



Deploy Cisco UCS C-Series rack server

FlexPod

NetApp
June 08, 2021

This PDF was generated from https://docs.netapp.com/us-en/flexpod/express/express-c-series-c190-deploy_deploy_cisco_ucs_c-series_rack_server.html on October 13, 2021. Always check docs.netapp.com for the latest.

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Deploy Cisco UCS C-Series rack server

This section provides a detailed procedure for configuring a Cisco UCS C-Series standalone rack server for use in the FlexPod Express configuration.

Perform the initial Cisco UCS C-Series standalone server setup for CIMC

Complete these steps for the initial setup of the CIMC interface for Cisco UCS C-Series standalone servers.

The following table lists the information needed to configure CIMC for each Cisco UCS C-Series standalone server.

Detail	Detail value
CIMC IP address	<<cimc_ip>>
CIMC subnet mask	\<<cimc_netmask
CIMC default gateway	<<cimc_gateway>>



The CIMC version used in this validation is CIMC 4.0.(4).

All servers

1. Attach the Cisco keyboard, video, and mouse (KVM) dongle (provided with the server) to the KVM port on the front of the server. Plug a VGA monitor and USB keyboard into the appropriate KVM dongle ports.

Power on the server and press F8 when prompted to enter the CIMC configuration.



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Press <F2> BIOS Setup : <F6> Boot Menu : <F7> Diagnostics
Press <F8> CIMC Setup : <F12> Network Boot
Bios Version : C220M5.4.0.4g.0.0712190011
Platform ID : C220M5

Processor(s) Intel(R) Xeon(R) Silver 4114 CPU @ 2.20GHz
Total Memory = 64 GB Effective Memory = 64 GB
Memory Operating Speed 2400 Mhz
M.2 SWRAID configuration is not detected. Switching to AHCI mode.

Cisco IMC IPv4 Address : 10.63.172.160
Cisco IMC MAC Address : 70:69:5A:B5:8D:68

Entering CIMC Configuration Utility ...

92

2. In the CIMC configuration utility, set the following options:

a. Network interface card (NIC) mode:

Dedicated ☒ [X]

b. IP (Basic):

IPV4: ☒ [X]

DHCP enabled: ☐ []

CIMC IP: <<cimc_ip>>

Prefix/Subnet: <<cimc_netmask>>

Gateway: <<cimc_gateway>>

c. VLAN (Advanced): Leave cleared to disable VLAN tagging.

NIC redundancy

None: ☒ [X]

```

Cisco IMC Configuration Utility Version 2.0  Cisco Systems, Inc.
*****
NIC Properties
NIC mode
Dedicated:      [X]          NIC redundancy      None:          [X]
Shared LOM:     [ ]          Active-standby:     [ ]
Cisco Card:
  Riser1:       [ ]          Active-active:      [ ]
  Riser2:       [ ]          VLAN (Advanced)
  MLom:         [ ]          VLAN enabled:     [ ]
  Shared LOM Ext: [ ]        VLAN ID:         1
                                      Priority:        0
IP (Basic)
IPv4:           [X]          IPv6:         [ ]
DHCP enabled    [ ]
CIMC IP:        10.63.172.160
Prefix/Subnet:  255.255.255.0
Gateway:        10.63.172.1
Pref DNS Server: 0.0.0.0
Smart Access USB
Enabled         [ ]
*****
<Up/Down>Selection  <F10>Save  <Space>Enable/Disable  <F5>Refresh  <ESC>Exit
<F1>Additional settings

```

3. Press F1 to see the additional settings:

a. Common properties:

Host name: <<esxi_host_name>>

Dynamic DNS: []

Factory defaults: Leave cleared.

b. Default user (basic):

Default password: <<admin_password>>

Reenter password: <<admin_password>>

Port properties: Use default values.

Port profiles: Leave cleared.

4. Press F10 to save the CIMC interface configuration.

5. After the configuration is saved, press Esc to exit.

Configure Cisco UCS C-Series Servers iSCSI boot

In this FlexPod Express configuration, the VIC1457 is used for iSCSI boot.

The following table lists the information needed to configure iSCSI boot.




An italicized font indicates variables that are unique for each ESXi host.

Detail	Detail value
ESXi host initiator A name	<<var_ucs_initiator_name_A>>
ESXi host iSCSI-A IP	<<var_esxi_host_iscsiA_ip>>
ESXi host iSCSI-A network mask	<<var_esxi_host_iscsiA_mask>>
ESXi host iSCSI A default gateway	<<var_esxi_host_iscsiA_gateway>>
ESXi host initiator B name	<<var_ucs_initiator_name_B>>
ESXi host iSCSI-B IP	<<var_esxi_host_iscsiB_ip>>
ESXi host iSCSI-B network mask	<<var_esxi_host_iscsiB_mask>>
ESXi host iSCSI-B gateway	<<var_esxi_host_iscsiB_gateway>>
IP address iscsi_lif01a	<<var_iscsi_lif01a>>
IP address iscsi_lif02a	<<var_iscsi_lif02a>>
IP address iscsi_lif01b	<<var_iscsi_lif01b>>
IP address iscsi_lif02b	<<var_iscsi_lif02b>>
Infra_SVM IQN	<<var_SVM_IQN>>

Boot order configuration

To set the boot order configuration, complete the following steps:

1. From the CIMC interface browser window, click the Compute tab and select BIOS.
2. Click Configure Boot Order and then click OK.


Cisco Integrated Management Controller

/home / Compute / BIOS

BIOS
Remote Management
Troubleshooting
Power Policies
PID Catalog

[Enter BIOS Setup](#) | [Clear BIOS CMOS](#) | [Restore Manufacturing Custom Settings](#) | [Restore Defaults](#)

Configure BIOS
Configure Boot Order
Configure BIOS Profile

BIOS Properties

Running Version
C220M5.4.0.4g.0.0712190011

UEFI Secure Boot
☐

Actual Boot Mode
Uefi

Configured Boot Mode

Last Configured Boot Order Source
BIOS

Configured One time boot device

Save Changes

Configured Boot Devices

Basic

☒ Advanced

Actual Boot Devices

UEFI: Built-in EFI Shell (NonPolicyTarget)

UEFI: PXE IP4 Intel(R) Ethernet Controller X550 (NonPolicyTarget)

UEFI: PXE IP4 Intel(R) Ethernet Controller X550 (NonPolicyTarget)

Configure Boot Order

3. Configure the following devices by clicking the device under Add Boot Device and going to the Advanced tab:

a. Add Virtual Media:

Name: KVM-CD-DVD

Subtype: KVM MAPPED DVD

State: Enabled

Order: 1

b. Add iSCSI Boot:

Name: iSCSI-A

State: Enabled

Order: 2

Slot: MLOM

Port: 1

c. Click Add iSCSI Boot:

Name: iSCSI-B

State: Enabled

Order: 3

Slot: MLOM

Port: 3

4. Click Add Device.

5. Click Save Changes and then click Close.

Configure Boot Order

Configured Boot Level: Advanced

Basic Advanced

Add Boot Device

- Add Local HDD
- Add PXE Boot
- Add SAN Boot
- Add iSCSI Boot
- Add USB
- Add Virtual Media
- Add PCHStorage
- Add UEFISHELL
- Add SD Card
- Add NVME
- Add Local CDD

Advanced Boot Order Configuration

Selected 1 / Total 3

	Name	Type	Order	State
<input checked="" type="checkbox"/>	KVM-MAPPED-DVD	VMEDIA	1	Enabled
<input type="checkbox"/>	iSCSI-A	ISCSI	2	Enabled
<input type="checkbox"/>	iSCSI-B	ISCSI	3	Enabled

Save Changes Reset Values Close

6. Reboot the server to boot with your new boot order.

Disable RAID controller (if present)

Complete the following steps if your C-Series server contains a RAID controller. A RAID controller is not needed in the boot from SAN configuration. Optionally, you can also physically remove the RAID controller from the server.

1. Under the Compute tab, click BIOS in the left navigation pane in CIMC.
2. Select Configure BIOS.
3. Scroll down to PCIe Slot:HBA Option ROM.
4. If the value is not already disabled, set it to disabled.

BIOS	Remote Management	Troubleshooting	Power Policies	PID Catalog	
I/O	Server Management	Security	Processor	Memory	Power/Performance

Note: Default values are shown in bold.

Reboot Host Immediately: ☒

Intel VT for directed IO:	Enabled ▼
Intel VTD ATS support:	Enabled ▼
LOM Port 1 OptionRom:	Enabled ▼
Pcie Slot 1 OptionRom:	Disabled ▼
MLOM OptionRom:	Enabled ▼
Front NVME 1 OptionRom:	Enabled ▼
MRAID Link Speed:	Auto ▼
PCIe Slot 1 Link Speed:	Auto ▼
Front NVME 1 Link Speed:	Auto ▼
VGA Priority:	Onboard ▼
P-SATA OptionROM:	LSI SW RAID ▼
USB Port Rear:	Enabled ▼
USB Port Internal:	Enabled ▼
IPv6 PXE Support:	Disabled ▼

Legacy USB Support:	Enabled ▼
Intel VTD coherency support:	Disabled ▼
All Onboard LOM Ports:	Enabled ▼
LOM Port 2 OptionRom:	Enabled ▼
Pcie Slot 2 OptionRom:	Disabled ▼
MRAID OptionRom:	Enabled ▼
Front NVME 2 OptionRom:	Enabled ▼
MLOM Link Speed:	Auto ▼
PCIe Slot 2 Link Speed:	Auto ▼
Front NVME 2 Link Speed:	Auto ▼
M.2 SATA OptionROM:	AHCI ▼
USB Port Front:	Enabled ▼
USB Port KVM:	Enabled ▼
USB Port:M.2 Storage:	Enabled ▼

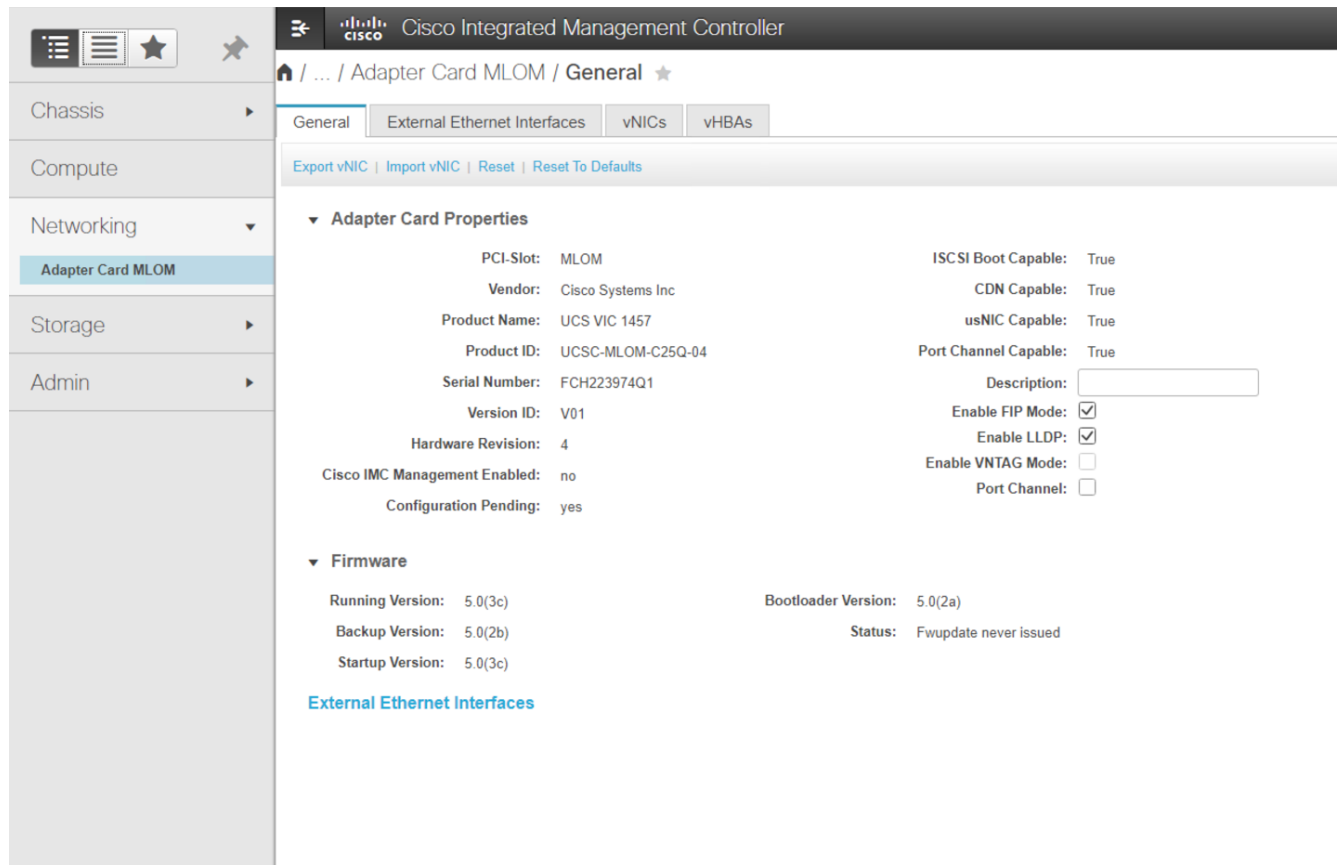
Configure Cisco VIC1457 for iSCSI boot

The following configuration steps are for the Cisco VIC 1457 for iSCSI boot.



The default port-channeling between ports 0, 1, 2, and 3 must be turned off before the four individual ports can be configured. If port channeling is not turned off, only two ports appear for the VIC 1457. Complete the following steps to enable the port channel on the CIMC:

1. Under the networking tab, click the Adapter Card MLOM.
2. Under the General tab, uncheck the port channel.
3. Save the changes and reboot the CIMC.



Create iSCSI vNICs

To create iSCSI vNICs, complete the following steps:

1. Under the networking tab, click Adapter Card MLOM.
2. Click Add vNIC to create a vNIC.
3. In the Add vNIC section, enter the following settings:
 - Name: eth1
 - CDN Name: iSCSI-vNIC-A
 - MTU: 9000
 - Default VLAN: <<var_iscsi_vlan_a>>
 - VLAN Mode: TRUNK
 - Enable PXE boot: Check
4. Click Add vNIC and then click OK.
5. Repeat the process to add a second vNIC:
 - Name the vNIC eth3.
 - CDN Name: iSCSI-vNIC-B
 - Enter <<var_iscsi_vlan_b>> as the VLAN.
 - Set the uplink port to 3.

▼ General

Name:

CDN:

MTU: (1500 - 9000)

Uplink Port: ▼

MAC Address: ☐ Auto
☒

Class of Service: (0 - 6)

Trust Host CoS: ☐

PCI Order: (0 - 7)

Default VLAN: ☐ None
☒ ?

6. Select the vNIC eth1 on the left.

General

External Ethernet Interfaces

vNICs

vHBAs

▼ vNICs

eth0

eth1

eth2

eth3

► vNIC Properties

▼ iSCSI Boot Properties

► General

▼ Initiator

Name: (0 - 222) chars

IP Address:

Subnet Mask:

Gateway:

Primary DNS:

► Primary Target

► Secondary Target

Unconfigure iSCSI Boot

7. Under iSCSI Boot Properties, enter the initiator details:

- Name: <<var_ucsa_initiator_name_a>>
- IP address: <<var_esxi_hostA_iscsiA_ip>>
- Subnet mask: <<var_esxi_hostA_iscsiA_mask>>
- Gateway: <<var_esxi_hostA_iscsiA_gateway>>

▼ vNICs
eth0
eth1
eth2
eth3

► vNIC Properties

▼ iSCSI Boot Properties

► General

▼ Initiator

Name: iqn.1992-01.com.cisco.ucsa-01 (0 - 222) chars

IP Address: 172.21.183.110

Subnet Mask: 255.255.255.0

Gateway: 172.21.183.1

Primary DNS:

Initiator Priority: primary

Secondary DNS:

TCP Timeout: 15 (0 - 255)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

▼ Primary Target

Name: iqn.1992-08.com.netapp.sn.e42fa6b2d2 (0 - 222) chars

IP Address: 172.21.183.105

TCP Port: 3260

Boot LUN: 0 (0 - 65535)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

▼ Secondary Target

Name: iqn.1992-08.com.netapp.sn.e42fa6b2d2 (0 - 222) chars

IP Address: 172.21.183.106

TCP Port: 3260

Boot LUN: 0 (0 - 65535)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

Unconfigure iSCSI Boot

8. Enter the primary target details:

- Name: IQN number of infra-SVM
- IP address: IP address of iscsi_lif01a
- Boot LUN: 0

9. Enter the secondary target details:

- Name: IQN number of infra-SVM
- IP address: IP address of iscsi_lif02a
- Boot LUN: 0



You can obtain the storage IQN number by running the `vserver iscsi show` command.



Be sure to record the IQN names for each vNIC. You need them for a later step. In addition, the IQN names for initiators must be unique for each server and for the iSCSI vNIC.

10. Click Save Changes.

11. Select the vNIC eth3 and click the iSCSI Boot button located on the top of the Host Ethernet Interfaces section.

12. Repeat the process to configure eth3.

13. Enter the initiator details:

- Name: <<var_ucsa_initiator_name_b>>
- IP address: <<var_esxi_hostb_iscsib_ip>>
- Subnet mask: <<var_esxi_hostb_iscsib_mask>>
- Gateway: <<var_esxi_hostb_iscsib_gateway>>

General External Ethernet Interfaces **vNICs** vHBAs

▼ vNICs

- eth0
- eth1
- eth2
- eth3**

► vNIC Properties

▼ iSCSI Boot Properties

► General

▼ Initiator

Name: (0 - 222) chars

IP Address:

Subnet Mask:

Gateway:

Primary DNS:

Initiator Priority:

Secondary DNS:

TCP Timeout: (0 - 255)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

▼ Primary Target

Name: (0 - 222) chars

IP Address:

TCP Port:

Boot LUN: (0 - 65535)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

▼ Secondary Target

Name: (0 - 222) chars

IP Address:

TCP Port:

Boot LUN: (0 - 65535)

CHAP Name: (0 - 49) chars

CHAP Secret: (0 - 49) chars

14. Enter the primary target details:

- Name: IQN number of infra-SVM
- IP address: IP address of iscsi_lif01b
- Boot LUN: 0

15. Enter the secondary target details:

- Name: IQN number of infra-SVM
- IP address: IP address of iscsi_lif02b
- Boot LUN: 0



You can obtain the storage IQN number by using the `vserver iscsi show` command.



Be sure to record the IQN names for each vNIC. You need them for a later step.

16. Click Save Changes.

17. Repeat this process to configure iSCSI boot for Cisco UCS server B.

Configure vNICs for ESXi

To configure vNICs for ESXi, complete the following steps:

1. From the CIMC interface browser window, click Inventory and then click Cisco VIC adapters on the right pane.

2. Under Networking > Adapter Card MLOM, select vNICs tab and then select the vNICs underneath.
3. Select eth0 and click Properties.
4. Set the MTU to 9000. Click Save Changes.
5. Set the VLAN to native VLAN 2.

The screenshot shows the Cisco Integrated Management Controller (CIMC) interface. The breadcrumb navigation is: / ... / Adapter Card MLOM / vNICs. The 'vNICs' tab is selected, and the 'vNIC Properties' section is expanded. Under 'General', the following settings are visible:

- Name: eth0
- CDN: VIC-MLOM-eth0
- MTU: 9000 (range 1500 - 9000)
- Uplink Port: 0
- MAC Address: ☐ Auto, ☒ F8:0F:6F:89:26:CE
- Class of Service: 0 (range 0 - 6)
- Trust Host CoS: ☐
- PCI Order: 0 (range 0 - 7)
- Default VLAN: ☐ None, ☒ 2

6. Repeat steps 3 and 4 for eth1, verifying that the uplink port is set to 1 for eth1.

The screenshot shows the Cisco Integrated Management Controller (CIMC) interface. The breadcrumb navigation is: / ... / Adapter Card MLOM / vNICs. The 'vNICs' tab is selected, and the 'Host Ethernet Interfaces' table is displayed. The table has the following columns: Name, CDN, MAC Address, MTU, usNIC, Uplink Port, CoS, VLAN, VLAN Mode, iSCSI Boot, PXE Boot, Channel, Port Profile, and Uplink Failover. The table contains four rows of data:

Name	CDN	MAC Address	MTU	usNIC	Uplink Port	CoS	VLAN	VLAN Mode	iSCSI Boot	PXE Boot	Channel	Port Profile	Uplink Failover
<input type="checkbox"/> eth0	VIC-MLO...	F8:0F:6F:89:26:CE	9000	0	0	0	2	TRUNK	disabled	enabled	N/A	N/A	N/A
<input type="checkbox"/> eth1	VIC-ISCS...	F8:0F:6F:89:26:CF	9000	0	1	0	3439	TRUNK	enabled	enabled	N/A	N/A	N/A
<input type="checkbox"/> eth2	VIC-MLO...	F8:0F:6F:89:26:D0	9000	0	2	0	2	TRUNK	disabled	enabled	N/A	N/A	N/A
<input type="checkbox"/> eth3	VIC-ISCS...	F8:0F:6F:89:26:D1	9000	0	3	0	3440	TRUNK	enabled	enabled	N/A	N/A	N/A



This procedure must be repeated for each initial Cisco UCS server node and each additional Cisco UCS server node added to the environment.

Next: NetApp AFF storage deployment procedure (part 2)

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