Cisco Collaboration on Virtual Servers

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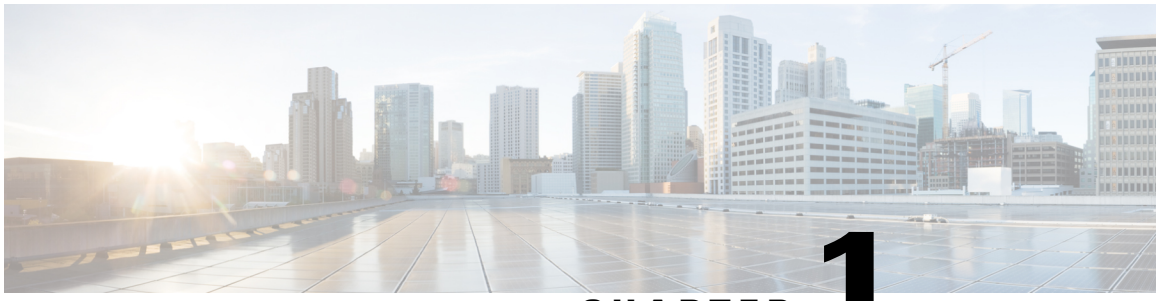

CHAPTER 1

Preparation

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Introduction

This book provides an overview of how to install and migrate to virtual servers for Cisco Collaboration applications.

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 www.cisco.com/go/be6000 or www.cisco.com/go/be7000. Follow this document only if you must rebuild your appliance server from scratch, such as after hardware replacement or recovering from a catastrophic event.

Installation and Migration Scenarios

For ordering information and part numbers, see the Business Edition datasheets at www.cisco.com/go/be6000 or www.cisco.com/go/be7000 and the Tested Reference Configurations at http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware#Table_1_-_UC_on_UCS_TRCs.

Table 1: UCS C-Series Tested Reference Configurations

TRC Capacity	Form Factor	UC on UCS TRC Name*	Packaged Collaboration Solution Name**
Extra-Large TRC	2RU rack-mount server	UCS C260 M2 TRC#1	N/A
Large TRC	2RU rack-mount server	UCS C240 M4SX TRC#1	Cisco Business Edition 7000H (M4)
		UCS C240 M3S TRC#1	N/A
Medium TRC	2RU rack-mount server	UCS C240 M4S2 TRC#1	Cisco Business Edition 7000M (M4)
	2RU rack-mount server	UCS C240 M3S TRC#2	Cisco Business Edition 7000M (M3)
	1RU rack-mount server	UCS C220 M3S TRC#1	N/A
	2RU rack-mount server	UCS C210 M2 TRCs #1,2,3	N/A
		UCS C210 M1 TRCs #1,2,3,4	N/A
Small Plus TRC	1RU rack-mount server	UCS C220 M4S TRC#2	Cisco Business Edition 6000H (M4)
		UCS C220 M3S TRC#3	Cisco Business Edition 6000H (M3)
Small TRC	1RU rack-mount server	UCS C220 M4S TRC#1	Cisco Business Edition 6000M (M4)
		UCS C220 M3S TRC#2	Cisco Business Edition 6000M (M3)
		UCS C200 M2 TRC#1	Cisco Business Edition 6000M (M2)

* When purchased as a UC on UCS TRC, there is no factory-setup or factory-installation of the hardware or software. Follow instructions in this doc for first time setup or rebuilds.

** When purchased as a Cisco Business Edition solution, the hardware is factory-setup and the software is factory-installed. For first-time-setup, DO NOT follow the instructions in this doc or you will overwrite the preload. Instead, follow the Cisco Business Edition Installation Guides at either www.cisco.com/go/be6000 or www.cisco.com/go/be7000 . Follow the instructions in this document only if you have to rebuild a BE6000 or BE7000 server from scratch.

Table 2: UCS B-Series Tested Reference Configurations

TRC Capacity	Form Factor	UC on UCS TRC Name
Extra-Extra-Large Blade TRC	Full-width blade server	UCS B440 M2 TRC#1
Extra-Large Blade TRC	Half-width blade server	UCS B230 M2 TRC#1
Large Blade TRC	Half-width blade server	UCS B200 M4 TRC#1
		UCS B200 M3 TRC#1
Medium Blade TRCs	Half-width blade server	UCS B200 M2/M1 TRCs

Table 3: UCS E-Series Tested Reference Configurations

TRC Capacity	Form Factor	UC on UCS TRC Name	Packaged Collaboration Solution Name**
Extra-Small TRC	Double-wide blade server for Cisco Integrated Services (Cisco ISR)	UCS E160D M2 TRC#1	Blade server component of Cisco Business Edition 6000S (M2) appliance
Extra-Small TRC	Single-wide blade server for Cisco Integrated Services (Cisco ISR)	UCS E160S M3 TRC#1	N/A

* When purchased as a UC on UCS TRC, the hardware definition is only for the UCS E-Series blade server and not for the Cisco ISR router housing the server. There is also no factory-setup or factory-installation of the hardware or software. Follow instructions in this doc for first time setup or rebuilds of the blade server. See http://www.cisco.com/go/isr for documentation on Cisco ISR routers.

** When purchased as a Cisco Business Edition solution, the Cisco ISR router and UCS E-Series blade server hardware are factory-setup and the software is factory-installed. For first-time-setup, DO NOT follow the instructions in this doc or you will overwrite the preload. Instead, follow the Cisco Business Edition 6000 Installation Guides at http://www.cisco.com/go/be6000. Follow the instructions in this document only if you have to rebuild a BE6000 or BE7000 server from scratch.

System Requirements

- This document is for virtualized Cisco UCS servers configured as Tested Reference Configurations (TRCs) for the UC on UCS. For more information see http://www.cisco.com/go/uconucs, and http://www.cisco.com/go/uc-virtualized.
- For newly purchased/installed Cisco Business Edition 6000 and 7000 appliance servers, do not follow the procedures in this document because your server ships with factory-setup hardware and preloaded

software. If you follow the procedures in this document, you will overwrite the preloaded software and licensing. Instead, use the Cisco Business Edition 6000 or 7000 Installation Guide at www.cisco.com/go/be6000 or www.cisco.com/go/be7000. Follow this document only if you must rebuild your server from scratch such as recovering from a catastrophic event.

- If you want to deploy Cisco Collaboration on a virtualized 3rd-party Specs-based server or Cisco UCS Specs-based server, see the application support information at http://www.cisco.com/go/uc-virtualized, and the Specs-based support information at http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware. Installation procedures will vary from this document and can be found at vmware.com, http://www.cisco.com/go/ucs, or the 3rd-party server vendor's website.
- Additional detail on supported virtualization software vendors, products, versions and features can be found at http://docwiki.cisco.com/wiki/Unified_Communications_VMWare_Requirements.

To run Cisco UCS servers, your system must meet the requirements listed in the following table.

Table 4: System Requirements

Parameter	Value
Supported Application Co-residency and Virtual-to-Physical Sizing	See the application links at http://www.cisco.com/go/uc-virtualized. See sizing information at http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines and http://www.cisco.com/go/vmpt.
Supported Virtual Machine Configuration	Refer to the documentation at: http://www.cisco.com/go/uc-virtualized To ensure that the VMs are correctly configured, use the Cisco-provided OVA template to create VMs. Refer to Download Virtual Machine Templates (OVA Templates), on page 25 For more information about virtual machine configurations, refer to the documentation at: http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines#OVAs.2C_VMs.2C_Users_and_Servers .
Supported virtualization software vendors, products, versions and features	See http://docwiki.cisco.com/wiki/Unified_Communications_VMWare_Requirements
Supported hardware	See http://www.cisco.com/go/uc-virtualized and http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware.
CPU and RAM over subscription	None
Storage capacity and IOPS requirements	See http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware#Storage and the application links at http://www.cisco.com/go/uc-virtualized

To operate Cisco UCS servers successfully, you should have the experience and skills to manage a host server running VMware ESXi.

External Media for Cisco Collaboration Applications

Cisco UCS servers use “soft media” such as ISO or FLP (virtual floppy) for procedures that require external media (such as installation and upgrade). Physical external devices such as USB drives are not supported.

Note Backup and restore for Cisco Collaboration applications are not supported on soft media.

The virtual USB interface is not supported for Cisco Collaboration applications running on VMware. The following are examples of differences in external media support between non-virtualized Cisco Media Convergence servers and virtualized Cisco UCS servers:

- Install logs cannot be dumped to a USB key. These logs are dumped to a file through the serial port of the VM.
- The answer file that is generated by the Answer File Generator (platformConfig.xml) cannot be read from a USB key to perform an unattended installation. Instead, you must put the answer file into an FLP image to be mounted in the floppy drive.
- USB tape drive backup is not supported. Use SFTP instead.
- Music On Hold through a USB connection is not supported. Use multicast MOH instead.

Cisco Unified Communications Manager VMware Tools and ESXi

VMware Tools are specialized drivers for virtual hardware that is installed in the UC applications when they are running virtualized. It is very important that the VMware tools version running in the UC application be in sync with the version of ESXi being used. For information on how to upgrade the tools, see:

http://docwiki.cisco.com/wiki/VMware_Tools.

Requirements for Cisco UCS Server Installation

This section describes how to prepare to install a Cisco UCS Server in a standalone configuration (it is not in a datacenter).

Caution If your server is ordered as a Cisco Business Edition 6000 or Cisco Business Edition 7000, 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 www.cisco.com/go/be6000 or www.cisco.com/go/be7000.

Cisco suggests that you allocate the following resources before installation:

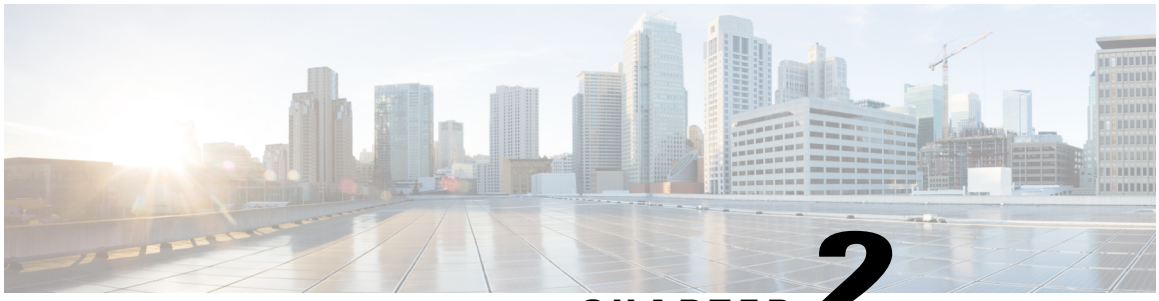
- Space in a rack to receive the Cisco C-Series rack-mount server, Cisco ISR housing UCS E-Series blade server, or UCS 5100 Blade Server Chassis housing UCS B-Series blade server and its UCS 6300/6200/6100 Fabric Interconnect Switches.
- Ethernet ports on a switch close to the Cisco UCS Server. For port details specific to your server, see the below table.
- 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.

Table 5: Ethernet Port Allocations for a Cisco UC on UCS Servers

Cisco UCS Server	Ethernet Port Allocation
UCS C240 M4SX TRC (Large TRC / BE7000H M4)	Eleven ethernet ports • One port for dedicated CIMC management • Eight ports for quad-port Intel NICs • Two ports for the LOM, if required.
UCS C240 M3S TRC1 (Large TRC)	Eleven ethernet ports: • One port for dedicated CIMC management • Eight ports for quad-port Intel NICs • Two ports for the LOM, if required.
UCS C240 M4S2 TRC (Medium TRC / BE7000M M4)	Eleven ethernet ports • One port for dedicated CIMC management • Eight ports for quad-port Intel NICs • Two ports for the LOM, if required.
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	Eleven ethernet ports: • One port for dedicated CIMC management • Eight ports for quad-port Intel NICs • Two ports for the LOM, if required.

Cisco UCS Server	Ethernet Port Allocation
UCS C220 M4S TRCs (Small TRC / BE6000M M4 and Small Plus TRC / BE6000H M4)	**For Small TRC:** Three ethernet ports: • One port for dedicated CIMC management • Two ports for the LOM, if required. **For Small Plus or Medium TRC:** Seven ethernet ports: • One port for dedicated CIMC management • Four ports for quad-port Intel NICs • Two ports for the LOM, if required.
UCS C220 M3S TRCs (Small TRC / BE6000M M3, Small Plus TRC / BE6000H M3 and Medium TRC)	**For Small TRC:** Three ethernet ports: • One port for dedicated CIMC management • Two ports for the LOM, if required. **For Small Plus or Medium TRC:** Seven ethernet ports: • One port for dedicated CIMC management • Four ports for quad-port Intel NICs • Two ports for the LOM, if required.
UCS E160D M2 TRC1 (Extra-Small TRC / BE6000S M2)	3 "external" (front of E160D M2) ethernet ports: • One "M" port for dedicated CIMC management (CIMC is also accessible via the "internal" ports described below) • Two ports for LAN access • The two "internal" ports of the UCS E-Series server are to ISR backplane for connectivity to other ISR interfaces.
UCS E160S M3 TRC1(Extra-Small TRC)	3 "external" (front of E160D M2) ethernet ports: • One "M" port for dedicated CIMC management (CIMC is also accessible via the "internal" ports described below) • Two ports for LAN access • The two "internal" ports of the UCS E-Series server are to ISR backplane for connectivity to other ISR interfaces.

Cisco UCS Server	Ethernet Port Allocation
End-of-Sale UCS C260 M2 TRC1 (Extra-Large TRCs)	Ten ethernet ports: • One port for dedicated Cisco Integrated Management Controller (CIMC) management • Four ports for quad-port Intel NICs • Two ports for the LAN on Motherboard (LOM) • Two 10-Gigabit Modular LOM
End of Sale UCS C210 M2/M1 TRCs (Medium TRCs)	Seven ethernet ports • One port for dedicated CIMC management • Four ports for quad-port Intel NICs • Two ports for the LOM
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	Three ethernet ports: • One port for dedicated CIMC management • Two ports for the LOM



CHAPTER 2

Installation and Configuration

Caution The Extra-Small TRC (UCS E160D M2 TRC1), Small TRCs (UCS C220 M3S TRC2, UCS C240 M4S TRC1) and the Small Plus TRCs (UCS C220 M3S TRC3, UCS C220 M4S TRC2) are preloaded with software if purchased as part of Cisco Business Edition 6000.

Certain Medium TRCs (UCS C240 M3S TRC2, UCS C240 M4S2 TRC1) and Large TRCs (UCS C240 M4SX TRC1) are preloaded with software if purchased as part of Cisco Business Edition 7000.

Install Cisco UCS B-Series Blade Server, on page 9

Cisco UCS C-Series and E-Series Server Installation and Configuration Task Flow, on page 10

- Install Cisco UCS B-Series Blade Server, page 9
- Cisco UCS C-Series and E-Series Server Installation and Configuration Task Flow, page 10

Install Cisco UCS B-Series Blade Server

Procedure

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.

Cisco UCS C-Series and E-Series Server Installation and Configuration Task Flow

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

Before You Begin

Review chapter 1 of this book for the installation requirements for your server:

- Preparation, on page 1

Procedure

	Command or Action	Purpose
Step 1	Install Cisco UCS C-Series or E-Series Server , on page 11	Install the Cisco UCS Server.
Step 2	Configure Cisco Integrated Management Controller, on page 11	Power on the server and configure Cisco Integrated Management Controller (CIMC) for remote management.
Step 3	Configure RAID using one of the following procedures: • Configure RAID with Preboot CLI (UCS C-Series M2 or M3 Servers) , on page 15 • Configure RAID with GUI (UCS C-Series M3 Servers), on page 20 • Configure RAID with GUI (UCS C-SeriesM4 Servers), on page 21 • Configure RAID with GUI (UCS E-Series M2 Servers), on page 22 • Configure RAID with GUI (UCS C-Series M3 Servers), on page 20	Configure the RAID settings on your server using either the Preboot CLI or GUI indicated above.
Step 4	Configure BIOS, on page 23	Configure the BIOS boot order.
Step 5	Install and Configure VMware ESXi, on page 24	Install and configure the VMware ESXi and the vSphere client.
Step 6	Download Virtual Machine Templates (OVA Templates), on page 25	Download an OVA for collaboration application software, such as Cisco Unified Communications Manager, onto your virtual machine.

	Command or Action	Purpose
Step 7	Use vSphere to create the VM on the server: • Use vSphere to Create the VM for Servers with Optical Drives, on page 26 • Use vSphere to Create the VM for Servers Without Optical Drives, on page 26	Use vSphere to create the VM on the server. Map the OVA to the VM.
Step 8	Install Cisco Collaboration Applications on VMs, on page 27	Install Collaboration applications such as Cisco Unified Communications Manager on the virtual machine.

Install Cisco UCS C-Series or E-Series Server

Procedure

Step 1 If UCS C-Series, install the server in the rack. If UCS E-Series, install the Cisco ISR in the rack and installe 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, on page 11

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.

Note Virtualized Collaboration Applications does not prescribe any specific version of BIOS. The current version is assumed to be compatible with the latest release of ESXi. Business Edition appliances ship with BIOS version, configuration and settings that are compatible with the factory-preloaded release of ESXi at time of appliance build. Non-appliance servers, or appliances that have been in the field for extended period of time, may require modification of these settings. See the UCS Release, CIMC version or firmware package in UCS Interoperability Matrix as well as UCS OS drivers for ESXi.

Before You Begin

Install Cisco UCS C-Series or E-Series Server , on page 11

Procedure

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):

a) Uncheck the DHCP enabled check box using the spacebar.

b) 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 table in RAID Configuration, on page 13

Configure RAID using one of the following three methods:

- Configure RAID with Preboot CLI (UCS C-Series M2 or M3 Servers) , on page 15
- Configure RAID with GUI (UCS C-Series M3 Servers), on page 20
- Configure RAID with GUI (UCS C-SeriesM4 Servers), on page 21
- Configure RAID with GUI (UCS E-Series M2 Servers), on page 22

RAID Configuration

Caution To be supported as a Tested Reference Configuration instead of UCS Specs-based, the RAID must be setup exactly as indicated below. Do not change the RAID configuration on a server ordered as Cisco Business Edition 6000 or Cisco Business Edition 7000.

Refer to the following table for the RAID specifications for the type of virtual machine that you want to configure.

TRC	Information
UCS C240 M3S TRC1 (Large TRC)	• Two virtual drives (VD) with RAID-5 arrays • Eight 300 GB hard drives for each VD
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	• Two virtual drives (VD) with RAID-5 arrays • Six 300-GB hard drives for each VD
UCS C220 M3S (Medium TRC)	• One virtual drive with a RAID-5 array • Eight 300-GB hard drives
UCS C220 M3S TRC3 (Small Plus TRC / BE6000H M3)	• One virtual drive with a RAID-5 array • Eight 300-GB hard drives
UCS C220 M3S TRC2 (Small TRC / BE6000M M3)	• One virtual drive with a RAID-10 array • Four 500-GB hard drives
UCS E160D M2 TRC1 (Extra-Small TRC / BE6000S M2)	• One virtual drive with a RAID-5 array • Three 600-GB hard drives
UCS E160S M3 TRC1 (Extra-Small TRC)	• One virtual drive with a RAID-1 array- Two 900-GB hard drives
End of Sale UCS C260 M2 TRC1 (Extra-Large TRC)	• Two virtual drives (VD) with RAID-5 arrays • Eight 300 GB hard drives for each VD

TRC	Information
End of Sale UCS C210 M2/M1 TRCs (Medium TRC)	• first 2 drives are RAID-1 (mirrored) drives with the ESXi installation. • remaining drives are RAID-5 with UC application VMs.
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	• One virtual drive with a RAID-10 array • Four 1 TB hard drives
UCS C220 M4S TRC1 (Small TRC / BE6000M M4)	• One virtual drive with a RAID-5 array • Six 300-GB hard drives
UCS C220 M4S TRC2 (Small Plus TRC / BE6000H M4)	• One virtual drive with RAID-5 • Eight 300-GB hard drives
UCS C240 M4S2 TRC1 (Medium TRC / BE7000M M4)	• Two virtual drives (VDs) with RAID-5 • Each VD has six 300-GB hard drives
UCS C240 M4SX TRC1 (Large TRC / BE7000H M4)	• Four virtual drives (VD) with RAID-5 • Each VD has five 300-GB hard drives.

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 Preboot CLI (UCS C-Series M2 or M3 Servers)

Follow this procedure to configure a RAID array using the preboot CLI for M2 or M3 servers.

Before You Begin

Configure Cisco Integrated Management Controller, on page 11

Procedure

Step 1 Check your current RAID configuration:

- To use the Preboot CLI to configure RAID, enter **Ctrl-Y**.
- Type the following commands:

a)

TRC	Command
End of Sale UCS C260 M2 TRC1 (Extra-Large TRC)	• **-ldinfo -l0 -a0** • **-ldinfo -l1 -a0**
UCS C240 M3S TRC1 (Large TRC)	• **-ldinfo -l0 -a0** • **-ldinfo -l1 -a0**
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	
UCS C220 M3S TRC1 (Medium TRC)	**-ldinfo -l0 -a0**
UCS C220 M3S TRC3 (Small Plus TRC / BE6000H M3)	
UCS C220 M3S TRC2 (Small TRC / BE6000M M3)	
End of Sale UCS C210 M2/M1 TRCs (Medium TRC)	
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	

This command displays the number of drives, RAID level, and so forth for the specified logical drive.

Step 2 Use the following sequence of commands to set the recommended RAID configuration:

a) Enter **CTRL-Y** to enter the Preboot CLI when prompted during boot

b) Enter the following Preboot CLI command to clear configuration:

TRC	Command
End of Sale UCS C260 M2 TRC1 (Extra-Large TRC)	**-cfgclr -l0**

TRC	Command
UCS C240 M3S TRC1 (Large TRC)	**-cfgclr -a0**
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	
UCS C220 M3S TRC1 (Medium TRC)	
UCS C220 M3S TRC3 (Small Plus TRC / BE6000H M3)	
UCS C220 M3S TRC2 (Small TRC / BE6000M M3)	
End of Sale UCS C210 M2/M1 TRCs (Medium TRC)	
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	

Step 3 To determine the enclosure ID and drive numbering, which is required before you can configure RAID, run the following commands:

TRC	Command
End of Sale UCS C260 M2 TRC1 (Extra-Large TRC)	**-encinfo -l0 -page 20**
UCS C240 M3S TRC1 (Large TRC)	**-encinfo -a0 -page 20**
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	
UCS C220 M3S TRC1 (Medium TRC)	
UCS C220 M3S TRC3 (Small Plus TRC / BE6000H M3)	
UCS C220 M3S TRC2 (Small TRC / BE6000M M3)	
End of Sale UCS C210 M2/M1 TRCs (Medium TRC)	
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	

Note This command can generate more than one page of output, so enter -page 20 to look at 20 lines at a time. Look for the Device ID of the enclosure that has a nonzero Number of Physical Drives. Use this Device ID (also called Enclosure ID) in the following commands.

Step 4 The Cisco UCS Rack-Mount Server enclosure ID is not predictable, so you need to substitute the Device ID acquired above for <encl> in the commands below. When all drives are in a single enclosure, the slot numbering starts at zero. This may not be true in all cases, so verify the slot numbering with the following command: **-pdinfo -physdrv [<encl>:0] -a0**

If this command generates meaningful output, the drives start at zero. If it generates an error, the drives start at one.

Step 5 Use the following command to set up RAID on the existing drives on each RAID controller:

TRC	Command
End of Sale UCS C260 M2 TRC1 (Extra-Large TRC)	**-cfgldadd -r5 [<encl>:1 <encl>:2, <encl>:3, <encl>:4, <encl>:5, <encl>:6, <encl>:7, <encl>:8 -a0** **-cfgldadd -r5 [<encl>:9 <encl>:10, <encl>:11, <encl>:12, <encl>:13, <encl>:14, <encl>:15, <encl>:16 -a0**
UCS C240 M3S TRC1 (Large TRC)	**-cfgldadd -r5 [<encl>:0, <encl>:1, <encl>:2, <encl>:3, <encl>:4, <encl>:5, <encl>:6, <encl>:7] -a0**
UCS C240 M3S TRC2 (Medium TRC / BE7000M M3)	**–cfgldadd –r5 [<encl>:9, <encl>:10, <encl>:11, <encl>:12, <encl>:13, <encl>:14, <encl>:15, <encl>:16] –a0**
UCS C220 M3S TRC1 (Medium TRC)	**-cfgldadd -r5 [<encl>:0, <encl>:1, <encl>:2, <encl>:3, <encl>:4, <encl>:5, <encl>:6, <encl>:7] -a0**
UCS C220 M3S TRC3 (Small Plus TRC / BE6000H M3)	
UCS C220 M3S TRC2 (Small TRC / BE6000M M3)	

TRC	Command
End of Sale UCS C210 M2/M1 TRCs (Medium TRC)	• If your drives start at slot zero, run this command: **-cfgldadd -r1 [deviceID:0, deviceID:1] -a0** • If your drives start at slot one, run this command: **-cfgldadd -r1 [deviceID:1, deviceID:2] -a0** • If your server contains 6 total disk drives, enter the following command to configure the second RAID array: **-cfgldadd -r5 [deviceID:2, deviceID:3, deviceID:4, deviceID:5] -a0** • If your server contains 10 total disk drives, configure the second RAID array by entering one of the following commands, depending on the starting slot number: ◦ If your drives start at slot zero, run this command: **-cfgldadd -r5 [deviceID:2, deviceID:3, deviceID:4, deviceID:5, deviceID:6, deviceID:7, deviceID:8, deviceID:9] -a0** ◦ If your drives start at slot one, run this command: **-cfgldadd -r5 [deviceID:3, deviceID:4, deviceID:5, deviceID:6, deviceID:7, deviceID:8, deviceID:9, deviceID:10] -a0**
End of Sale UCS C200 M2 TRC1 (Small TRC / BE6000M M2)	**-CfgSpanAdd -r10 -Array0[enclosureID:0,enclosureID:1] -Array1[enclosureID:2,enclosureID:3] -a0**

Note To clear data on previously used drives and initialize a new array, use the **-ldinit -start -full -l0** command. Allow command to finish before exiting the Preboot CLI.

Step 6 Set the Strip Size to 128 KB with the following command-line option on **-cfgldadd** command lines in step 5 above : **-strpsz 128**. Also set required Read Policy and Write Policy described above via appropriate command line options. E.g. **-cfgldadd** -r5 [26:1, 26:2, 26:3, 26:4, 26:5, 26:6, 26:7, 26:8] WB RA Cached NoCachedBadBBU -strpsz 128 -a0.

Step 7 The following commands are not necessary for new drives that have not been used.

- Use the **-ldinit -start -l0 -a0** and **–ldinit –start –l1 –a0** commands to perform a *fast* initialize.
- To clear data on previously used drives and to *slow* (or *full*) initialize a new array, use the **-ldinit -start -full -l0 -a0** and **-ldinit -start -full -l1 -a0** commands. Allow the commands to finish before exiting the Preboot CLI. When both commands, **–ldinit –showprog –l0 –a0** and **–ldinit –showprog –l1 –a0**, show that initialization is not running, it is safe to exit the Preboot CLI.

  Note Cisco has noticed that a *slow* initialize can take up to 95 minutes or more to fully complete for array sizes of 1 TB+ that are used in a UCS C240 M3 Rack-Mount Server TRC1 deployment.

Step 8 After you configure the logical volume, exit the Preboot CLI by entering **q**.

Note The LSI adapter has factory default values for the drive rebuild rate, patrol read rate, and other settings. Cisco recommends leaving the default values unchanged.

What to Do Next

Configure BIOS, on page 23

Configure RAID with GUI (UCS C-Series M3 Servers)

Use this procedure to configure a RAID array for a virtual drive on M3 servers. For servers with more than one virtual drive, perform these steps for each virtual drive.

Before You Begin

Configure Cisco Integrated Management Controller, on page 11

Procedure

Step 1 During the boot process, ensure that Quiet Boot is disabled, and press **Ctrl-H** at the LSI screen when prompted. The MegaRaid BIOS Configuration utility opens and displays the LSI MegaRAID SAS adapters. Select **Adapter 0** to begin and click **Start.**

Step 2 Select **New Configuration** and click **Next**.

Step 3 Select **Manual Configuration**.

Step 4 On the next screen, you need to add drives to a Drive Group. Select one drive and then select all others by holding down Shift and the Down Arrow key. Click **Add to Array**.

Step 5 Click **Accept DG**.

Step 6 Add the drive group to a span. Select **DG0** and click **Add to Span**.

Step 7 After the drive group is part of a span, you can configure RAID on it.

a) Select **RAID 5** or **RAID 10** from the list of available options.

b) Cisco recommends that you select 128KB from the Strip Size drop-down list.

Step 8 Set **Read Policy** to **read ahead = always**.

Step 9 Set **Write Policy** to one of the following:

- **- write back with bbu–**if you are using a RAID card with SuperCap (RAID-9266CV), for example.
- **- 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.

Note When possible, use the new RAID cards with SuperCap and make sure the UCS is attached to an Uninterruptible Power Supply (UPS).

Step 10 Click **Update Size** to finalize the RAID 5 volume and to determine the size of the resulting volume. A warning relating to BBU appears. Click **Yes** to accept a possible performance degradation if the BBU is over-tasked.

Step 11 Click **Next** on the next screen to accept the Virtual Drive you just created (VD 0).

Step 12 Click **Next**. At the next screen, you are presented with the option to initialize the array. Click:

a) **Fast Initialize**

b) **Go**
c) **Set Boot Drive**
d) **Go**

Step 13 The RAID configuration is now complete for the first RAID controller. Go back to the controller selection by clicking on **Controller selection**. This time, select **Adapter 1**.

Step 14 Repeat all the steps that you performed for Adapter 0 with this new Adapter to set up the second RAID 5 array.

What to Do Next

Configure BIOS, on page 23

Configure RAID with GUI (UCS C-SeriesM4 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, on page 11

Procedure

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 Select **Create Virtual Drive** and press **Enter**.

Step 4 For the **RAID Level** option, select **RAID 5**.

Step 5 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** displays in the ID box.

Step 6 Select **Advanced**.

Step 7 Set **Read Policy** to **read ahead = always**.

Step 8 For the **Write Policy**, select **Write Back with BBU**.
We recommend that you select 128KB from the **Strip Size** drop-down list.

Step 9 For the **I/O Policy**, select **Cached**.

Step 10 Tab to the **Initialize** option and select the option by pressing the space bar.
An X displays in the **Initialize** box.

Step 11 Select **OK**. Press **Enter**.

Step 12 When the Initialization is complete popup displays, select **OK** and hit **Enter**.
The Virtual Drive Management screen appears.

Step 13 Press **Ctrl-N** to go to **Ctrl Mgmt** tab.

Step 14 Select the drive that you want to use to boot the virtual drive.

Step 15 Select **Apply** and press **Enter**.

The Back Initialization process begins. It may take several minutes to initialize the virtual drive.

Step 16 If your server has more than one virtual drive, repeat this process for each virtual drive.

What to Do Next

Configure BIOS, on page 23

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

Before You Begin

Configure Cisco Integrated Management Controller, on page 11

Procedure

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.

Configure RAID with GUI (UCS E-Series M3 Servers)

Use this procedure if you have an M3 server and want to configure a RAID 1 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

Before You Begin

Configure Cisco Integrated Management Controller, on page 11

Procedure

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 both the disk drives from Available Drives table to Selected Drives table. If you don't have two disk drives, your hardware configuration does not match the Tested Reference Configuration.
b) In RAID Level drop-down list, select RAID 1.
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.

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 Preboot CLI (UCS C-Series M2 or M3 Servers) , on page 15
- Configure RAID with GUI (UCS C-Series M3 Servers), on page 20
- Configure RAID with GUI (UCS C-SeriesM4 Servers), on page 21
- Configure RAID with GUI (UCS E-Series M2 Servers), on page 22

Procedure

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, on page 24

Install and Configure VMware ESXi

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

Preparation for ESXi Installation

Before you install ESXi, 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 13

For additional information about ESXi storage configurations, see http://docwiki-dev.cisco.com/wiki/UC_Virtualization_Supported_Hardware#Storage.

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

- To determine which ESXi version is required for the application you are intending to deploy, see: http://docwiki.cisco.com/wiki/Unified_Communications_VMWare_Requirements#Supported_Versions_of_VMware_vSphere_ESXi
- Install ESXi on one of the RAID arrays. If there are multiple RAID arrays, any is acceptable but it is recommended to 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.

- 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 2 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.

Install vSphere Client

Once the host is on the network, you can browse to its IP address to bring up a web-based interface. The vSphere client is Windows-based, so the download and install must be performed from a Windows PC.

This installation proceeds like any other Windows application installation, and takes only a few minutes to perform. After the vSphere client is installed, you can bring it up and log into the host using the hostname or IP address, the root login ID, and the password configured above.

The host may also be joined to a vCenter if available and if you wish to manage the host through vCenter.

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), on page 25

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, on page 24

Procedure

To download OVAs for Cisco Collaboration applications, go to www.cisco.com/go/uc-virtualized.

What to Do Next

Create the VM for your server type:

• Use vSphere to Create the VM for Servers with Optical Drives, on page 26
• Use vSphere to Create the VM for Servers Without Optical Drives, on page 26

ISO and VM Template Delivery

Depending on the servers and virtualization licenses that you purchase, virtualization software and Cisco application software can be delivered either physically or electronically.

Use vSphere to Create the VM for Servers with 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 with optical drives.

Before You Begin

Download Virtual Machine Templates (OVA Templates), on page 25

Procedure

Step 1 Deploy a blank virtual machine from the OVA template for your application using the Cisco.com URL as the source.

Step 2 Make the CD-ROM drive available to the newly deployed VM.

Step 3 Click on **Options** > **Boot Options** the next time the virtual machine boots, force entry into BIOS Setup Screen.

Step 4 Insert the application installation DVD from the media kit in the system CD-ROM drive.

Step 5 Power on the VM, select **Boot** and promote CD-ROM to boot before the hard drive.

Step 6 Save the BIOS settings and boot.
The installation screens for your application appear at this point.

What to Do Next

Install Cisco Collaboration Applications on VMs, on page 27

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), on page 25

Procedure

Step 1 Deploy a blank virtual machine from the appropriate OVA template for your application using the 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.

What to Do Next

Install Cisco Collaboration Applications on VMs, on page 27

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

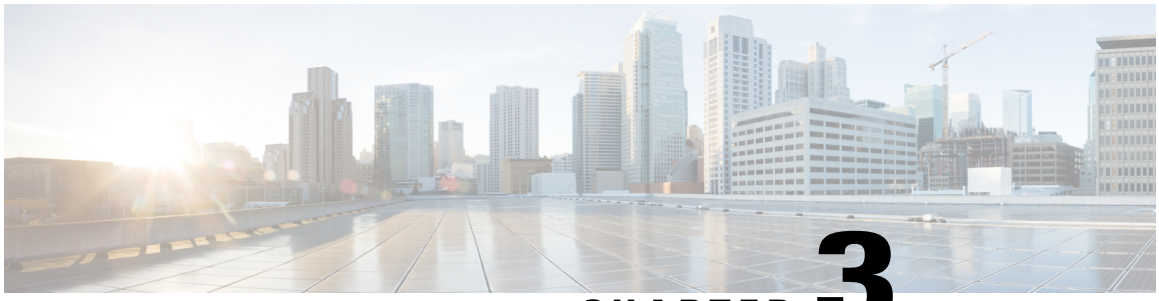
For details on how to install Cisco Business Edition 6000, refer to the *Installation Guide for Cisco Business Edition 6000* at the following URL:

http://www.cisco.com/go/be6000

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:

http://www.cisco.com/go/be7000



CHAPTER 3

Migration

Migration of Collaboration applications from nonvirtual servers to virtualized servers uses different procedures depending on whether or not there is also an application version upgrade. For more information, see the following documents.

For 10.x and earlier systems:

- *Cisco Prime Collaboration Deployment Administration Guide*
- *Cisco Unified Communications Operating System Administration Guide*
- *Disaster Recovery System Administration Guide*
- *Installing Cisco Unified Communications Manager*
- *Replacing a Single Server or Cluster for Cisco Unified Communications Manager*
- See "Changing the Cluster IP Addresses for Publisher Servers That Are Defined by Host Name" in the *Changing the IP Address and Host Name for Cisco Unified Communications Manager* guide.

For 11.x and later systems:

- *Prime Collaboration Deployment Administration Guide for Cisco Unified Communications Manager*
- *Administration Guide for Cisco Unified Communications Manager*
- *Installing Cisco Unified Communications Manager*
- *Replacing a Single Server or Cluster for Cisco Unified Communications Manager*

- Migrate to Cisco UCS B-Series Blade Servers, page 29
- Migrate to Cisco UCS Rack-Mount Server, page 31
- Migrate Cisco Unity Connection on a Virtual Machine, page 33

Migrate to Cisco UCS B-Series Blade Servers

Migrating from a Media Convergence Server (MCS) to a Cisco UCS B-Series Blade Server follows a procedure that is very similar to replacing server hardware, which is described in the document *Replacing a Single Server or Cluster for Cisco Unified Communications Manager*.

The following procedure provides the tasks for the migration process.

Procedure

Step 1 Review the document *Replacing a Single Server or Cluster for Cisco Unified Communications Manager* at http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-installation-guides-list.html.
The process in this document is very similar to migrating from an MCS server to a Cisco UCS B-Series Blade Server. Perform the pre-replacement and post-replacement tasks in the document, and review the procedures for installing Cisco Unified Communications Manager and migrating data.

Step 2 Upgrade the MCS to Cisco Unified Communications Manager Release 8.0(2) or later.

Step 3 If the VM will use a different IP address or hostname than the MCS server, change the IP address and hostname of the MCS server to the values that the VM will use.
This is required for DRS backup and restore to work.

Step 4 Perform a DRS backup on the MCS server.
Note Cisco UCS B-Series Blade Servers do not support tape drive as the backup media.

Step 5 Use the Answer File Generator to generate a license MAC for the Cisco UCS B-Series Blade Server.
See http://www.cisco.com/web/cuc_afg/index.html.

The license MAC is required to obtain licenses for the server. After you obtain the license MAC, you can rehost the licenses for your new server.

Step 6 Create the virtual machine (VM) on the Cisco UCS B-Series Blade Server that will be used as the replacement for the MCS node.
Use the Cisco-provided OVA template to create VMs.

Step 7 Install Cisco Unified Communications Manager Release 8.0(2c) or later on the Cisco UCS B-Series Blade Server.
Note Cisco UCS B-Series Blade Servers do not support installation from a DVD.
Note Cisco UCS B-Series Blade Servers do not support a hardware clock; you must use NTP. The option to configure a hardware clock is not available in the installation program.

Step 8 Install Cisco Unified Communications Manager Release 8.0(2c) or later on the Cisco UCS B-Series Blade Server.

Step 9 Perform a DRS restore to restore the data that was backed up from the MCS server to the Cisco UCS B-Series Blade Server.

Step 10 Upload the new licenses to the Cisco UCS B-Series Blade Server.
If you did not obtain licenses for the new server already, you must request the licenses first.

Note The previous license will no longer be valid. However, you have 30 additional days in which to use your previous license.

Migrate to Cisco UCS Rack-Mount Server

Migrating from a Media Convergence Server (MCS server) to a Cisco UCS Rack-Mount Server follows a procedure that is very similar to replacing server hardware, which is described in the document *Replacing a Single Server or Cluster for Cisco Unified Communications Manager*.

The following table provides an overview of the migration process and references to other pertinent documentation.

Steps	Configuration steps	Related procedures and topics
Step 1	Review the document *Replacing a Single Server or Cluster for Cisco Unified Communications Manager*. This document describes how to replace server hardware, which is very similar to migrating from an MCS server to a Cisco UCS Rack-Mount Server. You should perform the document's pre-replacement and post-replacement tasks, and review the procedures for installing Cisco Unified Communications Manager and migrating data.	*Replacing a Single Server or Cluster for Cisco Unified Communications Manager*
Step 2	Upgrade the MCS server to Cisco Unified Communications Manager Release 8.0(2) or later.	**For 8.x-10.x:** • *Cisco Unified Communications Operating System Administration Guide* **For 11.x:** • *Administration Guide for Cisco Unified Communications Manager*
Step 3	If the VM will use a different IP address or hostname than the MCS server, change the IP address and hostname of the MCS server to the values that the VM will use. This is required for DRS backup and restore to work.	Refer to the topic "Changing the Cluster IP Addresses for Publisher Servers That Are Defined by Host Name" in the *Changing the IP Address and Host Name for Cisco Unified Communications Manager* guide.
Step 4	Perform a DRS backup on the MCS server.	**For 8.x-10.x:** • *Disaster Recovery System Administration Guide* **For 11.x:** • *Administration Guide for Cisco Unified Communications Manager*

Steps	Configuration steps	Related procedures and topics
Step 5	Use the Answer File Generator to generate a license for the Cisco UCS Server. After you obtain the license, you can rehost licenses for your new server.	New Licensing Procedure Customer Impact, on page 39 *Installing Cisco Unified Communications Manager*
Step 6	Create the virtual machine (VM) on the Cisco UCS Rack-Mount Server that will be used as the replacement for the MCS node.	Use one of the following procedures: • Use vSphere to Create the VM for Servers Without Optical Drives, on page 26 • Use vSphere to Create the VM for Servers with Optical Drives, on page 26
Step 7	Install the same release of Cisco Unified Communications Manager on the virtual machine that you installed on the MCS server.	*Installing Cisco Unified Communications Manager*
Step 8	Perform a DRS restore to restore the data backed up from the MCS server to the Cisco UCS Rack-Mount Server.	**For 8.x-10.x:** • *Disaster Recovery System Administration Guide* **For 11.x:** • *Administration Guide for Cisco Unified Communications Manager*

Steps	Configuration steps	Related procedures and topics
Step 9	Upload the licenses that you generated to: • For 8.x systems—publisher node • For 9.x systems—Enterprise License Manager • 10.x and up—Cisco Prime License Manager If you did not obtain licenses for the new server already, you must request the licenses first. **Note** The previous license will no longer be valid. However, you have 30 additional days in which to use your previous license. See New Licensing Procedure Customer Impact, on page 39.	New Licensing Procedure Customer Impact, on page 39 *Administration Guide for Cisco Unified Communications Manager* **For 8.x-10.x:** • *Cisco Unified Communications Operating System Administration Guide* • *Enterprise License Manager User Guide* • *Cisco Prime License Manager User Guide* **For 11.x:** • *Administration Guide for Cisco Unified Communications Manager*

Migrate Cisco Unity Connection on a Virtual Machine

For information on migrating to Cisco Unity Connection on a virtual machine, see the “Migrating from a Cisco Unity Connection Physical Server to a Connection 8.x Virtual Machine” chapter in the applicable *Reconfiguration and Upgrade Guide for Cisco Unity Connection* at http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html.

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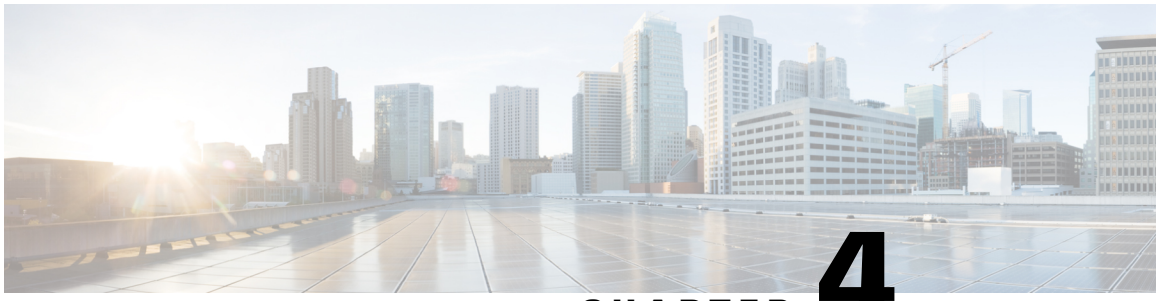

CHAPTER 4

Administration

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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 www.cisco.com/go/ucs .

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, on page 13.

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:

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.

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*.

New Identity

Cisco supports the New Identity process for use with Cisco Unified Communications Manager. The New Identity process is designed to start with a Communications Manager application that is fully installed and configured with common settings. Often, the initial VM is saved as a VMware template and cloned as new Communications Manager publisher nodes come online.

The New Identity process copies the VMware template and changes a set of primary settings, such as the IP address and hostname, to give a new VM a unique identity in the network.

Run New Identity Process

Procedure

Step 1 Create a new VM instance from the template of the deployed Unified CM application.

Step 2 Run the CLI command **utils import config**.

For more information about CLI commands, see the documentation at http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/cli_ref/8_5_1/cli_ref_851.html.

New Identity Caveats

When you run the New Identity process, note the following:

- Although you can provide a new OS administrator user ID in the XML file, you cannot change the OS administrator user ID during the New Identity process.
- Each cloned VM has the same network configuration as the VMware template. The network must be functional during the New Identity process. If you run the cloned VMs on the same LAN there can be duplicate IP addresses. Ensure that you do not run the VMware template, or multiple VMs from the initial template, at the same time on the same LAN.
- The NTP server must be accessible before you can configure it on the Unified CM application. Ensure that the VM has access to the new NTP server.
- If DNS is used, DNS servers must be accessible when you run the New Identity process.
- For Cisco Unity Connection, you must set the SMTP domain address after you run the New Identity process.
- For Cisco Unified Presence, you must set the postinstallation steps that configure the Unified CM system with which Cisco Unified Presence communicates after you run the New Identity process.

Deploy Cluster Nodes Using Templates

Procedure

Step 1 Perform a skip install.

Step 2 When prompted for the floppy/USB drive in the **Pre-existing Configuration Information** window, power down the VM.

Step 3 Clone or convert the VM into a VM template.

Step 4 For a new node, deploy the template and mount a virtual floppy drive that contains the configuration file from the AFG tool.

Licensing Cisco Unified CM on Virtualized Servers

Note For more information about licensing of your operating system, see http://www.vmware.com.

New Licensing Procedure Customer Impact

Licensing for 10.x and up

Cisco Unified Communications Manager on Virtual Servers in Release 10.x uses Cisco Prime License Manager. For more information, see http://www.cisco.com/en/us/products/sw/voicesw/ps556/prod_maintenance_guides_list.html.

Licensing for 9.X

Cisco Unified Communications Manager on Virtual Servers in Release 9.x uses Enterprise License Manager. For more information, see the Enterprise License Manager User Guide at http://www.cisco.com/en/us/products/sw/voicesw/ps556/prod_maintenance_guides_list.html.

Licensing for 8.x

Cisco Unified Communications Manager on Virtual Servers in Release 8.x uses a different licensing model than Cisco Unified Communications Manager on non-virtualized servers (including 7800 Series Media Convergence Servers). The MAC address of the physical NIC card is no longer used to associate the license to the server.

The license is associated to a license MAC, which is a 12 digit HEX value created by hashing the following parameters that you configure on the server:

- Time zone
- NTP server 1 (or “none”)
- NIC speed (or “auto”)
- Hostname
- IP Address (or “dhcp”)
- IP Mask (or “dhcp”)
- Gateway Address (or “dhcp”)
- Primary DNS (or “dhcp”)
- SMTP server (or “none”)
- Certificate Information (Organization, Unit, Location, State, Country)

The ways to obtain the license MAC are as follows:

- Before installation, use the Answer File Generator (http://www.cisco.com/web/cuc_afg/index.html). When you generate the answer file, you also get the license MAC.

Note If you use this method, ensure that you enter the identical parameter values in the Answer File Generator and the Cisco Unified Communications Manager installation program, or the license will be invalid.

- After installation, navigate to **Show** > **System** in Cisco Unified Communications Manager Administration.

- After installation, use the CLI command **show status**.

Obtaining New Licenses

The process to redeem a Product Activation Key (PAK) for licenses at www.cisco.com/go/license is changed for a license MAC. When redeeming a PAK for a license MAC at this URL, you are prompted to select the type of license that you want to obtain:

- A physical MAC address—used when Cisco Unified Communications Manager will be installed on an MCS server.
- A license MAC address—used when Cisco Unified Communications Manager will be installed on Cisco Unified Communications Manager on Virtualized Servers.

After you make this selection, the generation and installation of the license file follows the same process.

Obtaining Rehosted Licenses When You Change License MAC Parameters

When you change any of the parameters that create the license MAC, the license that you obtained with it becomes invalid. You must request a rehosting of the license to obtain a valid license. The old license continues to work for a 30-day grace period.

To rehost your licenses, you must open a case with the licensing team to obtain a license for your replacement server. Contact the licensing team at licensing@cisco.com.

During the grace period, you can change the settings back to the licensed values to make your original license valid again. If you need more than 30 days of grace period, change your settings back to the licensed values, and then change them back to the new values that you want to use. You will get another 30-day grace period.

Virtual Machine Setup and Licensing Support

The virtual machine configuration for running Cisco Unified Communications Manager on Virtualized Servers must match the stated specifications to get support from Cisco.

While Cisco Unified Communications Manager can be installed and licensed in other virtual machine configurations, Cisco does not support these configurations.

Related Documentation

- The *UCS RAID Controller SMI-S Reference Guide*, which describes Storage Management Initiative Specification (SMI-S) support in the Cisco UCS Servers, is available at the following URL:

  http://www.cisco.com/en/US/docs/unified_computing/ucs/sw/utilities/raid/reference/guide/ucs_raid_smis_reference.html

- The official list of supported servers for Cisco Unified Communications Manager releases is available at the following URL:

  http://www.cisco.com/go/uc-virtualized

- Technical specifications of Cisco Unified Communications virtualized servers are available at the following URL:

  http://www.cisco.com/go/uc-virtualized

- 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/uc-virtualized