the fully qualified domain name instead of an IP address for the Service Node configuration then you should test a ping to it instead of the IP Address. If it doesn't resolve the name you should verify your hosts files on all nodes and your DNS server. You could also change the Service Node configuration to use the IP Address.

```
[root@CUCSD_Primary ~]# ping 172.17.80.116  
PING 172.17.80.116 (172.17.80.116) 56(84) bytes of data.  
64 bytes from 172.17.80.116: icmp_seq=1 ttl=64 time=0.269 ms  
64 bytes from 172.17.80.116: icmp_seq=2 ttl=64 time=0.257 ms  
64 bytes from 172.17.80.116: icmp_seq=3 ttl=64 time=0.258 ms  
--- 172.17.80.116 ping statistics ---  
3 packets transmitted, 3 received, 0% packet loss, time 1998ms  
rtt min/avg/max/mdev = 0.257/0.261/0.269/0.014 ms  
[root@CUCSD_Primary ~]# ■
```

Tail the logfile.txt file on the Primary Node and then test connectivity to the Service Node.

- SSH to the Primary node using the root account
- tail -f /opt/infra/inframgr/logfile.txt

```
[root@cUCSD_Primary ~]# tail -f /opt/infra/inframgr/logfile.txt
2015-09-19 02:12:10,369 [pool-35-thread-27] INFO getBestAgent(AgentAllocator.java:109) - Node pool default-service
2015-09-19 02:12:10,372 [pool-35-thread-27] INFO getBestAgent(SystemTaskExecutor.java:317) - No Agent available f
VMwareEventCollector:MGMT-VCENTER
2015-09-19 02:12:10,373 [pool-35-thread-27] INFO updateStatus(SystemTaskStatusProvider.java:181) - Task: task.VMw
lector:MGMT-VCENTER changed state to OK
2015-09-19 02:12:10,380 [pool-35-thread-27] INFO executeLocally(SystemTaskExecutor.java:142) - Executing task loc
eventCollector:MGMT-VCENTER
2015-09-19 02:12:10,380 [pool-35-thread-27] INFO getClusterLeaf(ClusterPersistenceUtil.java:81) - Leaf name Local
2015-09-19 02:12:10,385 [pool-35-thread-27] INFO updateStatus(SystemTaskStatusProvider.java:181) - Task: task.VMw
lector:MGMT-VCENTER changed state to In Progress
2015-09-19 02:12:10,391 [pool-35-thread-27] INFO executeLocally(SystemTaskExecutor.java:158) - Start executing ta
wareEventCollector:MGMT-VCENTER. Task executed-11A7677820AA&
```

- Launch a second SSH session to the Primary Node
- Test the connection to the Service Node: telnet 172.17.80.116 443
- If your output shows connected as show below then the connection was successful
- **Note:** The 443 at the end of the telnet command is port number 443 for https

```
[root@cUCSD_Primary ~]# telnet 172.17.80.116 443
Trying 172.17.80.116...
Connected to 172.17.80.116.
Escape character is '^A'.
```

- Monitor the logging in the other session to see if you see any signs for the connection failing.
- Log into the UCS Director GUI and Test Connectivity

The screenshot shows the Cisco UCS Director interface. At the top, there's a navigation bar with tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is highlighted), CloudSense™, and Favorites. Below the navigation bar is a sub-navigation bar with tabs for Advanced Controls, Service Provider Feature, System Tasks, System Task Policy, User Roles, Service Nodes (which is highlighted), and Email Templates. There are also icons for Refresh, Favorite, Add, Service Node Pools, View Cluster Connectivity, Edit, Delete, and Test Connectivity. The main content area is titled 'Service Nodes' and contains a table with columns: Node Name, Role, Node Pool, Description, Network Name, and Protocol. Two rows are visible: 'LocalHost' with Role 'Primary' and 'Network Name' 'localhost', and 'CUCSD-S1' with Role 'Service' and 'Network Name' '172.17.80.116'. A red arrow points to the 'Role' column for the CUCSD-S1 row, another red arrow points to the 'Test Connectivity' button, and a third red arrow points to the 'Service Nodes' tab in the sub-navigation bar.

Node Name	Role	Node Pool	Description	Network Name	Protocol
LocalHost	Primary		localhost		Yes
CUCSD-S1	Service	Richardson		172.17.80.116	https

- Monitor the logging on the Primary Node to see if you see any signs for the connection failing.

SSH to the Primary node and issue telnet 172.17.80.116 443 to initiate a connection to the Service Node and quickly move to the next step. You only have 30 seconds or so to see the connection. Longer than that, you will need to run the telnet command again to re-establish the session.

```
[root@cUCSD_Primary ~]# telnet 172.17.80.116 443
Trying 172.17.80.116...
Connected to 172.17.80.116.
Escape character is '^A'.
```

Run the following command on the Service Node: 'netstat -n | grep 172.17.80.113' The output in the screen shot below shows ESTABLISHED which is a good sign the connectivity is working properly.

```
[root@cUCSD_Service1 ~]# netstat -n | grep 172.17.80.113
tcp        0      0 ::ffff:172.17.80.116:443  ::ffff:172.17.80.113:49379  ESTABLISHED
[root@cUCSD_Service1 ~]#
```

Verify the connection performance to the datastore using the following command. 25MB/s is the recommended minimum performance but it's not uncommon to get speeds as low as 4.0 MB/s. The slower the speed, the longer the node will take to completely come online. If possible, use a storage array that will get you to the optimal performance. It may take a few minutes to process this command before you see the output.

- Command: 'dd if=/dev/zero of=/tmp/test1 bs=4096 count=262144 oflag=direct'

```
[root@cUCSD_Service1 ~]# dd if=/dev/zero of=/tmp/test1 bs=4096 count=262144 oflag=direct
262144+0 records in
262144+0 records out
1073741824 bytes (1.1 GB) copied, 252.307 seconds, 4.3 MB/s
[root@cUCSD_Service1 ~]#
```

Determine if the Service Node is completely up.

- Change Directory to inframgr: 'cd /opt/infra/inframgr/'
- You can look at the logfile: 'tail -f logfile.txt'
- Exit the logfile: press 'ctrl + c'
- Open the logfile with vi so you can search it: 'vi logfile.txt'
- Search the logfile for Choosing MySQL DB: enter '/Choosing', press return
 - o Document the time stamp for this entry: 2015-09-17 02:23:49

```
172.17.80.116 x
2015-09-17 02:23:49.030 [main] INFO main(InitializeSchemaOnStartup.java:31) - Initializing Database schema...
2015-09-17 02:23:49.625 [main] INFO initDB.java:81) - Choosing MySQL DB
2015-09-17 02:23:49.635 [main] INFO initDb(DbStorageHelper.java:194) - Created db_private_admin database successfully
2015-09-17 02:23:49.639 [main] INFO loadSystemPropertiesTest.java:68) - Loading Database properties from service.properties
2015-09-17 02:23:49.648 [main] INFO <clinit>(AnnotationSizeFilter.java:53) - Using regular expression provided through VM argument net.sf.ehcache.pool.sizeof.ignore.pattern for Ignoresizeof annotation: ^.*cache\..*ignoresizeof$
2015-09-17 02:23:49.927 [main] INFO <clinit>(AgentLoader.java:69) - unavailable or unrecognised attach API : java.lang.ClassNotFoundException: com.sun.tools.attach.VirtualMachine
[redacted]
```

- Search the logfile for Ready to send announcements: enter '/Ready', press return
 - o Document the time stamp for this entry: 2015-09-17 02:34:40
 - o **Note:** If you do not see this entry, then the node isn't completely up yet. Wait until you see this entry.
- ```
2015-09-17 02:34:40.281 [main] INFO main(InframgrMain.java:192) - master_ip not null creating master
2015-09-17 02:34:40.291 [main] INFO main(InframgrMain.java:205) - persisting master
2015-09-17 02:34:40.335 [main] INFO main(InframgrMain.java:215) - Creating Infrasender
2015-09-17 02:34:40.339 [AS-Infrasender:3491232761] INFO runAnnouncementSender.java:35) - Ready to send announcements
2015-09-17 02:34:40.351 [main] INFO main(InframgrMain.java:217) - Created Infrasender
```
- The difference between 'Choosing MySQL DB' and 'Ready to send announcements' is the time it took for the node to come up. In this case, it took approximately 11 minutes.
- Exit vi without saving: enter ':quit'

Verify the task does not take longer to complete than the frequency of the task. In this case the 'VMware Inventory Collector – MGMT-VCENTER' took 21 seconds to complete and the frequency is 1 hour so this is not a problem. If the task took longer than the frequency, this would be a problem.

| Label                                     | Enable  | Frequency  | Executor | Execution N   | Execution Duration | Start Time           | Last Executed Time    |
|-------------------------------------------|---------|------------|----------|---------------|--------------------|----------------------|-----------------------|
| VMware Inventory Collector - MGMT-VCENTER | Enabled | 1 hour     | CUCSD-S1 | 172.17.80.116 | OK                 | 0 minutes 21 seconds | 10/06/2015 19:49:59 G |
| VMware Event Collector - MGMT-VCENTER     | Enabled | 15 minutes | CUCSD-S1 | 172.17.80.116 | OK                 | 0 minutes 0 seconds  | 10/06/2015 19:49:49 G |

If you need to view or download the logs from UCS Director, you can find them here. Administration -> Support Information and select the logs you want to see or download. If you open a TAC case, they will most likely request you to upload these logs to the TAC Case.

The screenshot shows the Cisco UCS Director interface. At the top, there's a navigation bar with tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar, a section titled "Support Information" is visible. A red arrow points to the "Support Information" link. Another red arrow points to a dropdown menu under "Support Information" labeled "System Information (Basic)". This dropdown menu contains several options: System Information (Basic) (selected), System Information (Advanced), Show Log, Download All Logs, and Debug Logging. A detailed description of "System Information (Basic)" is provided: "System Clock and Uptime, System Resource Usage, Servers Status, Storage Network Devices Status, Clouds". At the bottom right of this section is a "Submit" button.

Useful logs to view from the GUI.

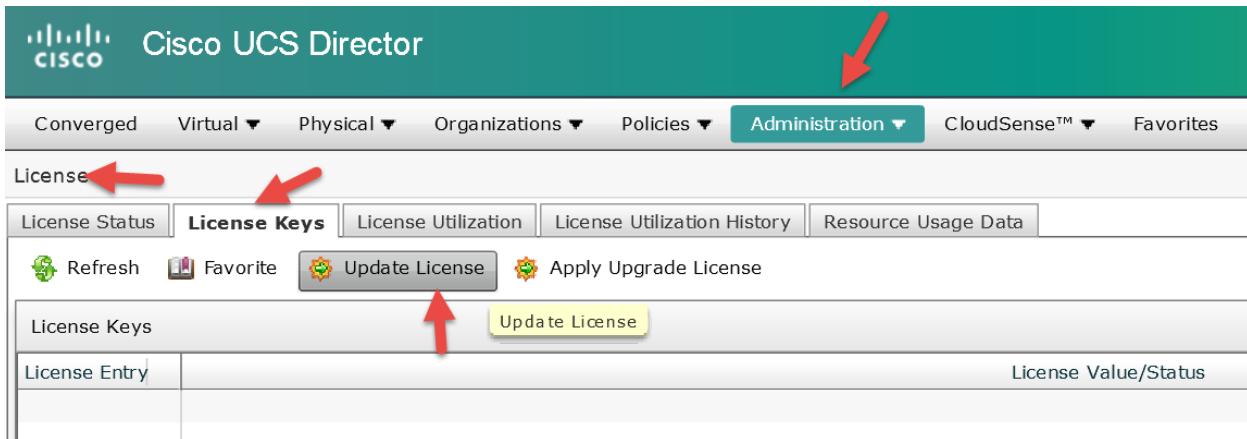
This screenshot shows the "Show Log" page within the Cisco UCS Director interface. It features a navigation bar identical to the first one. A red arrow points to the "Support Information" link. Another red arrow points to a dropdown menu under "Support Information" labeled "Show Log". A third red arrow points to a dropdown menu under "Show Log" labeled "Infra Manager". The "Infra Manager" dropdown menu lists several log files: Infra Manager, Web Context Cloud Manager, Tomcat Log, Authenticator Log, Mail Delivery Log, and Patch Log. To the right of the "Show Log" dropdown is a "Show Logs" button.

Last resort: Reboot the Primary Node and see if this fixes the connectivity issue between the Primary Node and the Services Node. If that doesn't fix the issue, then reboot the Service Node. You can reboot these Nodes via root account using the reboot command or shelladmin account and select the menu item to reboot appliance.

If all else fails, Open a TAC Case ;-)

## 10. Add Licenses to UCS Director

Go to Administrator -> License -> License Keys -> and select Update License.



You have the option to browse to the license file or Enter License Text. to enter the license text, simply copy the license and paste it into the screen then click Submit

The screenshot shows the 'Update License' dialog box. It has a 'License' section with a 'Select a file for upload:' input field, a 'Browse...' button, and an 'Upload' button. Below this is a 'Enter License Text' section with a checked checkbox and a large text area containing license text. The text area contains several license entries, each starting with 'FEATURE' or 'VENDOR\_STRING'. At the bottom of the dialog box are 'Submit' and 'Close' buttons, with a red arrow pointing to the 'Submit' button.

```
VENDOR_STRING=<Count>20
NOTICE=<LicFileID>21
<PAK></PAK>" S
BBB0 D784 14
32E8 18D6
FEATURE CUIC-PH
VENDOR_STRING=<Count>20
NOTICE=<LicFileID>21
<PAK></PAK>" S
54F
D
FEATURE CUIC-B
VENDOR_STRING=<Count>20
NOTICE=<LicFileID>21
<PAK></PAK>" S
9CA0
3D94 &
FEATURE CUIC-B
VENDOR_STRING=<Count>20
NOTICE=<LicFileID>21
<PAK></PAK>" S
F9CC EC47 5498 CAL
E411 F6EB 6F7C 4B57 1AAC
```

Verify License Utilization.

The screenshot shows the Cisco UCS Director interface. At the top, there is a navigation bar with tabs: Converged, Virtual, Physical, Organizations, Policies, Administration (which is currently selected), CloudSense™, and Favorites. Below the navigation bar, there is a sub-navigation bar with tabs: License Status, License Keys, License Utilization (which is currently selected), License Utilization History, and Resource Usage Data. On the far left of this sub-bar, there are icons for Refresh, Favorite, Update License, and Run License Audit. The main content area is titled "License Utilization". It contains a table with the following data:

| License          | Licensed Lim | Available | Used | Status      |                                                                                          |
|------------------|--------------|-----------|------|-------------|------------------------------------------------------------------------------------------|
| Production Base  | 1            |           | 1    | Licensed    |                                                                                          |
| Physical Servers | 100          | 100       | 0    | Licensed    | Licensed Limit =Physical BM Server(=0) + Small/Medium POD servers are not counted i      |
| Storage Control  | 120          | 120       | 0    | Licensed    | Licensed Limit = Actual Licensed(=20) + Small/Medium POD storage controllers are nc      |
| Network Devices  | 120          | 120       | 0    | Licensed    | Licensed Limit = Actual Licensed(=20) + Small/Medium POD network devices are not         |
| Other Devices    | 105          | 105       | 0    | Licensed    | Licensed Limit = Actual Licensed(=5) + Small/Medium POD storage controllers are nc       |
| Big Data Nodes   | 0            | 0         | 0    | Not License | Available = Actual Licensed(=0) - Used(=0)                                               |
| Small Pod        | 0            | 0         | 0    | Not License | Available = Actual Licensed(=0) - Used(=0) -                                             |
| Medium Pod       | 0            | 0         | 0    | Not License | Available = Actual Licensed(=0) - Used(=0) -                                             |
| Small Pod Enter  | 0            | 0         | 0    | Not License |                                                                                          |
| Medium Pod Ent   | 0            | 0         | 0    | Not License |                                                                                          |
| Server VMs       | 5000         | 5000      | 0    | Licensed    | Licensed Limit = Physical Server License Cou Available = Licensed Physical Servers(=100) |

## 11. Mail Setup (Required)

Go to Administrator -> System -> Mail Setup

The screenshot shows the Cisco UCS Director interface. The top navigation bar has tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (which is selected), and CloudSense™. A red arrow points to the Administration tab. Below it, the main menu has tabs for System Information, Mail Setup (which is selected), System Parameters, and Infrastructure System Parameters. A red arrow points to the Mail Setup tab. The main content area is titled "Mail Setup". It contains several configuration fields: "Outgoing Email Server (SMTP)" with value "72.17.80.113" (boxed in red), "Outgoing SMTP Port" with value "25", "Outgoing SMTP User" (empty field), "Outgoing SMTP Password" (empty field), "Outgoing Email Sender Email Address" with value "no-reply@cisco.com" (boxed in red), and "UCSD Server IP Address" with value "172.17.80.113" (boxed in red). There is also a checkbox for "Send Test Email" and a "Save" button at the bottom right.

Add user 'admin' contact e-mail.

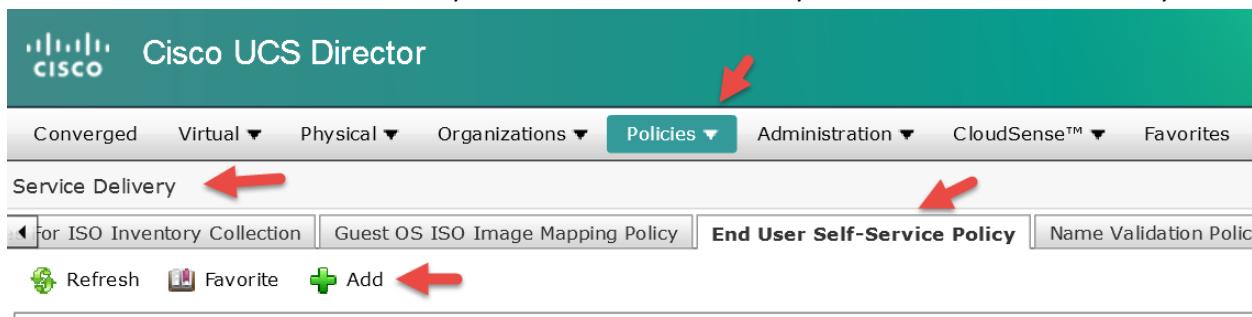
The screenshot shows the Cisco UCS Director interface. The top navigation bar has tabs for Converged, Virtual, Physical, Organizations, Policies, Administration (selected), and CloudSense™. A red arrow points to the Administration tab. Below it, the main menu has tabs for User Groups, Login Users (which is selected), and Current Online Users. A red arrow points to the Login Users tab. The main content area is titled "Edit User". It shows a table of "Login Users" with rows for "admin" and "infraUser". To the right is a form for editing the "admin" user. The form fields are: "User Role" (System Admin), "Login Name" (admin), "User Contact Email" with value "contact@cisco.com" (boxed in red), "First Name" (empty field), "Last Name" (empty field), and "Phone" (empty field). There are also "Refresh", "Find", "Add", and "View" buttons at the top of the user list table.

## 12. Create Self Service Policy

An End User Self-Service Policy controls the actions or tasks that a user can perform on a vDC. The starting point for creating this policy is to specify an Account Type, for example VMware. After you specify an account type, you can continue with creating the policy. After you create the policy, you must assign the policy to a vDC that is created with the same account type. For example, if you have created an end user policy for VMware, then you can specify this policy when you create a VMware vDC. You cannot view or assign policies that have been created for other account types.

Assigning a policy to a vDC is the only method through which you can control the tasks that a user can perform on the vDC. In prior versions, you enabled or disabled tasks on a vDC while creating it. If you have upgraded to the current release, those previously set permissions and options are automatically grouped as an end user policy, with the name of the vDC, and assigned to the vDC.

Create an 'End User Self-Service Policy'. Policies -> Service Delivery -> End User Self-Service Policy -> Add



Select Account Type.

The screenshot shows a modal dialog box titled "Add End User Policy". Inside the dialog, there is a form field labeled "Account Type" with a dropdown menu. The dropdown menu is open, showing "VMware" as the selected option, followed by an asterisk (\*) indicating it is a required field. A red arrow points to the "VMware" option in the dropdown. At the bottom of the dialog, there are two buttons: "Submit" and "Close". A red arrow points to the "Submit" button.

Name the Policy and Select all options.

### End User Policy

Policy Name  \*

Policy Description

End User Self-Service Options

- VM Power Management
  - Power ON
  - Power OFF
  - Suspend
  - Standby
  - Reset
  - Reboot
  - Shutdown Guest
- VM Resizing
  - Resize VM
- VM Snapshot Management
  - Create Snapshot
  - Revert Snapshot
  - Mark Golden Snapshot
  - Delete Snapshot
  - Delete All Snapshots
- VM Deletion Management
  - Delete VM
- VM Disk Management
  - Create VM Disk
  - VM Disk Resize
  - Delete VM Disk
- VM Network Management
  - Add vNICs
  - Delete vNICs
  - VM Resync
- VM Lease Expiry
  - Configure Lease Time
- VM Console Management
  - Launch VM Client
  - Configure VNC
  - Test VNC
  - Enable/Disable VMRC Console
- VM Clone and Template Management
  - Clone
  - Clone VM as Image
  - Convert VM as Image
  - Move VM To VDC
  - Assign VMs To VDC
- VM ISO Management
  - Mount ISO Image As CD/DVD Drive