

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

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1. Download UCS Director 5.2 software from Cisco.com

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

Download Software

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UCS Director 5.2

Add Device Add Notification

Release 5

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.

File Information	Release Date	Size	
Cisco UCS Director 5.2 (VMWare vSphere OVF Appliance. MD5 Checksum - 06 bfb6fe95aabef9c69555b535946363) CUCSD_5_2_0_0_VMWARE_GA.zip	20-DEC-2014	2869.15 MB	Download Add to cart Publish

Login using your CCO account.

Log In and Service Contract Required

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Your Cisco Account Team if you have a direct purchase agreement with Cisco
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Once you have the service contract you must associate your service contract to your Cisco.com user ID with [Profile Manager](#)

Login Cancel

Accept the license agreement.

End User License Agreement

 In order to download software, please indicate that you have read and agree to be bound by the [Cisco End User License Agreement](#)

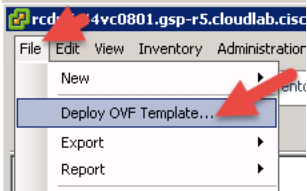
Accept License Agreement Cancel

2. Create the Inventory Database Node

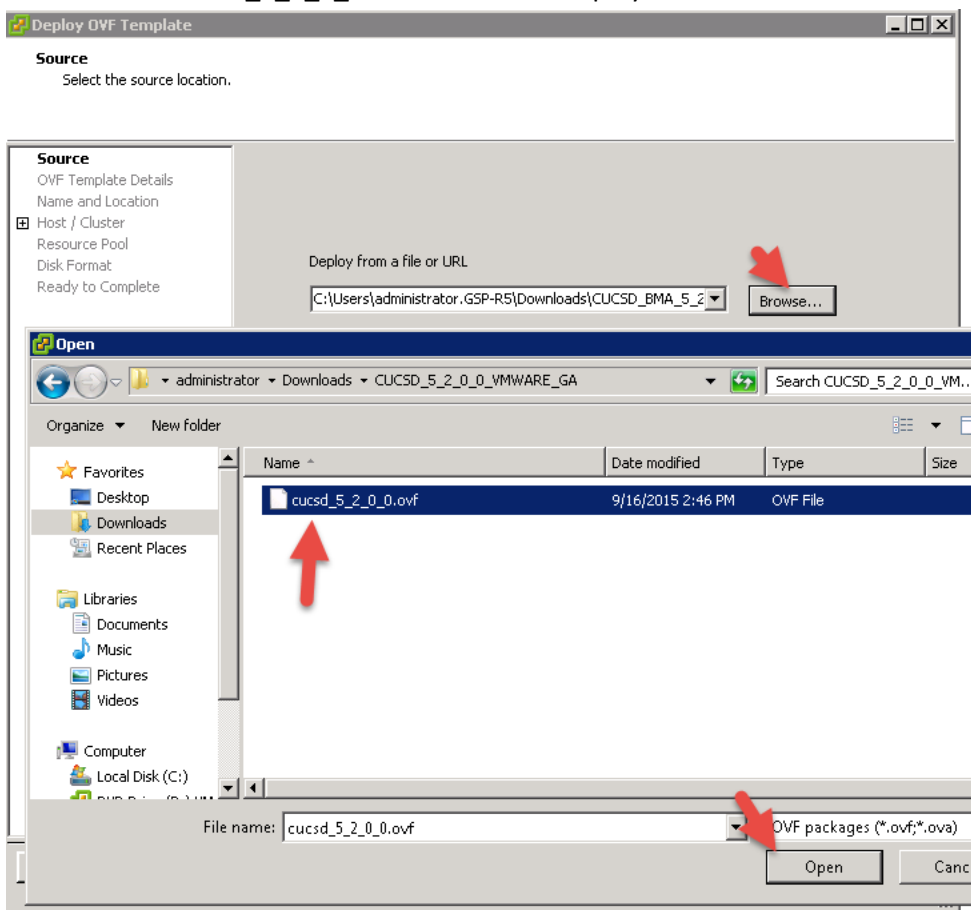
2.1. Create Inventory Database VM

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.

Deploy OVF Template

OVF Template Details
Verify OVF template details.

[Source](#)

OVF Template Details

- End User License Agreement
- Name and Location
- Host / Cluster
- Resource Pool
- Disk Format
- Properties
- Ready to Complete

Product:	CUCSD-5.2.0.0
Version:	5.2.0.0
Vendor:	Cisco Systems
Publisher:	No certificate present
Download size:	2.8 GB
Size on disk:	Unknown (thin provisioned) 100.0 GB (thick provisioned)
Description:	Cisco UCS Director 5.2.0.0 (Zephyr Cove Branch)

Note: It is mandatory to reserve vCPU and Memory as recommended by Installation and Deployment guide.

Accept the license agreement and Click Next.

Deploy OVF Template

End User License Agreement
Accept the end user license agreements.

[Source](#)

[OVF Template Details](#)

End User License Agreement

- Name and Location
- Storage
- Disk Format
- Network Mapping
- Properties
- Ready to Complete

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Name the VM and click Next.

Deploy OVF Template

Name and Location
Specify a name and location for the deployed template

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
Name and Location
Host / Cluster
Resource Pool
Disk Format
Properties
Ready to Complete

Name:
The name can contain up to 80 characters and it must be unique within the inventory folder.

Inventory Location:

Select a Host and click Next.

Deploy OVF Template

Host / Cluster
On which host or cluster do you want to run the deployed template?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
Host / Cluster
Specific Host
Resource Pool
Disk Format
Properties

culpeper1
culpeper2
172.17.80.61
172.17.80.62
172.17.80.65
172.17.80.66

172.17.80.68

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

Deploy OVF Template

Storage
Where do you want to store the virtual machine files?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
[Host / Cluster](#)
Storage
Disk Format
Network Mapping

Select a destination storage for the virtual machine files:
VM Storage Profile:

Name	Drive Type	Capacity	Provisioned	Free	Type	Thin Prov
datastore1 (9)	Non-SSD	5.00 GB	726.00 MB	4.29 GB	VMFS5	Supporte
MGMT-SAN1	Non-SSD	3.90 TB	3.64 TB	2.05 TB	VMFS5	Supporte

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

Deploy OVF Template

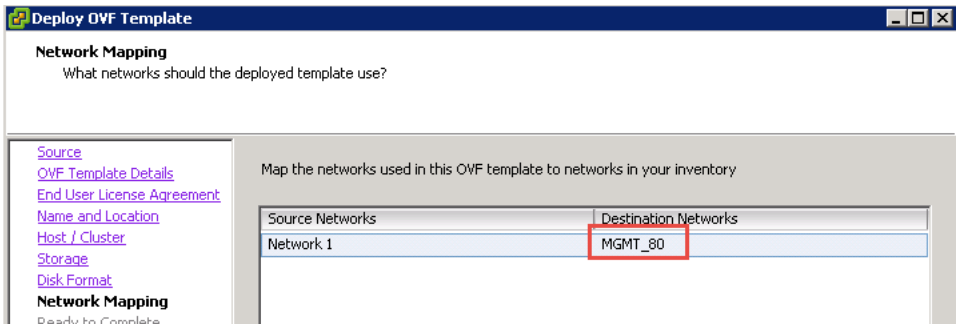
Disk Format
In which format do you want to store the virtual disks?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
[Host / Cluster](#)
[Storage](#)
Disk Format
Network Mapping
Ready to Complete

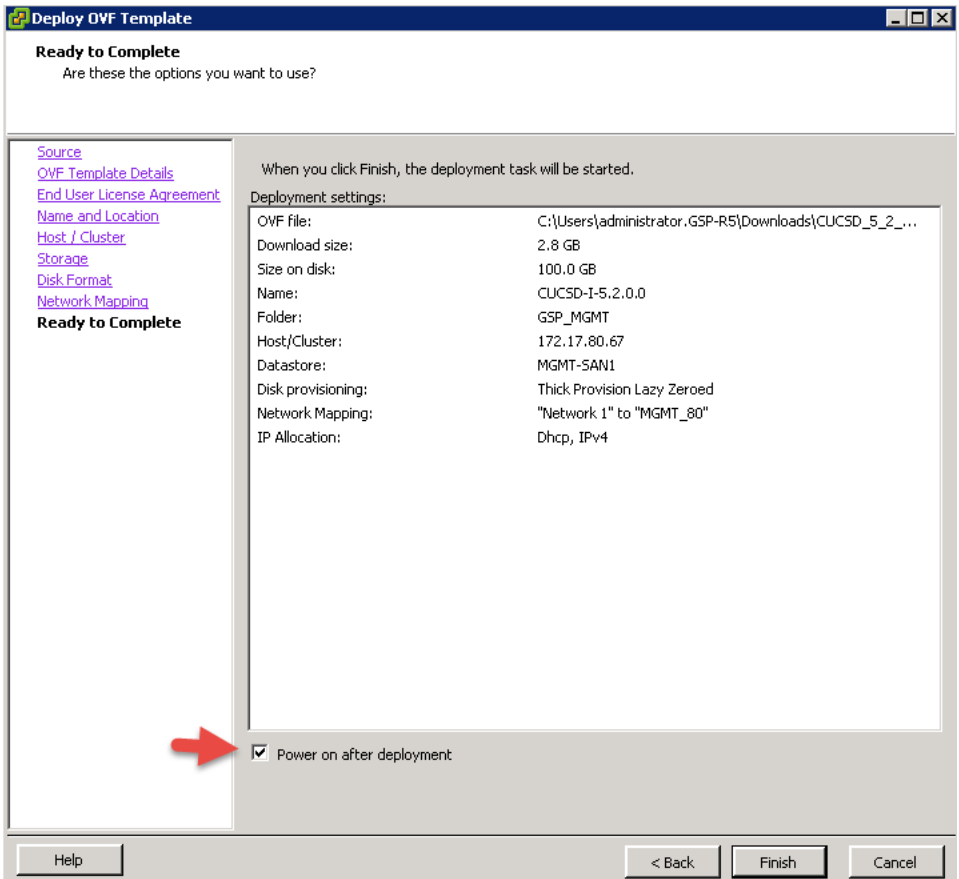
Datstore:
Available space (GB):

Thick Provision Lazy Zeroed
 Thick Provision Eager Zeroed
 Thin Provision

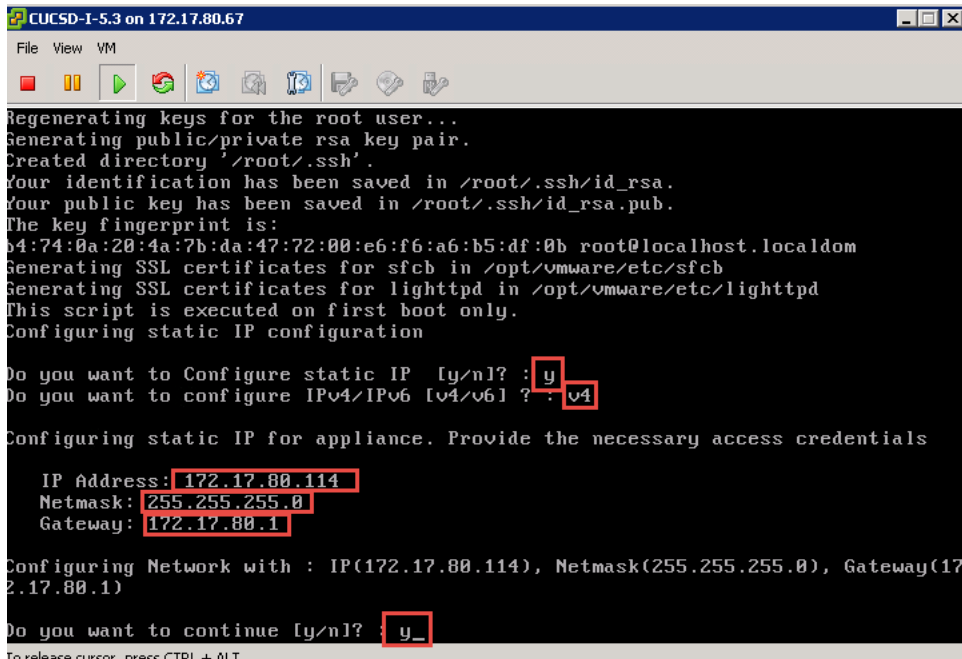
Select the Network to put this VM on and click Next.



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.



```
CUCSD-1-5.3 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:
b4:74:0a:20:4a:7b:da:47:72:00:e6:f6:a6:b5:df:0b root@localhost.localdom
Generating SSL certificates for sfcbln in /opt/vmware/etc/sfcbln
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

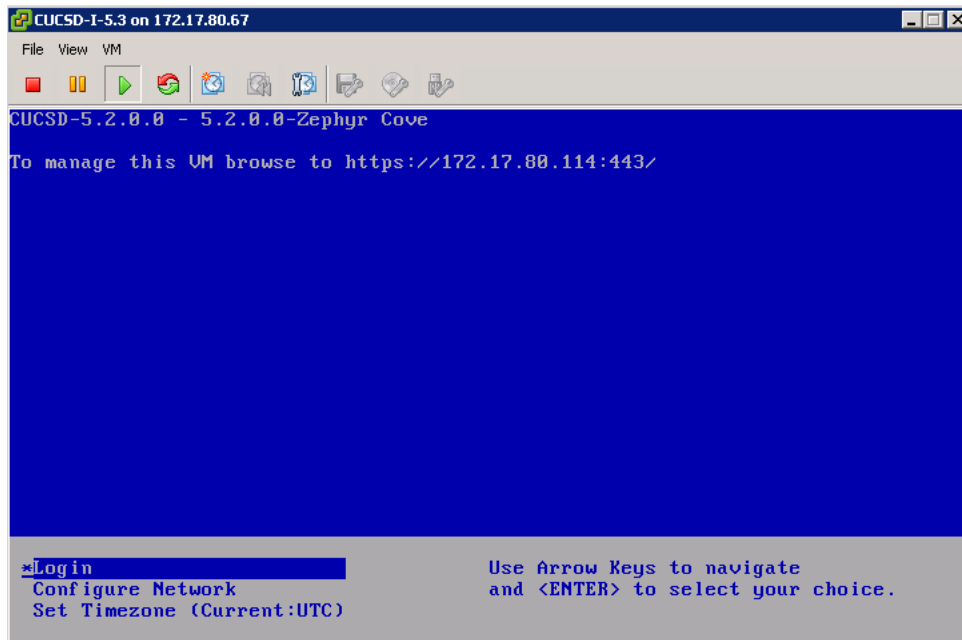
Configuring static IP for appliance. Provide the necessary access credentials

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.



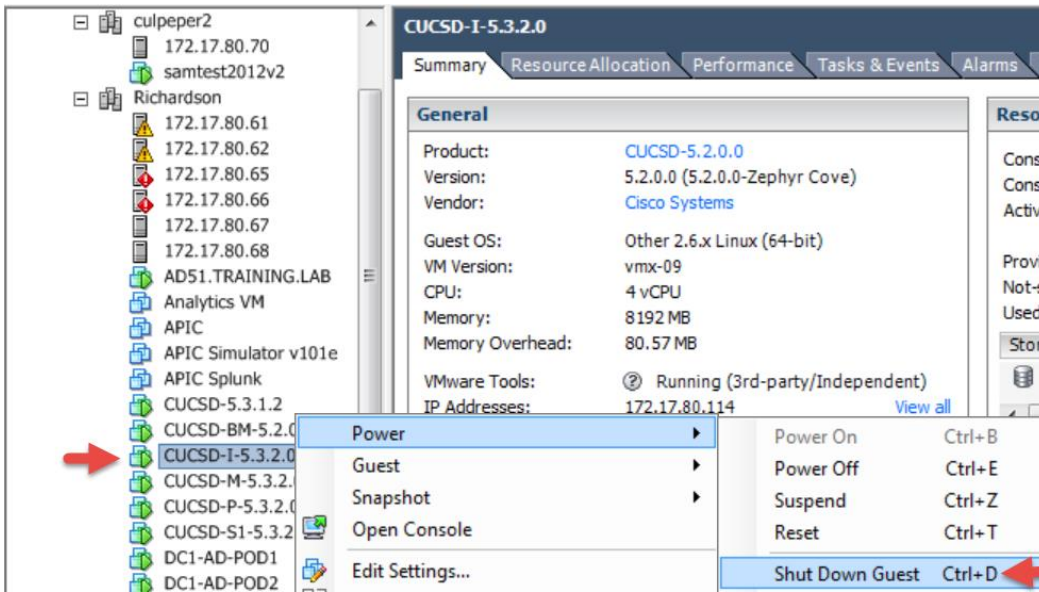
```
CUCSD-5.2.0.0 - 5.2.0.0-Zephyr Cove
To manage this VM browse to https://172.17.80.114:443/

*Login
Configure Network
Set Timezone (Current:UTC)

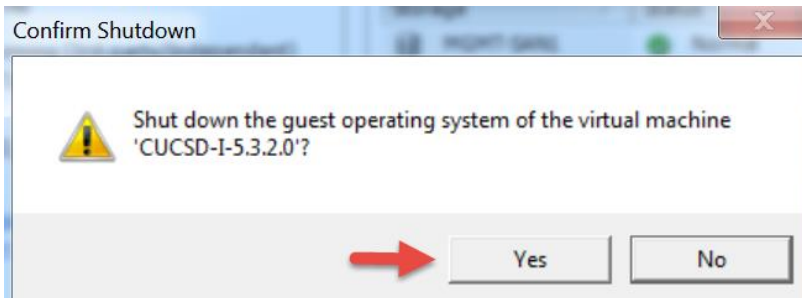
Use Arrow Keys to navigate
and <ENTER> to select your choice.
```


2.2. Install/Update VMWare tools & VM Version

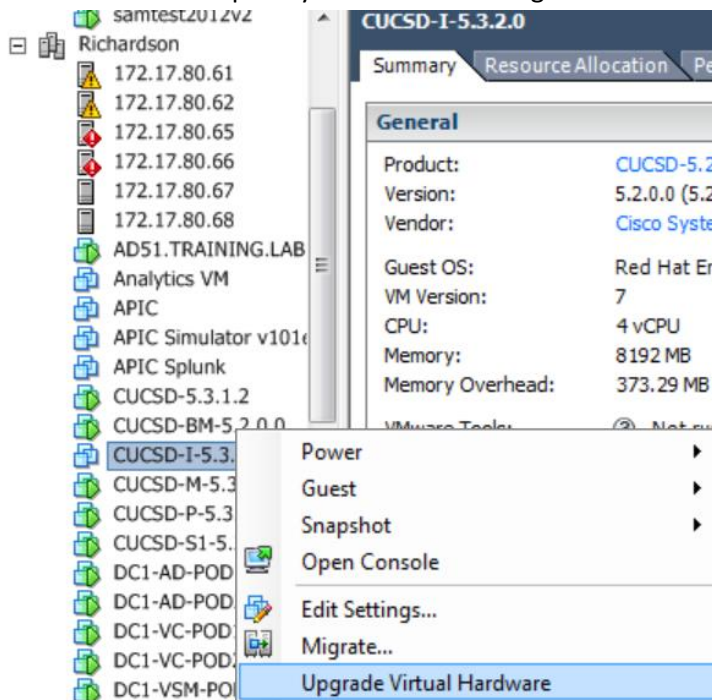
Log into vCenter, navigate to your Inventory Database VM, select 'Shutdown Guest'.



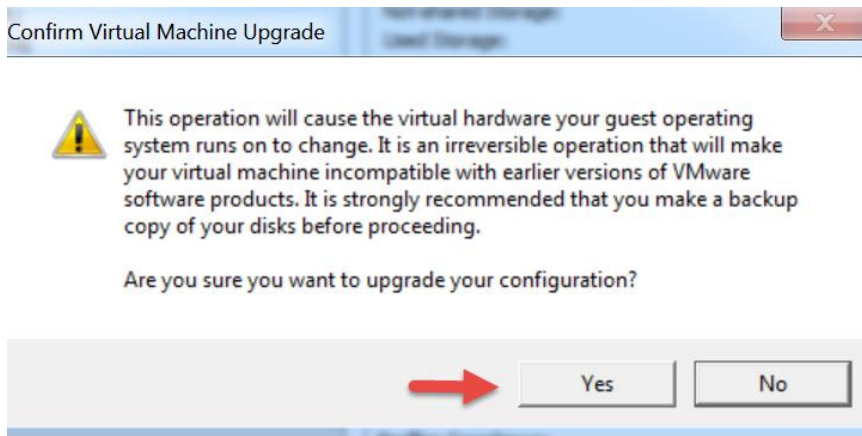
Select Yes.



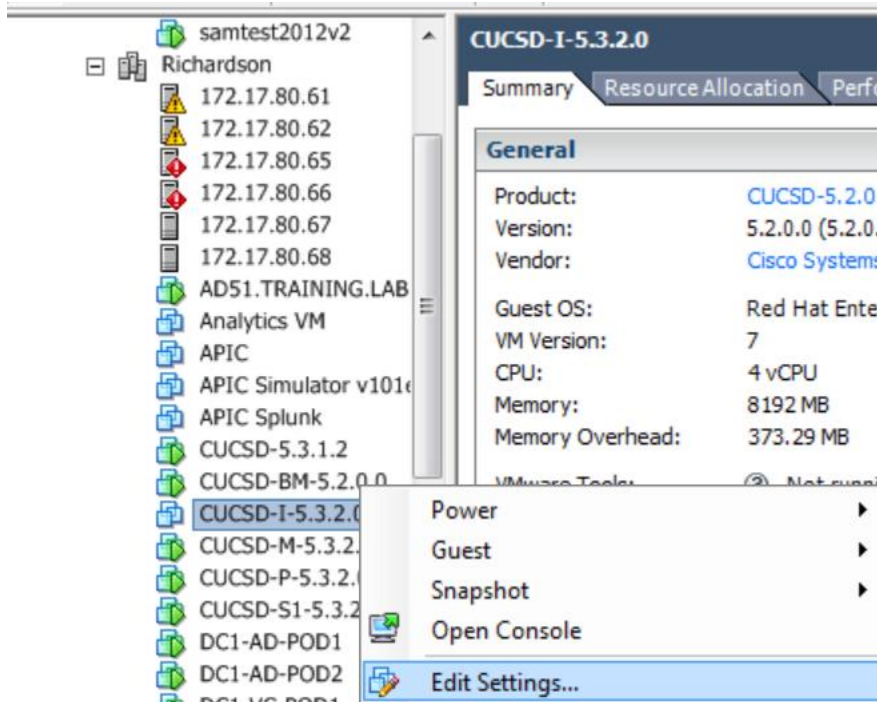
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



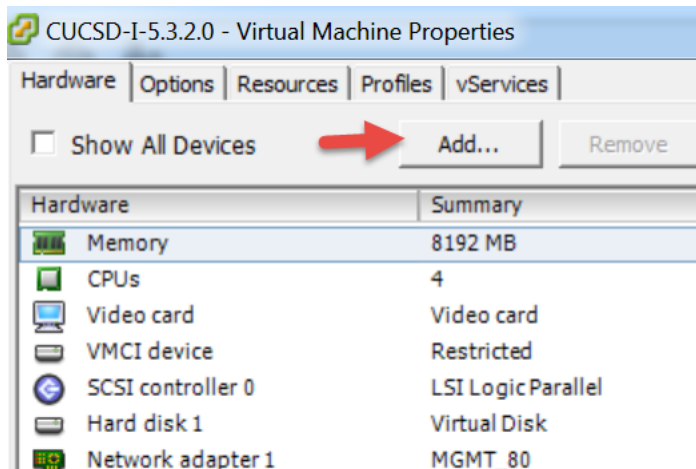
Select Yes.



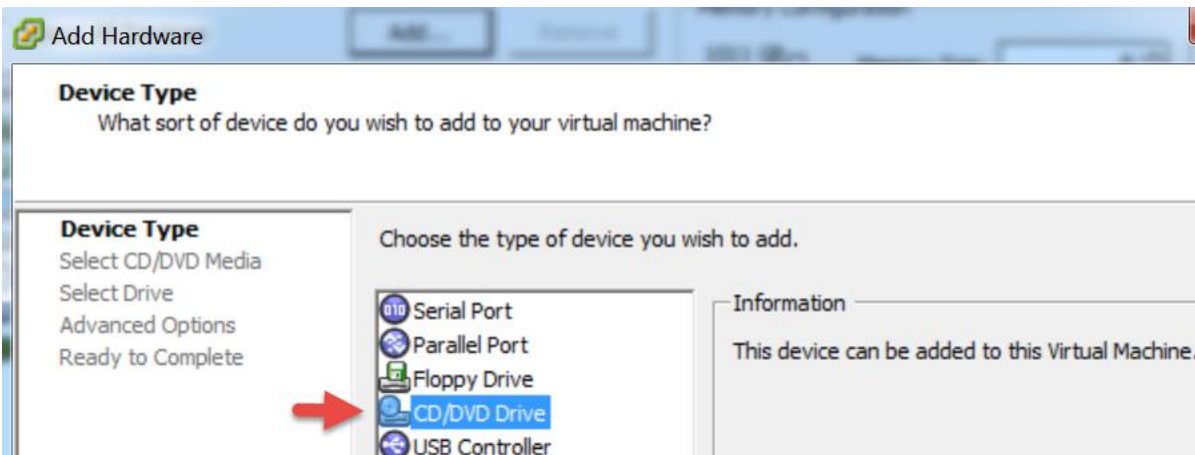
Right click on the VM and Select 'Edit Settings'



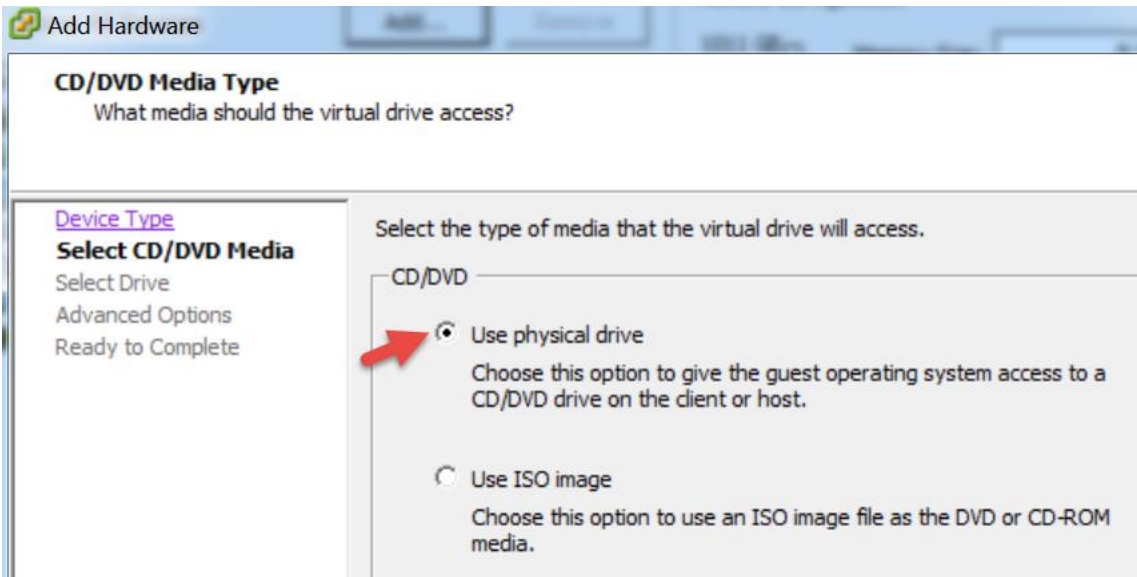
Select Add.



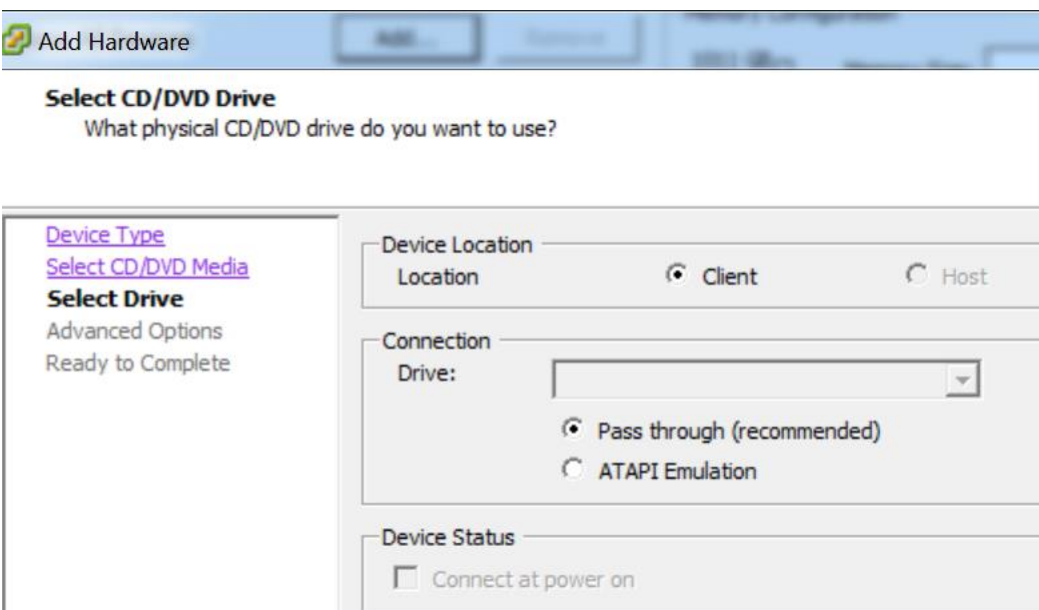
Select 'CD/DVD Drive' and click Next.



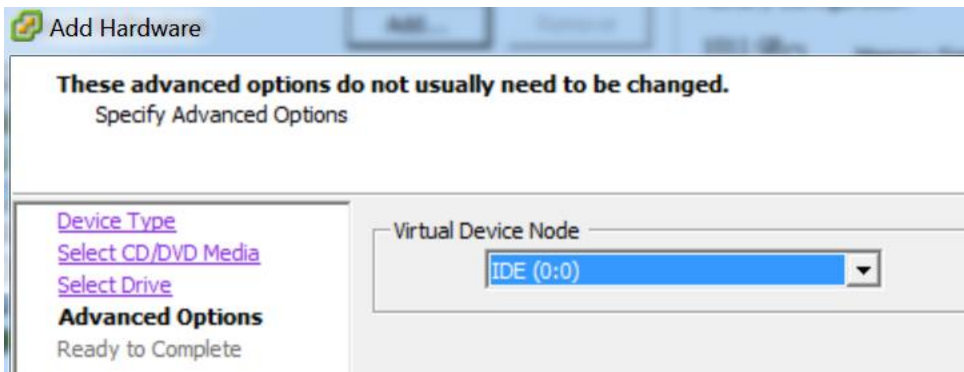
Leave default 'Use physical drive' and click Next.



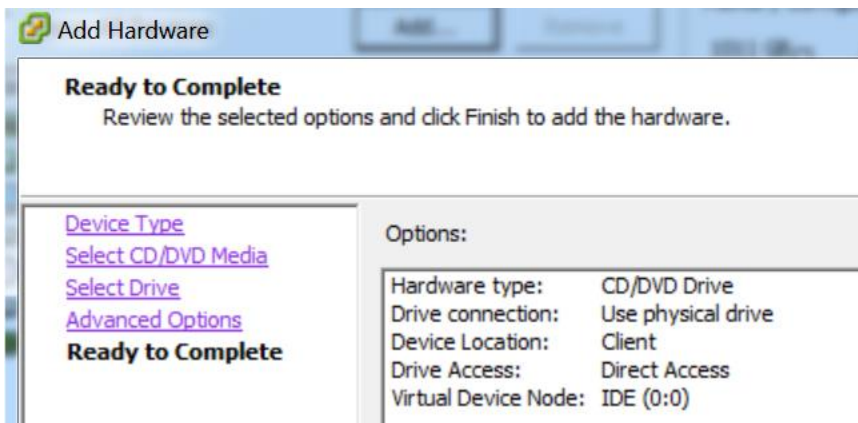
Leave default and click Next.



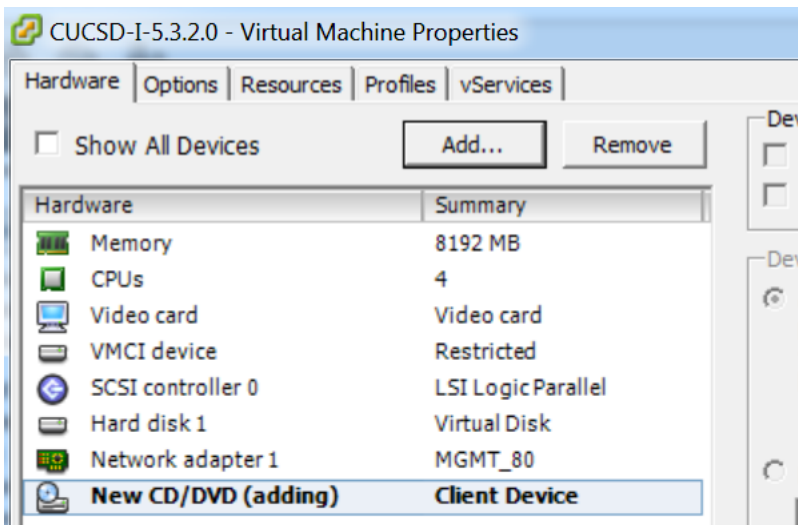
Leave default and click Next.



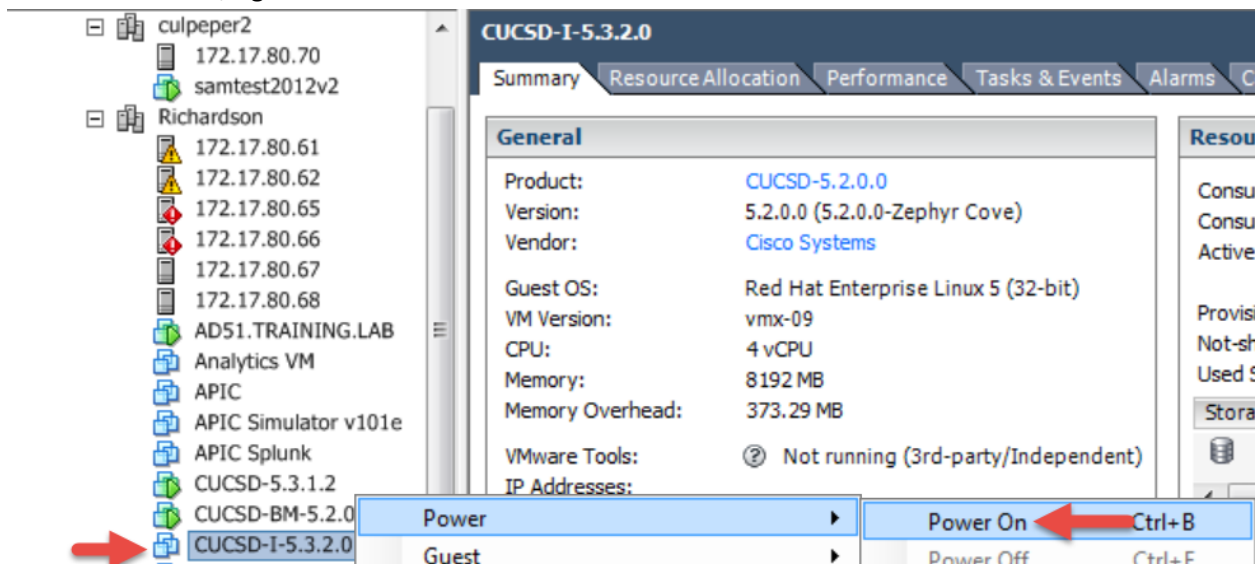
Review and click Finish.



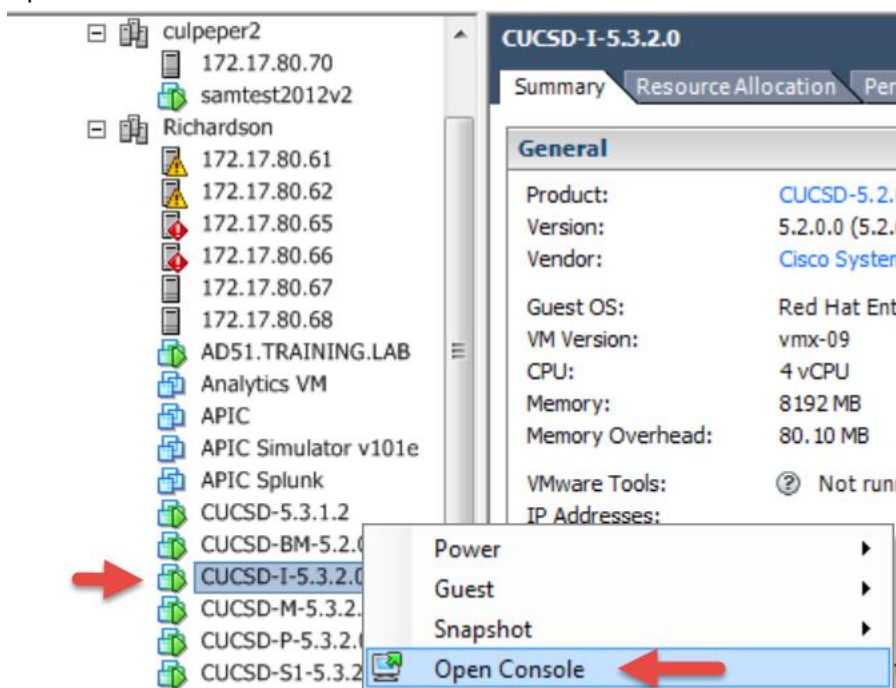
Review and click OK.



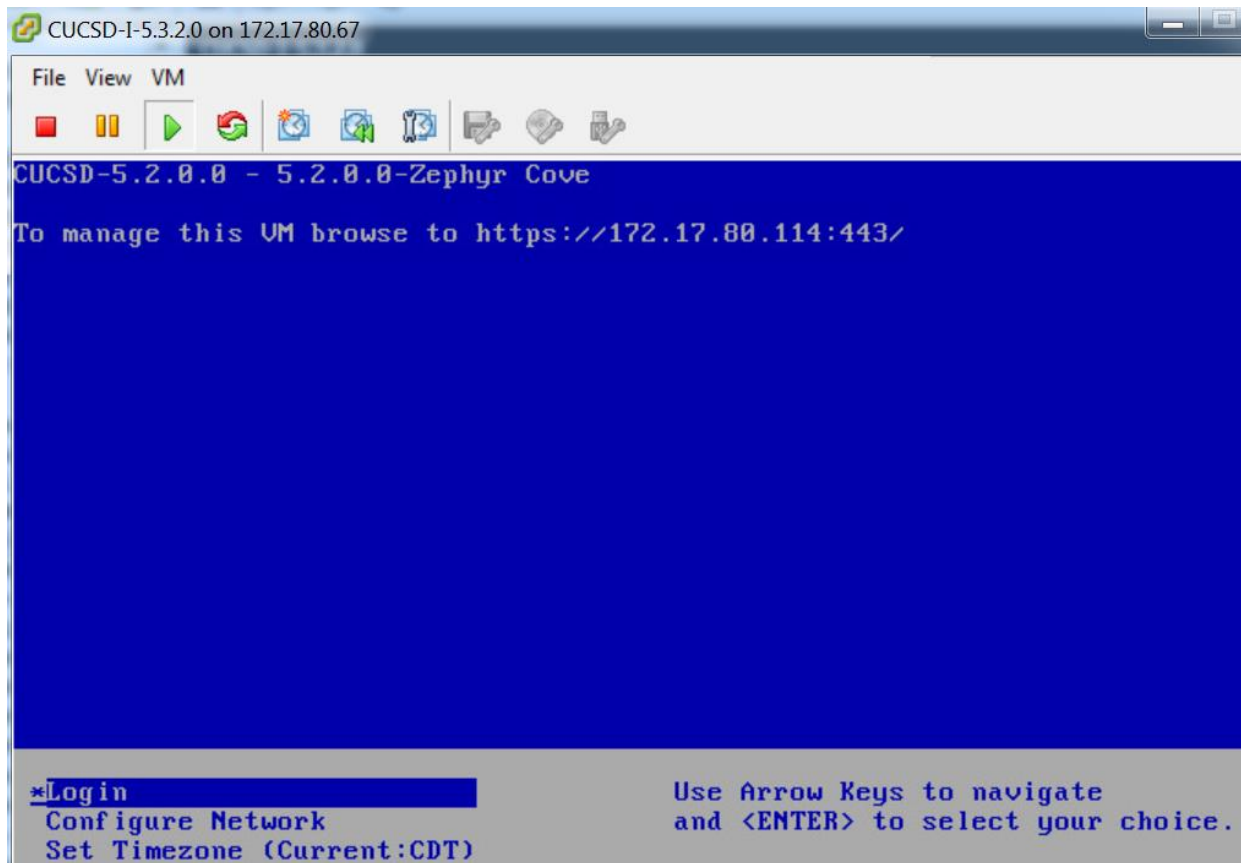
Power the VM On, right click on the VM and select 'Power On'.



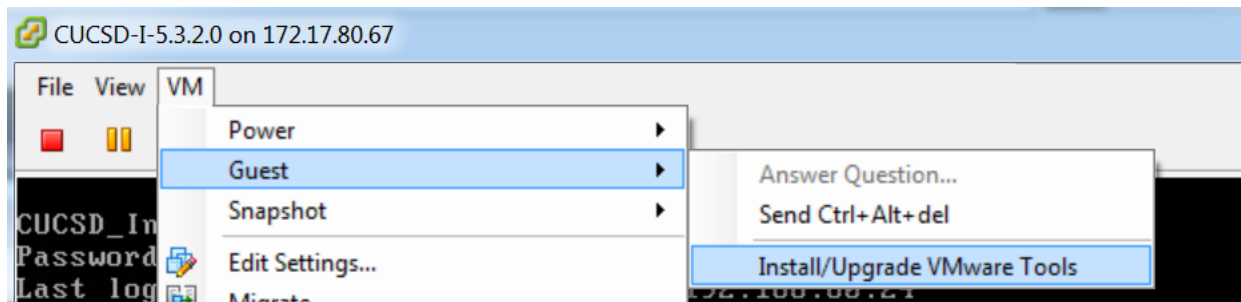
Open the VM Console to watch the VM Boot.



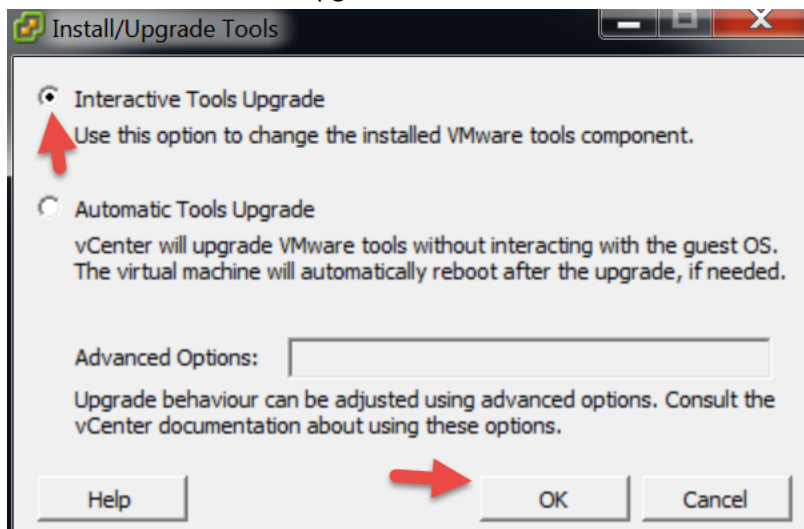
Once the VM is completely up, you should see the login screen similar to below.



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 xzf /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 equivalent) 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@CUCSD_Inventory ~]# rm -rf /usr/lib/vmware-tools/
[root@CUCSD_Inventory ~]# cd vmware-tools-distrib/
[root@CUCSD_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@CUCSD_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 HGF5 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:

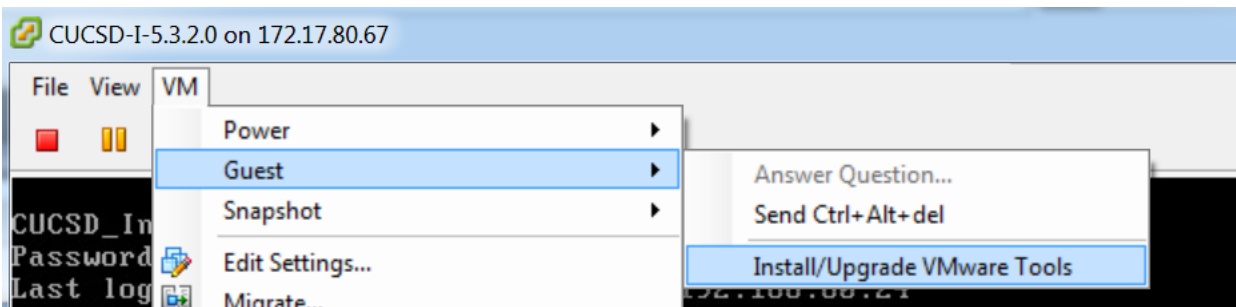
```
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start
```

Enjoy,

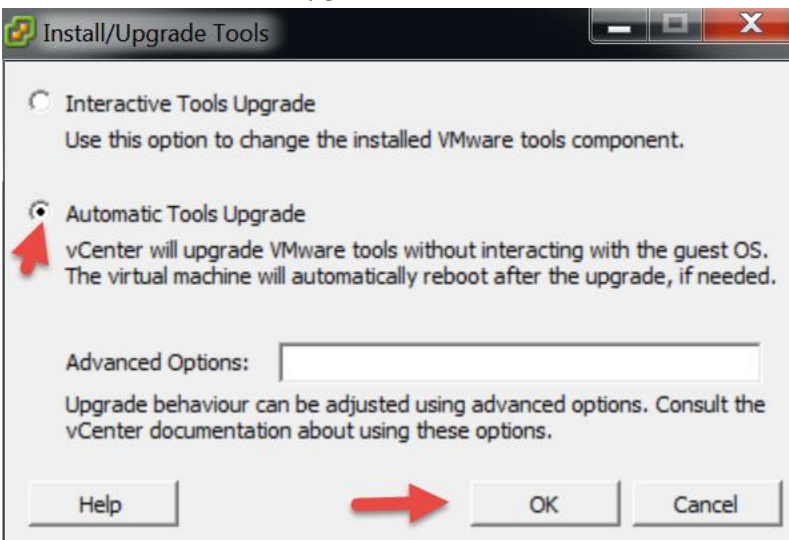
--the VMware team

[root@CUCSD_Inventory vmware-tools-distrib]#

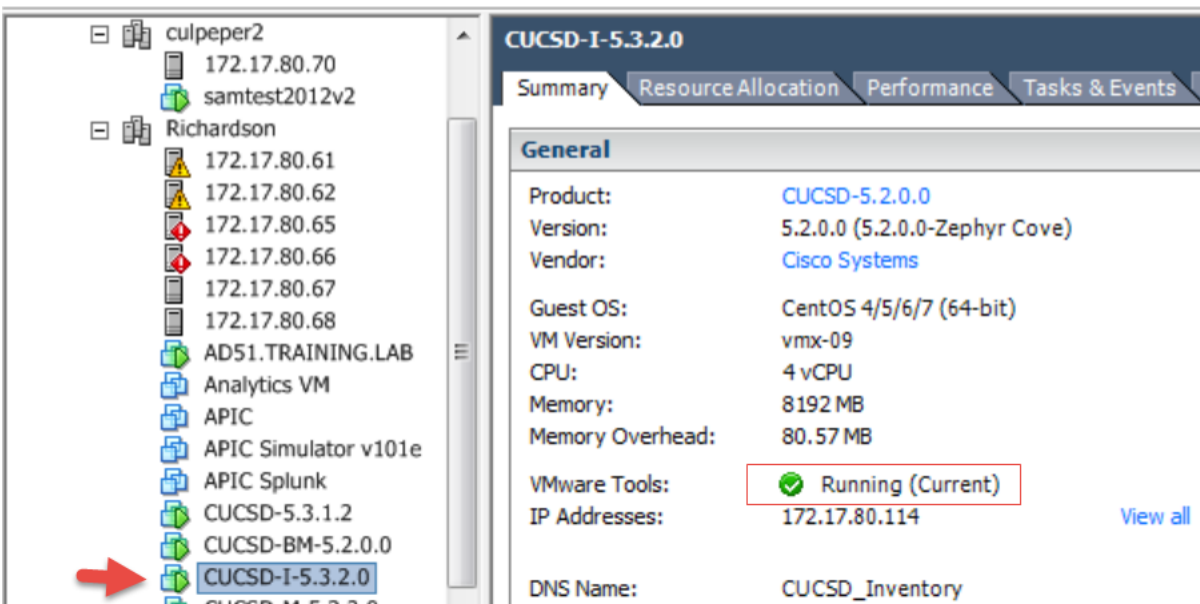
From the console, select 'Install/Upgrade VMware Tools'



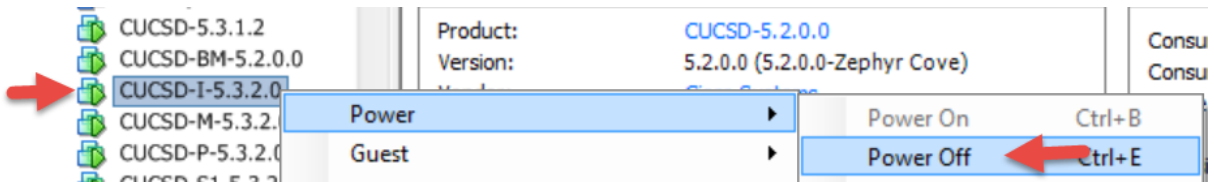
Select 'Automatic Tools Upgrade' and click OK.



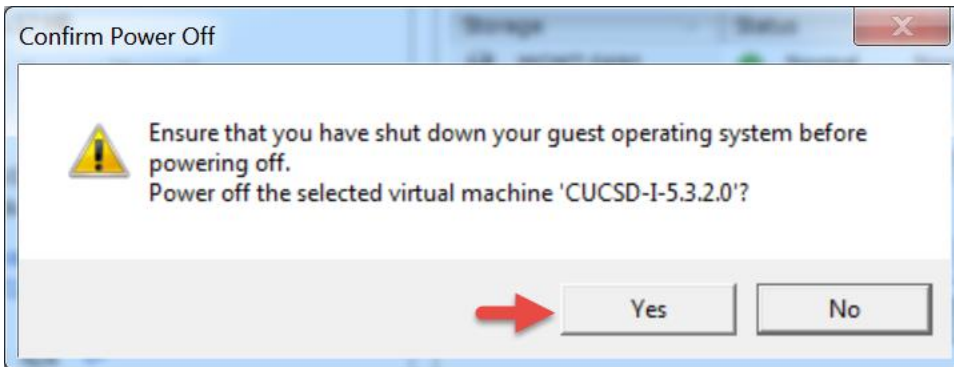
Verify Tools have been installed and currently Running as shown below.



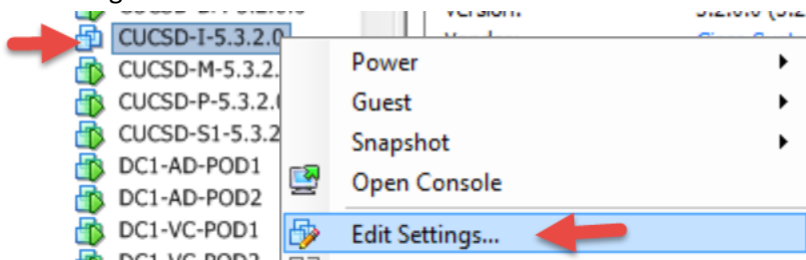
Power off the VM, select 'Power Off'.



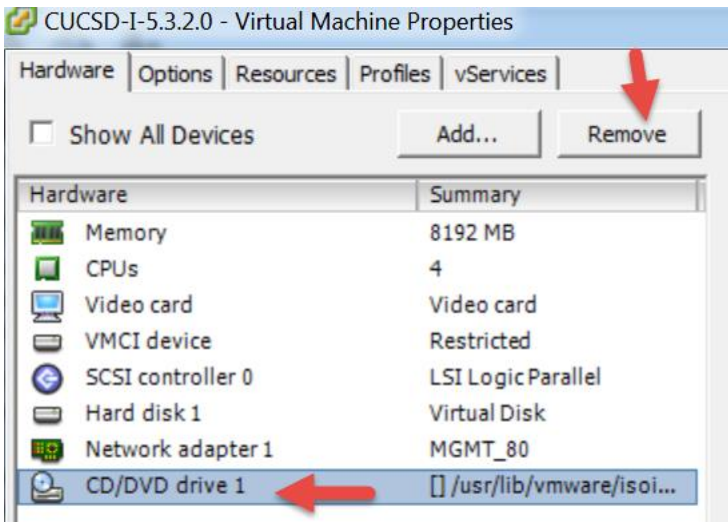
Select Yes.



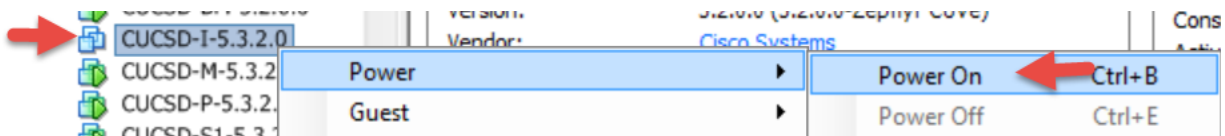
Edit Settings.



Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.

The screenshot displays a VMware vSphere interface. On the left, a list of virtual machines is shown, with 'CUCSD-I-5.3.2.0' selected and highlighted in blue. A red arrow points to this VM. The right pane shows the details for this VM:

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:	172.17.80.114 View all
DNS Name:	CUCSD_Inventory
EVC Mode:	N/A
State:	Available
Host:	172.17.80.67

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:
Retype new UNIX password:
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:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
Root passwd changed successfully
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 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 reconfi
gured 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 con
tinue? [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
```

- cat /etc/resolv.conf

```
[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=localhost
[root@localhost ~]#
```

Change the hostname

```
localhost localhost
[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 ~]#
```

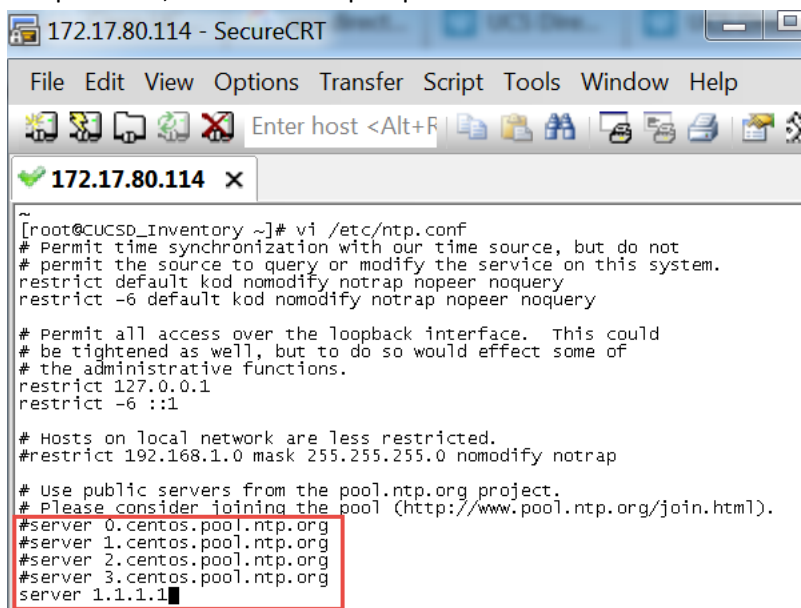
Configure NTP servers for Inventory Database Node. SSH into Inventory Database Node using root account.

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.c1f.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 # infront 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



Restart the ntpd 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
-----
* 173.44.32.10    .INIT.      16 u  11  64   1   1.354 -29.804  0.001
LOCAL(0)        .LOCL.      10 l  10  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_Inventory ~]#
[root@CUCSD_Inventory ~]#
[root@CUCSD_Inventory ~]# ls -l /etc/localtime
lrwxrwxrwx 1 root root 27 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
Australia      EET           Factory        Greenwich       Israel         Mideast       Poland        ROC           UTC
[root@CUCSD_Inventory zoneinfo]# cd America/
[root@CUCSD_Inventory America]# ls
Adak            Cambridge_Bay  Dominica       Indiana         Mendoza        Phoenix        St_Barthelmy
Anchorage      Campo_Grande  Edmonton      Indianapolis    Menominee      Port-au-Prince St_Johns
Anguilla       Cancun         Eirunepe      Inuvik          Merida         Porto_Acre     St_Kitts
Antigua       Caracas        El_Salvador   Inulit          Mexico_City    Port_of_Spain  St_Lucia
Araguaina     Catamarca     Ensenada      Jamaica         Miquelon      Porto_Velho    St_Thomas
Argentina     Cayenne       Fortaleza     Jujuy           Moncton        Puerto_Rico    St_Vincent
Aruba         Cayman        Fort_Wayne    Knox_IN         Monterrey      Rainy_River    Swift_Current
Asuncion      Chicago       Glace_Bay     Kentucky        Montevideo     Rankin_Inlet   Tegucigalpa
Atikokan     Chihuahua     Godthab       Knox_IN         Montreal       Recife         Thule
Atka          Coral_Harbour Goose_Bay      La_Paz          Montserrat    Regina         Thunder_Bay
Bahia         Cordoba       Grand_Turk    Lima            Nassau         Resolute       Tijuana
Barbados     Costa_Rica    Grenada       Los_Angeles    New_York       Rio_Branco     Toronto
Belem        Cuiaba        Guadeloupe    Louisville     Nipigon        Rosario        Tortola
Belize       Curacao       Guatemala     Maceio         Nome           Santarem       Vancouver
Blanc-Sablon Danmarkshavn  Guayaquil     Managua         Noronha        Santiago       Virgin
Boa_Vista    Dawson        Guyana        Manaus         North_Dakota   Santo_Domingo Whitehorse
Bogota       Dawson_Creek Halifax        Marigot        Panama         Sao_Paulo      Winnipeg
Boise        Denver        Havana        Martinique     Pangnirtung    Scoresbysund  Yakutat
Buenos_Aires Detroit       Hermsillo     Mazatlan       Paramaribo     Shiprock       Yellowknife
[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 timzone is what you set it to: 'date'
- Verify the link: 'ls -l /etc/localtime'

```

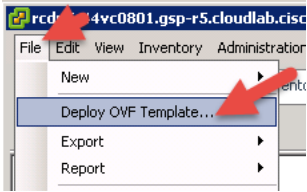
File Edit View Options Transfer Script Tools Window Help
172.17.80.114 x
Last login: Thu Sep 17 15:38:48 2015 from 192.168.80.14
[root@CUCSD_Inventory ~]# cp /etc/localtime /root/old.timezone
[root@CUCSD_Inventory ~]# rm /etc/localtime
rm: remove symbolic link '/etc/localtime'? y
[root@CUCSD_Inventory ~]#
[root@CUCSD_Inventory ~]# ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime
[root@CUCSD_Inventory ~]#
[root@CUCSD_Inventory ~]# date
Thu Sep 17 12:19:20 CDT 2015
[root@CUCSD_Inventory ~]#
[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 ~]#

```

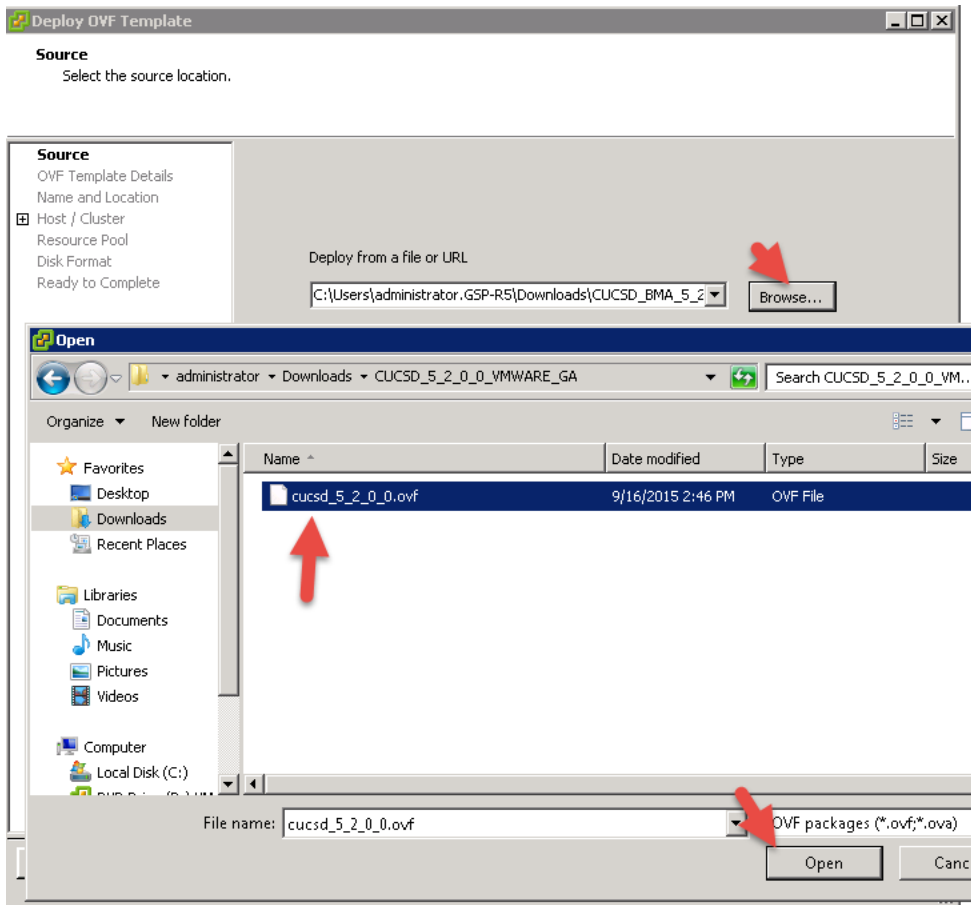

3. Create the Monitoring Database Node

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.

The screenshot shows a window titled "Deploy OVF Template" with a sub-header "OVF Template Details" and the instruction "Verify OVF template details." On the left is a navigation pane with links: Source, OVF Template Details, End User License Agreement, Name and Location, Host / Cluster, Resource Pool, Disk Format, Properties, and Ready to Complete. The main area displays the following details:

Product:	CUCSD-5.2.0.0
Version:	5.2.0.0
Vendor:	Cisco Systems
Publisher:	No certificate present
Download size:	2.8 GB
Size on disk:	Unknown (thin provisioned) 100.0 GB (thick provisioned)
Description:	Cisco UCS Director 5.2.0.0 (Zephyr Cove Branch)

Note: It is mandatory to reserve vCPU and Memory as recommended by Installation and Deployment guide.

Accept the license agreement and Click Next.

The screenshot shows the "End User License Agreement" screen within the "Deploy OVF Template" window. The instruction is "Accept the end user license agreements." The navigation pane on the left highlights "End User License Agreement" and includes links for Source, OVF Template Details, and End User License Agreement. The main area contains the following text:

IMPORTANT: PLEASE READ THIS END USER LICENSE AGREEMENT CAREFULLY. IT IS VERY IMPORTANT THAT YOU CHECK THAT YOU ARE PURCHASING CISCO SOFTWARE OR EQUIPMENT FROM AN APPROVED SOURCE AND THAT YOU, OR THE ENTITY YOU REPRESENT (COLLECTIVELY, THE "CUSTOMER") HAVE BEEN REGISTERED AS THE END USER FOR THE PURPOSES OF THIS CISCO END USER LICENSE AGREEMENT. IF YOU ARE NOT REGISTERED AS THE END USER YOU HAVE NO LICENSE TO USE THE SOFTWARE AND THE LIMITED WARRANTY IN THIS END USER LICENSE AGREEMENT DOES NOT APPLY. ASSUMING YOU HAVE PURCHASED FROM AN APPROVED SOURCE, DOWNLOADING, INSTALLING OR USING CISCO OR CISCO-SUPPLIED SOFTWARE CONSTITUTES ACCEPTANCE OF THIS AGREEMENT.

CISCO SYSTEMS, INC. OR ITS AFFILIATE LICENSING THE SOFTWARE ("CISCO") IS WILLING TO LICENSE THIS SOFTWARE TO YOU ONLY UPON THE CONDITION THAT YOU PURCHASED THE SOFTWARE FROM AN APPROVED SOURCE AND THAT YOU ACCEPT ALL OF THE TERMS CONTAINED IN THIS END USER LICENSE AGREEMENT PLUS ANY ADDITIONAL LIMITATIONS ON THE LICENSE SET FORTH IN A SUPPLEMENTAL LICENSE AGREEMENT ACCOMPANYING THE PRODUCT, MADE AVAILABLE AT THE TIME OF YOUR ORDER, OR POSTED ON THE CISCO WEBSITE AT www.cisco.com/go/terms (COLLECTIVELY THE "AGREEMENT"). TO THE EXTENT OF ANY CONFLICT BETWEEN THE TERMS OF THIS END USER LICENSE AGREEMENT AND ANY SUPPLEMENTAL LICENSE AGREEMENT, THE SUPPLEMENTAL LICENSE AGREEMENT SHALL APPLY. BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU ARE REPRESENTING THAT YOU PURCHASED THE SOFTWARE FROM AN APPROVED SOURCE AND BINDING YOURSELF TO THE AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THE AGREEMENT, THEN CISCO IS UNWILLING TO LICENSE THE SOFTWARE TO YOU AND (A) YOU MAY NOT DOWNLOAD, INSTALL OR USE THE SOFTWARE, AND (B) YOU MAY RETURN THE SOFTWARE (INCLUDING ANY UNOPENED CD PACKAGE AND ANY WRITTEN MATERIALS) FOR A FULL REFUND, OR, IF THE SOFTWARE AND WRITTEN MATERIALS ARE SUPPLIED AS PART OF ANOTHER PRODUCT, YOU MAY RETURN THE ENTIRE PRODUCT FOR A FULL REFUND. YOUR RIGHT TO RETURN AND REFUND EXPIRES 30 DAYS AFTER PURCHASE FROM AN APPROVED SOURCE, AND APPLIES ONLY IF YOU ARE THE ORIGINAL AND REGISTERED END USER PURCHASER. FOR THE PURPOSES OF THIS END USER LICENSE AGREEMENT, AN "APPROVED SOURCE" MEANS (A) CISCO; OR (B) A DISTRIBUTOR OR SYSTEMS INTEGRATOR AUTHORIZED BY CISCO TO DISTRIBUTE / SELL CISCO EQUIPMENT, SOFTWARE AND SERVICES WITHIN YOUR TERRITORY TO END USERS; OR (C) A RESELLER AUTHORIZED BY ANY SUCH DISTRIBUTOR OR SYSTEMS INTEGRATOR IN ACCORDANCE WITH THE TERMS OF THE DISTRIBUTOR'S AGREEMENT WITH CISCO TO DISTRIBUTE / SELL THE CISCO EQUIPMENT,

A red arrow points to the "Accept" button. At the bottom of the window are buttons for "Help", "< Back", "Next >", and "Cancel".

Name the VM and click Next.

Deploy OVF Template

Name and Location
Specify a name and location for the deployed template

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
Name and Location
[Host / Cluster](#)
Storage
Disk Format
Network Mapping
Ready to Complete

Name:
The name can contain up to 80 characters and it must be unique within the inventory folder.

Inventory Location:

Select a Host and click Next.

Deploy OVF Template

Host / Cluster
On which host or cluster do you want to run the deployed template?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
Host / Cluster
Specific Host
Resource Pool
Disk Format
Properties

GSP_MGMT
 culpeper1
 culpeper2
 172.17.80.61
 172.17.80.62
 172.17.80.65
 172.17.80.66
 172.17.80.67
 172.17.80.68

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

Deploy OVF Template

Storage
Where do you want to store the virtual machine files?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
[Host / Cluster](#)
Storage
Disk Format
Network Mapping

Select a destination storage for the virtual machine files:
VM Storage Profile:

Name	Drive Type	Capacity	Provisioned	Free	Type	Thin Prov
datastore1 (9)	Non-SSD	5.00 GB	726.00 MB	4.29 GB	VMF55	Supporte
MGMT-SAN1	Non-SSD	3.90 TB	3.64 TB	2.05 TB	VMF55	Supporte

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

Deploy OVF Template

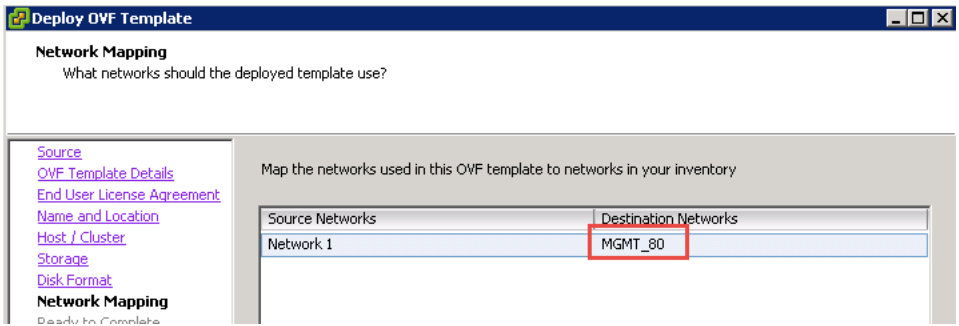
Disk Format
In which format do you want to store the virtual disks?

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
[Host / Cluster](#)
[Storage](#)
Disk Format
Network Mapping
Ready to Complete

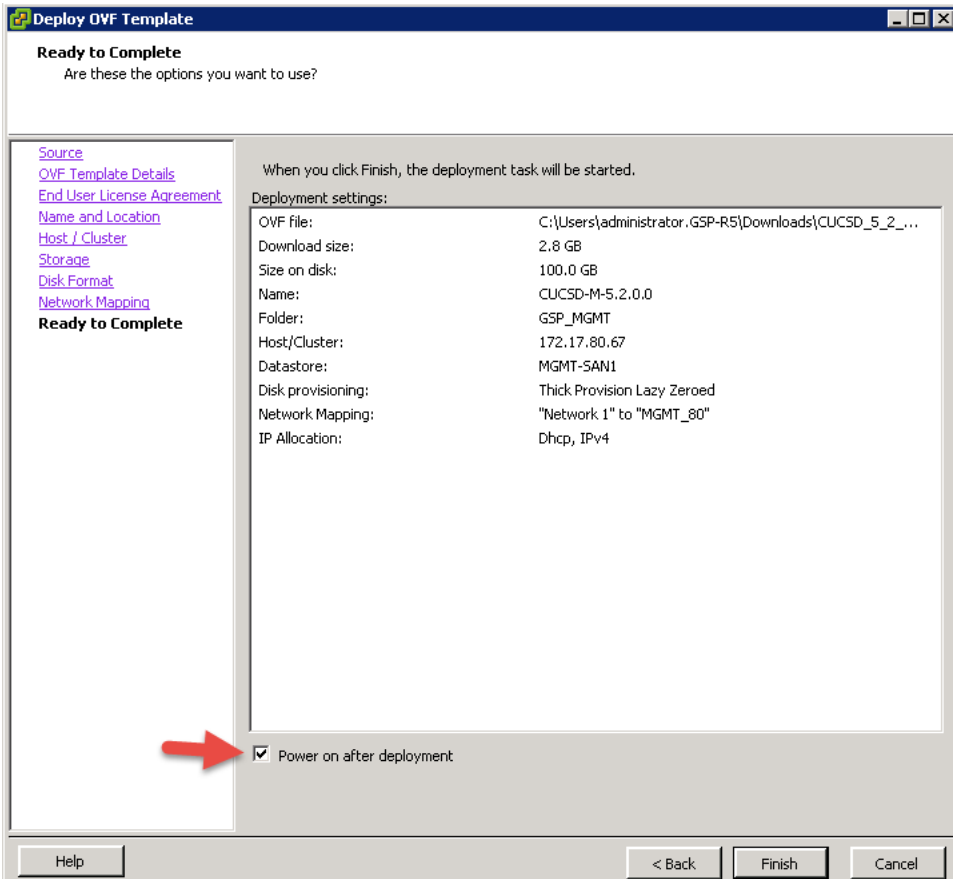
Datstore:
Available space (GB):

Thick Provision Lazy Zeroed
 Thick Provision Eager Zeroed
 Thin Provision

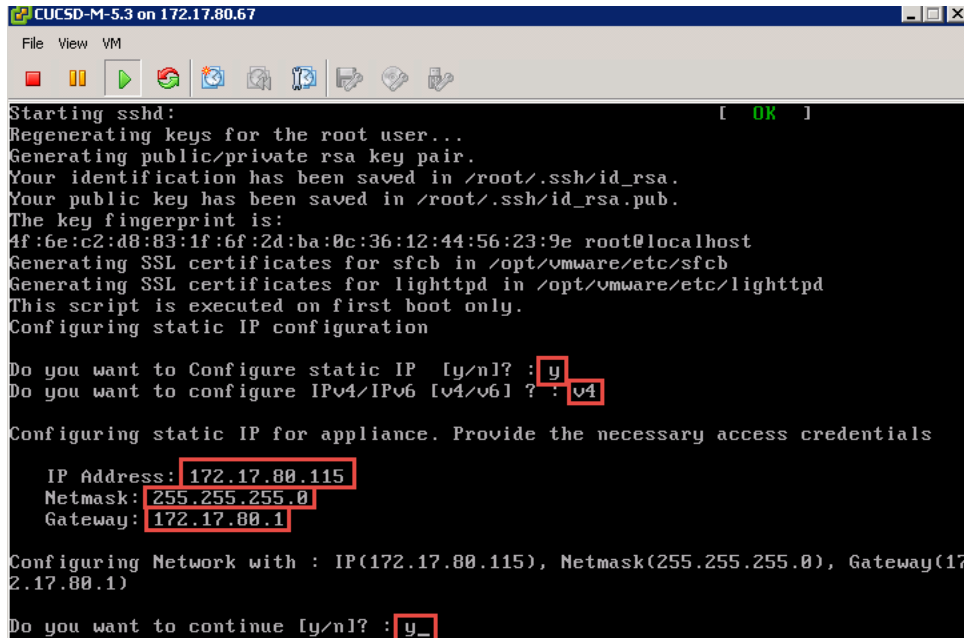
Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.

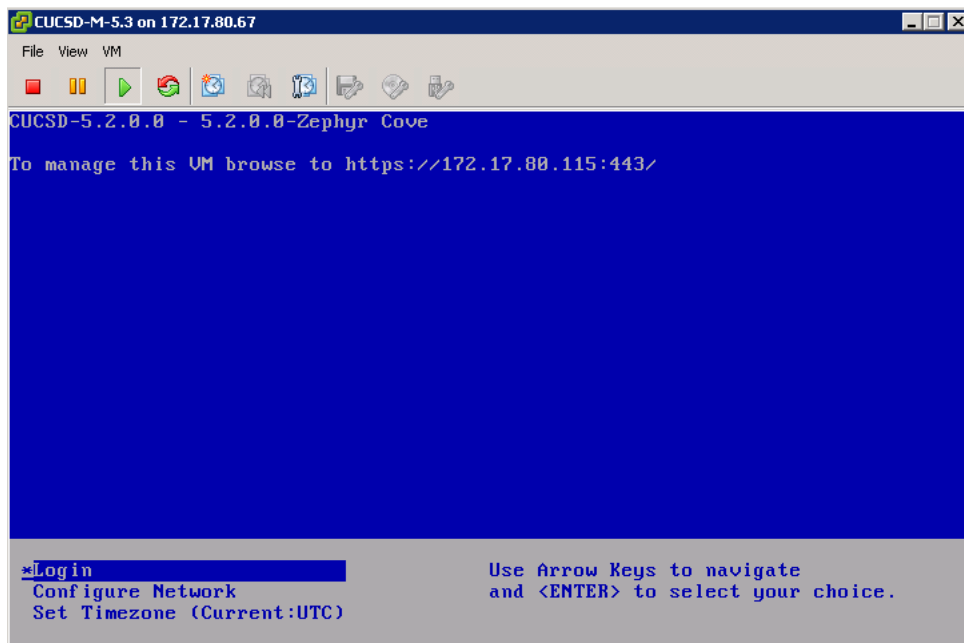


In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Monitoring Database Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.



```
CUCSD-M-5.3 on 172.17.80.67
File View VM
Starting sshd: [ OK ]
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 sfc in /opt/vmware/etc/sfc
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.



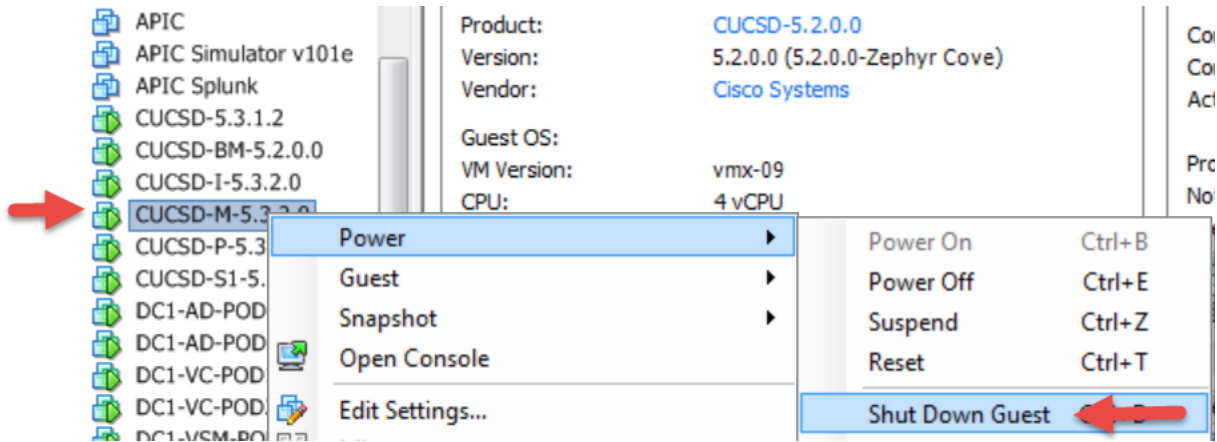
```
CUCSD-5.2.0.0 - 5.2.0.0-Zephyr Cove
To manage this VM browse to https://172.17.80.115:443/

Login
Configure Network
Set Timezone (Current:UTC)

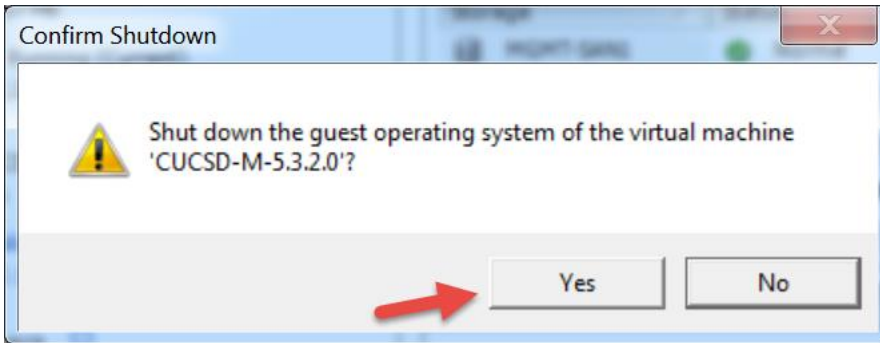
Use Arrow Keys to navigate
and <ENTER> to select your choice.
```

3.2. Install/Update VMWare tools & VM Version

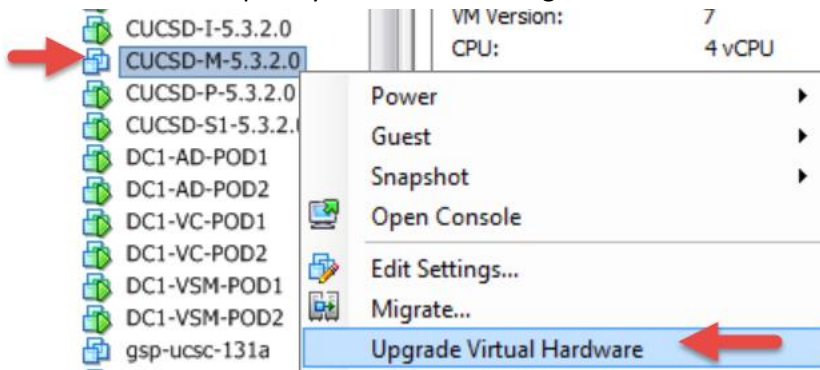
Log into vCenter, navigate to your Monitoring Database VM, select 'Shutdown Guest'.



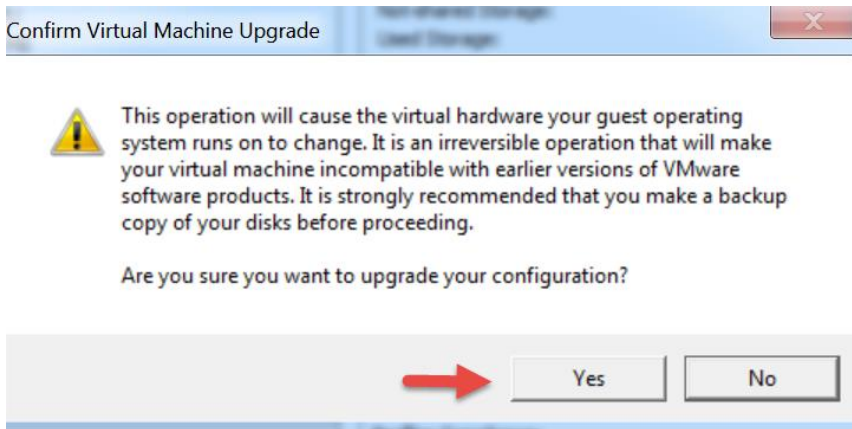
Select Yes.



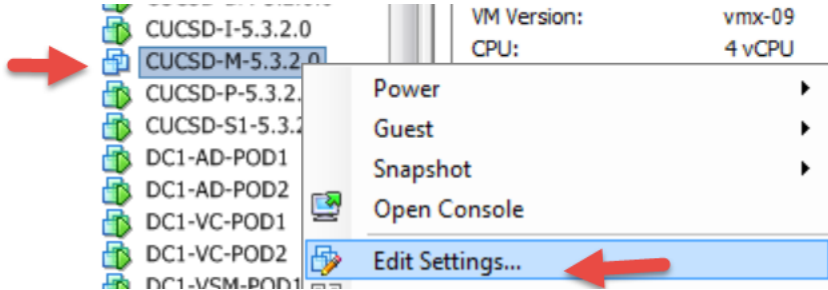
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



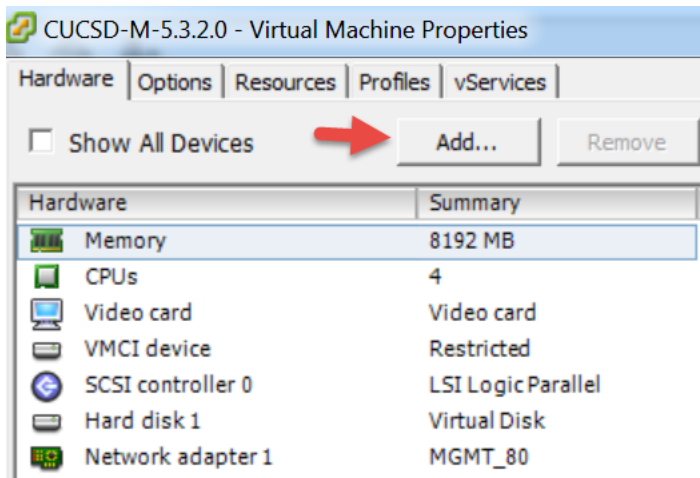
Select Yes.



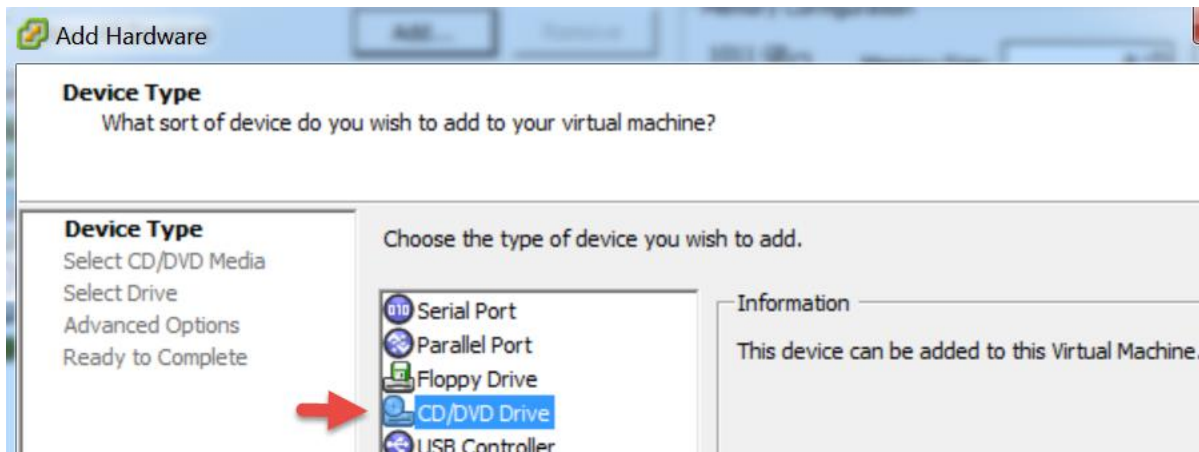
Right click on the VM and Select 'Edit Settings'



Select Add.



Select 'CD/DVD Drive' and click Next.



Leave default 'Use physical drive' and click Next.

Add Hardware

CD/DVD Media Type

What media should the virtual drive access?

[Device Type](#)
Select CD/DVD Media
Select Drive
Advanced Options
Ready to Complete

Select the type of media that the virtual drive will access.

CD/DVD

Use physical drive
Choose this option to give the guest operating system access to a CD/DVD drive on the client or host.

Use ISO image
Choose this option to use an ISO image file as the DVD or CD-ROM media.

Leave default and click Next.

Add Hardware

Select CD/DVD Drive

What physical CD/DVD drive do you want to use?

[Device Type](#)
[Select CD/DVD Media](#)
Select Drive
Advanced Options
Ready to Complete

Device Location

Location Client Host

Connection

Drive:

Pass through (recommended)
 ATAPI Emulation

Device Status

Connect at power on

Leave default and click Next.

Add Hardware

These advanced options do not usually need to be changed.

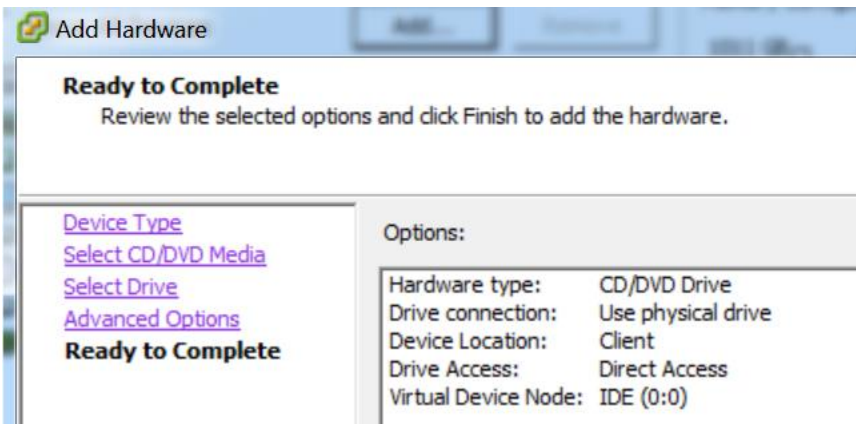
Specify Advanced Options

[Device Type](#)
[Select CD/DVD Media](#)
[Select Drive](#)
Advanced Options
Ready to Complete

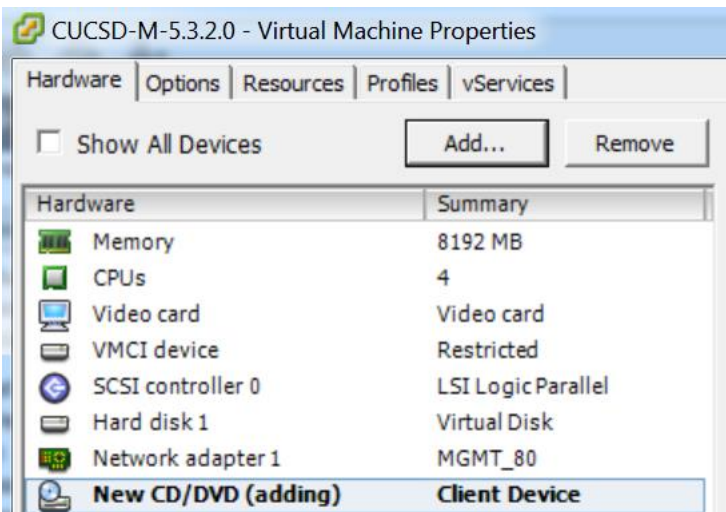
Virtual Device Node

IDE (0:0)

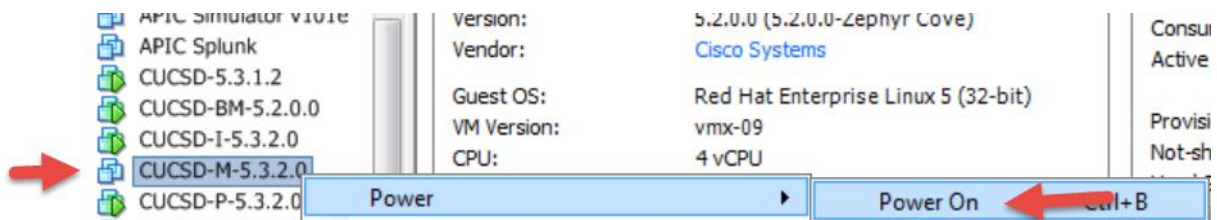
Review and click Finish.



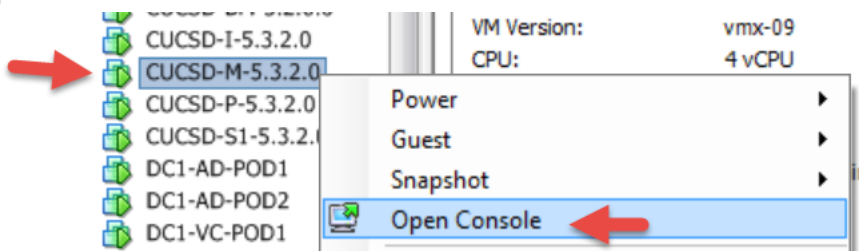
Review and click OK.



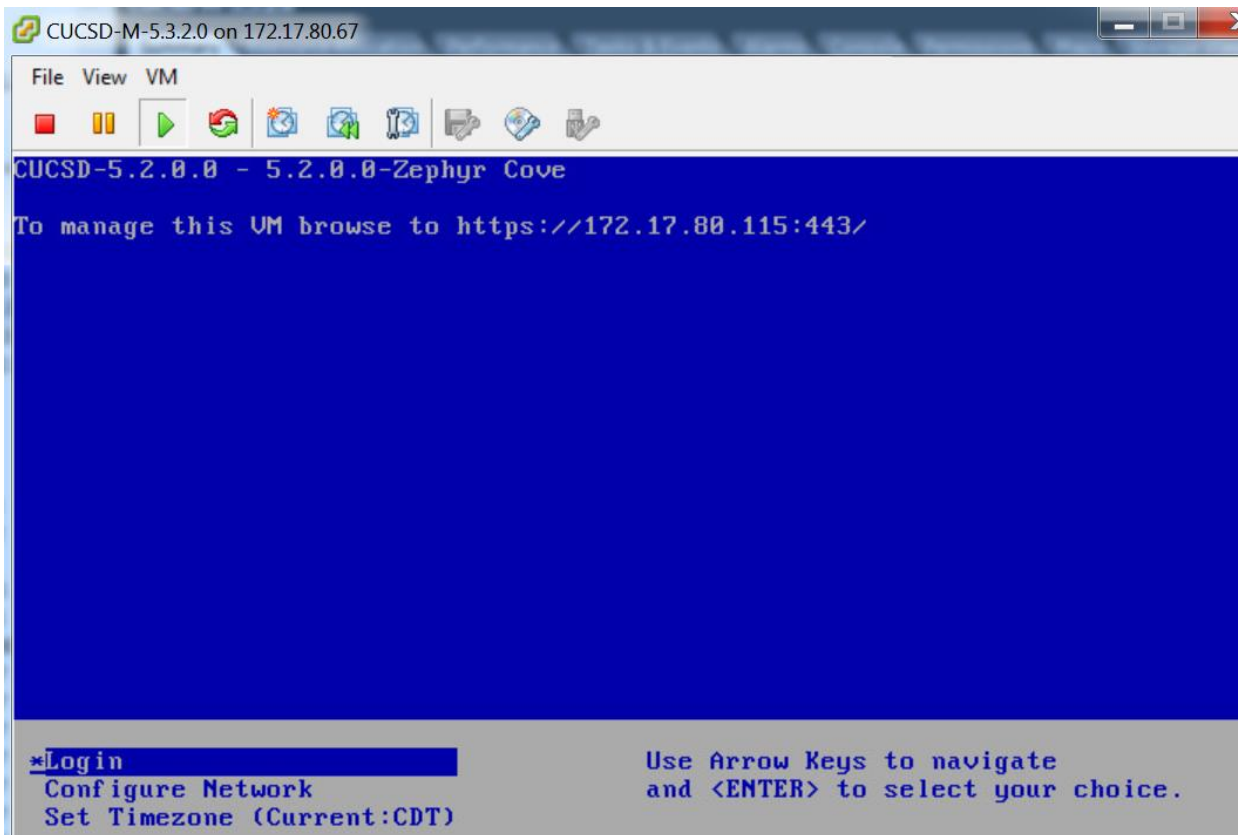
Power the VM On, right click on the VM and select 'Power On'.



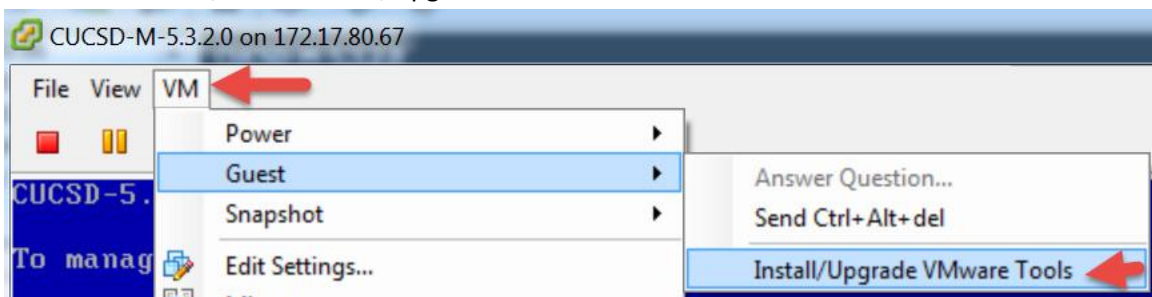
Open the VM Console to watch the VM Boot.



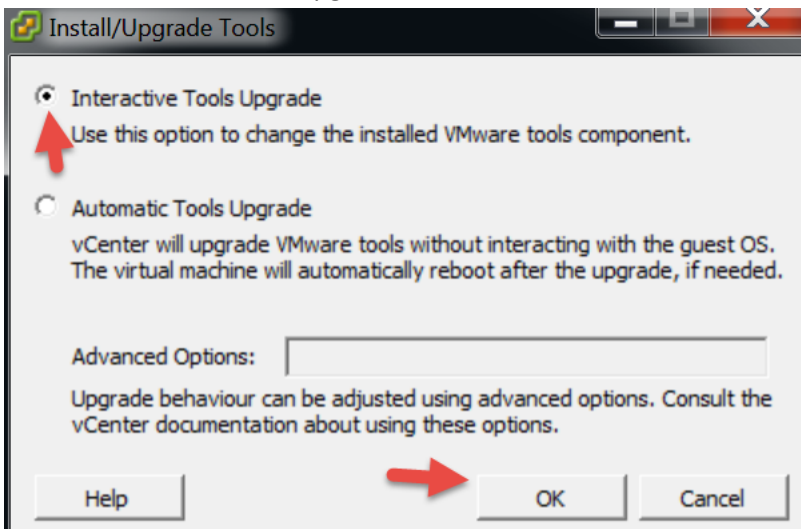
Once the VM is completely up, you should see the login screen similar to below.



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 xzf /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 equivalent) 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@CUCSD_Monitoring vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@CUCSD_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@CUCSD_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 HGF5 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:

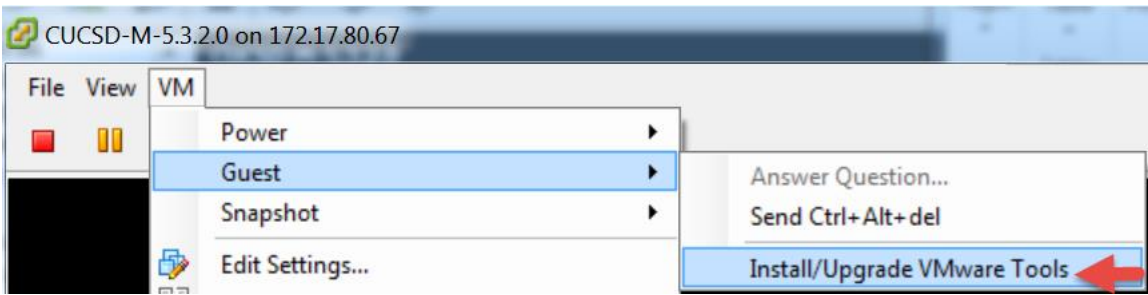
```
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start
```

Enjoy,

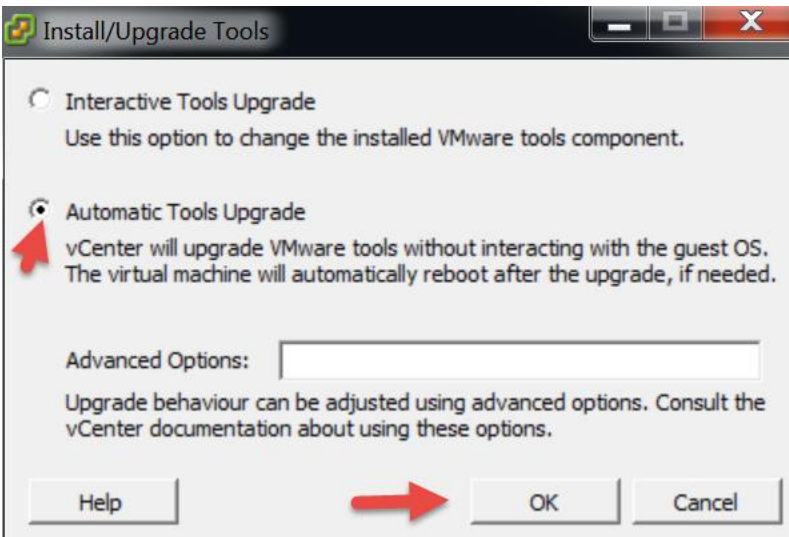
--the VMware team

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

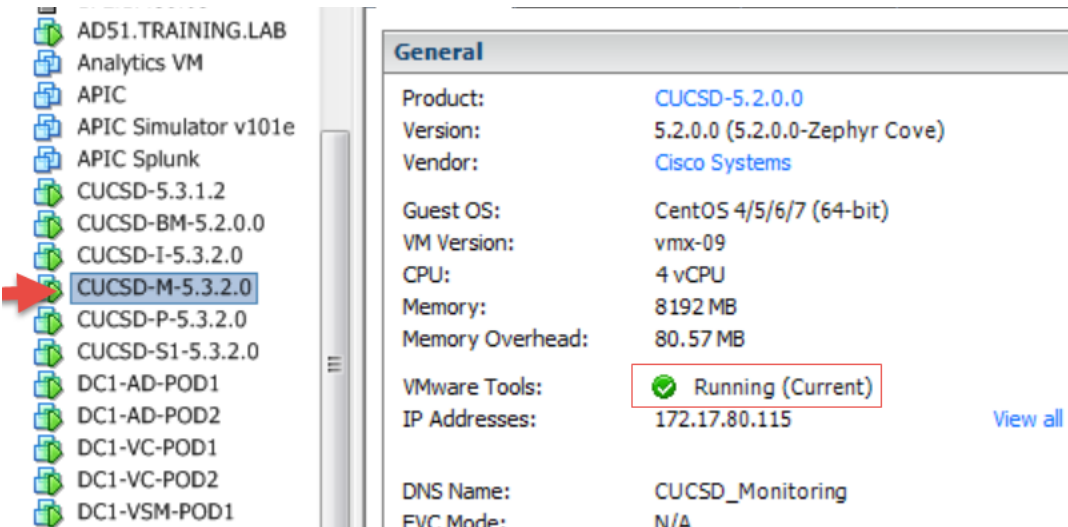
From the console, select 'Install/Upgrade VMware Tools'



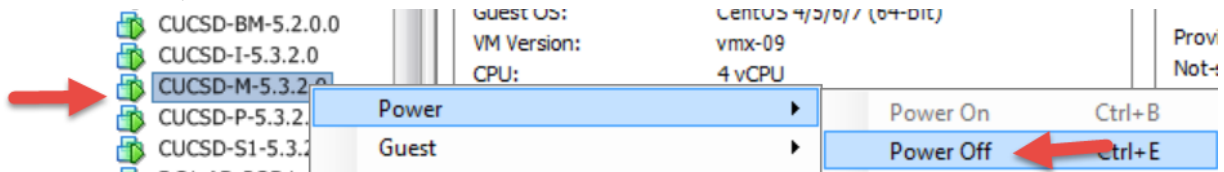
Select 'Automatic Tools Upgrade' and click OK.



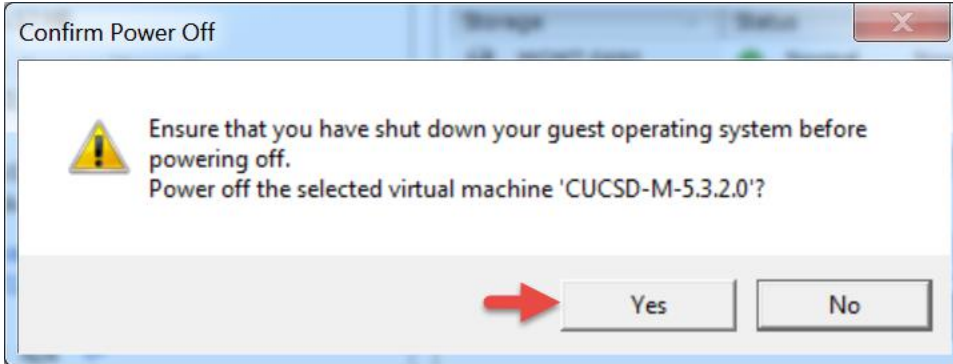
Verify Tools have been installed and currently Running as shown below.



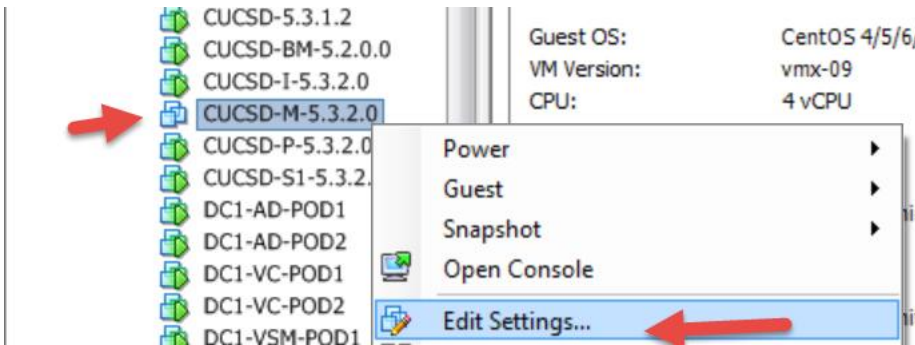
Power off the VM, select 'Power Off'.



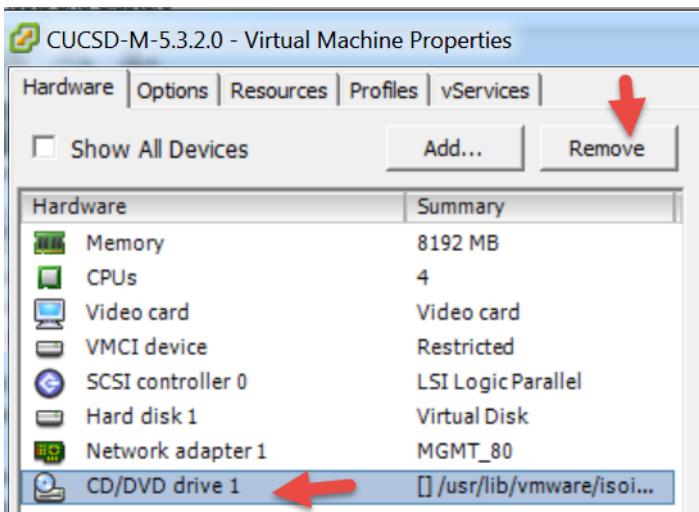
Select Yes.



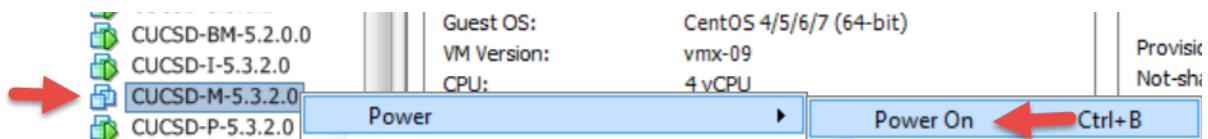
Edit Settings.



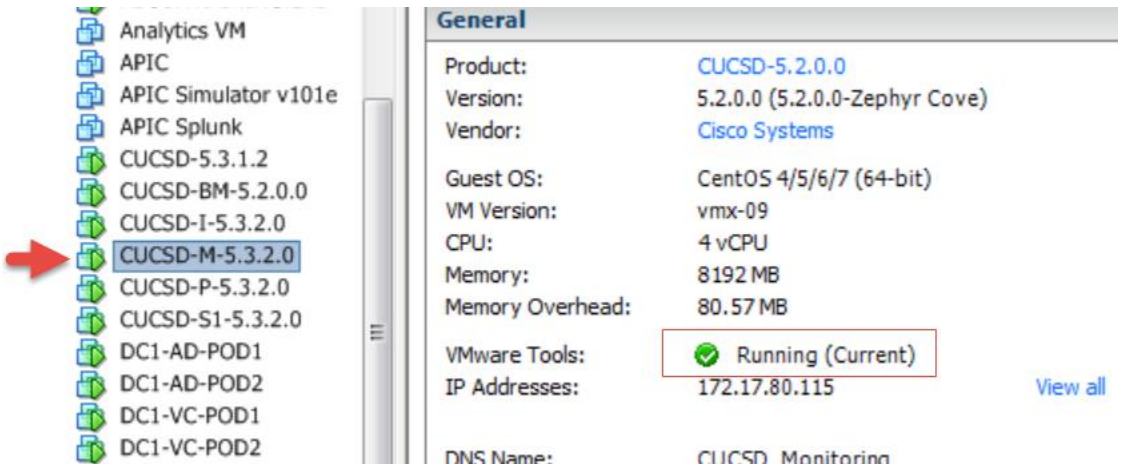
Remove CD/DVD drive then click OK.



Power on the VM.



Verify the tools are installed, running and current.



The screenshot shows the VMware Workstation interface. On the left, a list of virtual machines is displayed, with 'CUCSD-M-5.3.2.0' selected and highlighted in blue. A red arrow points to this VM. The right pane shows the 'General' tab for this VM, displaying various configuration details. The 'VMware Tools' status is highlighted with a red box, showing a green checkmark and the text 'Running (Current)'. A 'View all' link is visible next to the IP addresses.

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 View all
DNS Name:	CUCSD-Monitoring

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:
Retype new UNIX password:
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:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
Root passwd changed successfully
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.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_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=localhost
[root@localhost ~]# █
```

Change the hostname

```
localhost.localdomain
[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 ~]# █
```

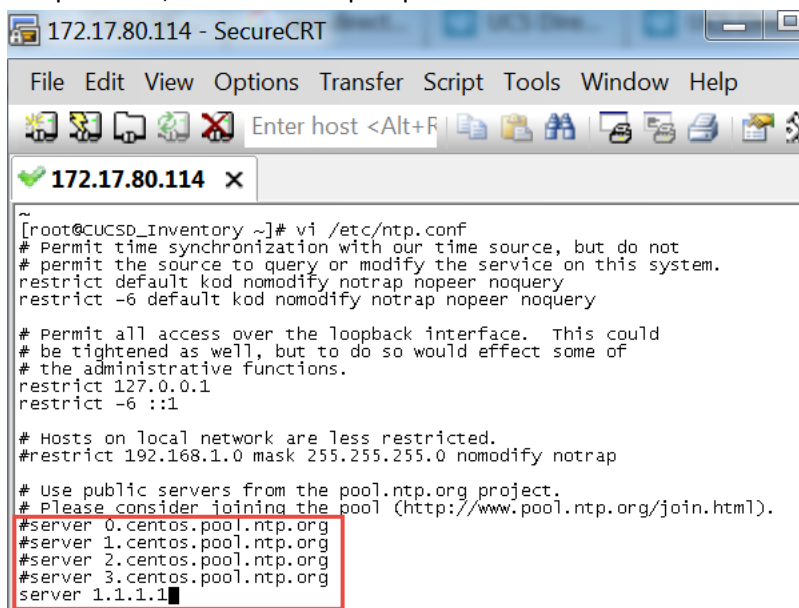
Configure NTP servers for Inventory Database Node. SSH into Inventory Database Node using root account.

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.c1f.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 # infront 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



Restart the ntpd 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_Monitoring ~]# service ntpd restart
Shutting down ntpd: [ OK ]
Starting ntpd: [ OK ]
[root@CUCSD_Monitoring ~]# ntpq -p
      remote           refid      st t when poll reach  delay  offset  jitter
-----
173.44.32.10    .INIT.      16 u  - 64  0   0.000  0.000  0.000
LOCAL(0)       .LOCL.      10 l  - 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    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-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
Atkokean     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
Bellem       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       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_Barthelemy
[root@CUCSD_Monitoring America]#
```

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

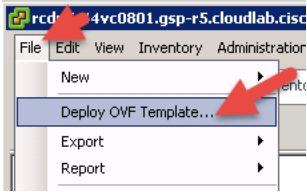
- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timzone is what you set it to: 'date'
- Verify the link: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

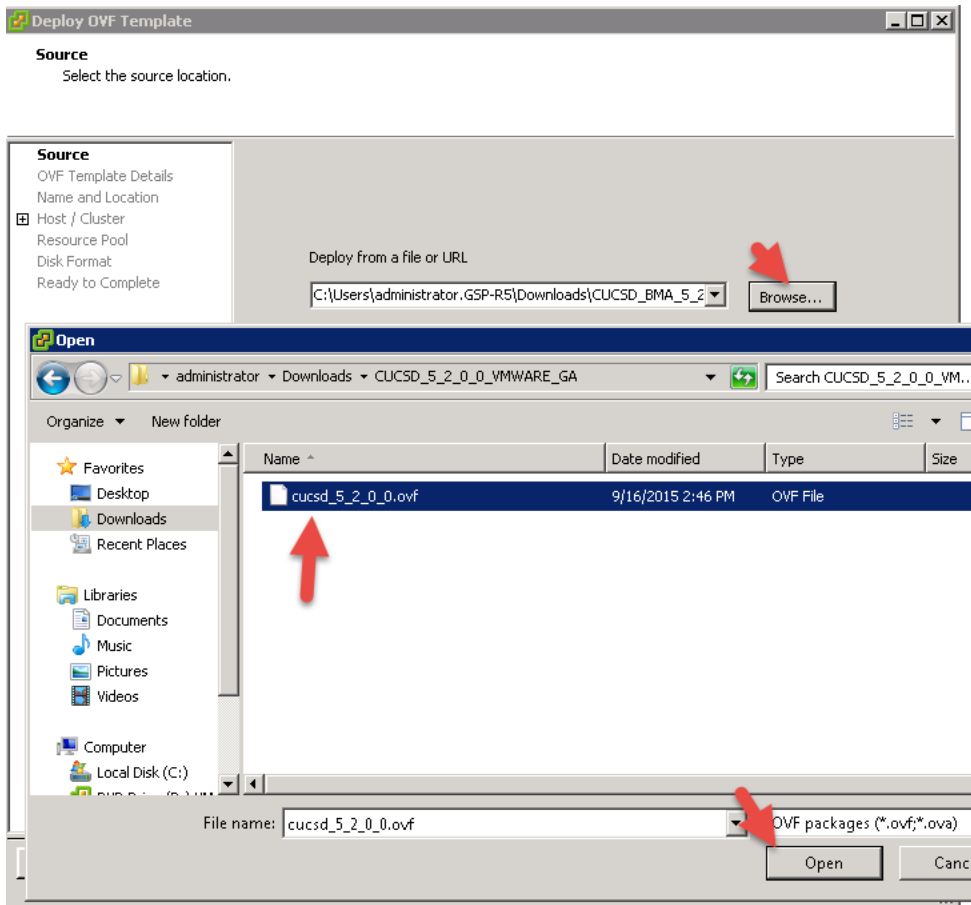
4. Create the Primary Node

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.

Deploy OVF Template

OVF Template Details
Verify OVF template details.

[Source](#)

OVF Template Details

- End User License Agreement
- Name and Location
- Host / Cluster
- Resource Pool
- Disk Format
- Properties
- Ready to Complete

Product:	CUCSD-5.2.0.0
Version:	5.2.0.0
Vendor:	Cisco Systems
Publisher:	No certificate present
Download size:	2.8 GB
Size on disk:	Unknown (thin provisioned) 100.0 GB (thick provisioned)
Description:	Cisco UCS Director 5.2.0.0 (Zephyr Cove Branch)

Note: It is mandatory to reserve vCPU and Memory as recommended by Installation and Deployment guide.

Accept the license agreement and Click Next.

Deploy OVF Template

End User License Agreement
Accept the end user license agreements.

[Source](#)

[OVF Template Details](#)

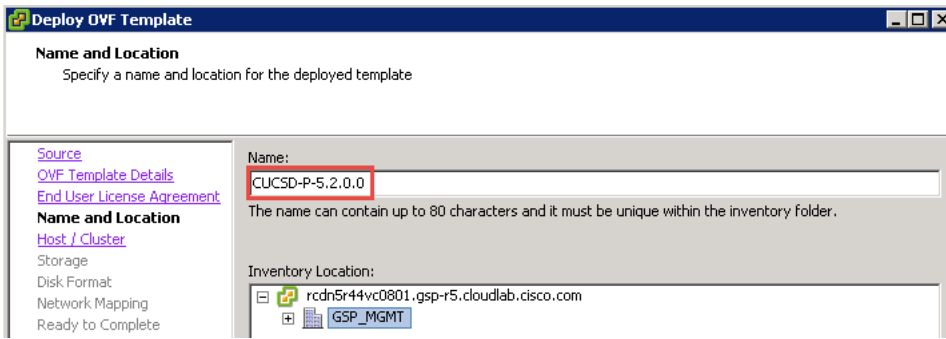
End User License Agreement

- Name and Location
- Storage
- Disk Format
- Network Mapping
- Properties
- Ready to Complete

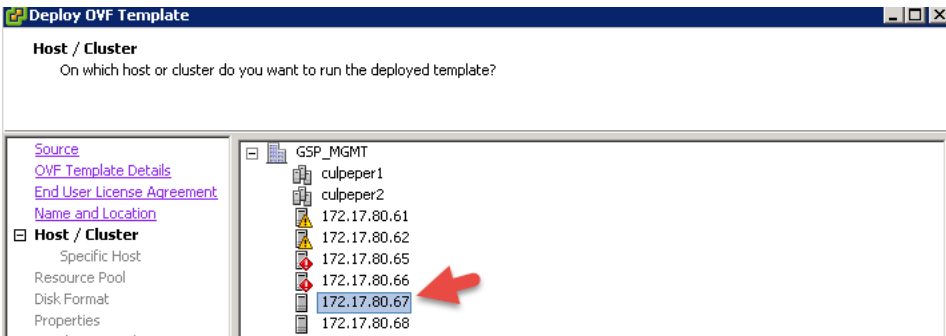
IMPORTANT: PLEASE READ THIS END USER LICENSE AGREEMENT CAREFULLY. IT IS VERY IMPORTANT THAT YOU CHECK THAT YOU ARE PURCHASING CISCO SOFTWARE OR EQUIPMENT FROM AN APPROVED SOURCE AND THAT YOU, OR THE ENTITY YOU REPRESENT (COLLECTIVELY, THE "CUSTOMER") HAVE BEEN REGISTERED AS THE END USER FOR THE PURPOSES OF THIS CISCO END USER LICENSE AGREEMENT. IF YOU ARE NOT REGISTERED AS THE END USER YOU HAVE NO LICENSE TO USE THE SOFTWARE AND THE LIMITED WARRANTY IN THIS END USER LICENSE AGREEMENT DOES NOT APPLY. ASSUMING YOU HAVE PURCHASED FROM AN APPROVED SOURCE, DOWNLOADING, INSTALLING OR USING CISCO OR CISCO-SUPPLIED SOFTWARE CONSTITUTES ACCEPTANCE OF THIS AGREEMENT.

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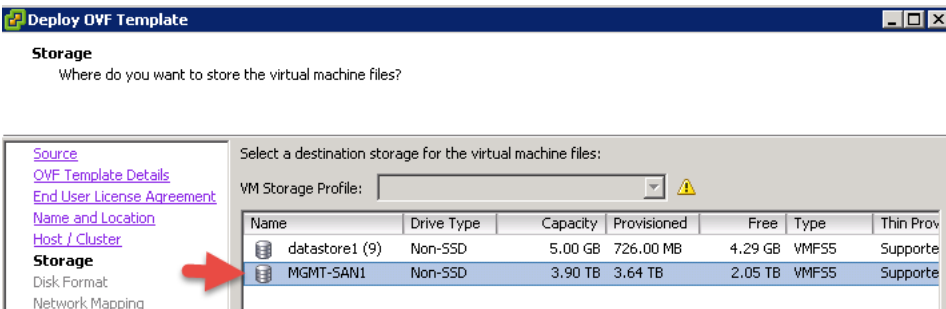
Name the VM and click Next.



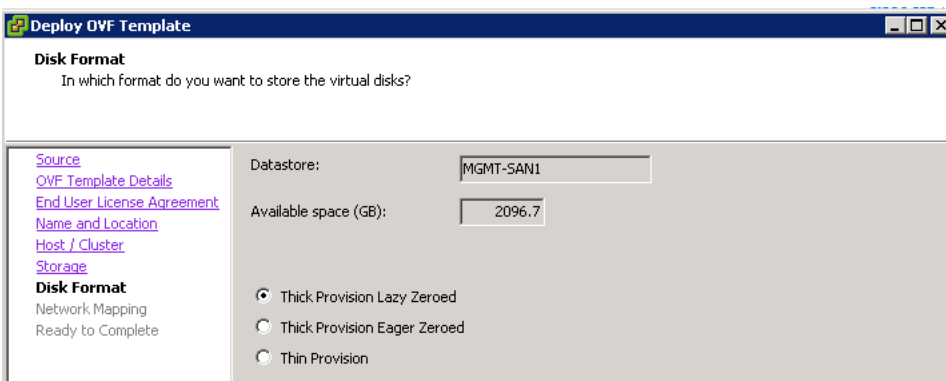
Select a Host and click Next.



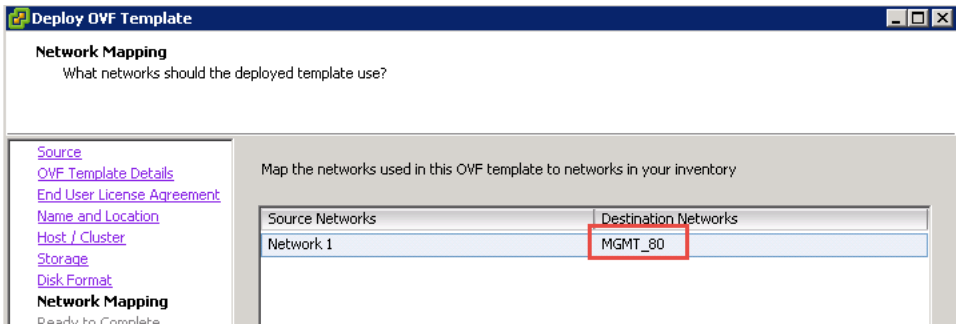
Select a storage location to install the VM and click Next.



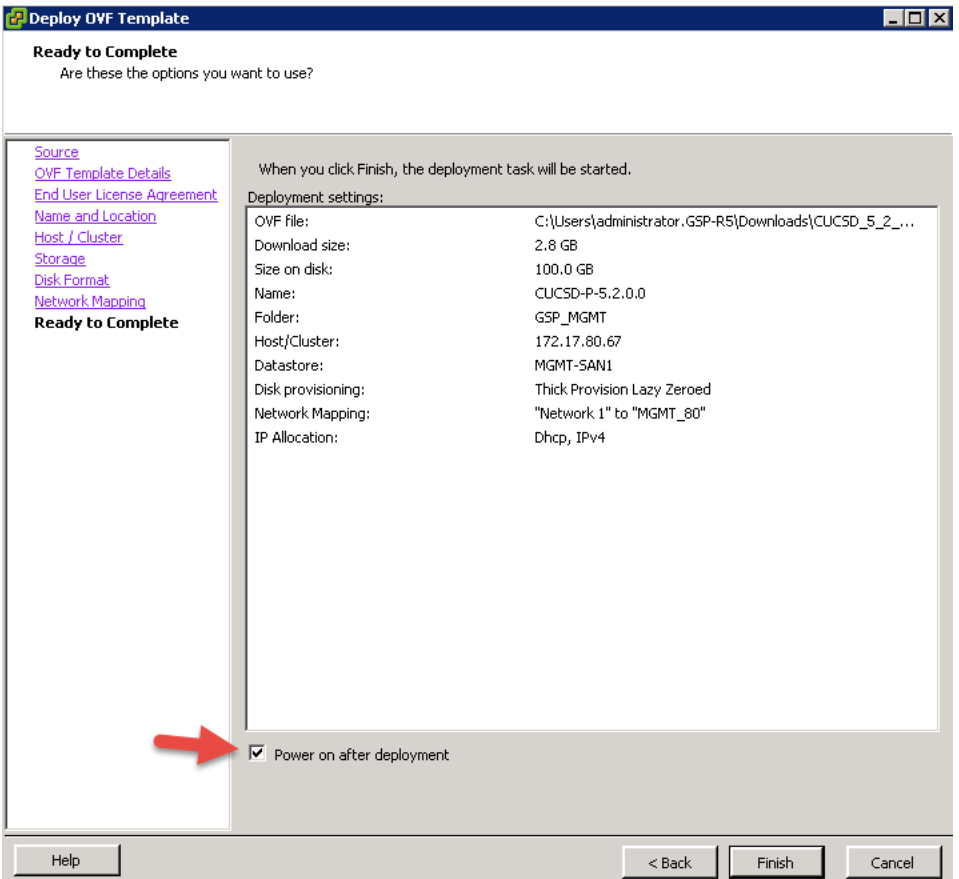
Leave the default settings for the Disk Format and click Next.



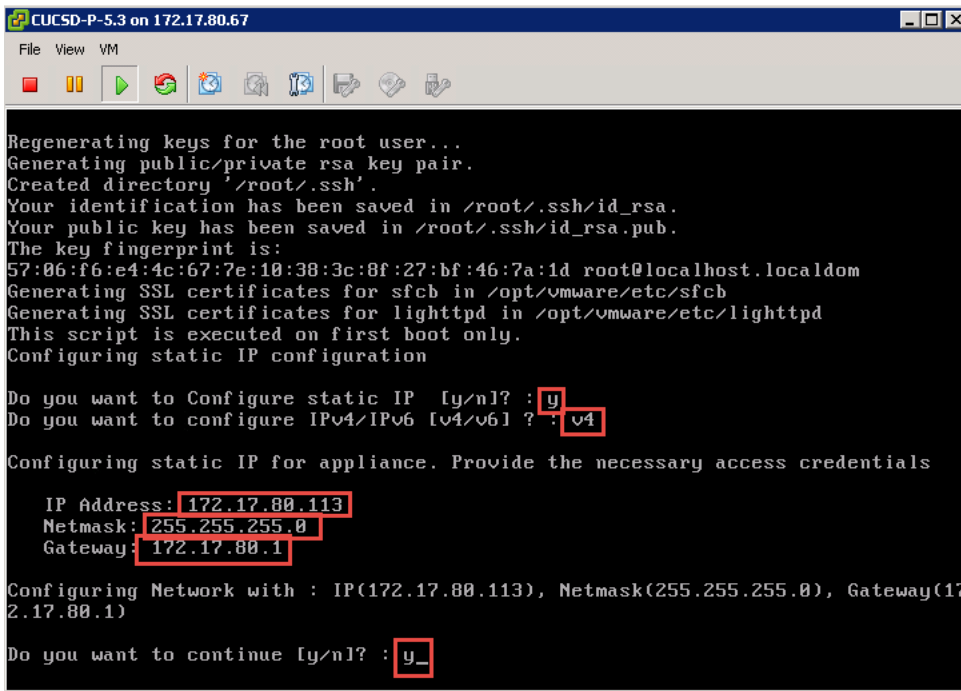
Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.

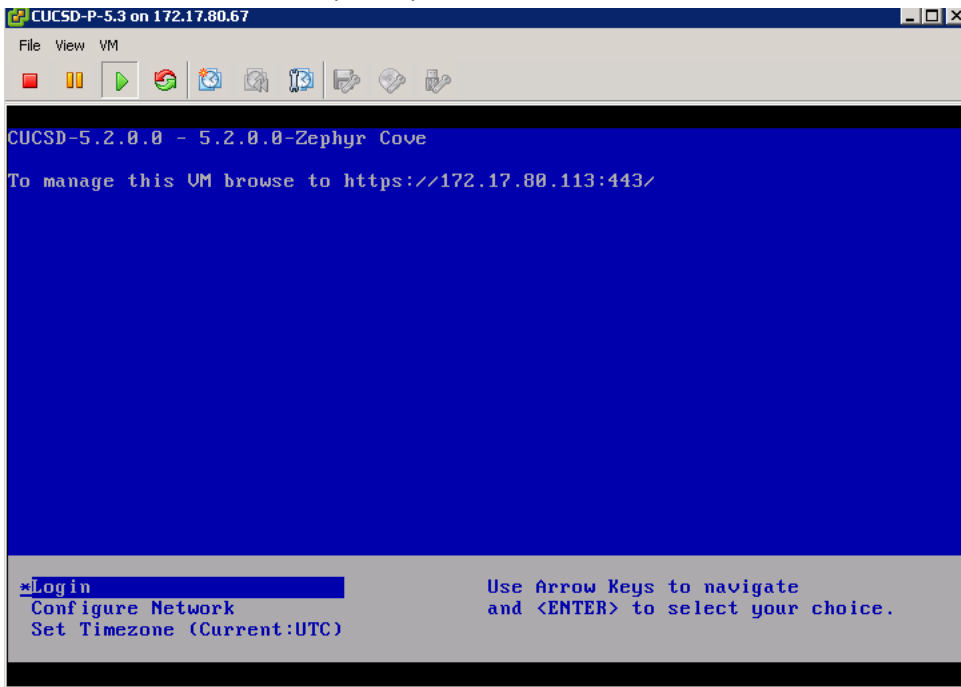


In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Primary Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.



```
CUCSD-P-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:
57:06:f6:e4:4c:67:7e:10:38:3c:8f:27:bf:46:7a:1d root@localhost.localdom
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.



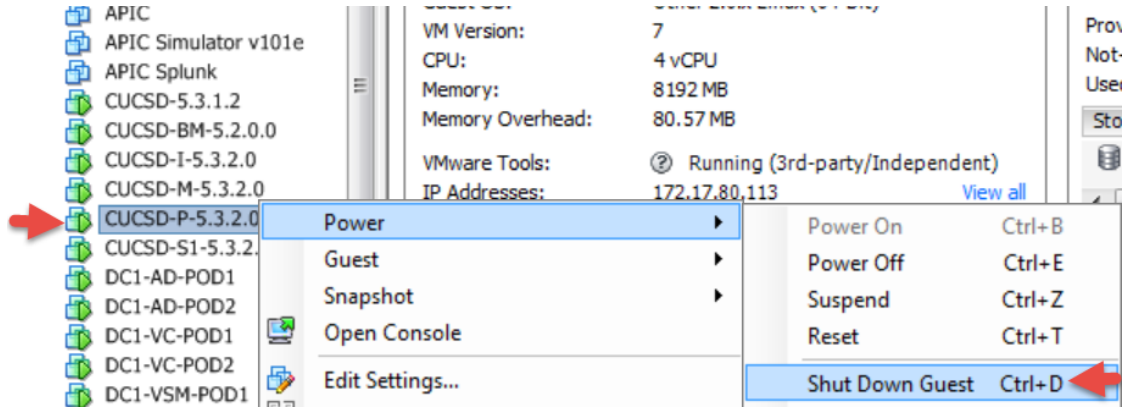
```
CUCSD-5.2.0.0 - 5.2.0.0-Zephyr Cove
To manage this UM browse to https://172.17.80.113:443/

*Login
Configure Network
Set Timezone (Current:UTC)

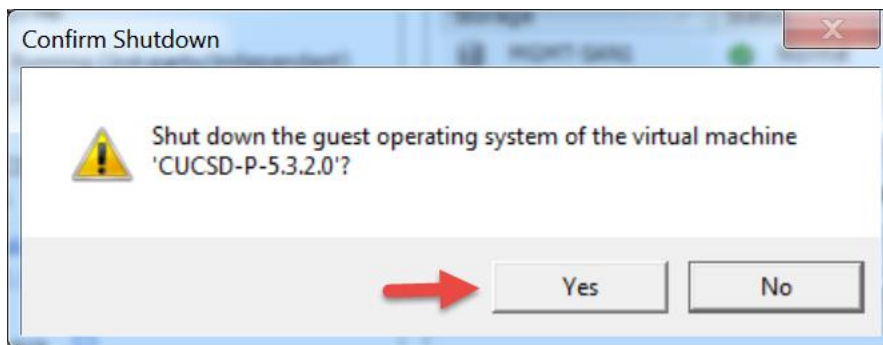
Use Arrow Keys to navigate
and <ENTER> to select your choice.
```

4.2. Install/Update VMWare tools & VM Version

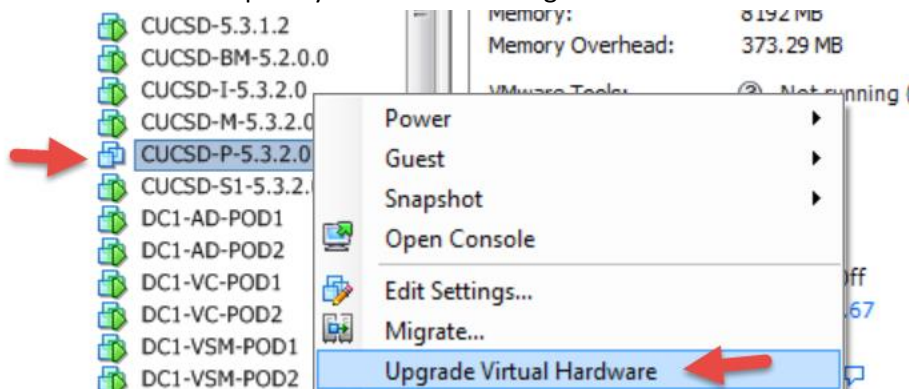
Log into vCenter, navigate to your Primary Node VM, select 'Shutdown Guest'.



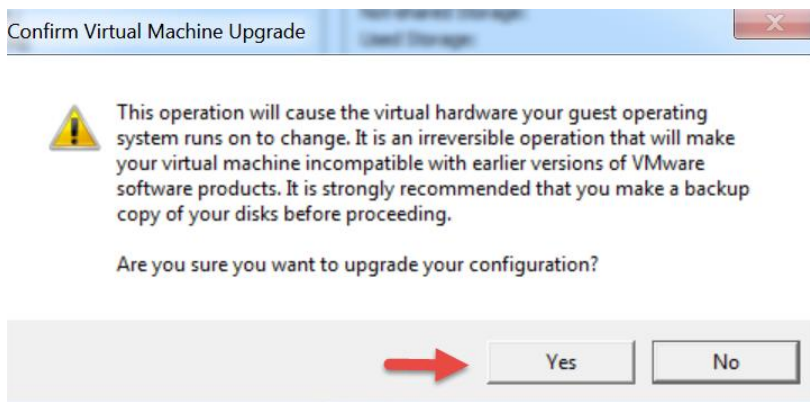
Select Yes.



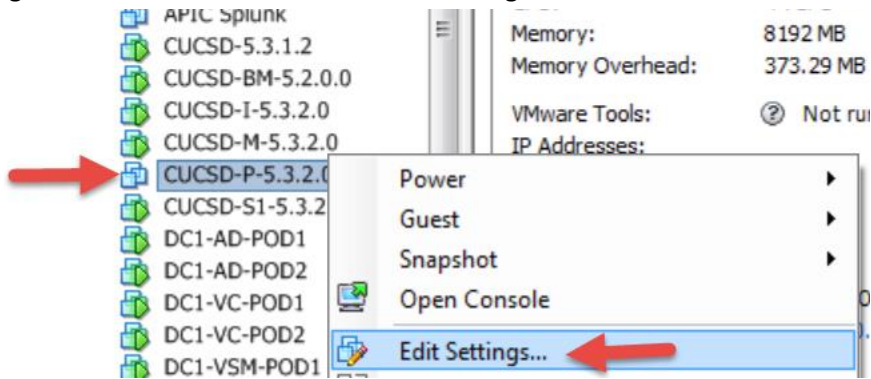
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



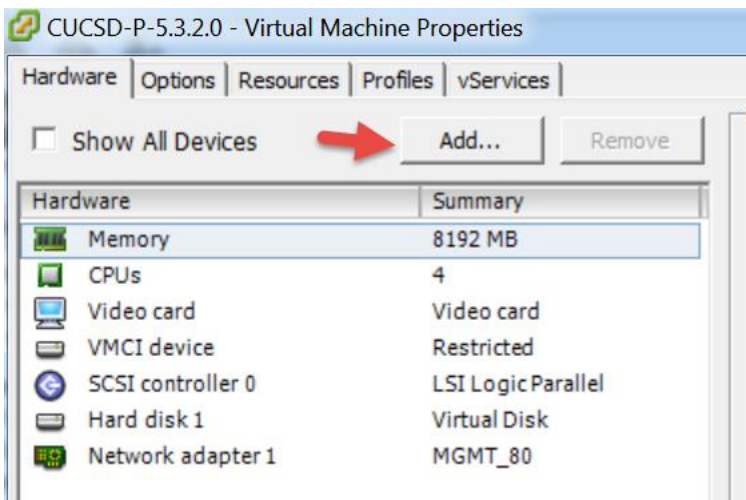
Select Yes.



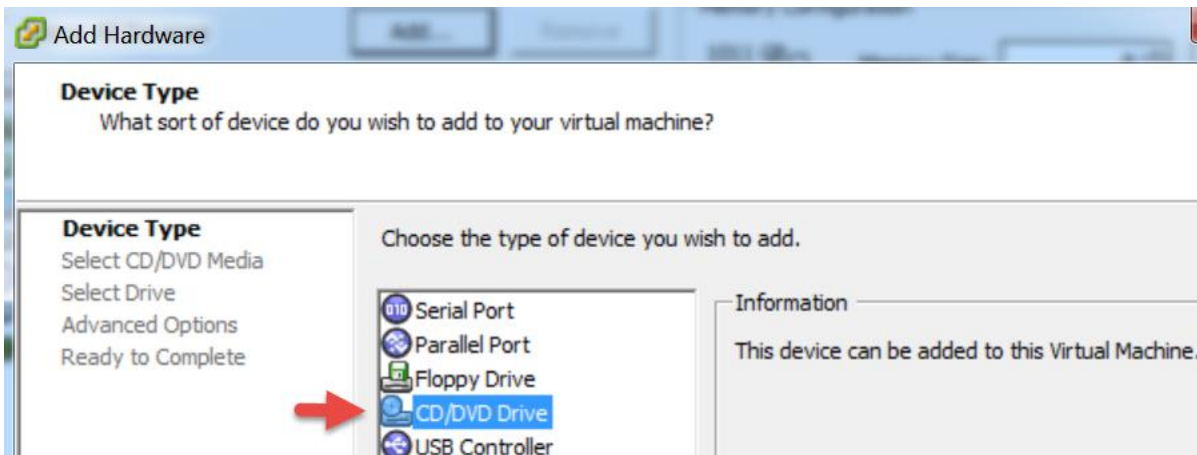
Right click on the VM and Select 'Edit Settings'



Select Add.



Select 'CD/DVD Drive' and click Next.



Leave default 'Use physical drive' and click Next.

Add Hardware

CD/DVD Media Type

What media should the virtual drive access?

[Device Type](#)
Select CD/DVD Media
Select Drive
Advanced Options
Ready to Complete

Select the type of media that the virtual drive will access.

CD/DVD

Use physical drive
Choose this option to give the guest operating system access to a CD/DVD drive on the client or host.

Use ISO image
Choose this option to use an ISO image file as the DVD or CD-ROM media.

Leave default and click Next.

Add Hardware

Select CD/DVD Drive

What physical CD/DVD drive do you want to use?

[Device Type](#)
[Select CD/DVD Media](#)
Select Drive
Advanced Options
Ready to Complete

Device Location

Location Client Host

Connection

Drive:

Pass through (recommended)
 ATAPI Emulation

Device Status

Connect at power on

Leave default and click Next.

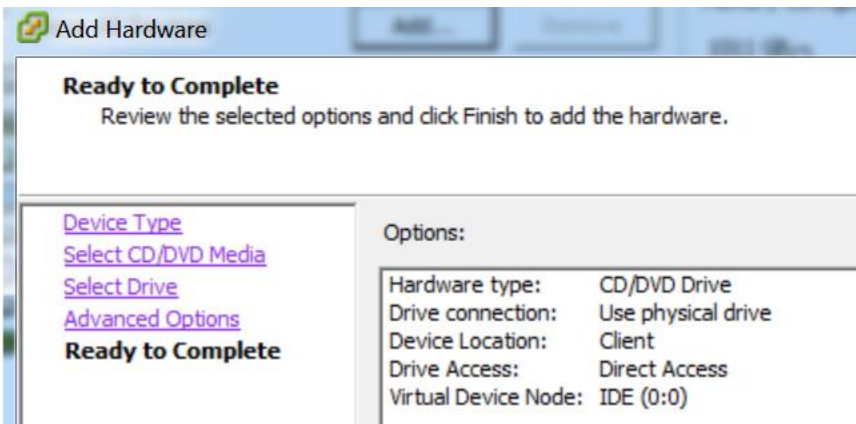
Add Hardware

These advanced options do not usually need to be changed.
Specify Advanced Options

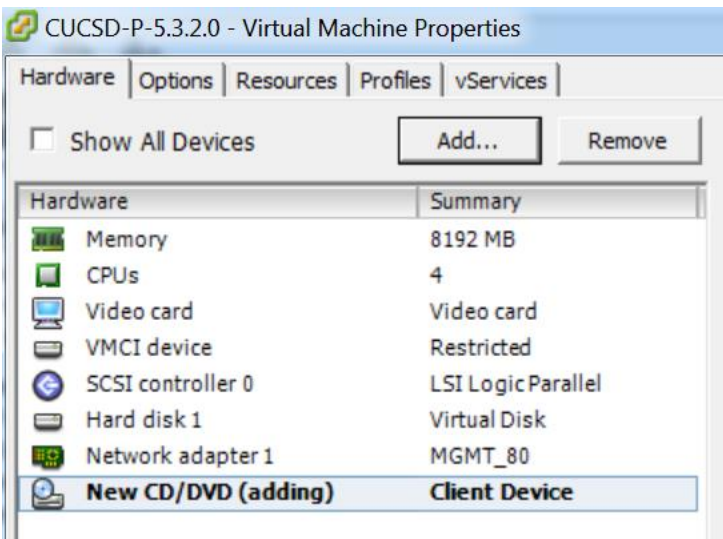
[Device Type](#)
[Select CD/DVD Media](#)
[Select Drive](#)
Advanced Options
Ready to Complete

Virtual Device Node

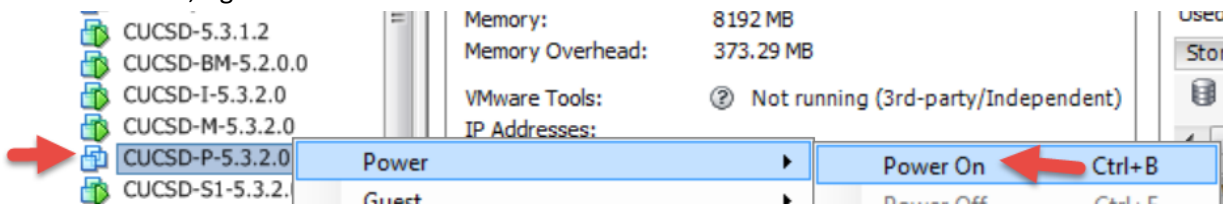
Review and click Finish.



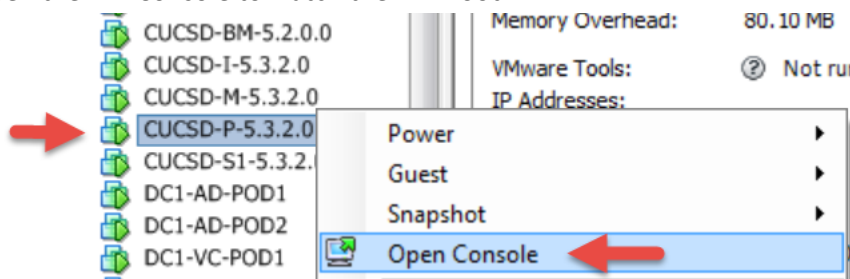
Review and click OK.



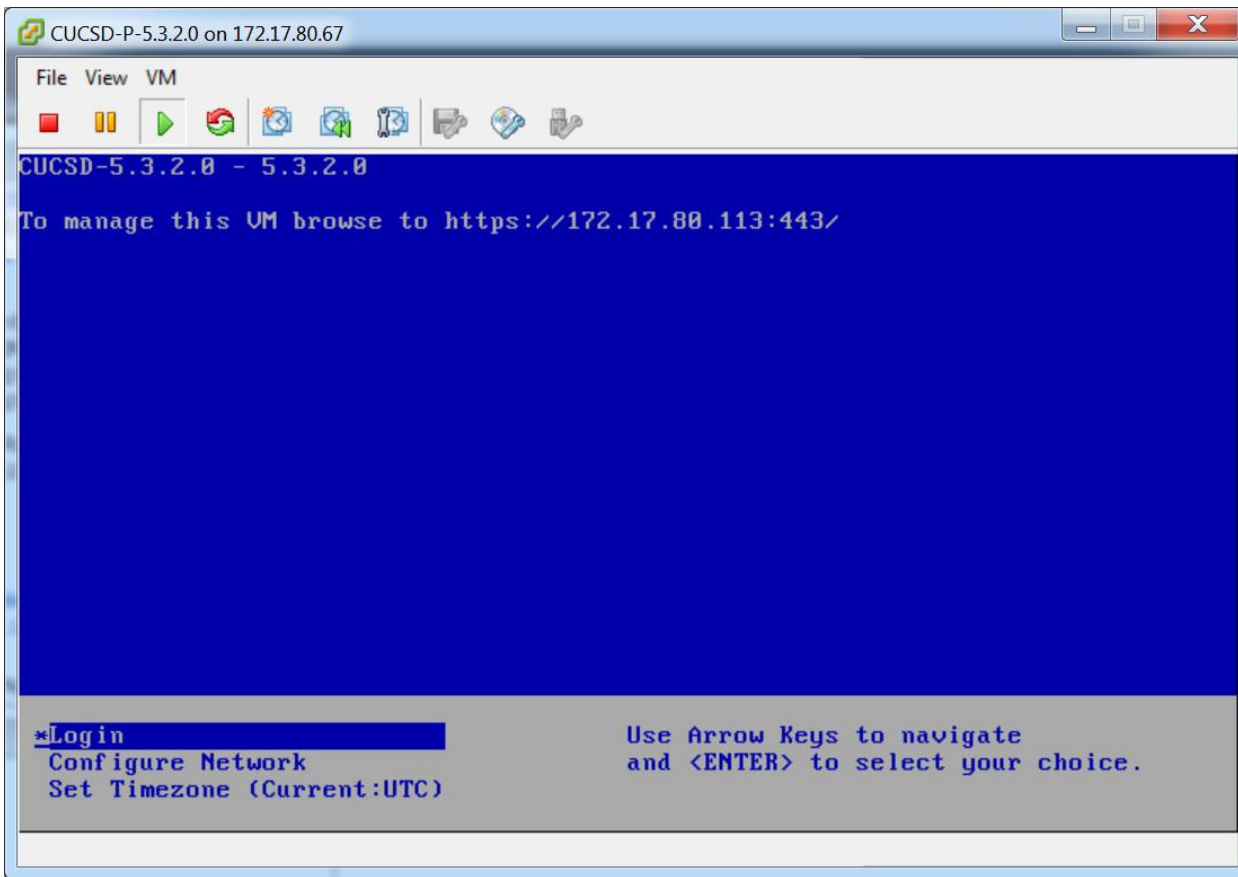
Power the VM On, right click on the VM and select 'Power On'.



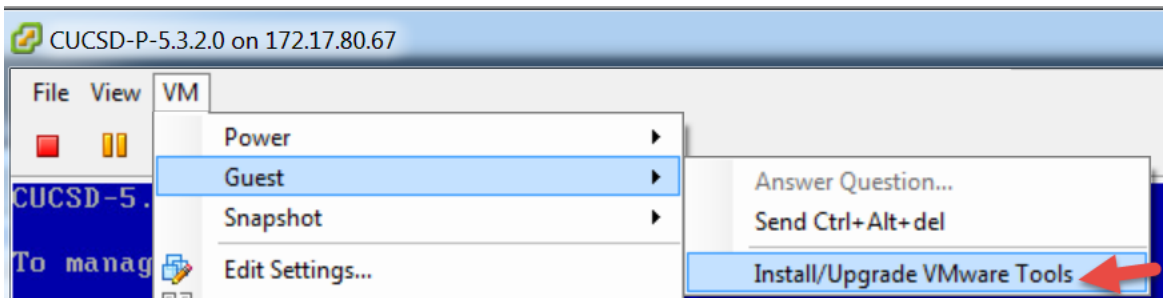
Open the VM Console to watch the VM Boot.



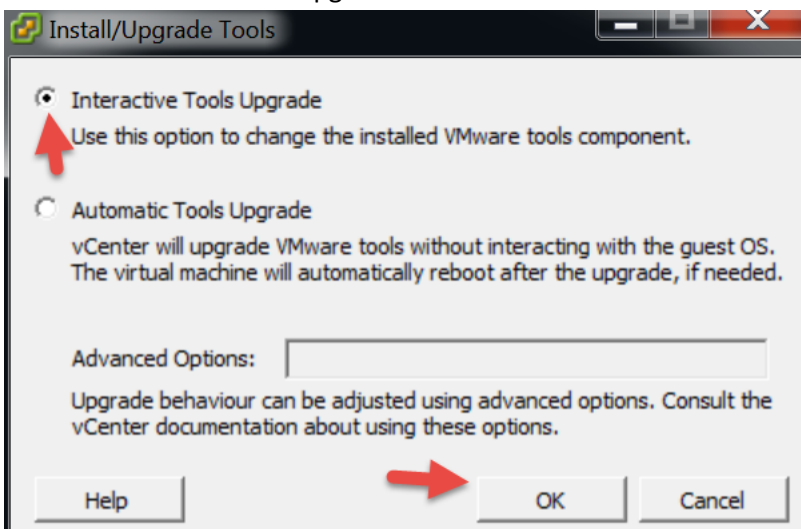
Once the VM is completely up, you should see the login screen similar to below.



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 xzf /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 equivalent) 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@CUCSD_Primary vmware-tools-distrib]#
[root@CUCSD_Primary vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@CUCSD_Primary vmware-tools-distrib]#
[root@CUCSD_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@CUCSD_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 HGF5 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:

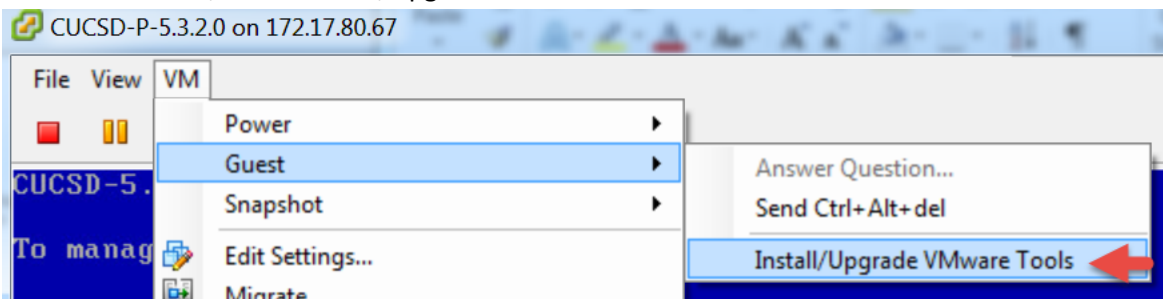
```
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start
```

Enjoy,

--the VMware team

[root@CUCSD_Primary vmware-tools-distrib]#

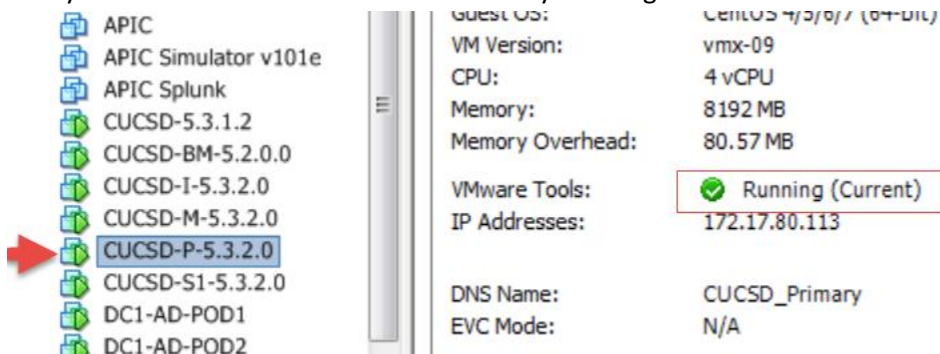
From the console, select 'Install/Upgrade VMware Tools'



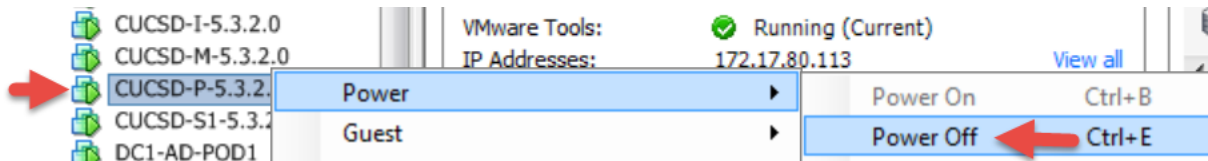
Select 'Automatic Tools Upgrade' and click OK.



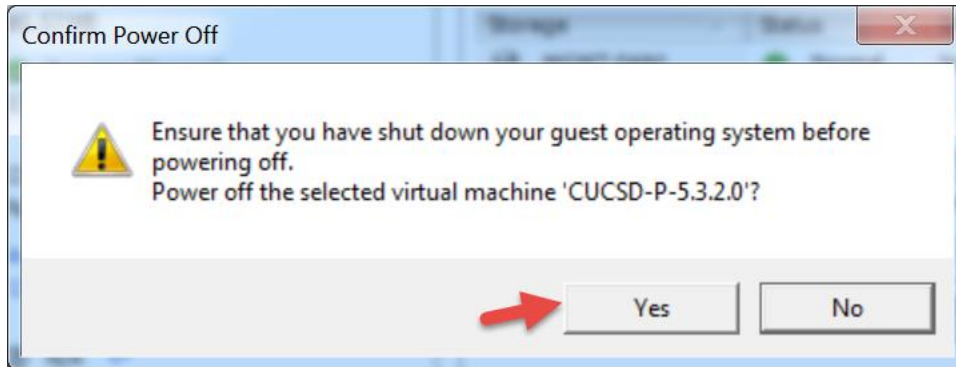
Verify Tools have been installed and currently Running as shown below.



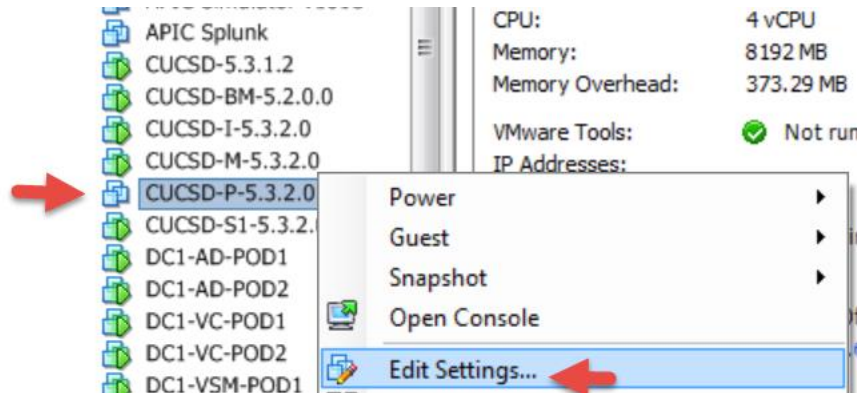
Power off the VM, select 'Power Off'.



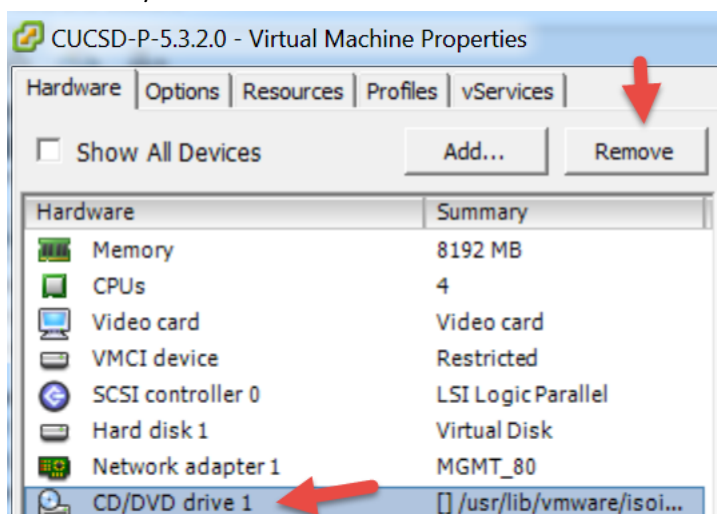
Select Yes.



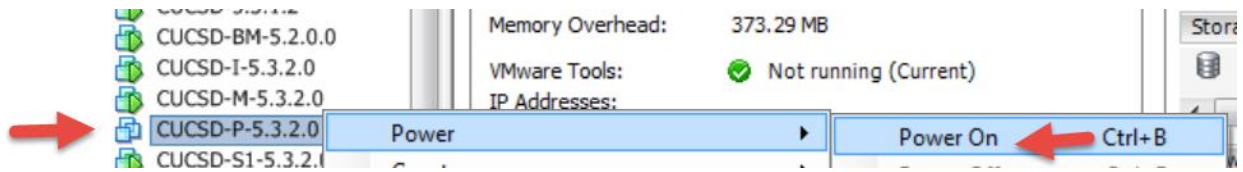
Edit Settings.



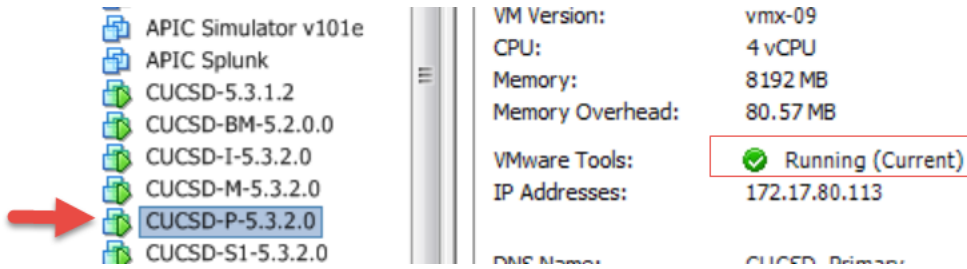
Remove CD/DVD drive then click OK.



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:
Retype new UNIX password:
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:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
Root passwd changed successfully
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) Correct 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
websoc          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.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_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=localhost
[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 ~]# █
```

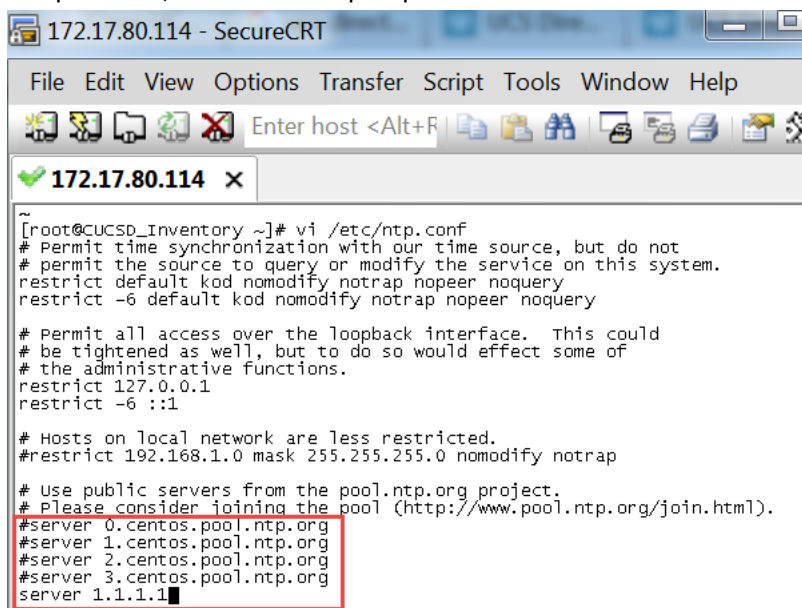

Configure NTP servers for the Primary Node. SSH into Primary Node using root account.

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.c1f.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



Restart the ntpd 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_Primary ~]# service ntpd restart
Shutting down ntpd: [ OK ]
Starting ntpd: [ OK ]
[root@CUCSD_Primary ~]# ntpq -p
      remote           refid      st t when poll reach  delay  offset  jitter
-----
172.17.1.0.104  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-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         Danmarkshavn Hermosillo    Mexico_City  Rankin_Inlet Toronto
Barbados     Dawson       Indiana      Miquelon    Recife       Tortola
Belm          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      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_Barthelmy
[root@CUCSD_Primary America]#
```

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

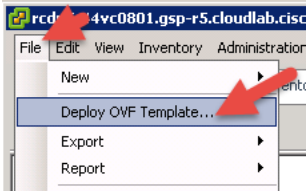
- Copy the localtime to new file named old.timezone: 'cp /etc/localtime /root/old.timezone'
- Remove the localtime file: 'rm /etc/localtime'
- Create the new localtime file: 'ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime'
- Verify the timzone is what you set it to: 'date'
- Verify the link: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

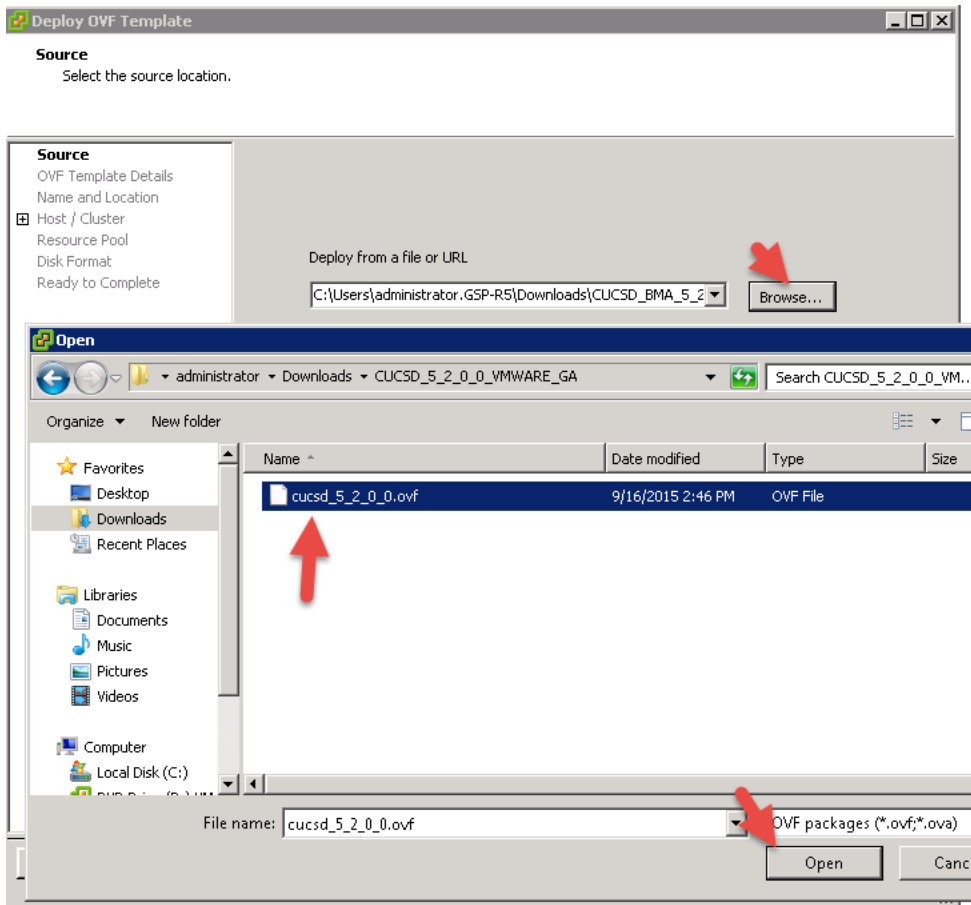
5. Create the Service Node

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.

Deploy OVF Template

OVF Template Details
Verify OVF template details.

[Source](#)

OVF Template Details

- End User License Agreement
- Name and Location
- Host / Cluster
- Resource Pool
- Disk Format
- Properties
- Ready to Complete

Product:	CUCSD-5.2.0.0
Version:	5.2.0.0
Vendor:	Cisco Systems
Publisher:	No certificate present
Download size:	2.8 GB
Size on disk:	Unknown (thin provisioned) 100.0 GB (thick provisioned)
Description:	Cisco UCS Director 5.2.0.0 (Zephyr Cove Branch)

Note: It is mandatory to reserve vCPU and Memory as recommended by Installation and Deployment guide.

Accept the license agreement and Click Next.

Deploy OVF Template

End User License Agreement
Accept the end user license agreements.

[Source](#)

[OVF Template Details](#)

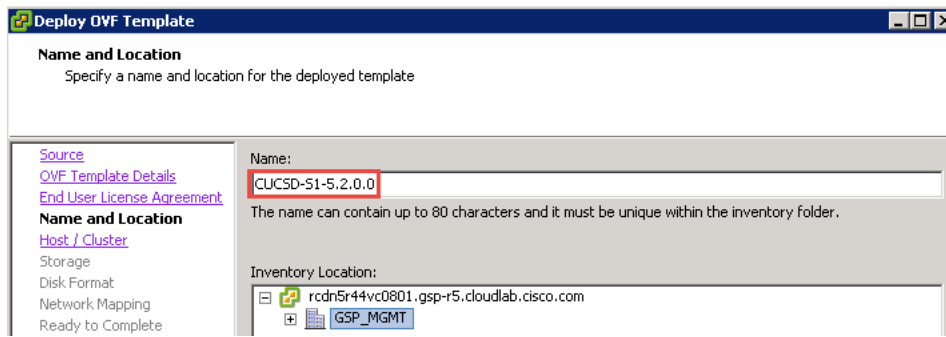
End User License Agreement

- Name and Location
- Storage
- Disk Format
- Network Mapping
- Properties
- Ready to Complete

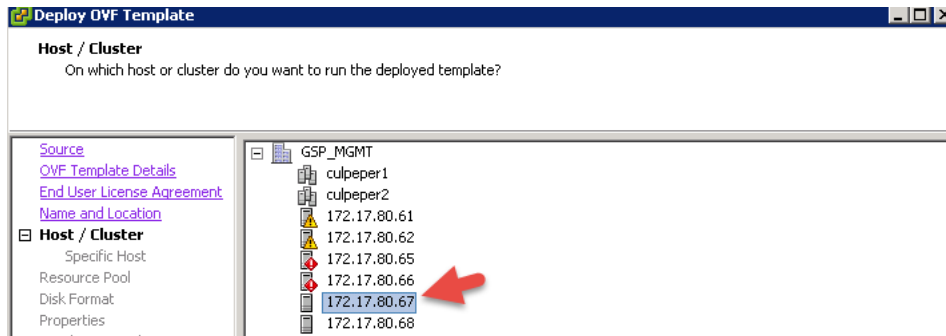
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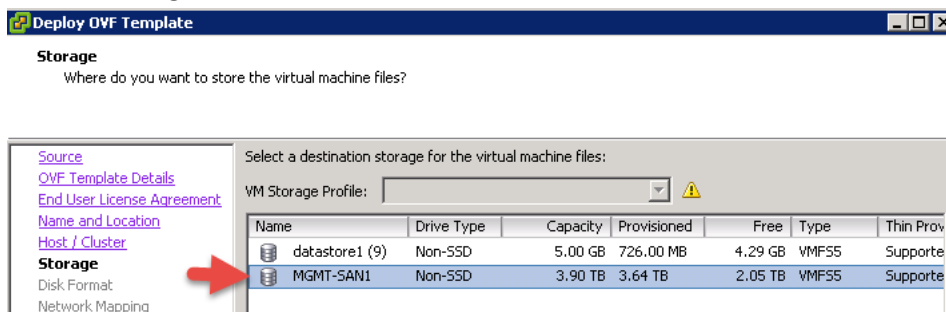
Name the VM and click Next.



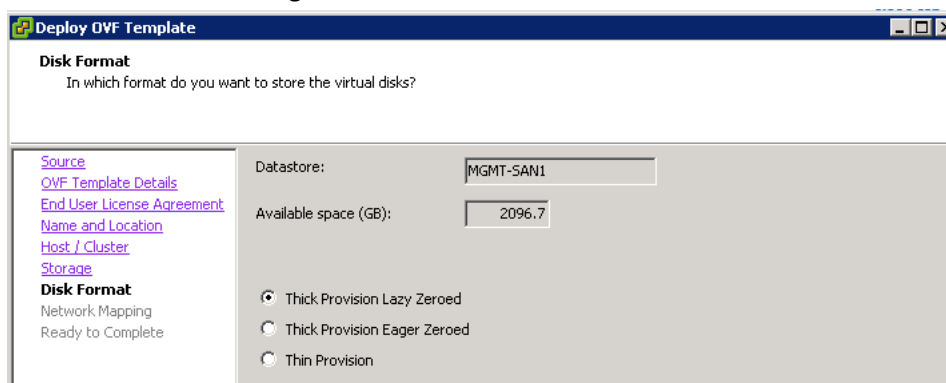
Select a Host and click Next.



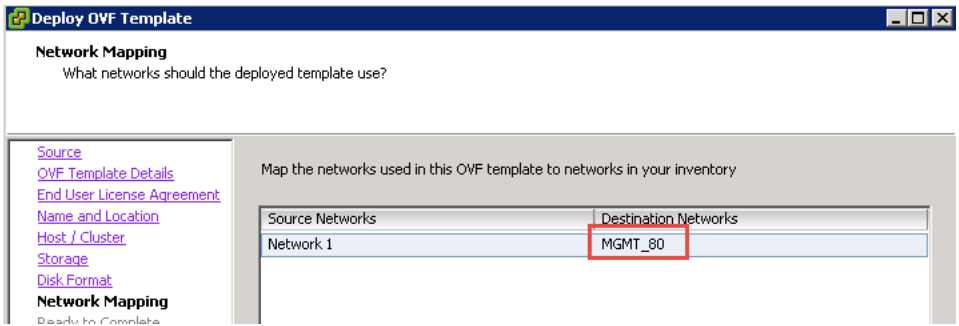
Select a storage location to install the VM and click Next.



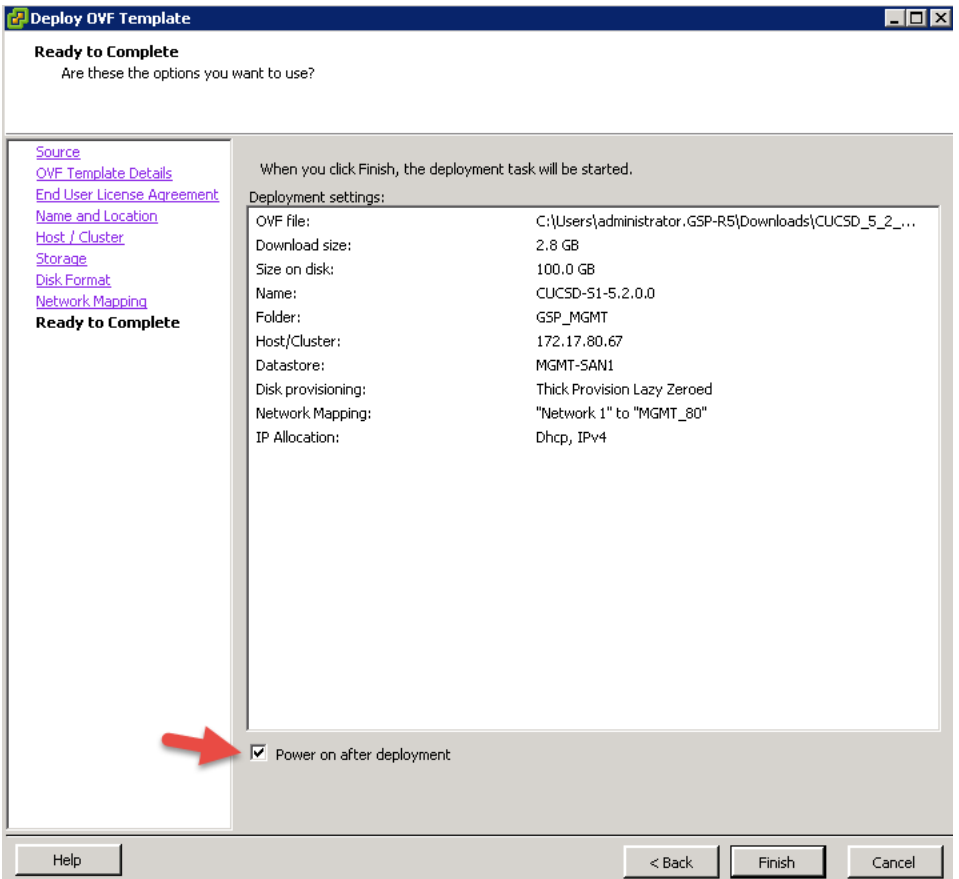
Leave the default settings for the Disk Format and click Next.



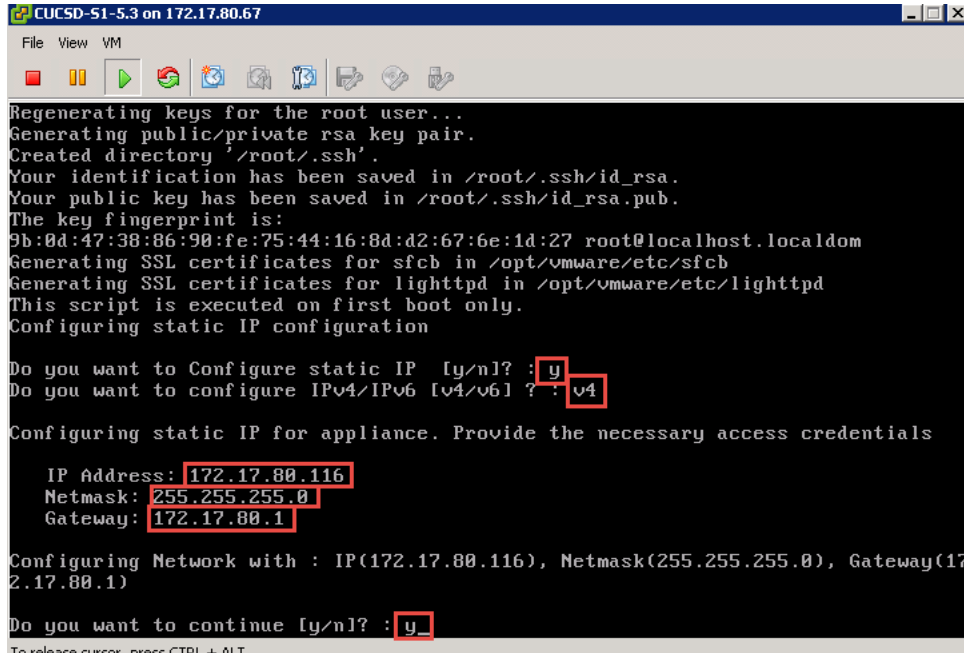
Select the Network to put this VM on and click Next.



Select Power on after deployment and click Finish.

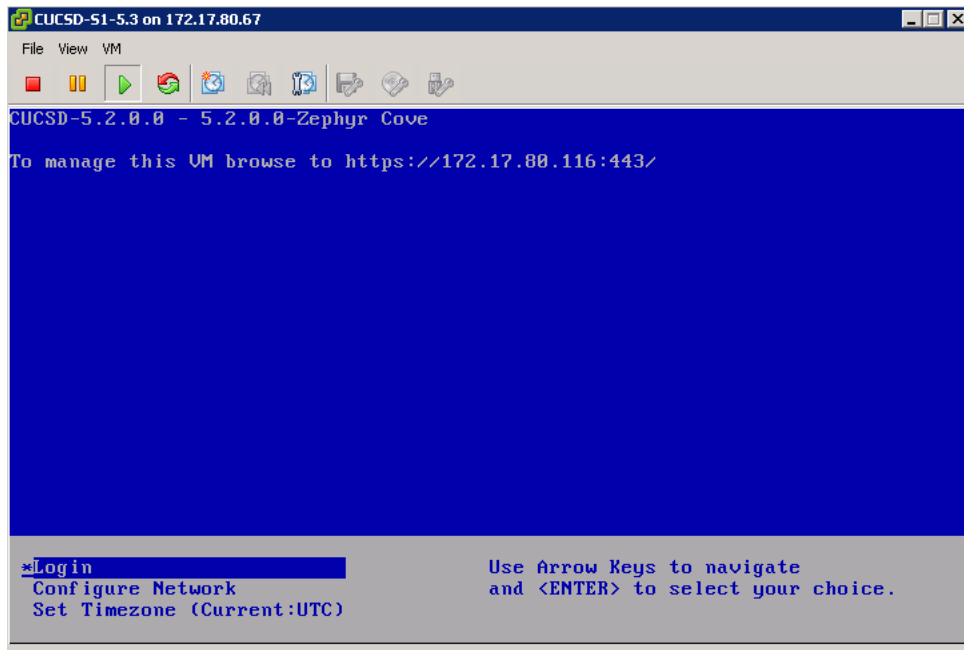


In my case, I don't have DHCP enabled on the network so I must manually configure an IP Address from the Console. In vCenter, open the console of the Service Node. Enter the following and wait for the Build to complete. This process could take a while so be patient.



```
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.localdom
Generating SSL certificates for sfc in /opt/vmware/etc/sfc
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 console press CTRL + ALT
```

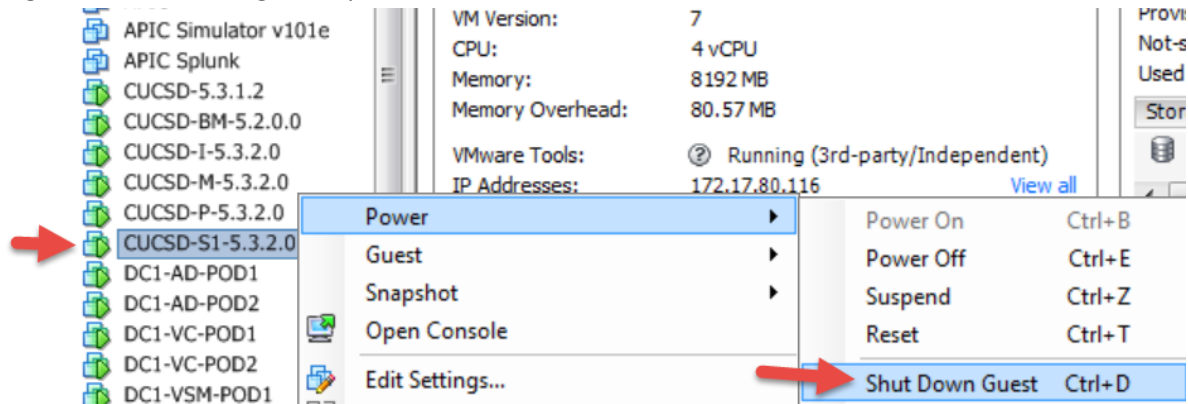
After the installation is complete, you should see a screen that looks like this.



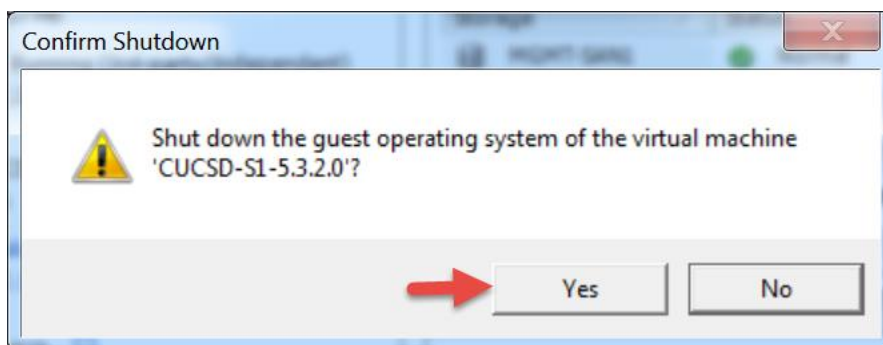
```
CUCSD-5.2.0.0 - 5.2.0.0-Zephyr Cove
To manage this VM browse to https://172.17.80.116:443/
*Login
Configure Network
Set Timezone (Current:UTC)
Use Arrow Keys to navigate
and <ENTER> to select your choice.
```

5.2. Install/Update VMWare tools & VM Version

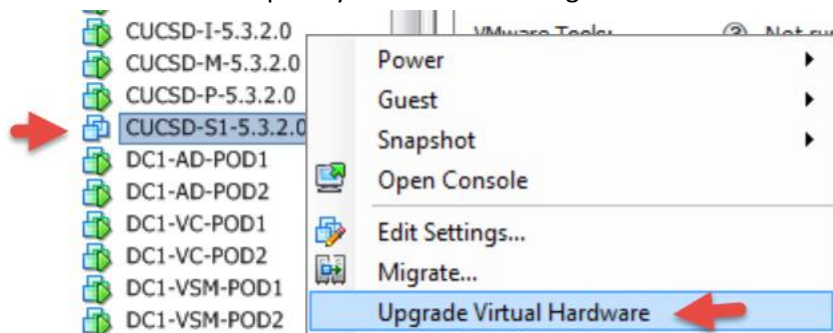
Log into vCenter, navigate to your Service Node VM, select 'Shutdown Guest'.



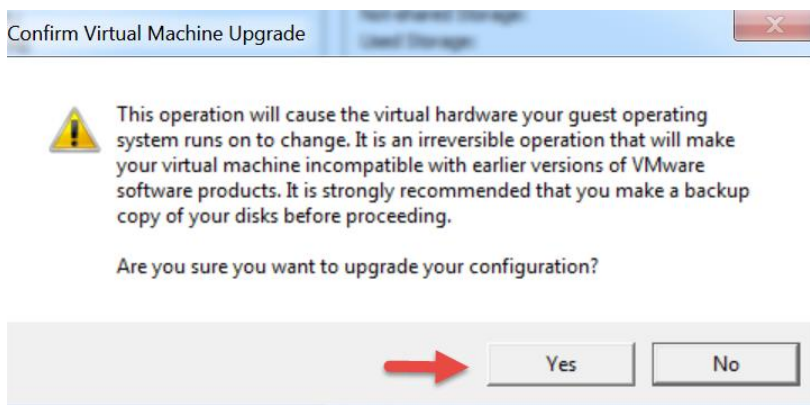
Select Yes.



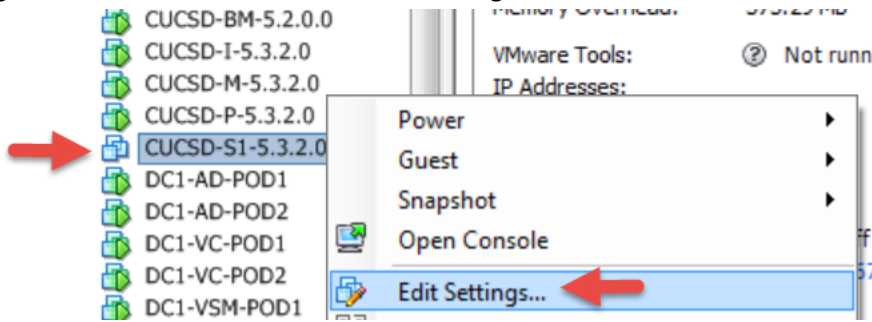
Wait for the VM to completely shut down then right click on the VM and select 'Upgrade Virtual Hardware'.



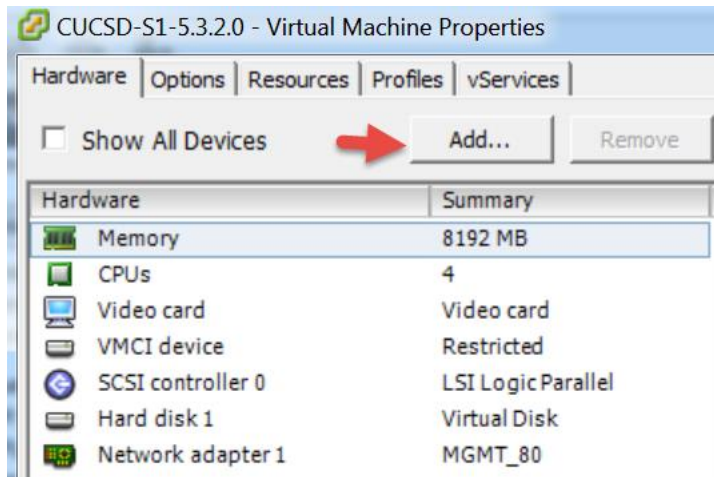
Select Yes.



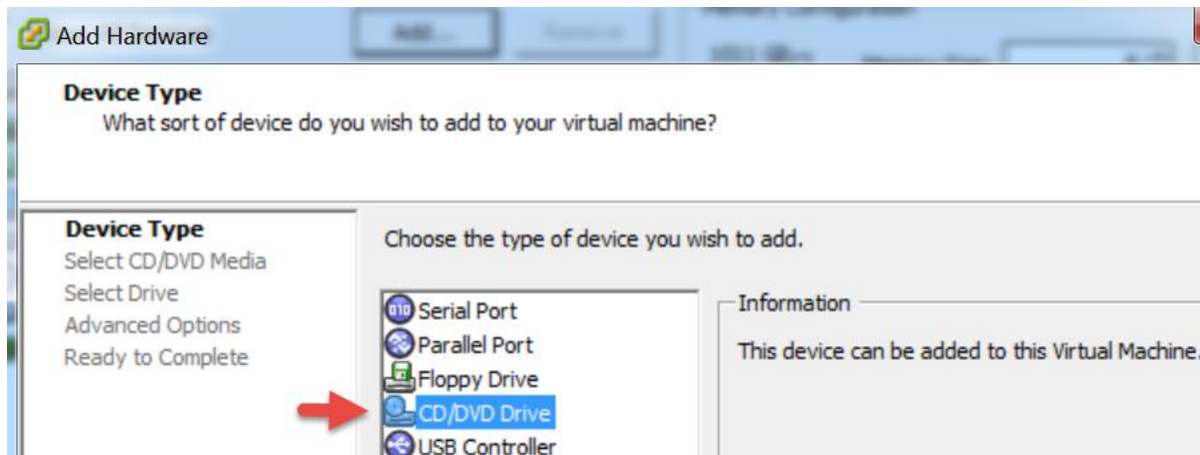
Right click on the VM and Select 'Edit Settings'



Select Add.



Select 'CD/DVD Drive' and click Next.



Leave default 'Use physical drive' and click Next.

Add Hardware

CD/DVD Media Type

What media should the virtual drive access?

[Device Type](#)
Select CD/DVD Media
Select Drive
Advanced Options
Ready to Complete

Select the type of media that the virtual drive will access.

CD/DVD

Use physical drive
Choose this option to give the guest operating system access to a CD/DVD drive on the client or host.

Use ISO image
Choose this option to use an ISO image file as the DVD or CD-ROM media.

Leave default and click Next.

Add Hardware

Select CD/DVD Drive

What physical CD/DVD drive do you want to use?

[Device Type](#)
[Select CD/DVD Media](#)
Select Drive
Advanced Options
Ready to Complete

Device Location

Location Client Host

Connection

Drive:

Pass through (recommended)
 ATAPI Emulation

Device Status

Connect at power on

Leave default and click Next.

Add Hardware

These advanced options do not usually need to be changed.

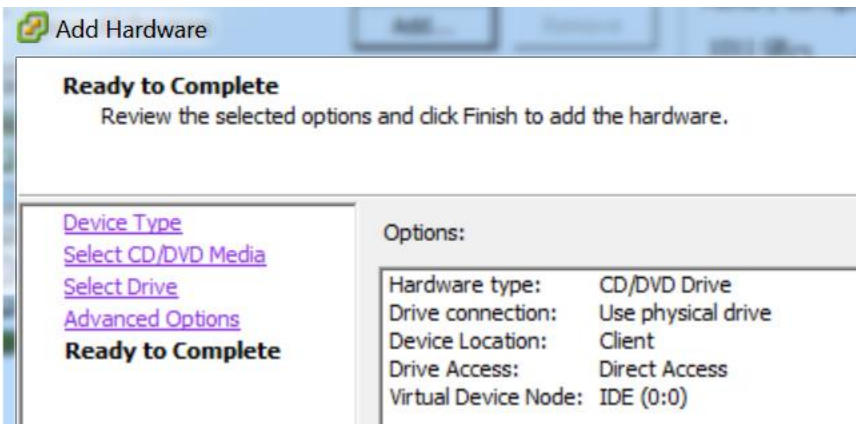
Specify Advanced Options

[Device Type](#)
[Select CD/DVD Media](#)
[Select Drive](#)
Advanced Options
Ready to Complete

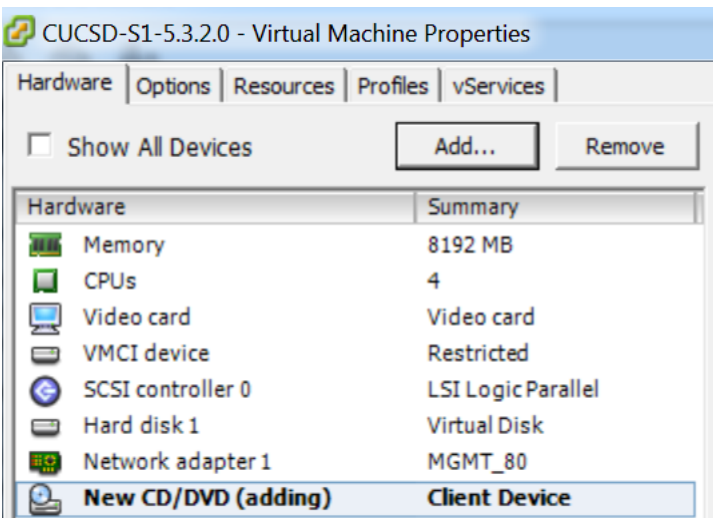
Virtual Device Node

IDE (0:0)

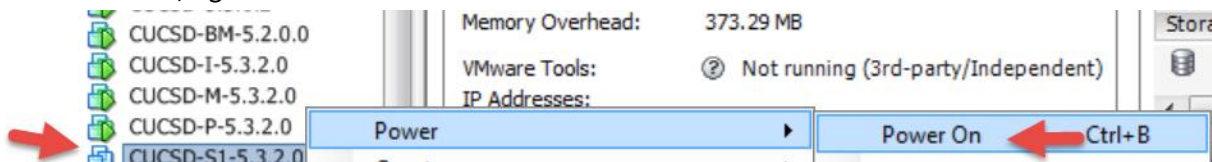
Review and click Finish.



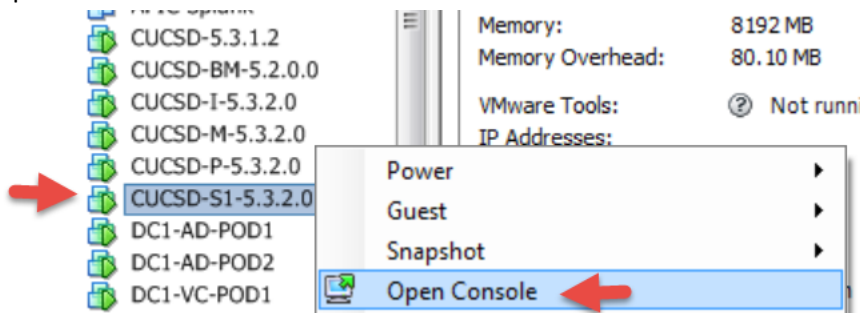
Review and click OK.



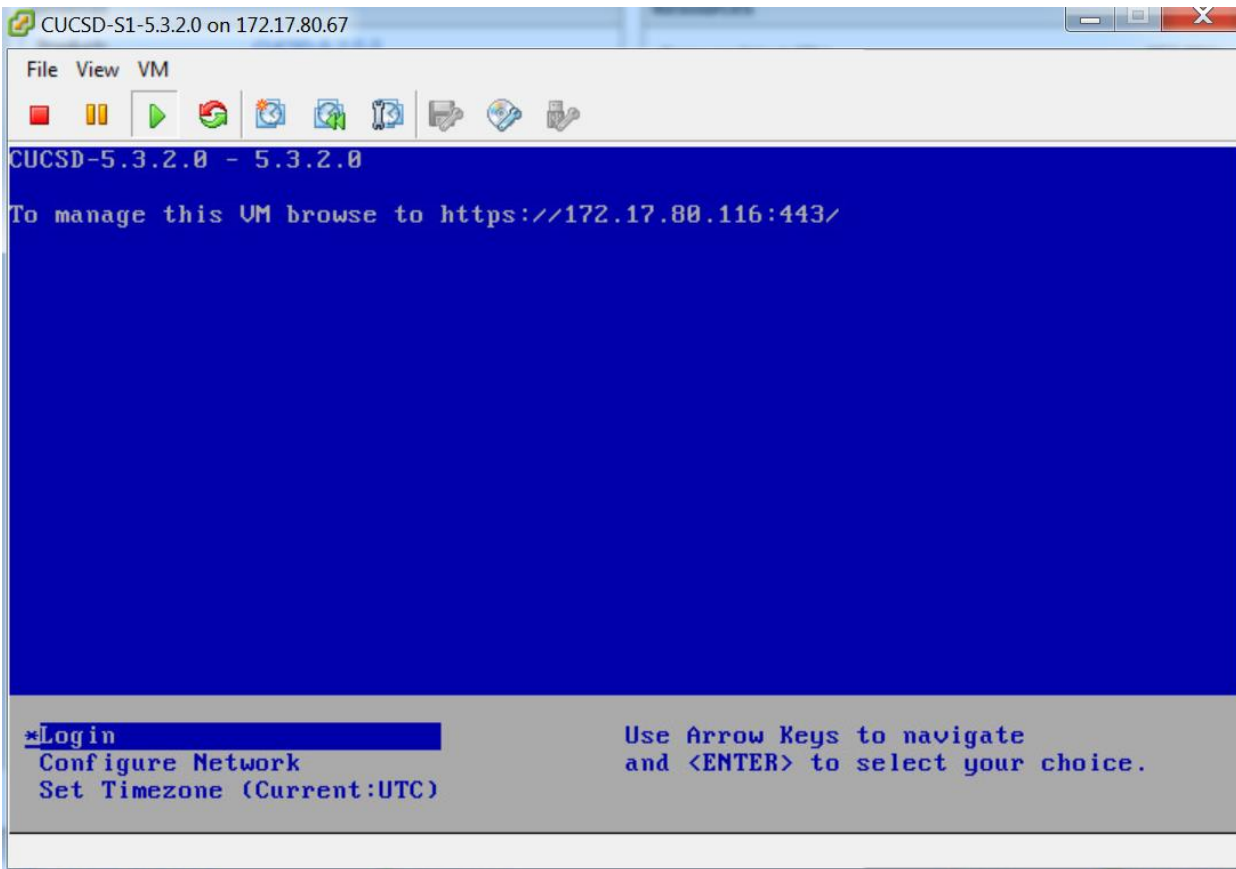
Power the VM On, right click on the VM and select 'Power On'.



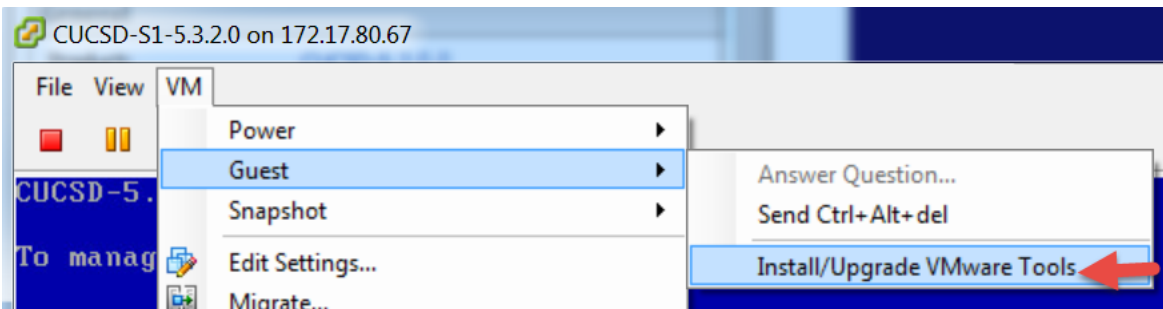
Open the VM Console to watch the VM Boot.



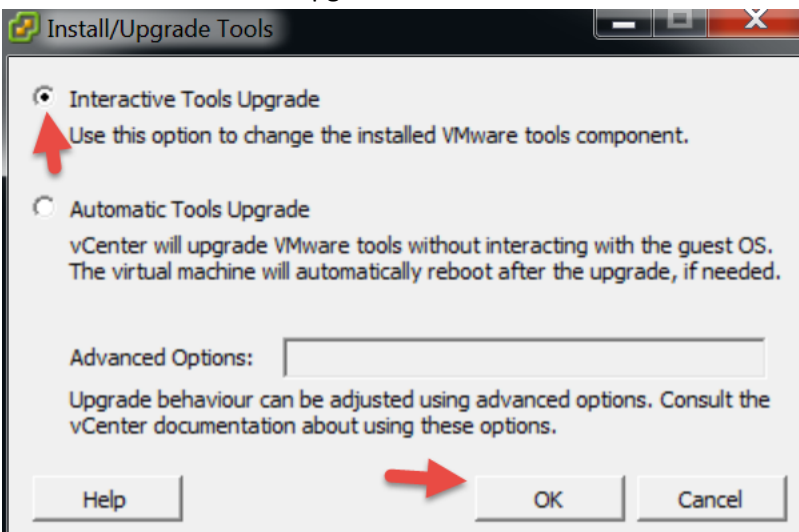
Once the VM is completely up, you should see the login screen similar to below.



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 xzf /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 equivalent) 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@CUCSD_Service1 vmware-tools-distrib]# rm -rf /usr/lib/vmware-tools/
[root@CUCSD_Service1 vmware-tools-distrib]#
[root@CUCSD_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@CUCSD_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 HGF5 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.

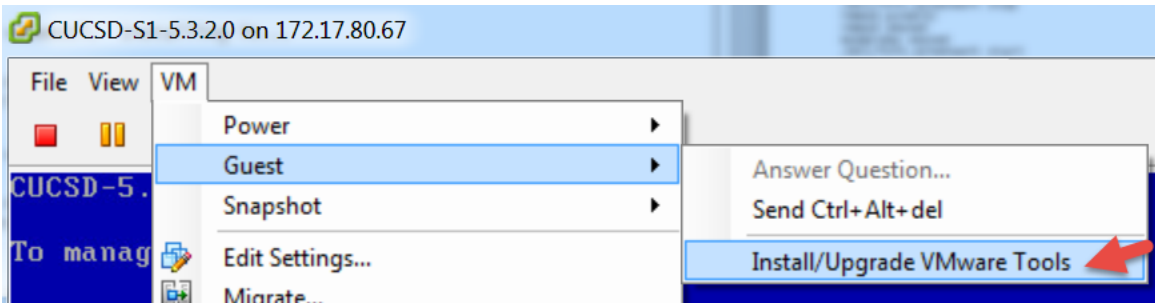
To use the vmxnet driver, restart networking using the following commands:
/etc/init.d/network stop
rmmod pcnet32
rmmod vmxnet
modprobe vmxnet
/etc/init.d/network start

Enjoy,

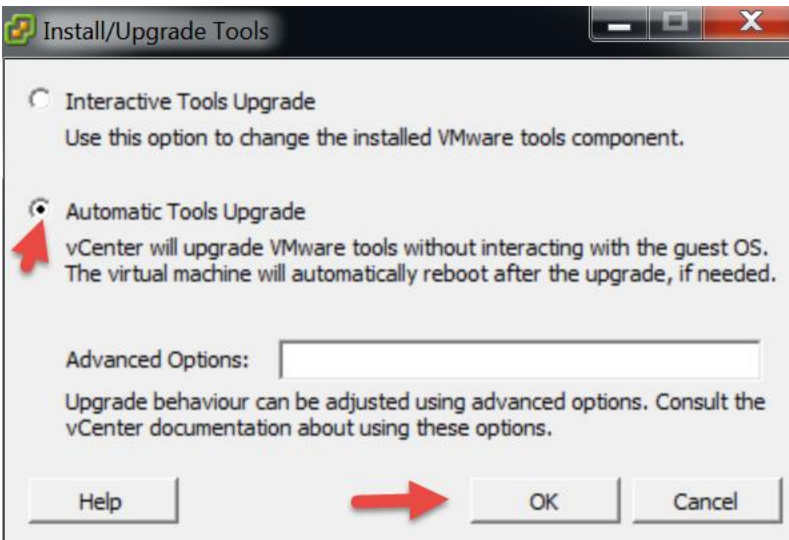
--the VMware team

[root@CUCSD_service1 vmware-tools-distrib]#
```

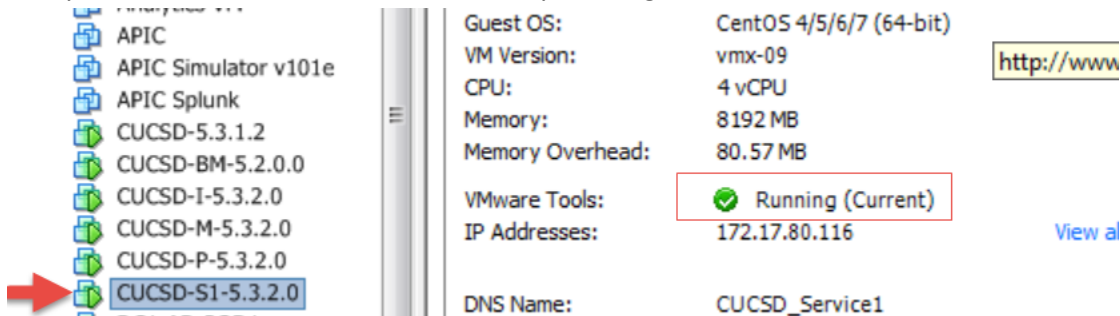
From the console, select 'Install/Upgrade VMware Tools'



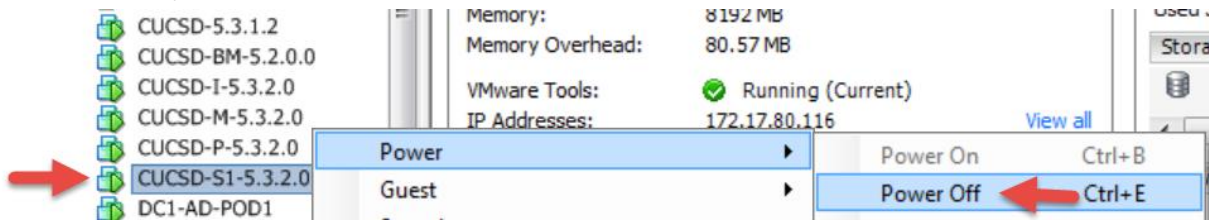
Select 'Automatic Tools Upgrade' and click OK.



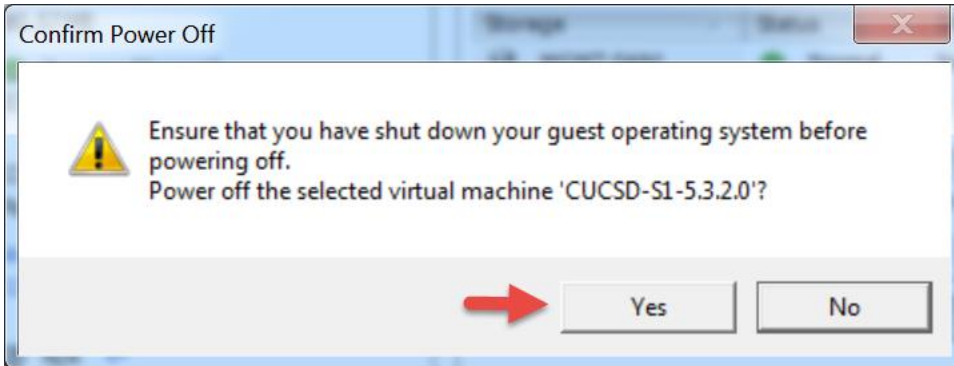
Verify Tools have been installed and currently Running as shown below.



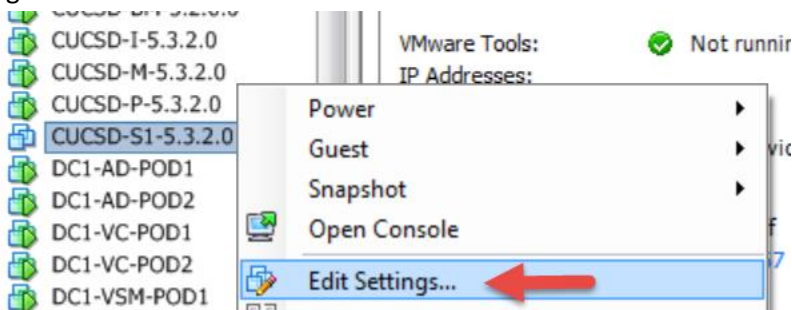
Power off the VM, select 'Power Off'.



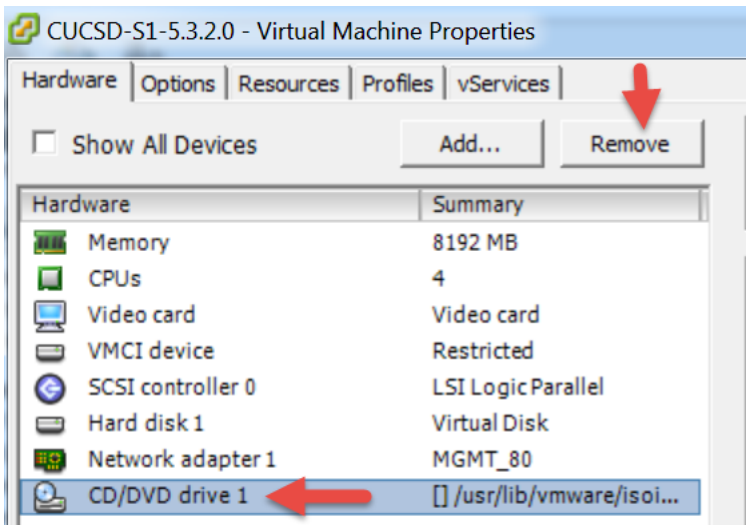
Select Yes.



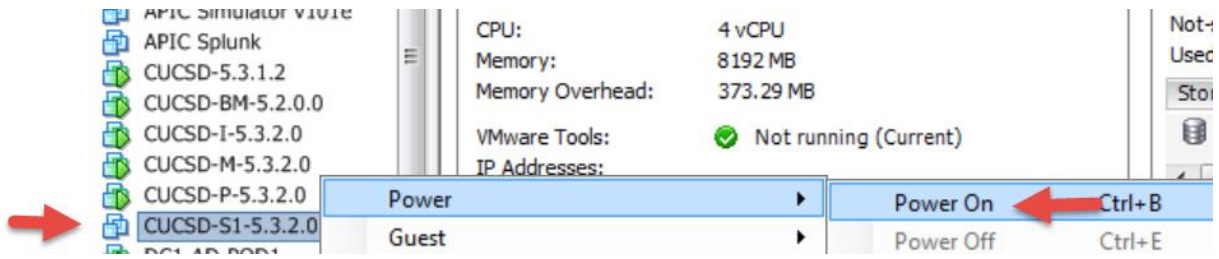
Edit Settings.



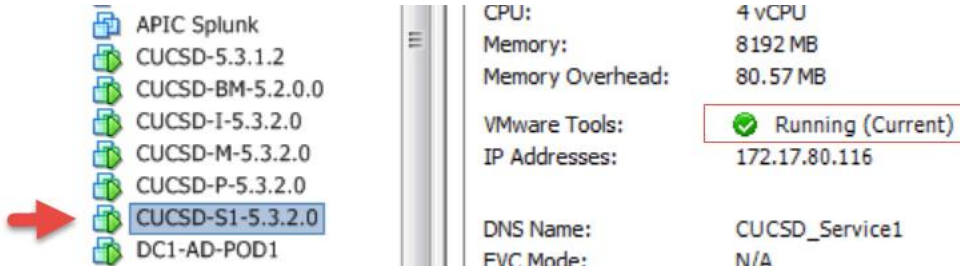
Remove CD/DVD drive then click OK.



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:
Retype new UNIX password:
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:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
Root passwd changed successfully
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 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]? 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 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

```
[root@localhost ~]# cat /etc/hosts
127.0.0.1 localhost 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_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=localhost
[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 # infront 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 ntpd 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
-----
192.17.200.174 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       Pangoitung  St_Kitts
Anguilla     Cayman       Grand_Turk   Managua      Paramaribo  St_Lucia
Antigua     Chicago      Grenada      Manaus       Phoenix     St_Thomas
Araguaina   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       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-Sablon Detroit     Iqaluit    Montevideo  Rio_Branco  Whitehorse
Boa_Vista   Dominica   Jamaica     Montreal    Rosario     Winnipeg
Bogota     Edmonton   Jujuy      Montserrat Santarem    Yakutat
Boise      Eirunepe   Juneau     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_Barthelmy
[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 timzone 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 ~]# ln -s /usr/share/zoneinfo/America/Chicago /etc/localtime
[root@CUCSD_Service1 ~]#
[root@CUCSD_Service1 ~]# date
Thu Sep 17 13:23:18 CDT 2015
[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
=====
*1. 1.37.0.1.1.4 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 23:47:55,101 [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. The top navigation bar includes 'Administration', 'System', and 'Service Nodes'. A table of Service Nodes is visible, with one entry for 'LocalHost'.

Node Name	Role	Node Pool	Description	Network Nam	Protocol	
LocalHost	Primary		localhost			Yes

Enter the following details and click Submit.

Service Node

Node Name: *

Role: Service

Service Node Pool: ▼
Select a Service Node Pool to associate this Service node with

DNS Name: *
DNS Name or IP/IPv6 Address of the Service Node

Description:

Protocol: ▼

Port: *

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

Test Service Node Connectivity.

Cisco UCS Director Administration

System

Service Nodes

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

Test Connectivity

Verify Service Node is in sync with UCS Director.

Cisco UCS Director Administration

System

System Information

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

7. Test and Verification

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

Cisco UCS Director

admin | Log Out | Cisco

Converged Virtual Physical Organizations Policies Administration CloudSense™ Favorites

System

License Status System Information Mail Setup System Parameters Infrastructure System Parameters Advanced Controls Service Provider Feature System Ta

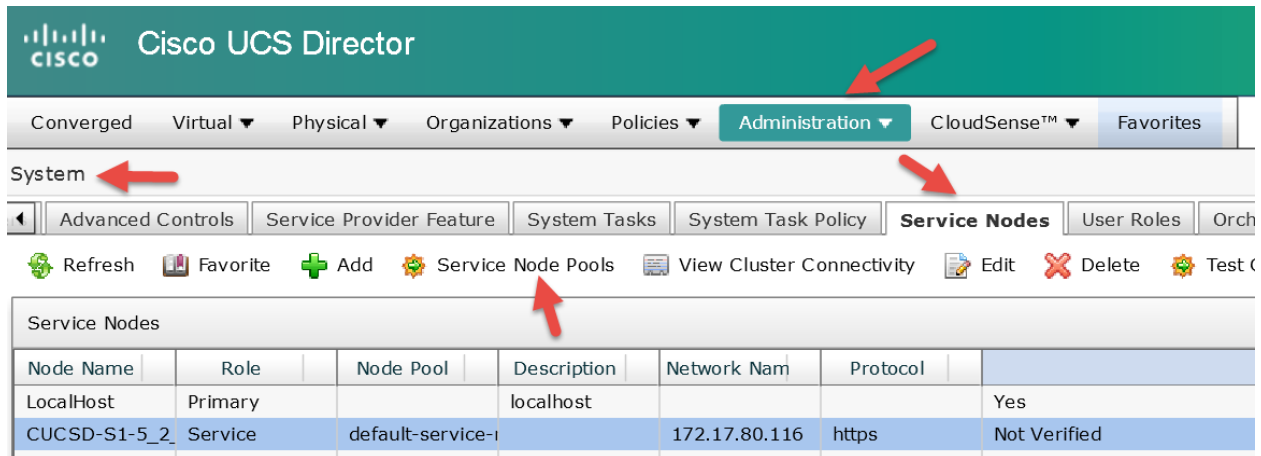
Refresh

Primary Node		Service Node(s)		DB Node(s)	
Name	172.17.80.113	Reachable	1	Inventory(172.17.80.114)	Ok
IP Address	172.17.80.113	Non Reachable	0	Monitoring(172.17.80.115)	Ok
Up Time	0 Day (s) 12 hour (s) 27 Min				
System Time	September 17, 2015 14:45:3				
Total Service Nodes	1				

System Memory		System Disk	
Memory Capacity (MB)	10030	Disk Info (File system root)	/
Memory Used (MB)	6827	Disk Capacity (MB)	101184
Memory Free (MB)	3202	Disk Used (MB)	5725
		Disk Free (MB)	90442

8. Create and assign System Task to a Service Node

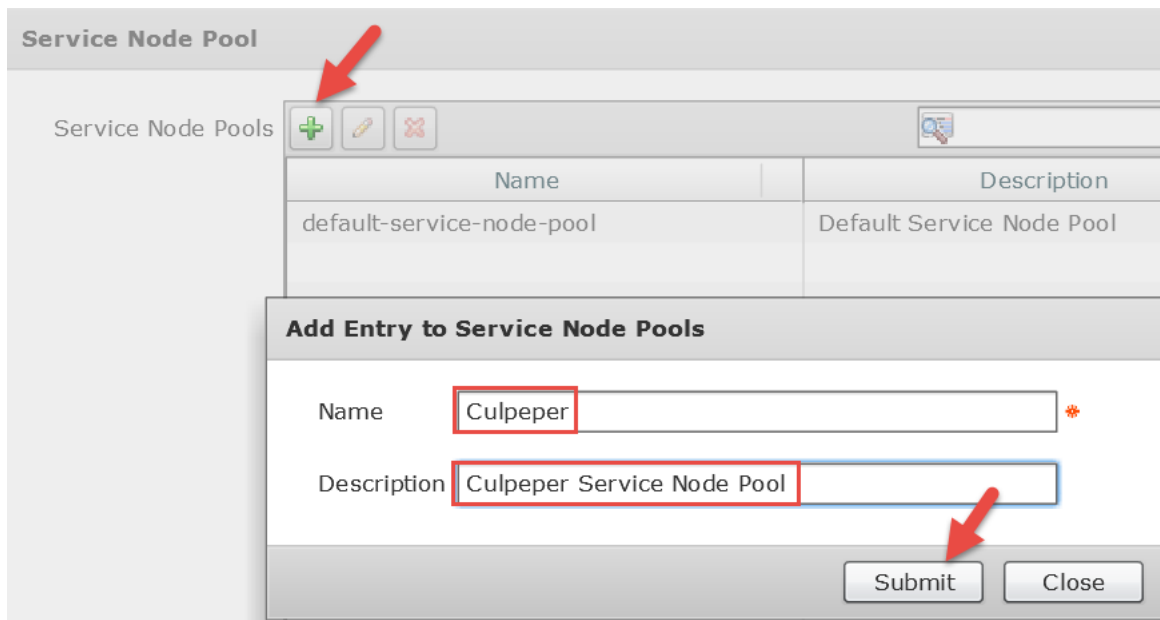
Create a Service Node Pool.



The screenshot shows the Cisco UCS Director interface. The top navigation bar includes 'Administration' and 'Service Nodes'. The 'Service Nodes' section is active, displaying a table with columns: Node Name, Role, Node Pool, Description, Network Name, Protocol, and Status. The table contains two entries: 'LocalHost' (Primary, localhost, Yes) and 'CUCSD-S1-5_2_Service' (Service, default-service-i, 172.17.80.116, https, Not Verified). A red arrow points to the 'Add' button in the toolbar above the table.

Node Name	Role	Node Pool	Description	Network Name	Protocol	Status
LocalHost	Primary		localhost			Yes
CUCSD-S1-5_2_Service	Service	default-service-i		172.17.80.116	https	Not Verified

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



The screenshot shows the 'Service Node Pool' configuration dialog box. The 'Add Entry to Service Node Pools' window is open, showing the 'Name' field with 'Culpeper' and the 'Description' field with 'Culpeper Service Node Pool'. The 'Submit' button is highlighted with a red arrow.

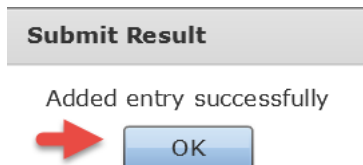
Name	Description
default-service-node-pool	Default Service Node Pool

Add Entry to Service Node Pools

Name:

Description:

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



The screenshot shows the 'Submit Result' dialog box with the message 'Added entry successfully' and an 'OK' button. A red arrow points to the 'OK' button.

Submit Result

Added entry successfully

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.

The screenshot shows the Cisco UCS Director interface with the 'Service Node' configuration dialog open. The dialog fields are as follows:

- Node Name: CUCSD-S1-5_2_0_0
- Role: Service
- Service Node Pool: Culpeper (highlighted with a red arrow)
- DNS Name: 172.17.80.116
- Protocol: https
- Port: 443
- UserName: infraUser

The 'Submit' button at the bottom right is also highlighted with a red arrow.

Verify Service Node Pool and Reachability.

The screenshot shows the 'Service Nodes' table in Cisco UCS Director. The table has the following data:

Node Name	Role	Node Pool	Description	Network Nam	Protocol	Reachability
LocalHost	Primary		localhost			Yes
CUCSD-S1-5_2_0_0	Service	Culpeper		172.17.80.116	https	Yes

The 'Culpeper' cell in the 'Node Pool' column and the 'Yes' cell in the 'Reachability' column for the CUCSD-S1-5_2_0_0 node are highlighted with red boxes.

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 successful
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-servic
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
eEventCollector: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: status=OK: lastExecuted=1442627830648
```

- 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 '^['.
```

- 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

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

- 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 '^['.
```

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

```
2015-09-17 02:23:49.030 [main] INFO main(initializeSchemaonStartup.java:31) - Initializing database schema...
2015-09-17 02:23:49.265 [main] INFO main(DB.java:81) - Choosing MySQL DB
2015-09-17 02:23:49.635 [main] INFO main(DBObjectHelper.java:194) - Created db_private_admin database successfully
2015-09-17 02:23:49.639 [main] INFO load(SystemProperties.java:68) - Loading database properties from service.properties
2015-09-17 02:23:49.918 [main] INFO <clinit>(AnnotationsSizeOfFilter.java:53) - Using regular expression provided through VM argument net.sf.ehcache.pool.sizeof.ignore.pattern for IgnoreSizeOf annotation : A.*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
```

- 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.

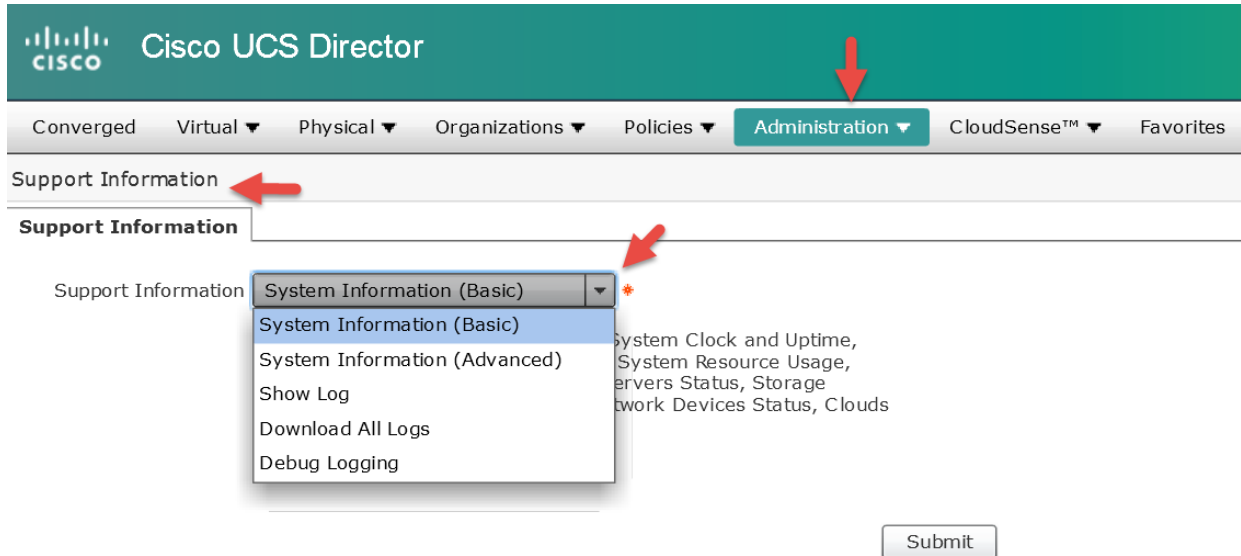
```
2015-09-17 02:34:40.261 [main] INFO main(InfraMgrMain.java:192) - master ip not null creating master
2015-09-17 02:34:40.261 [main] INFO main(InfraMgrMain.java:205) - persisting master
2015-09-17 02:34:40.335 [main] INFO main(InfraMgrMain.java:215) - Creating InfracUser
2015-09-17 02:34:40.339 [AS-InfracMor:34912327E1] INFO run(AnnouncementSender.java:35) - Ready to send announcements
2015-09-17 02:34:40.351 [main] INFO main(InfraMgrMain.java:217) - Created InfracUser
```

- 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'

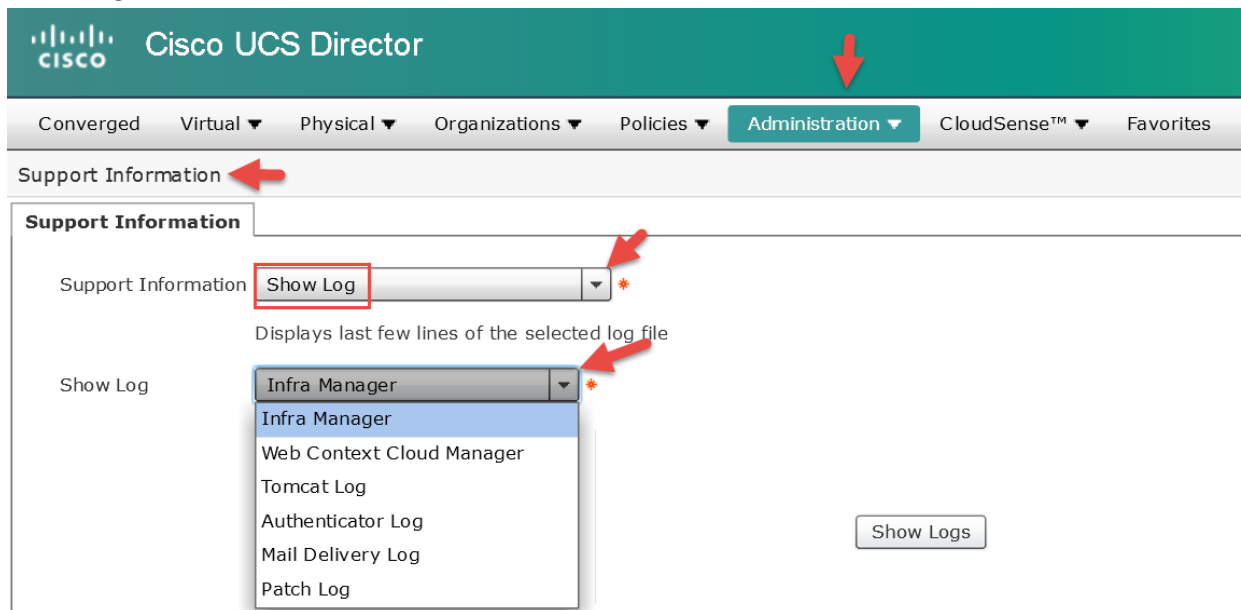
Verify the task does not take longer to complete than the frequency of the task. In this case the 'VMware Inventory Collector – MGMT-VCENTER' took 21 seconds to complete and the frequency is 1 hour so this is not a problem. If the task took longer than the frequency, this would be a problem.

Label	Enable	Frequenc	Executor	Execution N1	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
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

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.



Useful logs to view from the GUI.

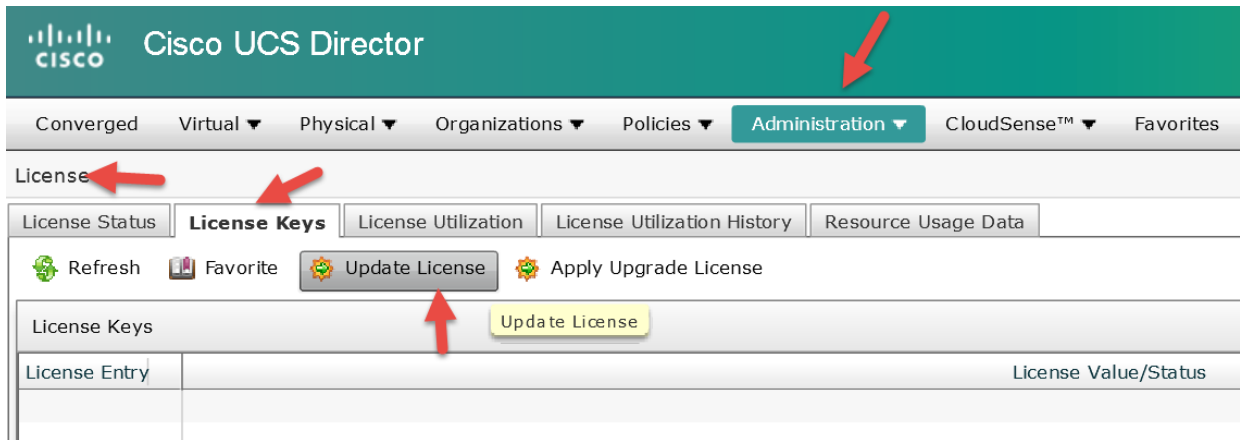


Last resort: Reboot the Primary Node and see if this fixes the connectivity issue between the Primary Node and the Services Node. If that doesn't fix the issue, then reboot the Service Node. You can reboot these Nodes via root account using the reboot command or shelladmin account and select the menu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

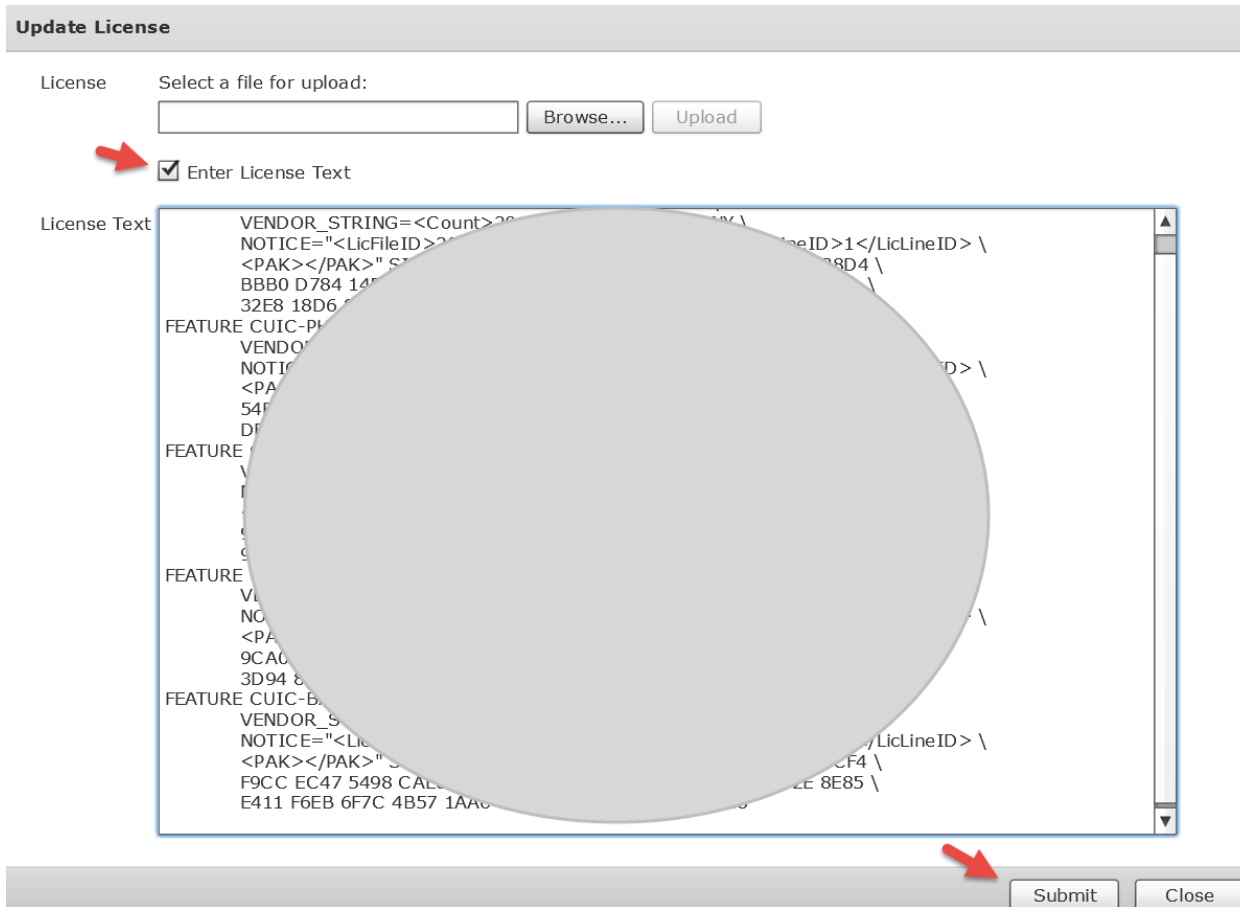
If all else fails, Open a TAC Case ;-)

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



Verify License Utilization.

Cisco UCS Director

Converged Virtual Physical Organizations Policies **Administration** CloudSense™ Favorites

License

License Status License Keys **License Utilization** License Utilization History Resource Usage Data

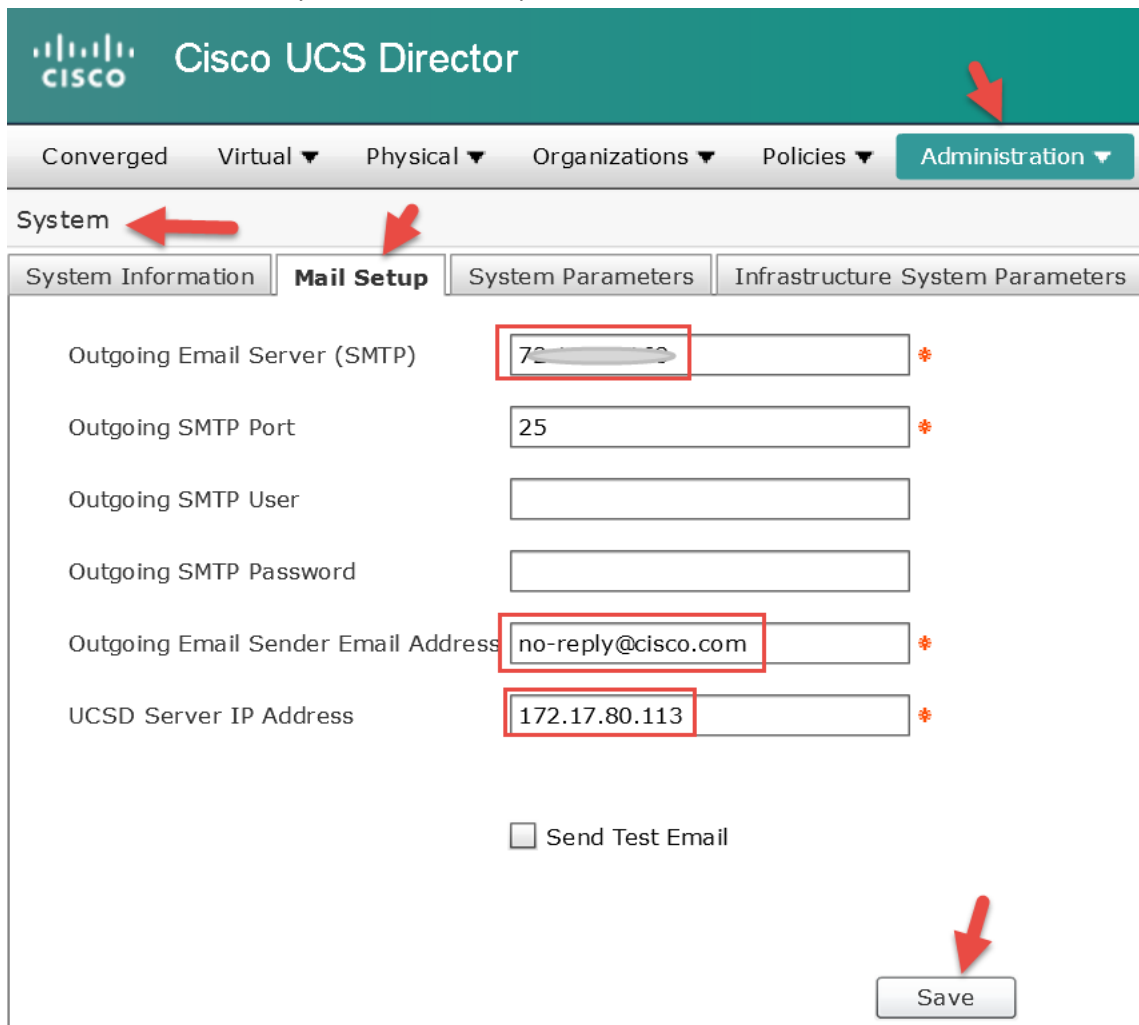
Refresh Favorite Update License Run License Audit

License Utilization

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

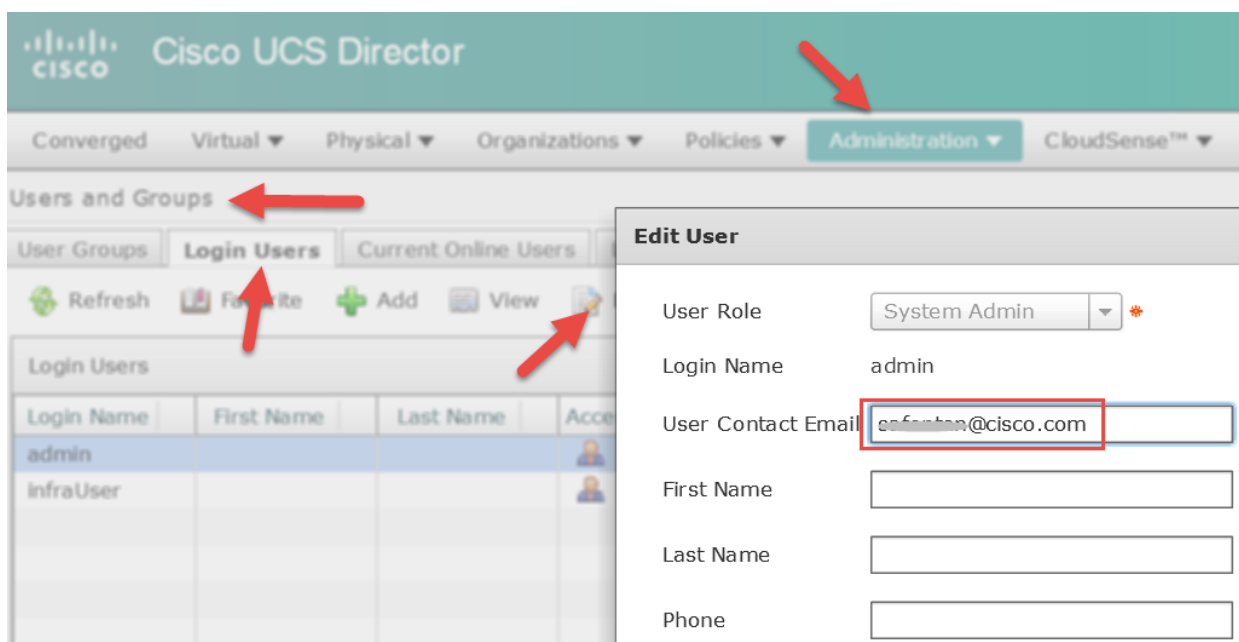


The screenshot shows the Cisco UCS Director interface. The top navigation bar includes 'Converged', 'Virtual', 'Physical', 'Organizations', 'Policies', and 'Administration'. The 'Administration' menu is expanded, and the 'System' option is selected. The 'Mail Setup' tab is active. The form contains the following fields:

- Outgoing Email Server (SMTP): 72.142.174.102
- Outgoing SMTP Port: 25
- Outgoing SMTP User: (empty)
- Outgoing SMTP Password: (empty)
- Outgoing Email Sender Email Address: no-reply@cisco.com
- UCSD Server IP Address: 172.17.80.113

There is a checkbox for 'Send Test Email' which is unchecked. A 'Save' button is located at the bottom right of the form.

Add user 'admin' contact e-mail.



The screenshot shows the Cisco UCS Director interface. The top navigation bar includes 'Converged', 'Virtual', 'Physical', 'Organizations', 'Policies', 'Administration', and 'CloudSense'. The 'Administration' menu is expanded, and the 'Users and Groups' option is selected. The 'Login Users' tab is active. The 'Edit User' form is open for the 'admin' user. The form contains the following fields:

- User Role: System Admin
- Login Name: admin
- User Contact Email: eefarhan@cisco.com
- First Name: (empty)
- Last Name: (empty)
- Phone: (empty)

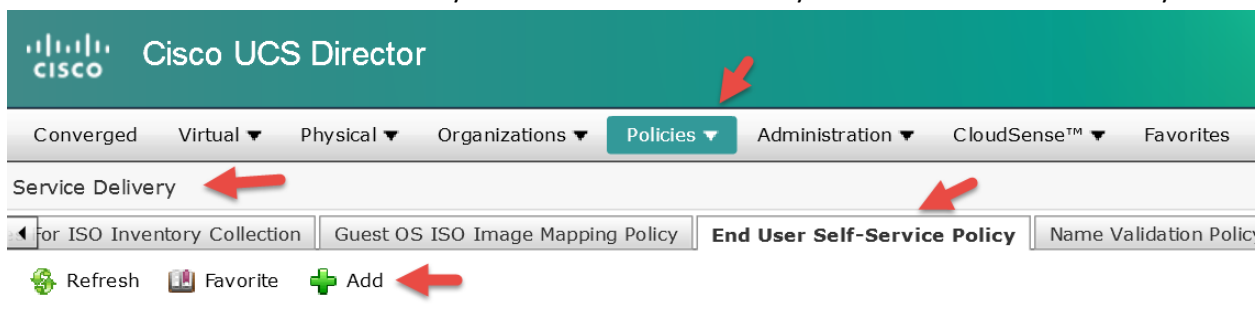
The 'User Contact Email' field is highlighted with a red box. The 'admin' user is selected in the 'Login Users' table.

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 the 'Add End User Policy' dialog box. It has a title bar 'Add End User Policy'. Below the title bar, there is a label 'Account Type' followed by a dropdown menu showing 'VMware'. To the right of the dropdown menu is a red asterisk icon. At the bottom of the dialog box, there are two buttons: 'Submit' and 'Close'.

Name the Policy and Select all options.

End User Policy

Policy Name

All Buttons *

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