



## **Cisco Collaboration on Virtual Servers (CSR 14)**

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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# CHAPTER 1

## Preparation

- [Introduction, on page 1](#)
- [Example Hardware Configurations for Cisco Collaboration, on page 1](#)
- [Essential Documents, on page 3](#)

## Introduction

This book provides helpful details for Cisco Collaboration applications installing on or migrating to specific examples of virtualization hardware.



**Note** For Cisco Business Edition 6000 and 7000 appliance servers, do not follow the procedures in this document as the appliance servers ship with factory-setup hardware and factory-preloaded software and you will overwrite the preloaded software. Instead, use the Cisco Business Edition 6000 or 7000 Installation Guide at <https://www.cisco.com/c/en/us/support/unified-communications/business-edition-6000/tsd-products-support-series-home.html> or <https://www.cisco.com/c/en/us/support/unified-communications/business-edition-7000/tsd-products-support-series-home.html>.

## Example Hardware Configurations for Cisco Collaboration

The table below is a summary of the example hardware configurations covered in this document. For details on how the latest shipping examples were derived, see [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#Intro](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#Intro)

	Hardware Examples for Small Collaboration	Hardware Examples for Medium Collaboration	Hardware Examples for Large Collaboration
<b>Latest Shipping Examples</b>			
Hyperconverged (Cisco HyperFlex HX-Series)	HyperFlex Edge 220c M5SX Example for Small Collaboration	HyperFlex Edge 220c M5SX Example for Medium Collaboration	HyperFlex Edge 220c M5SX Example for Large Collaboration
Blade Server (Cisco UCS B-Series)	UCS B200 M5 Example for Small Collaboration	UCS B200 M5 Example for Medium Collaboration	UCS B200 M5 Example for Large Collaboration

	<b>Hardware Examples for Small Collaboration</b>	<b>Hardware Examples for Medium Collaboration</b>	<b>Hardware Examples for Large Collaboration</b>
Rack-mount Server (Cisco UCS C-Series)	UCS C220 M5SX Example for Small Collaboration	UCS C240 M5SX Example for Medium Collaboration	UCS C240 M5SX Example for Large Collaboration
<b>Older Examples</b>			
Hyperconverged (Cisco HyperFlex HX-Series)	-	-	HyperFlex 240c M4SX Example for Large Collaboration
Blade Server (Cisco UCS B-Series)			UCS B200 M4 Example for Large Collaboration
Rack-mount Server (Cisco UCS C-Series)	UCS C220 M4S Example for Small Collaboration	UCS C240 M4S2 Example for Medium Collaboration	UCS C240 M4SX Example for Large Collaboration
	UCS C220 M4S Example for Small+ Collaboration (more apps)	-	-
Router Blade Server (Cisco UCS E-Series)	UCS E160S M3 Example for Extra-small UC	-	-
<b>End of Support Examples</b>			
Blade Server (Cisco UCS B-Series)	-	UCS B200 M2 Example for Medium Collaboration	UCS B200 M3 Example for Large Collaboration
	-	UCS B200 M1 Example for Medium Collaboration	UCS B440 M2 Example for Large Collaboration
	-	-	UCS B230 M2 Example for Large Collaboration
Rack-mount Server (Cisco UCS C-Series)	UCS C220 M3S Example for Small Collaboration	UCS C220 M3S Example for Medium Collaboration	UCS C220 M3S Example for Large Collaboration
	UCS C220 M3S Example for Small+ Collaboration (more apps)	UCS C220 M3S Example for Medium Collaboration	UCS C260 M2 Example for Large Collaboration
	UCS C200 M2 Example for Small Collaboration	UCS C210 M2 Example for Medium Collaboration	-
	-	UCS C210 M1 Example for Medium Collaboration	-
Router Blade Server (Cisco UCS E-Series)	UCS E160D M2 Example for Extra-small UC	-	-



# Essential Documents

Refer to the following documents to prepare for installing your hardware. There may be other hardware documents required besides the ones listed here.

- Application Deployment Options—To gain insights to help you plan your deployment, see the *Preferred Architecture guides and the Cisco Validated Designs* that are relevant to your business needs.
- Virtualized Collaboration technical documentation <http://www.cisco.com/go/%20virtualized-collaboration>.
- Collaboration Hardware and VMware compatibility at [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#Compatibility](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#Compatibility).
- Derivation of latest shipping hardware examples for Collaboration at [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#HW\\_Example](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#HW_Example)

Spec sheet for your Cisco hardware. For example (non-exhaustive):

- Cisco HyperFlex HX-E-220M5SX Edge Node Spec Sheet
  - Cisco HyperFlex HX220c M5 Node (HYBRID) Spec Sheet
  - Cisco UCS B200 M5 Blade Server Spec Sheet
  - Cisco UCS C240 M5 Rack Server (Small Form Factor Disk Drive Model) Spec Sheet
  - Cisco UCS C220 M5 Rack Server (Small Form Factor Disk Drive Model) Spec Sheet
- Installation guides for your hardware. For example (non-exhaustive):
- Preinstallation Checklist for Cisco HX Data Platform
  - Preinstallation Checklist for Cisco HyperFlex Edge
  - Cisco HyperFlex Systems Getting Started Guide
  - Cisco HyperFlex Edge Deployment Guide
  - Cisco HX220c M5 HyperFlex Node Installation Guide
  - Cisco UCS B200 M5 Blade Server Installation and Service Note
  - Cisco UCS C240 M5 Server Installation and Service Guide
  - Cisco UCS C220 M5 Server Installation and Service Guide





## CHAPTER 2

# Installation and Configuration

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**Caution**

If your hardware is ordered as a Cisco Business Edition 6000 or Cisco Business Edition 7000 appliance, the server ships with factory-setup hardware and factory-preloaded software. DO NOT follow the configuration procedures that are outlined in this document or you will overwrite the preloaded software. Follow this document only if you must rebuild your server from scratch. Unless you are rebuilding your server from scratch, such as recovering from a catastrophic situation, use the Installation Guides for Cisco Business Edition 6000 or 7000 at <https://www.cisco.com/c/en/us/products/unified-communications/business-edition-6000/%20index.html> or <https://www.cisco.com/c/en/us/products/unified-communications/business-edition-7000/%20index.html>.

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- [Preparing for Hardware Install, on page 5](#)
- [Install Cisco UCS B-Series Examples, on page 6](#)
- [Install Cisco UCS C-Series and E-Series Examples, on page 6](#)
- [Install Cisco UCS C-Series or E-Series Server, on page 7](#)
- [Configure Cisco Integrated Management Controller, on page 8](#)
- [RAID Configuration, on page 9](#)
- [Configure BIOS, on page 13](#)
- [Install Cisco HyperFlex HX-Series Examples, on page 14](#)
- [Install and Configure VMware ESXi 7.0, on page 14](#)
- [Download Virtual Machine Templates \(OVA Templates\), on page 16](#)

## Preparing for Hardware Install

**Caution**

If your hardware is ordered as a Cisco Business Edition 6000 or Cisco Business Edition 7000 appliance, the server ships with factory-setup hardware and factory-preloaded software. DO NOT follow the configuration procedures that are outlined in this document or you will overwrite the preloaded software. Follow this document only if you must rebuild your server from scratch. Unless you are rebuilding your server from scratch, such as recovering from a catastrophic situation, use the Installation Guides for Cisco Business Edition 6000 or 7000 at <https://www.cisco.com/c/en/us/products/unified-communications/business-edition-6000/index.html> or <https://www.cisco.com/c/en/us/products/unified-communications/business-edition-7000/index.html>.

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Cisco suggests that you allocate the following resources before installation:

- Rack space for the hardware (e.g. 1RU or 2RU for UCS C-Series or UCS HX-Series or 6RU for UCS 5108 Blade Server Chassis, plus any required Fabric Interconnect Switches).
- Ethernet ports on a nearby network device for management ports, LAN access and storage access. For specific port counts by hardware example, see [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#HW\\_Example](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#HW_Example)
- An IP address for Cisco IMC or UCS Manager management. If the dedicated port is used, attach it to the appropriate LAN.
- A VLAN ID and IP address for the host. This address is the Cisco UCS Server ESXi management address.
- A hostname and configured DNS, if desired, for the hostname.
- VLAN IDs and IP addresses for the VMs.

## Install Cisco UCS B-Series Examples

- 
- Step 1** Ensure that your UCS Mini or Fabric Interconnect Switches, Blade Server Chassis, and Fabric Extenders are installed in the rack.
- Step 2** Ensure that the network connections of your UCS Mini or Fabric Interconnect Switches are connected to their designated, trunked, switch ports.
- Step 3** Ensure that your Fabric Interconnect Switches are properly connected to your Fabric Extenders.
- Step 4** Ensure that you are able to access the blade remotely using UCS Manager software.
- Step 5** For the remaining server installation, see Cisco documentation at <http://www.cisco.com/go/ucs>.
- 

## Install Cisco UCS C-Series and E-Series Examples

Perform the following tasks to install and configure a virtual machine on a Cisco UCS server.

### Before you begin

Review the “Preparation” chapter in this guide for the installation requirements for your server.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<a href="#">Install Cisco UCS C-Series or E-Series Server, on page 7</a>	Install the Cisco UCS Server.
<b>Step 2</b>	<a href="#">Configure Cisco Integrated Management Controller, on page 8</a>	Power on the server and configure Cisco Integrated Management Controller (CIMC) for remote management.

	Command or Action	Purpose
<b>Step 3</b>	Configure RAID using one of the following procedures: <ul style="list-style-type: none"> <li>• <a href="#">Configure RAID with GUI (UCS C-Series M4 Servers)</a>, on page 10</li> <li>• <a href="#">Configure RAID with GUI (UCS E-Series M2 Servers)</a>, on page 12</li> <li>• <a href="#">Configure RAID with CIMC RAID Configuration Utility (UCS C-Series M5)</a>, on page 11</li> </ul>	Configure the RAID settings on your server using either the Preboot CLI or GUI indicated above.
<b>Step 4</b>	<a href="#">Configure BIOS</a> , on page 13	Configure the BIOS boot order.
<b>Step 5</b>	<a href="#">Install and Configure VMware ESXi 7.0</a> , on page 14	Install and configure the VMware ESXi and the vSphere client.
<b>Step 6</b>	<a href="#">Download Virtual Machine Templates (OVA Templates)</a> , on page 16	Download an OVA for collaboration application software, such as Cisco Unified Communications Manager, onto your virtual machine.
<b>Step 7</b>	Use vSphere to create the VM on the server: <ul style="list-style-type: none"> <li>• <a href="#">Use vSphere to Create the VM for Servers Without Optical Drives</a>, on page 16</li> </ul>	Use vSphere to create the VM on the server. Map the OVA to the VM.
<b>Step 8</b>	<a href="#">Install Cisco Collaboration Applications on VMs</a> , on page 17	Install Collaboration applications such as Cisco Unified Communications Manager on the virtual machine.

## Install Cisco UCS C-Series or E-Series Server

- 
- Step 1** If UCS C-Series, install the server in the rack. If UCS E-Series, install the Cisco ISR in the rack and install the UCS E-Series blade server into the ISR.
- Step 2** Attach the Cisco Integrated Management Controller (Cisco IMC) of the Cisco UCS C-Series or E-Series management port to the designated switch port.
- Step 3** Attach the UCS C-Series LAN on Motherboard (LOM) or NIC ports (or the UCS E-Series external ethernet ports if used instead of internal ethernet ports) to their designated, trunked switch ports.
- Step 4** Attach a VGA console, or a KVM to the VGA and keyboard ports. This step is necessary until Cisco IMC is configured.
- Step 5** Attach UCS C server or Cisco ISR for UCS E server to power supply.
- 

### What to do next

*Configure Cisco Integrated Management Controller*

# Configure Cisco Integrated Management Controller

Configuring the Cisco IMC allows you to perform all subsequent configuration and installation using the Cisco IMC console. In addition, the Cisco IMC provides a measure of hardware monitoring.



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**Note** Make sure to consult Hardware Compatibility in [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#Compatibility](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#Compatibility). To ensure correct BIOS, firmware and driver settings for versions of VMware vSphere ESXi and/or Cisco HyperFlex Data Platform (HXDP) in use.

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## Before you begin

Install Cisco UCS C-Series or E-Series Server

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**Step 1** Power on server.

**Step 2** During boot, press indicated function key (e.g. **F8** for a UCS C-Series) to enter Cisco IMC configuration.

**Step 3** In the Cisco IMC configuration screen, under IPV4 (Basic):

- Uncheck the DHCP enabled check box using the spacebar.
- Enter values for the Cisco IMC IP, Subnet mask, and Gateway.

**Step 4** Leave VLAN (Advanced) unchecked.

**Step 5** Under Default User (Basic), enter the default Cisco IMC user, **admin**, and a password.

**Note** The Cisco IMC username is not configurable and the setting is "admin."

**Step 6** Press indicated function key (e.g. **F10** for a UCS C-Series) to save your settings.

**Step 7** After it is configured, the Cisco IMC is accessible using http. Point a browser to the IP address configured above and log in as admin, using the password configured above.

---

## What to do next

Review the [RAID Configuration](#)

Configure RAID using one of the following methods:

- [Configure RAID with GUI \(UCS C-Series M4 Servers\)](#)
- [Configure RAID with CIMC RAID Configuration Utility \(UCS C-Series M5\)](#)
- [Configure RAID with GUI \(UCS E-Series M2 Servers\)](#)

# RAID Configuration

**Caution**

Example hardware configurations in this document require RAID setup exactly as indicated below. Do not change the RAID configuration on a server ordered as Cisco Business Edition 6000 appliance or Cisco Business Edition 7000 appliance.

**Warning**

While creating data store, you must exactly follow the RAID configuration as shown in the following table or it could degrade your disk read or write performance, impacting installation, upgrade, and database synchronization.

Refer to the link [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/cisco-collaboration-infrastructure.html#Intro](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-infrastructure.html#Intro) for the RAID specifications for the example hardware that you want to configure.

**Important**

If required, use the following settings for the Read and Write policies:

If UCS C-Series, do these settings:

- Set Read Policy to **read ahead = always**.
- Set Write Policy to one of the following:
  - **write back with bbu** – if you are using a RAID card with SuperCap (for example, RAID-9266CV).

**Note**

This write policy is not available on the C240 M3 rack-mount server TRC2

- **always write back** – if you are using a RAID card with legacy Battery Backup (BBU) instead of SuperCap (for example, RAID-9266). This option helps prevent a UC application performance impact if the BBU goes into learning mode or the battery dies. Whenever possible, use the new RAID cards with SuperCap and make sure the UCS is attached to an Uninterruptible Power Supply (UPS).

If UCS E-Series M3, do these settings:

- Strip Size = 64KB
- Drives per Span = 2 (due to E160S M3 TRC1 shipping with two physical disks)
- Span Depth = 1 (due to E160S M3 TRC1 using single LV, 2-disk RAID1)
- Access Policy = Read-Write
- Cache Policy = Direct
- Read Ahead Policy = None

- Requested Write Cache Policy = Write Through
- Current Write Cache Policy = Write Through
- Disk Cache Policy = Unchanged
- Allow Background Init = true
- Auto Snapshot = false
- Auto Delete Oldest = true

## Configure RAID with GUI (UCS C-Series M4 Servers)

Use this procedure if you have an M4 server and want to configure a RAID 5 Array on a virtual drive. For servers with more than one virtual drive, perform these steps for each virtual drive.

### Before you begin

Configure Cisco Integrated Management Controller,

- 
- Step 1** At the LSI screen, press **CTRL-R**.  
The **Virtual Drive Management** screen displays the list of unconfigured hard drives for the virtual drive.
- Step 2** Under Virtual Drive Management screen, highlight the controller, and press **F2** for Operations.
- Step 3** If the drives are unconfigured (and the **Create Virtual Drive** option is not selectable), perform the following from the F2 menu:
- Note** You can skip this step if the **Create Virtual Drive** option is selectable.
- Select **Clear Configuration**, then press **Yes** to clear the configuration.
  - Select **Make JBOD** (Just a Bunch Of Drives).
  - Select **Make Unconfigured Good**.
- Step 4** Select **Create Virtual Drive** and press **Enter**.
- Step 5** For the **RAID Level** option, select **RAID 5**.
- Step 6** Tab to the Drives area. For each hard drive that you want to add to this virtual drive, select the hard drive by pressing the space bar.  
When the drive is selected, an **X** appears in the ID box.
- Step 7** Enter any name for the RAID.
- Step 8** Select **Advanced**.
- Step 9** Set **Read Policy** to **read ahead = always**.
- Step 10** For the **Write Policy**, select **Write Back with BBU** -if you are using a RAID card with SuperCap (RAID-9266CV), for example..  
We recommend that you select 128-KB from the **Strip Size** drop-down list.
- Step 11** For the **I/O Policy**, select **Cached**.
- Step 12** For the **Disk Cache Policy**, select **Enable**.
- Step 13** Tab to the **Initialize** option and select the option by pressing the space bar.  
An X displays in the **Initialize** box.
- Step 14** Select **OK**. Press **Enter**.



- When the Initialization is complete, a popup appears.
- Step 15** Select **OK** and press **Enter**.  
The Virtual Drive Management screen appears.
- Step 16** Press **Ctrl-N** twice to go to **Ctrl Mgmt** tab.
- Step 17** Press **TAB**, until the **Boot Device** field is selected, then press **Enter**.
- Step 18** Select the drive that you want to use to boot the virtual drive.
- Step 19** Press **TAB** multiple times to highlight **Apply**, then press **Enter**.  
The Back Initialization process begins. It may take several minutes to initialize the virtual drive.
- Step 20** Press **Ctrl-N** until the **VD Mgmt** screen is displayed.
- Step 21** If your server has more than one virtual drive, repeat this process for each virtual drive.

---

### What to do next

Configure BIOS

## Configure RAID with CIMC RAID Configuration Utility (UCS C-Series M5)

Use this procedure if you have an M5 server and want to configure a RAID 5 Array on a virtual drive.

### Before you begin

Configure Cisco Integrated Management Controller

- 
- Step 1** Login to Cisco Integrated Management Controller.
- Step 2** From the navigation bar, choose **Cisco 12G Modular RAID controller**.
- Step 3** Select **Physical Drive Info** from the menu.
- Step 4** Select all drives and mark them as unconfigured good.
- Step 5** Select the **Controller Info** menu.
- Step 6** Perform the following for each virtual drive in BE6M/H and BE7M/H.

**Note** BE6M and BE6H have only one virtual drive, whereas BE7M and BE7H has 2 and 4 virtual drives respectively.

- a) Select the **Create Virtual Drive from Unused Physical Drives** link.
- b) Select the RAID level as **RAID 5**.
- c) (Optional) Update the RAID name.
- d) Select the number of drives from the available physical drives.
  - BE6M M5- all 6
  - BE6H M5- all 8
  - BE7M M5- for each of the 2 virtual drives, 7 disks
  - BE7H M5- for each of the 4 virtual drives, 6 disks
- e) Set Access policy as **Read Write**.
- f) Set Read policy as **Always Read ahead**.

- g) Set Cache policy as **Cached IO**.
- h) Set Disk Cache policy as **Enabled**.
- i) Set Write policy as **Write Back Good BBU**.
- j) Select **OK**.
- k) Select the **Virtual Drive Info** menu.
- l) Choose the created virtual drive and select **Initialize** button.
- m) Choose the first virtual drive and select **Set as Boot Drive** button.

---

### What to do next

Configure BIOS

## Configure RAID with GUI (UCS E-Series M2 Servers)

Use this procedure if you have an M2 server and want to configure a RAID 5 Array on a virtual drive.

Configure the UCS E160D M2 for RAID5. At the time of this writing, follow the instructions in the GUI Configuration Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine Integrated Management Controller located at [http://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/e/3-1-1/sw/gui/config/guide/b\\_3\\_1\\_1\\_GUI\\_Config\\_Guide/b\\_3\\_x\\_GUI\\_Config\\_Guide\\_chapter\\_0100.html#task\\_2F69DDBC07194A419240DD1B09A8689B](http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/e/3-1-1/sw/gui/config/guide/b_3_1_1_GUI_Config_Guide/b_3_x_GUI_Config_Guide_chapter_0100.html#task_2F69DDBC07194A419240DD1B09A8689B)

### Before you begin

Configure Cisco Integrated Management Controller

- 
- Step 1** In the **Integrated Management Controller** Navigation pane, click the **Server** tab.
  - Step 2** 2. On the Server tab, click **RAID**.
  - Step 3** 3. In the tabbed menu of the Storage Cards area, click the **Virtual Drive Info** tab.
  - Step 4** 4. In the Actions area of the **Virtual Drive Info** tab, click **Create**.
  - Step 5** 5. Complete the following fields:
    - a) Click and drag all 3 disk drives from Available Drives table to Selected Drives table. If you don't have three disk drives, your hardware configuration does not match the Tested Reference Configuration.
    - b) In RAID Level drop-down list, select RAID 5.
    - c) Set Strip Size to 64 KB.
    - d) Set Drive Cache to Disable.
    - e) Set Access Policy to Read-Write.
    - f) Check/enable Set this Virtual Drive Bootable.
    - g) Uncheck/disable Use the Remaining Drive as Hot Spare.
-

## Manage Impact of Cisco RAID Operations

Cisco Redundant Array of Independent Disks (RAID) Controller conducts background operations such as Consistency Check (CC), Background Initialization (BGI), Rebuild (RBLD), Volume Expansion & Reconstruction (RLM) and Patrol Read (PR).

These background operations are expected to limit their impact to I/O operations. However, there have been cases of higher impact during some of the operations like Format or similar input output operations. In these cases, both the I/O operation and the background operations may consume large amount of CPU resources. It is recommended that CC and Patrol Read jobs are scheduled when the load is relatively less. If there are Call manager servers where huge load is running at the same time, it is recommend that you limit possible concurrent background operations and other intensive I/O operations of Call Manager.

## Configure BIOS

You cannot select the hard drive in the BIOS Boot Order menu until the first logical volume has been defined. After RAID is configured, you need to make the second boot device the hard drive, as described in the following procedure:

### Before you begin

Configure RAID with one of the following methods:

- [Configure RAID with GUI \(UCS C-Series M4 Servers\)](#)
- [Configure RAID with CIMC RAID Configuration Utility \(UCS C-Series M5\)](#)
- [Configure RAID with GUI \(UCS E-Series M2 Servers\)](#)

- 
- Step 1** Press indicated function key (e.g. **F2** for a UCS C-Series) during boot to enter BIOS setup.
- Step 2** Move the cursor to **Boot Options**.
- Step 3** Verify that the CD ROM, or Cisco Virtual CD/DVD (Virtual CD/DVD drive), is selected for Boot Option #1.
- Step 4** Verify that the hard drive (the RAID 5 Array) is selected for Boot Option #2.
- Step 5** Verify that virtual threading is enabled in advanced CPU options.
- Step 6** Verify that VT I/O Redirection is disabled in the CPU options.

The server will now try to boot the CD ROM drive first and the hard drive second.

---

### What to do next

Install and Configure VMware ESXi 7.0

# Install Cisco HyperFlex HX-Series Examples

An example deployment including physical node placement, cabling, VLAN/subnet/IP address planning, and VM placement is available at [http://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/virtualization-collaboration-storage-design-requirements.html#hyperflex](http://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/virtualization-collaboration-storage-design-requirements.html#hyperflex).



---

**Note** This TRC setup process assumes HX Release 2.6 and VMware vSphere ESXi 7.0.

---

## Before you begin

For installation requirements, review [Essential Documents, on page 3](#) and [Preparing for Hardware Install, on page 5](#). Also refer to the Preinstallation Checklist for Cisco HX Data Platform and Cisco HyperFlex Systems Installation Guide for VMware ESXi Release 2.6, available at, <https://www.cisco.com/c/en/us/support/hyperconverged-systems/hyperflex-hx-data-platform-software/products-installation-guides-list.html>

Perform the following tasks to install and configure a virtual machine on a Cisco HyperFlex TRC node.

- 
- Step 1** **Verify installation readiness, set up your Fabric Interconnect Switches (if any), and prepare for HyperFlex node installation.**
- Follow instructions in the *Cisco HyperFlex Systems Getting Started Guide, Release 2.6* at <https://www.cisco.com/c/en/us/support/hyperconverged-systems/hyperflex-hx-data-platform-software/products-installation-guides-list.html>
- Step 2** **Set up each HyperFlex node.** Follow instructions in the *Cisco HX240c M5 HyperFlex Node Installation Guide, Release 2.6* at <http://www.cisco.com/c/en/us/support/hyperconverged-systems/hyperflex-hx-series/products-installation-guides-list.html>.
- Step 3** Complete procedure *Download Virtual Machine Templates (OVA Templates)*.
- Step 4** Download an OVA for collaboration application software, such as Cisco Unified CM onto your virtual machine.
- Step 5** Use vSphere to create the VM on the server:
- Use vSphere to Create the VM for Servers Without Optical Drives.
- Step 6** Install Cisco Collaboration Applications on VMs.
- Step 7** Install Collaboration applications such as Cisco Unified CM on the virtual machine.
- 

## Install and Configure VMware ESXi 7.0

The following sections provide a sequence of steps for bringing ESXi 7.0 into service at the customer site.

### Preparation for ESXi 7.0 Installation

Before you install ESXi 7.0, make sure these tasks are completed:

- The BIOS boot order is configured to boot the CD-ROM or virtual CD/DVD first.

- Each virtual drives on your servers has been configured with a RAID array. For RAID configuration details for your, see [RAID Configuration, on page 9](#)

For additional information about ESXi storage configurations, see [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/collaboration-virtualization-hardware.html](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/collaboration-virtualization-hardware.html).

For servers ordered as Cisco Business Edition 6000 or Cisco Business Edition 7000, these steps have been performed by the factory prior to shipping.

### Install ESXi 7.0

- To determine which ESXi version is required for the application you are intending to deploy, see [https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/uc\\_system/virtualization/virtualization-software-requirements.html](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/virtualization-software-requirements.html)
- Install ESXi 7.0 on one of the RAID arrays. If there are multiple RAID arrays, any is acceptable but we recommend that you install ESXi on the first.



---

**Note** You can install ESXi on the first RAID array. It is not required that you install ESXi on both arrays.

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- ESXi Installation takes less than 5 minutes. After installation is complete, remove the install CD or the virtual DVD and reboot the machine.
- Following a reboot, a gray and yellow ESXi console is displayed with two options:
  - F2 to customize the system
  - F12 to restart or halt the system
- At this point, press **F2** and configure the system in accordance with your network.

### Configuring LAN on Motherboard (LOM) NICs and Virtual Switches

The following options may be configured:

- Simple vSwitch0 (default VMware virtual switch)
- For larger data centers using vCenter, you can configure distributed virtual switches (for example, distributed vSwitch or the Nexus 1000V distributed virtual switch)
- For all options, you must define a port group for each VLAN running on the virtual switch. These port groups are selected when configuring a Virtual Machine network adapter, to place the virtual machine on a given LAN.

### What to Do Next

Download Virtual Machine Templates (OVA Templates)

# Download Virtual Machine Templates (OVA Templates)

The configuration of a Cisco Collaboration application virtual machine must match a supported virtual machine template.

## Before you begin

Install and Configure VMware ESXi 7.0

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OVA files for Cisco Collaboration applications may be found at [software.cisco.com](http://software.cisco.com). For assistance with finding the right download link, see the application pages on <http://www.cisco.com/go/virtualized-collaboration>.

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## What to do next

Create the VM for your server type:

- Use vSphere to Create the VM for Servers with Optical Drives
- Use vSphere to Create the VM for Servers Without Optical Drives

## Software Installation Image Delivery

For Business Edition appliances, virtualization software and application software is factory-loaded. For a summary of what files are provided, see the preload file summaries at Release Notes at <http://www.cisco.com/go/be6000> or <http://www.cisco.com/go/be7000>.

For other hardware, see the installation guides of the hardware and applications for how the software is delivered.

## Use vSphere to Create the VM for Servers Without Optical Drives

Cisco provides templates on a URL to download and transfer to a host. Use the following procedure to use vSphere create the VM for servers without optical drives.

### Before you begin

Download Virtual Machine Templates (OVA Templates)

- 
- Step 1** Deploy a blank virtual machine from the appropriate OVA template for your application using the [cisco.com](http://www.cisco.com) URL as the source.
  - Step 2** Associate the bootable application installation ISO file with the newly deployed VM.
  - Step 3** Set up the BIOS boot order. For instructions, see the release notes for the OVA that you are deploying.
  - Step 4** Map the ISO-format application installer file from the media kit to the physical or virtual CD/DVD drive..
  - Step 5** Save the BIOS settings and boot.

The normal installation screen for your application opens.

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### What to do next

Install Cisco Collaboration Applications on VMs

## Install Cisco Collaboration Applications on VMs

### Installing Cisco Unified Communications Manager

For details on how to install Cisco Unified Communications Manager, refer to the *Installation Guide for Cisco Unified Communications Manager* at the following URL:

<http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-installation-guides-list.html>

### Installing Cisco Business Edition 6000

For details on how to install Cisco Business Edition 6000, refer to the *Installation Guide for Cisco Business Edition 6000* at the following URL:

<https://www.cisco.com/c/en/us/support/unified-communications/business-edition-6000/products-installation-guides-list.html>

### Installing Cisco Business Edition 7000

For details on how to install Cisco Business Edition 7000, refer to the *Installation Guide for Cisco Business Edition 7000* at the following URL:

<https://www.cisco.com/c/en/us/support/unified-communications/business-edition-7000/products-installation-guides-list.html>







## CHAPTER 3

# Migration

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- [Essential Documentation Link](#), on page 19

## Essential Documentation Link

See the following essential documents for details on:

- hardware implications of version upgrades or virtual-to-virtual (V2V) migrations of applications
- Hardware migration options

[Upgrade and Migration Guide for Cisco Unified Communications Manager and IM and Presence Service, Release 14](#)

[Installation Guide for Cisco Unified Communications Manager and the IM and Presence Service, Release 14](#)

[Upgrade and Migration Guide for Cisco Unified Communications Manager and the IM and Presence Service, Release 12.5x](#)

[Prime Collaboration Deployment Administration Guide, Release 14](#)

[Installation Guide for Cisco Unified Communications Manager and the IM and Presence Service, Release 12.5\(1\)](#)





## CHAPTER 4

# Administration

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- [Rack-Mount Server Daily Operations, on page 21](#)
- [Monitoring From Virtual Machine, on page 21](#)
- [Monitoring From Cisco Integrated Management Controller, on page 22](#)
- [Monitoring From vSphere Client and vCenter, on page 22](#)
- [Server Health Monitoring From ESXi, on page 22](#)
- [Disk Management for Cisco UCS Rack-Mount Servers, on page 22](#)
- [Automatic Update Statistics, on page 23](#)
- [Related Documentation, on page 23](#)

## Rack-Mount Server Daily Operations

At this point the application is installed and in operation. Daily operations for applications are similar to an installation on a physical server, including:

- Application configuration and integration with other applications
- RTMT performance monitoring
- SNMP monitoring and alarms
- DRS backup and restore
- CDR collection
- Device, trunk, gateway configuration and monitoring

## Monitoring From Virtual Machine

Applications running in a VM have no ability to monitor the physical hardware. Any hardware monitoring must be done from the Cisco Integrated Management Controller, ESXi plugins, vCenter or by physical inspection (for flashing LEDs, and so on).

Monitoring of hardware is the customer's responsibility. It is assumed the customer is familiar with virtualized environments and knows how to manage hardware in these environments.

## Monitoring From Cisco Integrated Management Controller

The Cisco Integrated Management Controller (Cisco IMC) provides the following hardware monitoring:

- An overview of CPU, memory, and power supply health
- An overview of hardware inventory, including CPUs, Memory, Power Supplies, and Storage
- Monitoring of sensors for Power Supplies, Fans, Temperature, Voltage, and Current
- A system event log that contains BIOS and Sensor entries
- LSI MegaRAID controller information, which includes physical and virtual drive layout and Battery Backup Unit information from the Inventory > Storage tab. This information was usually accessible for earlier UCS servers only by installing the MegaRAID plugin from ESXi.

For additional details, go to <https://www.cisco.com/c/en/us/products/servers-unified-computing/index.html>.

## Monitoring From vSphere Client and vCenter

The vSphere Client provides the following monitoring:

- Hardware and system alarms defined under the Alarms tab in the vSphere Client when logged in to vCenter.
- VM resource usage under the Virtual Machines tab in the vSphere Client, as well as under the Performance tab for each VM.
- Host performance and resource usage under the Performance tab for the host.

For more information, go to <http://www.VMware.com>.

## Server Health Monitoring From ESXi

You can monitor server health from ESXi by logging into the ESXi console and inspecting system `/var/log/messages` for telltale entries.

## Disk Management for Cisco UCS Rack-Mount Servers

For details on the drive specifications for your Cisco UCS server, refer to *RAID Configuration*.

Disks are hot-swappable. This does not mean that you will be able to swap drives ad-hoc after a failure. A process exists to swap drives. When a drive fails, you need to follow these steps:



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**Note** If you have an M4 server, refer to [http://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/c/hw/C240M4/install/C240M4.pdf](http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C240M4/install/C240M4.pdf).

---

1. Reboot and enter the Preboot CLI.
2. Mark the defective drive for removal using `-PdPrpRmv -physdrv [<encl>:<slot>] -a0`.
3. Replace the drive.

The RAID array is rebuilt automatically when the replacement disk is inserted.



**Note** Although Preboot CLI is recommended, you can also perform this task through the LSI MegaRaid GUI, where you can swap drives out without having to power-cycle the server to get into the preboot CLI. However, this method requires you to procure a separate machine (Windows or Linux) on the same subnet as the ESXi host, installed with the LSI MegaRaid utility.

## Automatic Update Statistics

Communications Manager uses Automatic Update Statistics, an intelligent statistics update feature that monitors the changes made in the database tables and updates only tables that need statistic updates. This feature saves considerable bandwidth, especially on VMware deployments of Communications Manager. Automatic Update Statistics is the default indexing method.

For more information about database services, see the *Cisco Unified Serviceability Administration Guide*.

## Related Documentation

- **Cisco UCS documentation:** <http://www.cisco.com/go/ucs>
- **Cisco HyperFlex documentation:** [www.cisco.com/go/hyperflex](http://www.cisco.com/go/hyperflex)
- The official list of supported servers for Cisco Unified Communications Manager releases is available at the following URL: <http://www.cisco.com/go/virtualized-collaboration>
- Technical specifications of Cisco Unified Communications virtualized servers are available at the following URL: <http://www.cisco.com/go/virtualized-collaboration>
- TCP and UDP ports for vCenter Server, ESX hosts, and other management access for other network components are listed in article 1012382 at the following URL:  
<http://kb.vmware.com>
- The Cisco Unified Communications Virtualization docwiki, which discusses deployment of other Cisco Unified Communications products on virtualized servers, is available at the following URL:  
<http://www.cisco.com/go/virtualized-collaboration>

