Prepare the Appliance for Configuration

Preparation for Appliance Configuration Overview

Before you can successfully configure your Cisco DNA Center appliance, first complete the following tasks:

1. Enable browser access to the appliance's Cisco IMC (see Enable Browser Access to Cisco Integrated Management Controller).

2. Use Cisco IMC to check and adjust important hardware and switch settings (see Execute Preconfiguration Checks).

3. Cisco DNA Center software is preinstalled on your appliance, but you may need to reinstall the software in certain situations (such as before you change the current cluster link configuration). If this is the case, you must also complete the tasks described in Reimage the Appliance.

Note If you do not need to reimage your appliance, proceed to Appliance Configuration Overview.

Enable Browser Access to Cisco Integrated Management Controller

After installing the appliance, as described in Appliance Installation Workflow, use the Cisco IMC configuration utility to assign an IP address and gateway to the appliance's CIMC port. This gives you access to the Cisco IMC GUI, which you should use to configure the appliance.

After you complete the Cisco IMC setup, log in to Cisco IMC and run the tasks listed in Execute Preconfiguration Checks to ensure correct configuration.

Tip To help ensure the security of your deployment, Cisco IMC prompts you to change the Cisco IMC user's default password when you boot the appliance for the first time. To change the Cisco IMC user password later, use the Cisco IMC GUI, as follows:

1. From the top-left corner of the GUI, click the **Toggle Navigation** icon ( ) and then choose **Admin** > **User Management**.

   The **Local User Management** tab should already be selected.

2. Check the check box for user `1`, and then click **Modify User**.

   The **Modify User Details** dialog box opens.

3. Check the **Change Password** check box.

4. Enter and confirm the new password, and then click **Save**.

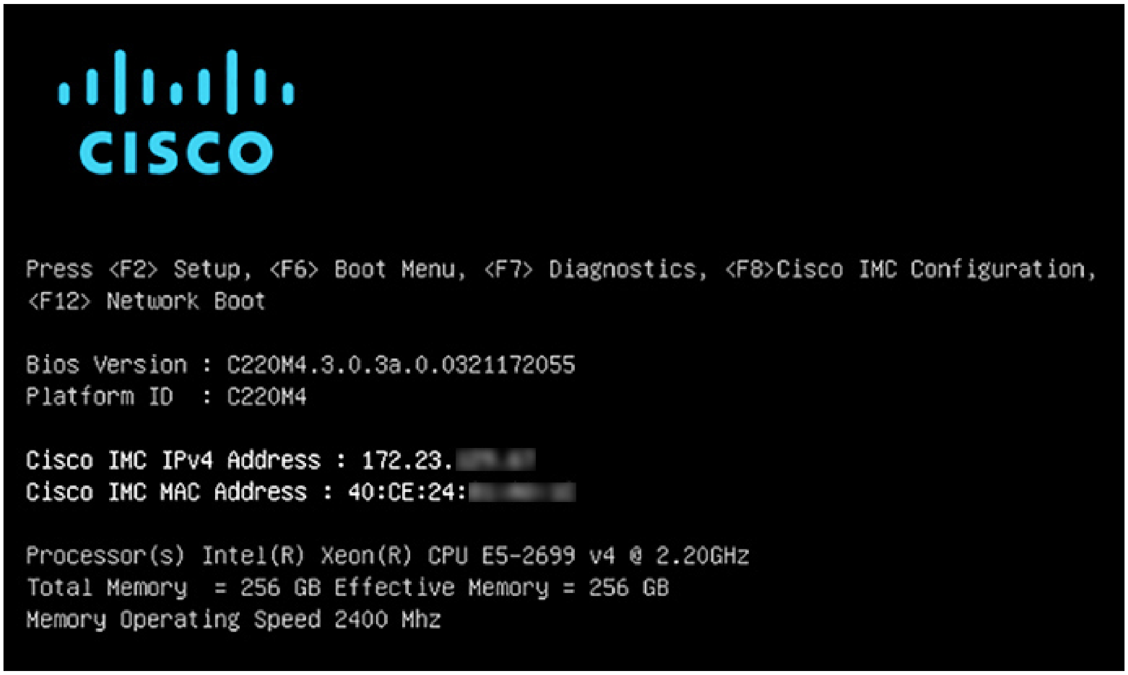
Step 1 Access the appliance console by attaching either of the following:

- A KVM cable to the KVM connector on the appliance's front panel (component 12 on the front panel illustrated in Front and Rear Panels)
- A keyboard and monitor to the USB and VGA ports on the appliance's rear panel (components 7 and 12, respectively, on the rear panel illustrated in Front and Rear Panels).

Step 2 Make sure that the appliance's power cord is plugged in and the power is on.

Step 3 Press the **Power** button on the front panel to boot the appliance.

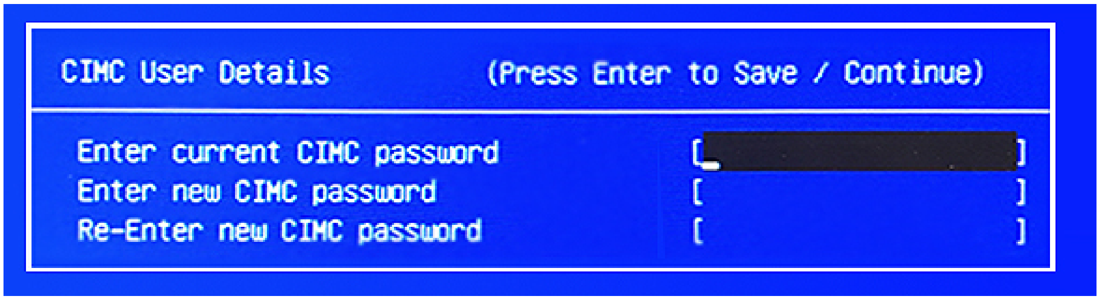
The Cisco IMC configuration utility boot screen should be displayed, as shown below.



```
Press <F2> Setup, <F6> Boot Menu, <F7> Diagnostics, <F8>Cisco IMC Configuration,
<F12> Network Boot

Bios Version : C220M4.3.0.3a.0.0321172055
Platform ID  : C220M4

Cisco IMC IPv4 Address : 172.23.[redacted]
Cisco IMC MAC Address : 40:CE:24:[redacted]

Processor(s) Intel(R) Xeon(R) CPU E5-2699 v4 @ 2.20GHz
Total Memory  = 256 GB Effective Memory = 256 GB
Memory Operating Speed 2400 Mhz
```

Step 4 As soon as the boot screen is displayed, press **F8** to perform Cisco IMC configuration.

The CIMC configuration utility displays the **CIMC User Details** screen, as shown below.



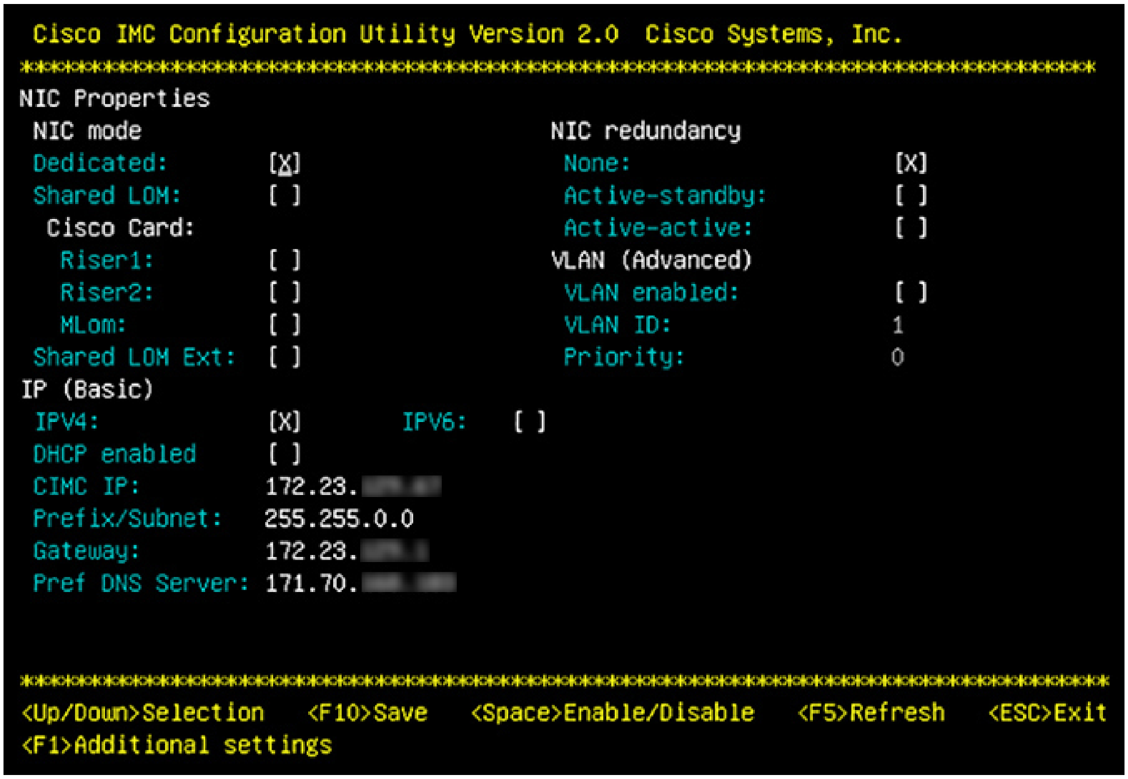
```
CIMC User Details            (Press Enter to Save / Continue)

  Enter current CIMC password            [[redacted]]
  Enter new CIMC password                [                    ]
  Re-Enter new CIMC password             [                    ]
```

355626

Step 5 Enter the default CIMC user password (the default on a new appliance is *password*) in the **Enter current CIMC Password** field.

Step 6 Enter and confirm the new CIMC user password in the **Enter new CIMC password** and **Re-Enter new CIMC password** fields.

When you press **Enter** after entering the new password in the **Re-Enter new CIMC password** field, the Cisco IMC configuration utility displays the **NIC Properties** screen, as shown below.



```
 Cisco IMC Configuration Utility Version 2.0  Cisco Systems, Inc.
********************************************************************************
NIC Properties
 NIC mode                              NIC redundancy
 Dedicated:        [X]                  None:                   [X]
 Shared LOM:       [ ]                  Active-standby:         [ ]
  Cisco Card:                           Active-active:          [ ]
   Riser1:         [ ]                 VLAN (Advanced)
   Riser2:         [ ]                  VLAN enabled:           [ ]
   MLom:           [ ]                  VLAN ID:                1
 Shared LOM Ext:   [ ]                  Priority:               0
IP (Basic)
 IPV4:             [X]        IPV6:    [ ]
 DHCP enabled      [ ]
 CIMC IP:          172.23.[redacted]
 Prefix/Subnet:    255.255.0.0
 Gateway:          172.23.[redacted]
 Pref DNS Server:  171.70.[redacted]


********************************************************************************
<Up/Down>Selection   <F10>Save   <Space>Enable/Disable   <F5>Refresh   <ESC>Exit
<F1>Additional settings
```

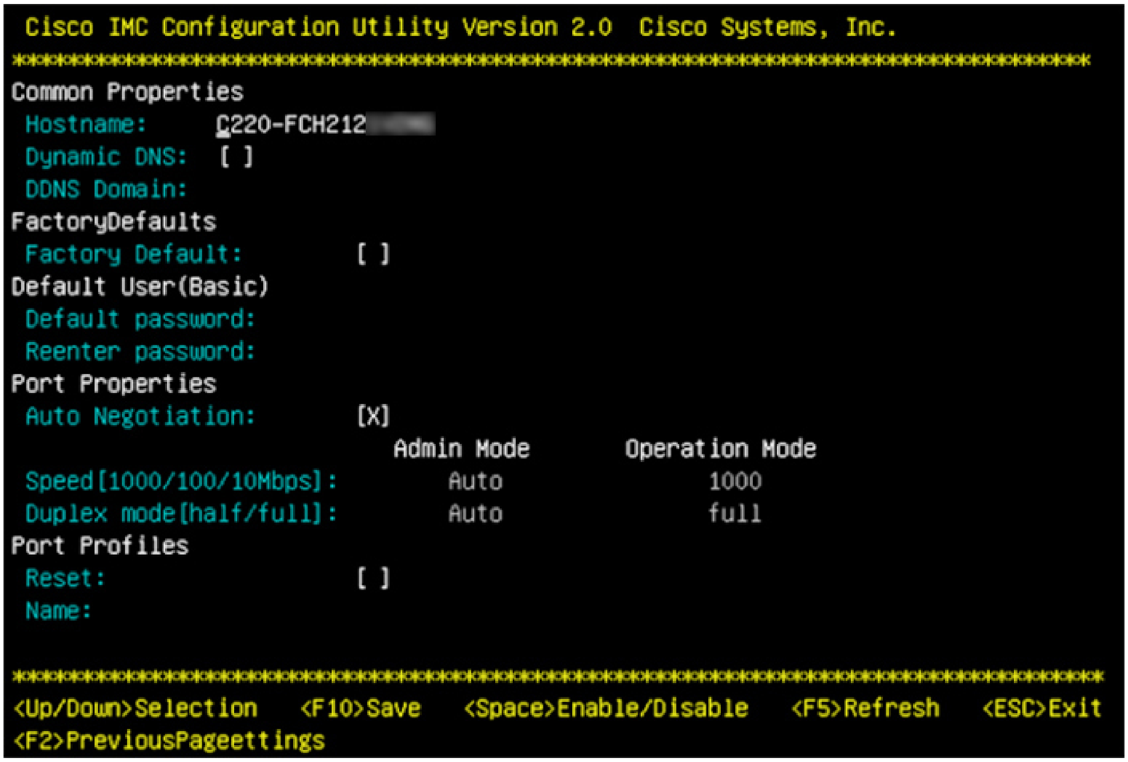
Step 7 Perform the following actions:

- **NIC mode**: Select **Dedicated**.
- **IP (Basic)**: Select **IPV4**.
- **CIMC IP**: Enter the IP address of the CIMC port.

- **Prefix/Subnet**: Enter the subnet mask for the CIMC port IP address.
- **Gateway**: Enter the IP address of your preferred default gateway.
- **Pref DNS Server**: Enter the IP address of your preferred DNS server.
- **NIC Redundancy**: Select **None**.

Step 8 Press **F1** to specify **Additional settings**.

The Cisco IMC configuration utility displays the **Common Properties** screen, as shown below.



```
 Cisco IMC Configuration Utility Version 2.0  Cisco Systems, Inc.
********************************************************************************
Common Properties
 Hostname:      C220-FCH212[redacted]
 Dynamic DNS:   [ ]
 DDNS Domain:
FactoryDefaults
 Factory Default:         [ ]
Default User(Basic)
 Default password:
 Reenter password:
Port Properties
 Auto Negotiation:        [X]
                             Admin Mode       Operation Mode
 Speed[1000/100/10Mbps]:        Auto              1000
 Duplex mode[half/full]:        Auto              full
Port Profiles
 Reset:                   [ ]
 Name:

********************************************************************************
<Up/Down>Selection   <F10>Save   <Space>Enable/Disable   <F5>Refresh   <ESC>Exit
<F2>PreviousPageettings
```

Step 9 Perform the following actions:

- **Hostname**: Enter a hostname for CIMC on this appliance.
- **Dynamic DNS**: Uncheck the check box to disable this feature.
- **Factory Defaults**: Uncheck the check box to disable this feature.
- **Default User (Basic)**: Leave these fields blank.
- **Port Properties**: Enter new settings or accept the defaults shown in these fields.
- **Port Profiles**: Uncheck the check box to disable this feature.

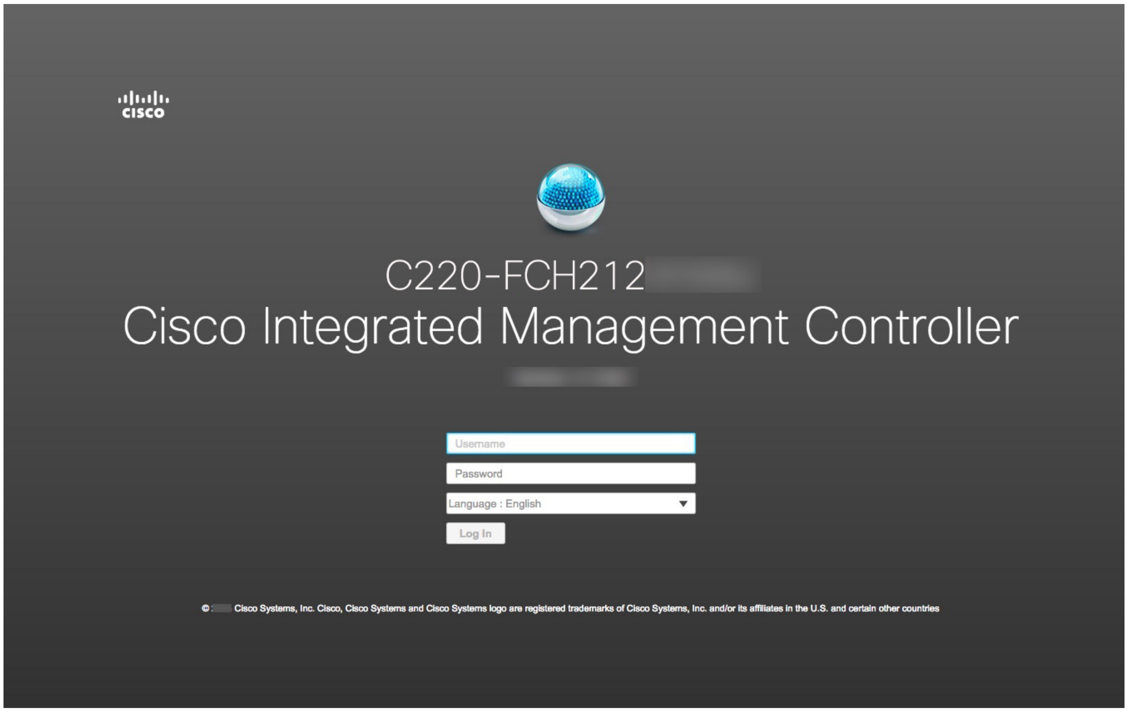
Step 10 Press **F10** to save the settings.

Step 11 Press **Escape** to exit and reboot the appliance.

Step 12 After the settings are saved and the appliance finishes rebooting, open a compatible browser on a client machine with access to the subnet on which the appliance is installed, and enter the following URL:

`https://`***`CIMC_ip_address`***, where ***`CIMC_ip_address`*** is the Cisco IMC port IP address that you entered in Step 7.

Your browser displays a main Cisco IMC GUI login window similar to the one shown below.



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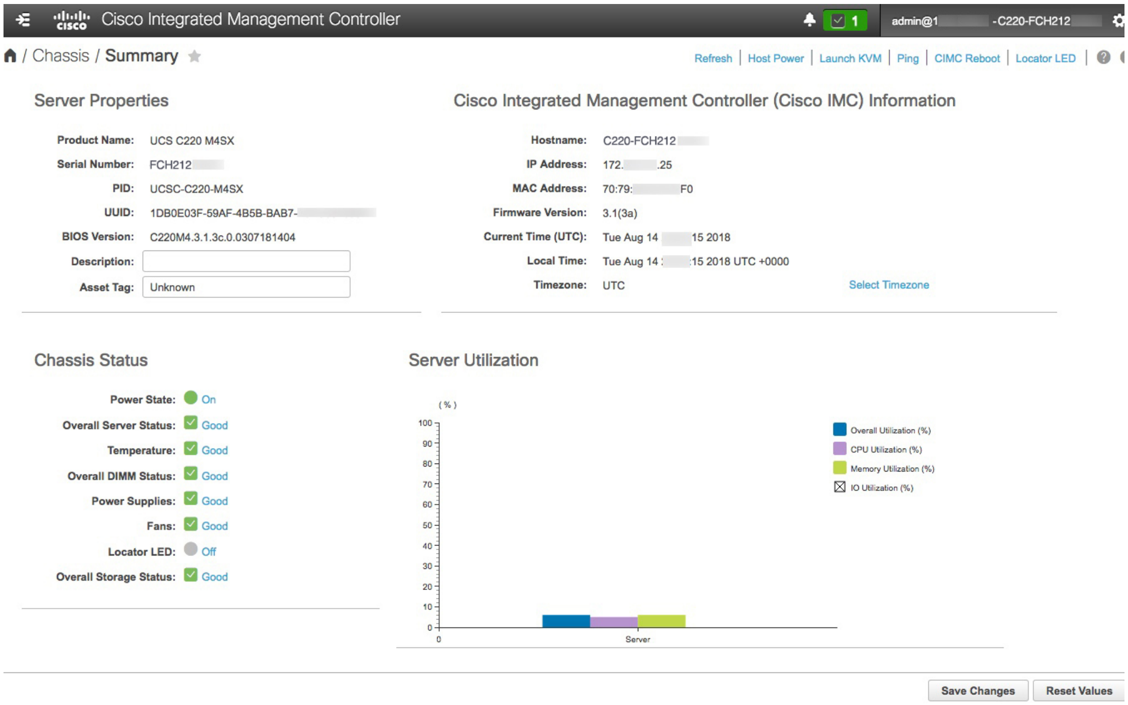
Step 13 Log in using the Cisco IMC user ID and password you set in Step 5.

If the login is successful, your browser displays a **Cisco Integrated Management Controller Chassis Summary** window similar to the one shown below.


Cisco Integrated Management Controller
1
admin@1[redacted]-C220-FCH212[redacted]
Chassis / Summary
Refresh | Host Power | Launch KVM | Ping | CIMC Reboot | Locator LED
Save Changes
Reset Values

Server Properties

Product Name: UCS C220 M4SX
Serial Number: FCH212[redacted]
PID: UCSC-C220-M4SX
UUID: 1DB0E03F-59AF-4B5B-BAB7-[redacted]
BIOS Version: C220M4.3.1.3c.0.0307181404
Description:
Asset Tag: Unknown

Cisco Integrated Management Controller (Cisco IMC) Information

Hostname: C220-FCH212[redacted]
IP Address: 172.[redacted].25
MAC Address: 70:79:[redacted]F0
Firmware Version: 3.1(3a)
Current Time (UTC): Tue Aug 14 [redacted]15 2018
Local Time: Tue Aug 14 :[redacted]:15 2018 UTC +0000
Timezone: UTC Select Timezone

Chassis Status

Power State: ● On
Overall Server Status: ☑ Good
Temperature: ☑ Good
Overall DIMM Status: ☑ Good
Power Supplies: ☑ Good
Fans: ☑ Good
Locator LED: ● Off
Overall Storage Status: ☑ Good

Server Utilization

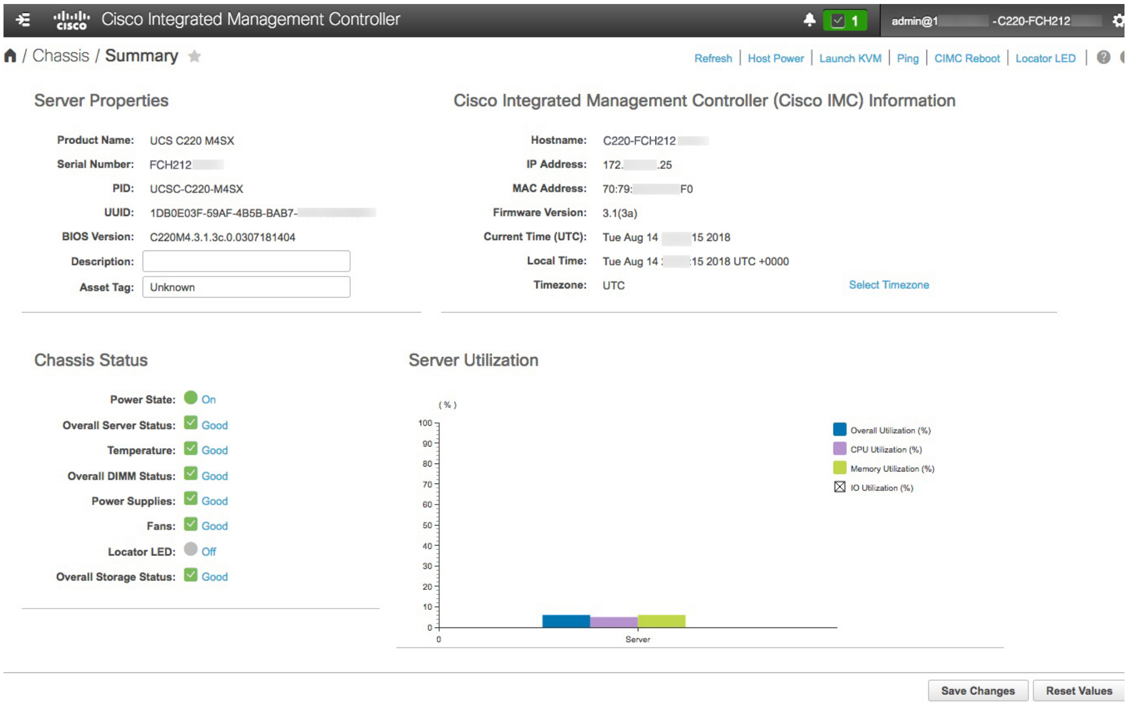
Execute Preconfiguration Checks

After installing the appliance (as described in Appliance Installation Workflow) and setting up access to the Cisco IMC GUI (as described in Enable Browser Access to Cisco Integrated Management Controller), use Cisco IMC to perform the following preconfiguration tasks, which help ensure correct configuration and deployment:

1. Synchronize the appliance hardware with the Network Time Protocol (NTP) servers you use to manage your network. These must be the same NTP servers whose hostnames or IPs you gathered for use when planning your implementation, as explained in Required IP Addresses and Subnets. This is a critical task that ensures that your Cisco DNA Center data is synchronized properly across the network.
2. Check that the appliance's 10-Gbps ports are enabled and properly configured for high throughput.
3. Reconfigure the switches connected to the 10-Gbps appliance ports to support higher throughput settings.
4. Reconfigure the switches connected to the 10-Gbps appliance ports to support oversize 802.1p frames.

Step 1 Log in to the appliance's Cisco IMC using the Cisco IMC IP address, user ID, and password you set in Enable Browser Access to Cisco Integrated Management Controller.

If the login is successful, your browser displays the **Cisco Integrated Management Controller Chassis Summary** window, as shown below.



Cisco Integrated Management Controller 1 admin@1[redacted]-C220-FCH212[redacted]

/ Chassis / **Summary**

Refresh | Host Power | Launch KVM | Ping | CIMC Reboot | Locator LED

Server Properties

Product Name:	UCS C220 M4SX
Serial Number:	FCH212[redacted]
PID:	UCSC-C220-M4SX
UUID:	1DB0E03F-59AF-4B5B-BAB7-[redacted]
BIOS Version:	C220M4.3.1.3c.0.0307181404
Description:	
Asset Tag:	Unknown

Cisco Integrated Management Controller (Cisco IMC) Information

Hostname:	C220-FCH212[redacted]
IP Address:	172.[redacted].25
MAC Address:	70:79:[redacted]F0
Firmware Version:	3.1(3a)
Current Time (UTC):	Tue Aug 14 [redacted]15 2018
Local Time:	Tue Aug 14 [redacted]15 2018 UTC +0000
Timezone:	UTC Select Timezone

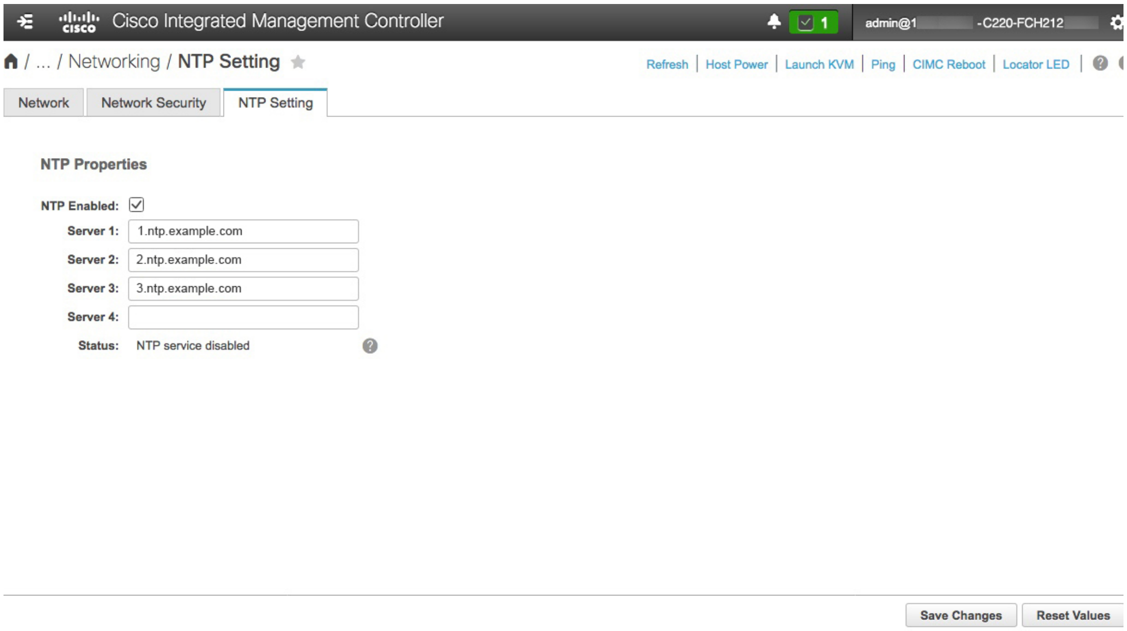
Chassis Status

Power State:	● On
Overall Server Status:	✓ Good
Temperature:	✓ Good
Overall DIMM Status:	✓ Good
Power Supplies:	✓ Good
Fans:	✓ Good
Locator LED:	● Off
Overall Storage Status:	✓ Good

Server Utilization

Step 2 Synchronize the appliance's hardware with the Network Time Protocol (NTP) servers you use to manage your network, as follows:

a) From the top-left corner of the Cisco IMC GUI, click the **Toggle Navigation** icon (☰).
b) From the Cisco IMC menu, select **Admin** > **Networking**, and then choose the **NTP Setting** tab.
c) Make sure that the **NTP Enabled** check box is checked and enter up to four NTP server host names or addresses in the numbered **Server** fields, as shown in the example below.



Cisco Integrated Management Controller 1 admin@1[redacted]-C220-FCH212[redacted]

/ ... / Networking / **NTP Setting**

Refresh | Host Power | Launch KVM | Ping | CIMC Reboot | Locator LED

Network | Network Security | NTP Setting

NTP Properties

NTP Enabled:	☑
Server 1:	1.ntp.example.com
Server 2:	2.ntp.example.com
Server 3:	3.ntp.example.com
Server 4:	
Status:	NTP service disabled

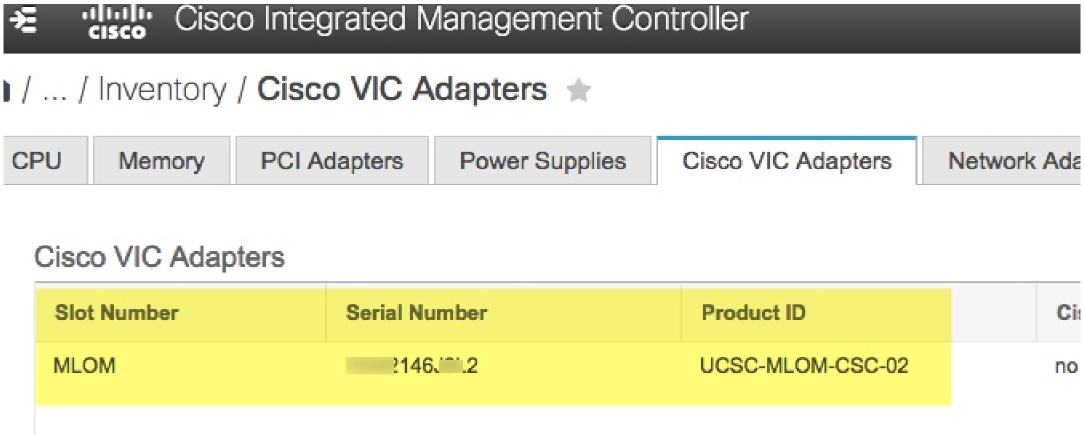
d) Click **Save Changes**. Cisco IMC validates your entries and then begins to synchronize the time on the appliance's hardware with the time on the NTP servers.

Note Cisco IMC does not support NTP authentication.

Step 3 Next, check that the appliance NICs are configured to support high throughput, as follows:

a) If needed, click the ☰ icon to display the Cisco IMC menu.

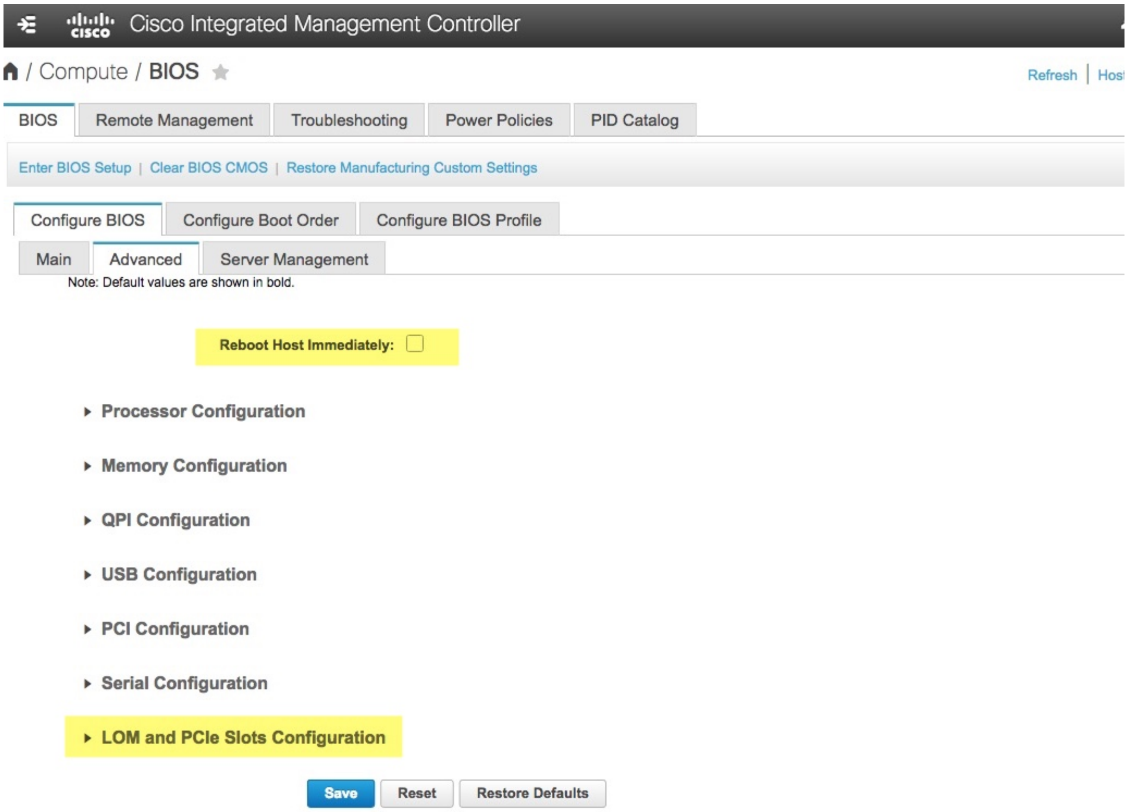
b) From the Cisco IMC menu, select **Chassis** > **Inventory** > **Cisco VIC Adapters**. Verify that the Product ID "UCSC-MLOM-CSC-02" is listed for the MLOM slot, as shown below:


Cisco Integrated Management Controller
/ ... / Inventory / Cisco VIC Adapters
CPU
Memory
PCI Adapters
Power Supplies
Cisco VIC Adapters
Network Ada

Cisco VIC Adapters

Slot Number	Serial Number	Product ID		Ci
MLOM	[redacted]	UCSC-MLOM-CSC-02		no

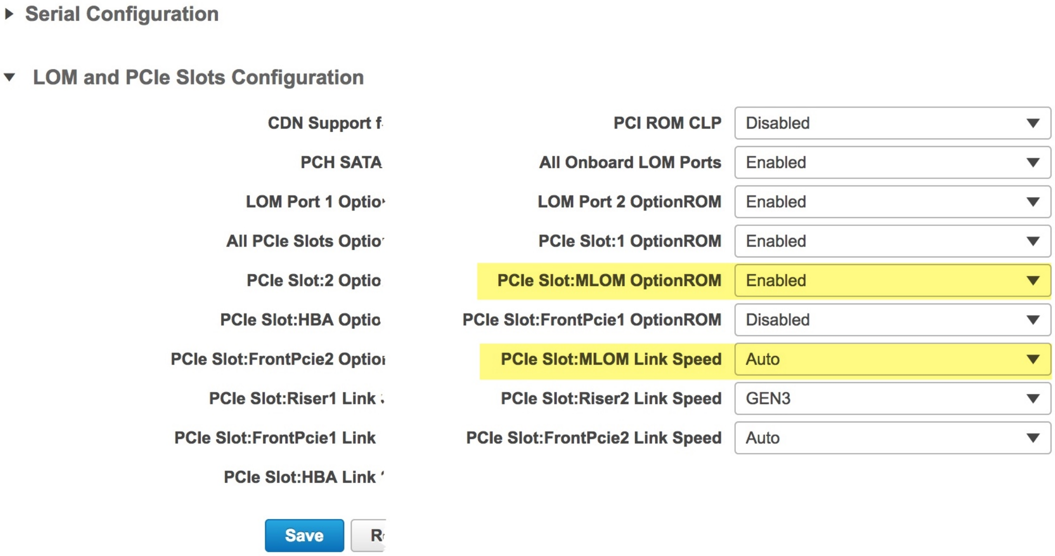
c) Select ☰ > **Compute** > **BIOS** > **Configure BIOS** > **Advanced**. Verify that the **Reboot Host Immediately** checkbox is unchecked and note the location of the **LOM and PCIe Slots Configuration** dropdown.



Note: Default values are shown in bold.

Reboot Host Immediately: □

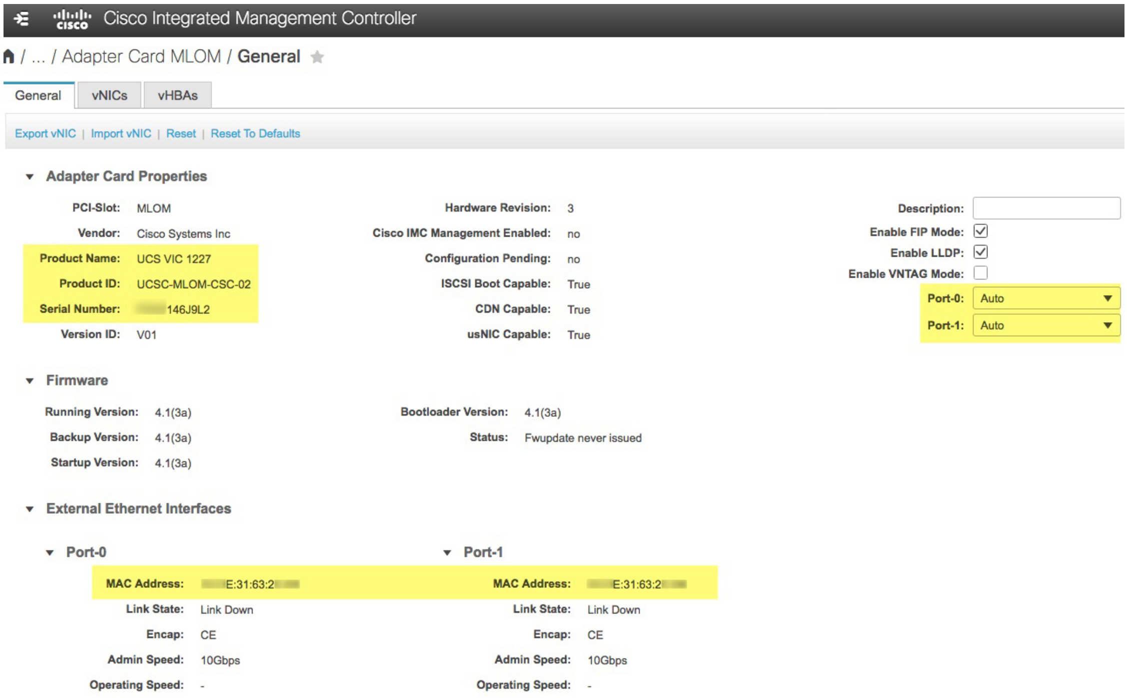
d) Select **LOM and PCIe Slots Configuration**. Then, using the dropdown selectors, set **PCIe Slot: MLOM OptionROM** to **Enabled** and **PCIe Slot: MLOM Link Speed** to **Auto**.



CDN Support f	PCI ROM CLP	Disabled
PCH SATA	All Onboard LOM Ports	Enabled
LOM Port 1 Optio	LOM Port 2 OptionROM	Enabled
All PCIe Slots Optio	PCIe Slot:1 OptionROM	Enabled
PCIe Slot:2 Optio	PCIe Slot:MLOM OptionROM	Enabled
PCIe Slot:HBA Optio	PCIe Slot:FrontPcie1 OptionROM	Disabled
PCIe Slot:FrontPcie2 Optio	PCIe Slot:MLOM Link Speed	Auto
PCIe Slot:Riser1 Link	PCIe Slot:Riser2 Link Speed	GEN3
PCIe Slot:FrontPcie1 Link	PCIe Slot:FrontPcie2 Link Speed	Auto
PCIe Slot:HBA Link		

e) Click **Save**. You will be prompted to reboot the host. Click **OK** to continue instead of rebooting.

f) Select ☰ > **Networking** > **Adapter Card MLOM** > **General**. Take note of the MAC addresses for **Port-0** and **Port-1** (shown in the **External Ethernet Interfaces** section at the bottom of the page). In the **Adapter Card Properties** section, use the dropdown selectors next to **Port-0** and **Port-1** to set the speed of both these ports to **Auto**, as shown below. Then click **Save Changes**.


Cisco Integrated Management Controller
/ ... / Adapter Card MLOM / General
General
vNICs
vHBAs
Export vNIC | Import vNIC | Reset | Reset To Defaults

Adapter Card Properties

PCI-Slot: MLOM
Vendor: Cisco Systems Inc
Product Name: UCS VIC 1227
Product ID: UCSC-MLOM-CSC-02
Serial Number: [redacted]146J9L2
Version ID: V01

Hardware Revision: 3
Cisco IMC Management Enabled: no
Configuration Pending: no
ISCSI Boot Capable: True
CDN Capable: True
usNIC Capable: True

Description:
Enable FIP Mode: ☑
Enable LLDP: ☑
Enable VNTAG Mode: □
Port-0: Auto
Port-1: Auto

Firmware

Running Version: 4.1(3a)
Backup Version: 4.1(3a)
Startup Version: 4.1(3a)
Bootloader Version: 4.1(3a)
Status: Fwupdate never issued

External Ethernet Interfaces

Port-0

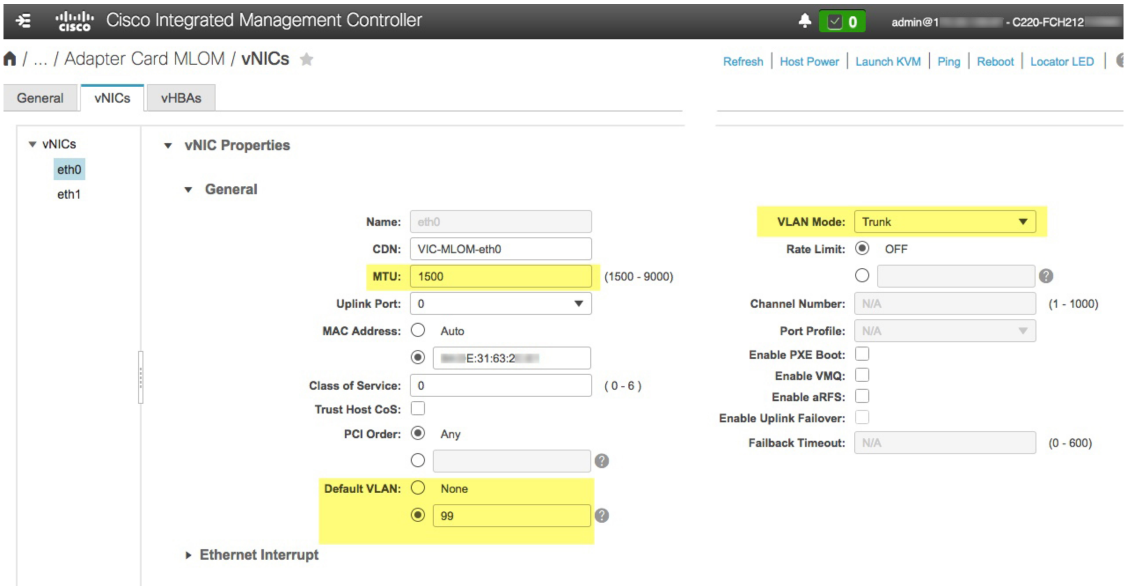
MAC Address: [redacted]E:31:63:2[redacted]
Link State: Link Down
Encap: CE
Admin Speed: 10Gbps
Operating Speed: -

Port-1

MAC Address: [redacted]E:31:63:2[redacted]
Link State: Link Down
Encap: CE
Admin Speed: 10Gbps
Operating Speed: -

g) Click the **vNICs** tab and select **eth0** from the **vNICs** dropdown. Use the selectors and fields to set these values for **eth0**:

- **VLAN Mode: Trunk**
- **MTU: 1500**
- **Default VLAN: 99** (Please note that "99" is only an example. You should enter the default VLAN value you want your appliances and their connected uplink switch to use.)


Cisco Integrated Management Controller
0
admin@1[redacted] - C220-FCH212[redacted]
/ ... / Adapter Card MLOM / vNICs
Refresh | Host Power | Launch KVM | Ping | Reboot | Locator LED
General
vNICs
vHBAs
vNICs
eth0
eth1
vNIC Properties
General
Ethernet Interrupt

Name: eth0

CDN: VIC-MLOM-eth0

MTU: 1500 (1500 - 9000)

Uplink Port: 0

MAC Address: ○ Auto ● [redacted]E:31:63:2[redacted]

Class of Service: 0 (0 - 6)

Trust Host CoS: □

PCI Order: ● Any ○

Default VLAN: ○ None ● 99

VLAN Mode: Trunk

Rate Limit: ● OFF ○

Channel Number: N/A (1 - 1000)

Port Profile: N/A

Enable PXE Boot: □

Enable VMQ: □

Enable aRFS: □

Enable Uplink Failover: □

Failback Timeout: N/A (0 - 600)

Tip 1500 is the minimum maximum transmission unit (MTU) size. You can improve throughput on the 10Gbps ports by entering any higher value, up to a maximum of 9000.

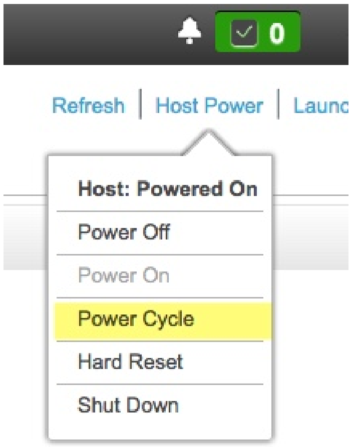
h) Click **Save Changes**. You will be prompted to reboot the host again. Click **Cancel** to continue instead of rebooting.

i) Select **eth1** from the **vNICS** dropdown and set the values that you want your appliances and their connected uplink switch to use.

j) When you are finished, click **Save Changes**. You will be prompted to reboot the host. This time, click **OK** to reboot the appliance.

k) When the appliance is finished rebooting, log in to the Cisco IMC GUI again. Select ☰ > **Networking** > **Adapter Card MLOM** > **General** > **vNICs**. Verify the accuracy of the vNIC MAC addresses and the MTU, VLAN and VLAN Mode parameters you set earlier.

l) When you are finished: Click the **Host Power** menu at top right and select **Power Cycle**. Then click **OK**.



Step 4 Reconfigure your switches to match the high-throughput settings on the appliance, as follows:

a) Using a Secure Shell (SSH) client, log in to the switch to be configured and enter EXEC mode at the switch prompt.

b) Configure the switch port.

On a Cisco Catalyst switch, enter the following commands. For example:

```
MySwitch#Config terminal
MySwitch(config)#interface tengigabitethernet 1/1/3
MySwitch(config-if)#switchport
MySwitch(config-if)#switchport mode trunk
MySwitch(config-if)#switchport trunk allowed vlan 99
MySwitch(config-if)#switchport voice vlan dot1p
MySwitch(config-if)#speed auto
MySwitch(config-if)#duplex full
MySwitch(config-if)#mtu 1500
MySwitch(config-if)#no shut
MySwitch(config-if)#end
MySwitch(config)#do copy running-config startup-config
```

On a Cisco Nexus switch, enter the following commands to disable Link Layer Discovery Protocol (LLDP) and priority flow control (PFC). For example:

```
N7K2# configure terminal
N7K2(config)# interface eth 3/4
N7K2(config-if)# no priority-flow-control mode auto
N7K2(config-if)# no lldp transmit
N7K2(config-if)# no lldp receive
```

Note that these commands are examples only. When configuring your appliance's NICs, use the same VLAN ID and MTU values you entered in Step 3 of this procedure. The values displayed for the link speed, duplex, and MTU parameters are the defaults for your switch. Enter new values for these parameters only if you have changed the defaults. You may, as with the appliance NICs, also set the MTU up to a maximum of 9000 for better throughput.

c) Run the `show interface tengigabitethernet` *`portID`* command and verify that the port is connected, running, and has the correct MTU, duplex, and link-type settings in the command output. For example:

```
MySwitch#show interface tengigabitethernet 1/1/3
TenGigabitEthernet1/1/3 is up, line protocol is up (connected)
  Hardware is Ten Gigabit Ethernet, address is XXXe.310.8000 (bia XXX.310.8000)
  MTU 1500 bytes, BW 10000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not set
  Full-duplex, 10GB/s, link type is auto, media type is SFP-10Gbase-SR
```

d) Run the `show run interface tengigabitethernet` *`portID`* command to configure the switch ports where the cables from the VIC 1227 ports are connected. For example:

```
MySwitch#show run interface tengigabitethernet 1/1/3
Building configuration...
Current configuration : 129 bytes
!
interface TenGigabitEthernet1/1/3
 switchport trunk allowed vlan 99
 switchport mode trunk
end

MySwitch#
```

e) Run the `show run interface tengigabitethernet` *`portID`* command and verify from the command output that the port has the correct `voice vlan dot1p` setting. For example:

```
MySwitch#show run interface tengigabitEthernet 1/1/3
Building configuration...
Current configuration : 129 bytes
!
interface TenGigabitEthernet1/1/3
 switchport trunk allowed vlan 99
 switchport mode trunk
 switchport voice vlan dot1p
end

MySwitch#
```

f) Run the `show mac address-table interface tengigabitethernet` *`portID`* command and verify the MAC address from the command output. For example:

```
MySwitch#show mac address-table interface tengigabitethernet 1/1/3
           Mac Address Table
--------------------------------------------
Vlan     Mac Address       Type      Ports
----     -----------       ----      -----
99       XXXe.3161.1000    DYNAMIC   Te1/1/3
Total Mac Addresses for this criterion: 1

MySwitch#
```

What to do next

When this task is complete, do one of the following:

- If you need to reinstall Cisco DNA Center software before you configure your appliance, see Reimage the Appliance.
- If you are ready to configure your appliance, proceed to Appliance Configuration Overview.

Reimage the Appliance

Situations may arise that require you to reimage your Cisco DNA Center appliance, such as recovering from a backup or changing your cluster link configuration. To do so, complete the following procedure.

Step 1 Download the Cisco DNA Center ISO image and verify that it is a genuine Cisco image.

See Verify the Cisco DNA Center ISO Image, on page 15.

Step 2 Create a bootable USB drive that contains the Cisco DNA Center ISO image.

See Create a Bootable USB Flash Drive, on page 16.

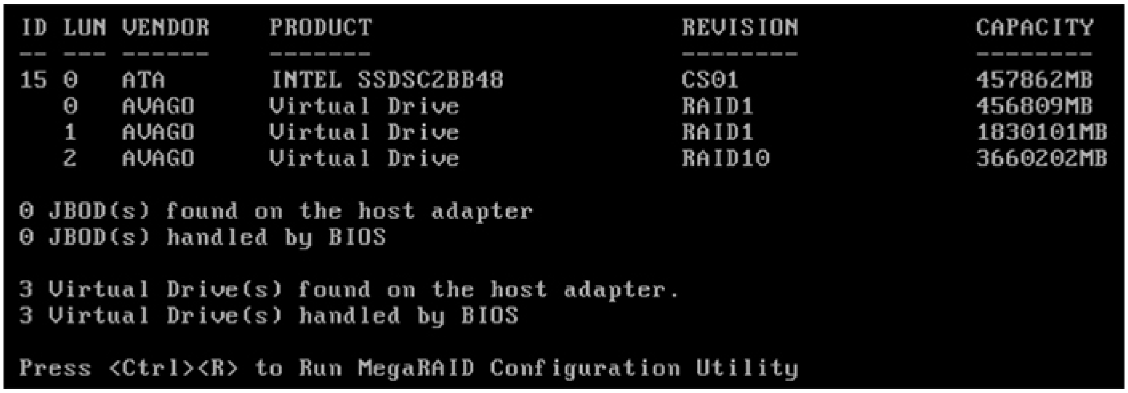
Step 3 Reinitialize the three virtual drives that are managed by your appliance's RAID controller:

a) Log in to Cisco IMC and start a KVM session.

b) Power on or power cycle the appliance by choosing one of the following menu options:

- **Power** > **Power On System**
- **Power** > **Power Cycle System (cold boot)**

As your appliance reboots, a screen that lists every drive on the appliance (both physical and virtual) will appear.

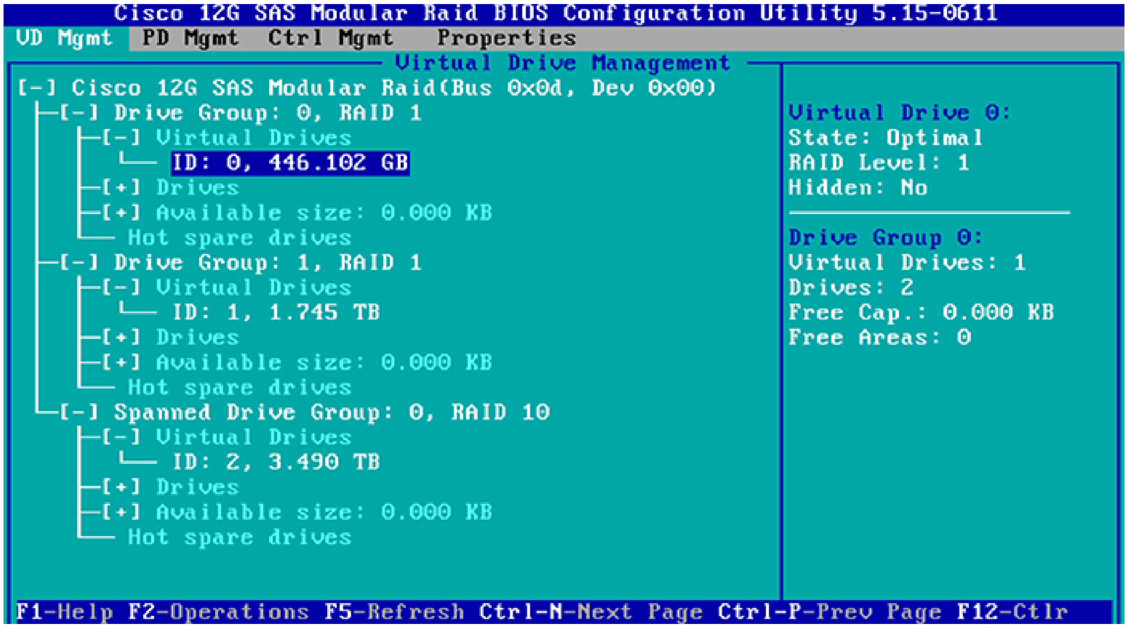


```
ID LUN VENDOR    PRODUCT                      REVISION          CAPACITY
-- --- ------    -------                      --------          --------
15 0   ATA       INTEL SSDSC2BB48             CS01              457862MB
   0   AVAGO     Virtual Drive                RAID1             456809MB
   1   AVAGO     Virtual Drive                RAID1             1830101MB
   2   AVAGO     Virtual Drive                RAID10            3660202MB

0 JBOD(s) found on the host adapter
0 JBOD(s) handled by BIOS

3 Virtual Drive(s) found on the host adapter.
3 Virtual Drive(s) handled by BIOS

Press <Ctrl><R> to Run MegaRAID Configuration Utility
```

c) As soon as you see this screen, press **Ctrl** + **R** to run the MegaRAID Configuration Utility.

If you wait too long, this screen will disappear. To get back to this screen, choose **Power** > **Reset System (warm boot)** from the KVM menu to reboot your appliance.

d) Select a drive's entry (`ID: 0, 446.102 GB`, for example) and then press **F2**.



```
       Cisco 12G SAS Modular Raid BIOS Configuration Utility 5.15-0611
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                       Virtual Drive Management
[-] Cisco 12G SAS Modular Raid(Bus 0x0d, Dev 0x00)   |
 ├─[-] Drive Group: 0, RAID 1                         | Virtual Drive 0:
 │  ├─[-] Virtual Drives                              | State: Optimal
 │  │  └── ID: 0, 446.102 GB                          | RAID Level: 1
 │  ├─[+] Drives                                      | Hidden: No
 │  ├─[+] Available size: 0.000 KB                    | --------------------
 │  └── Hot spare drives                              | Drive Group 0:
 ├─[-] Drive Group: 1, RAID 1                         | Virtual Drives: 1
 │  ├─[-] Virtual Drives                              | Drives: 2
 │  │  └── ID: 1, 1.745 TB                            | Free Cap.: 0.000 KB
 │  ├─[+] Drives                                      | Free Areas: 0
 │  ├─[+] Available size: 0.000 KB                    |
 │  └── Hot spare drives                              |
 └─[-] Spanned Drive Group: 0, RAID 10                |
    ├─[-] Virtual Drives                              |
    │  └── ID: 2, 3.490 TB                            |
    ├─[+] Drives                                      |
    ├─[+] Available size: 0.000 KB                    |
    └── Hot spare drives                              |
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

This opens the drive's **Advanced Properties** screen.

e) In the resulting menu, choose **Initialization** > **Full Initialization** for the first virtual drive.

f) Repeat Steps 3b through 3e for the other virtual drives on your appliance, but choose **Fast Initialize**. (Only the first virtual drive requires full initialization. The second and third virtual drives don't require full initialization.)

Step 4 Reinstall Cisco DNA Center onto your appliance.

See Install the Cisco DNA Center ISO Image, on page 18.

Verify the Cisco DNA Center ISO Image

Prior to deploying Cisco DNA Center, we strongly recommend that you to verify that the ISO image you downloaded is a genuine Cisco image.

Before you begin

Obtain the location of the Cisco DNA Center ISO image (through email or by contacting the Cisco support team).

Step 1 Download the Cisco DNA Center ISO image (.iso) from the location specified by Cisco.

Step 2 Download the Cisco public key (cisco_image_verification_key.pub) for signature verification from the location specified by Cisco.

Step 3 Download the secure hash algorithm (SHA512) checksum file for the ISO image from the location specified by Cisco.

Step 4 Obtain the ISO image's signature file (.sig) from Cisco support through email or by download from the secure Cisco website (if available).

Step 5 (Optional) Perform an SHA verification to determine whether the ISO image is corrupted due to a partial download.

Run one of the following commands (depending upon your operating system):

- On a Linux system: **sha512sum** *ISO-image-filename*
- On a Mac system: **shasum -a 512** *ISO-image-filename*

Microsoft Windows does not include a built-in checksum utility, but you can use the certutil tool:

```
certutil -hashfile <filename> sha256 | md5
```

For example:

```
certutil -hashfile D:\Customers\FINALIZE.BIN sha256
```

On Windows, you can also use the Windows PowerShell to generate the digest. For example:

```
PS C:\Users\Administrator> Get-FileHash -Path D:\Customers\FINALIZE.BIN
Algorithm Hash Path
SHA256 B84B6FFD898A370A605476AC7EC94429B445312A5EEDB96166370E99F2838CB5 D:\Customers\FINALIZE.BIN
```

Compare the output of the command you run to the SHA512 checksum file that you downloaded. If the command output does not match, download the ISO image again and run the appropriate command a second time. If the output still does not match, contact Cisco support.

Step 6 Verify that the ISO image is genuine and from Cisco by verifying its signature:

openssl dgst -sha512 -verify cisco_image_verification_key.pub -signature *signature-filename ISO-image-filename*

Note This command works in both MAC and Linux environments. For Windows, you need to download and install OpenSSL (available here) if you have not already done so.

If the ISO image is genuine, running this command should display a `Verified OK` message. If this message fails to appear, do not install the ISO image and contact Cisco support.

Step 7 After confirming that you have downloaded a Cisco ISO image, create a bootable USB drive that contains the Cisco DNA Center ISO image. See Create a Bootable USB Flash Drive.

Create a Bootable USB Flash Drive

Complete one of the following procedures to create a bootable USB flash drive from which you can install the Cisco DNA Center ISO image.

Before you begin:

- Download and verify your copy of the Cisco DNA Center ISO image. See Verify the Cisco DNA Center ISO Image.
- Confirm that the USB flash drive you are using:
  - Is USB 3.0 or later.
  - Has a capacity of at least 64 GB.
  - Is unencrypted.

Note Do not use the Rufus utility to burn the Cisco DNA Center ISO image. Use only Etcher, the Linux CLI, or the Mac CLI.

Using Etcher

Step 1 Download and install Etcher (Version 1.3.1 or later), an open-source freeware utility that allows you to create a bootable USB drive on your laptop or desktop.

Linux, macOS, and Windows versions of Etcher are currently available. You can download a copy at https://www.balena.io/etcher/.

Note Use only the Windows version of Etcher on machines running Windows 10, as there are known compatibility issues with older versions of Windows.

Step 2 From the machine on which you installed Etcher, connect a USB drive and then start Etcher.

Step 3 In the top-right corner of the window, click ⚙ and verify that the following Etcher settings are set:

- Auto-unmount on success
- Validate write on success

Step 4 Click **Back** to return to the main Etcher window.

Step 5 Click **Select Image**.

Step 6 Navigate to the Cisco DNA Center ISO image you downloaded previously, select it, and then click **Open**.

The name of the USB drive you connected should be listed under the drive icon (🖴). If it is not:

a. Click **Select drive**.

b. Click the radio button for the correct USB drive, and then click **Continue**.

Step 7 Click **Flash!** to copy the ISO image to the USB drive.

Etcher configures the USB drive as a bootable drive with the Cisco DNA Center ISO image installed.

Using the Linux CLI

Step 1 Verify that your USB flash drive is recognized by your machine:

a) Insert a flash drive into your machine's USB port.

b) Open a Linux shell and run the following command: **lsblk**

The command lists the disk partitions that are currently configured on your machine, as illustrated in the following example:

```
$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda 8:0 0 446.1G 0 disk
├─sda1 8:1 0 1M 0 part
├─sda2 8:2 0 28.6G 0 part /
├─sda3 8:3 0 28.6G 0 part /install2
├─sda4 8:4 0 9.5G 0 part /var
├─sda5 8:5 0 30.5G 0 part [SWAP]
└─sda6 8:6 0 348.8G 0 part /data
sdb 8:16 0 1.8T 0 disk
├─sdb1 8:17 0 426.1G 0 part /data/maglev/srv/fusion
└─sdb2 8:18 0 1.3T 0 part /data/maglev/srv/maglev-system
sdc 8:32 0 3.5T 0 disk
└─sdc1 8:33 0 3.5T 0 part /data/maglev/srv/ndp
sdd 8:48 1 28.7G 0 disk
└─sdd1 8:49 1 12G 0 part
```

c) Confirm that an `sdd` partition (which indicates the presence of a USB flash drive) is listed.

Step 2 Burn the Cisco DNA Center ISO image you downloaded previously onto your USB flash drive: **time sudo dd if=/data/tmp/***ISO-image-filename* **of=/dev/***flash-drive-partition* **bs=4M && sync status=progress**

For example, to create a bootable USB drive using an ISO image named `CDNAC-SW-1.330.iso`, you would run the following command: **time sudo dd if=/data/tmp/CDNAC-SW-1.330.iso of=/dev/sdd bs=4M && sync status=progress**

Using the Mac CLI

Step 1 Determine the disk partition associated with your USB flash drive:

a) Open a Terminal window and run the following command: **diskutil list**

The command lists the disk partitions that are currently configured on your machine.

b) Insert a flash drive into your machine's USB port and run the **diskutil list** command a second time.

The partition that was not listed the first time you ran this command corresponds to your flash drive. For example, let's assume that your flash drive's partition is `/dev/disk2`.

Step 2 Unmount the flash drive's partition: **diskutil unmountDisk** *flash-drive-partition*

Continuing our example, you would enter **diskutil unmountDisk /dev/disk2**

Step 3 Using the Cisco DNA Center ISO image you downloaded previously, create a disk image: **hdiutil convert -format UDRW -o** *Cisco-DNA-Center-version ISO-image-filename*

Continuing our example, let's assume that you are working with a Cisco DNA Center ISO image named `CDNAC-SW-1.330.iso`. You would run the following command, which creates a macOS disk image named `CDNAC-1.330.dmg`: **hdiutil convert -format UDRW -o CDNAC-1.330 CDNAC-SW-1.330.iso**

Important Ensure that the ISO image does not reside on a Box partition.

Step 4 Create a bootable USB drive: **sudo dd if=***macOS-disk-image-filename* **of=***flash-drive-partition* **bs=1m status=progress**

Continuing our example, you would run the following command: **sudo dd if=CDNAC-1.330.dmg of=/dev/disk2 bs=1m status=progress**

The ISO image is about 18 GB in size, so this can take around an hour to complete.

Install the Cisco DNA Center ISO Image

Complete the following procedure to install the Cisco DNA Center ISO image onto your appliance.

Before you begin

Create the bootable USB drive from which you will install the Cisco DNA Center ISO image. See Create a Bootable USB Flash Drive.

Step 1 Connect the bootable USB drive with the Cisco DNA Center ISO image to the appliance.

Step 2 Log in to Cisco IMC and start a KVM session.

Step 3 Power on or power cycle the appliance:

- Choose **Power** > **Power On System** if the appliance is not currently running.
- Choose **Power** > **Power Cycle System (cold boot)** if the appliance is already running.

Step 4 In the resulting pop-up window, click **Yes** to acknowledge that you are about to execute a server control action.

Step 5 When the Cisco logo appears, either press the **F6** key or choose **Macros** > **User Defined Macros** > **F6** from the KVM menu.

The boot device selection menu appears.

Step 6 Select your USB drive and then press **Enter**.

Step 7 In the **GNU GRUB** bootloader window, choose **Cisco DNA Center Installer** and then press **Enter**.

Note The bootloader automatically boots the Cisco DNA Center Installer instead if you do not make a selection within 30 seconds.

The installer reboots and opens the wizard's welcome screen. Depending on whether you are going to configure a primary or secondary cluster node, proceed to Step 4 in either Configure the Primary Node or Configure a Secondary Node.