Cisco Unified Communications for Midsize Businesses: Virtualization Options

What You Will Learn

Making the right choices is imperative for your business, especially when financial investment is involved. If you are preparing to improve your organization's communication system, it is important to understand the best solution options available that support your business needs today, while protecting your investment with the capability and agility to grow at the pace of your company.

This overview provides a side-by-side look at three industry-leading Cisco® Unified Communications Solution options. At Cisco, we believe that informed decisions are good ones.

Server Virtualization

Each Cisco Unified Communications Solution option discussed here uses server virtualization to provide more than one collaboration application on a single hardware platform. Consolidation of applications onto one platform reduces total cost of ownership (TCO) and accelerates return on investment (ROI).

Server virtualization masks the identity of the hardware platform and actual operating system from server users. A single hardware platform can host multiple, isolated virtual machines, also known as guests. The host presents an imitation of a hardware resource to the guest operating system. A program known as a hypervisor, which is a virtual machine manager (VMM), provides this imitation. A virtual machine can host a dedicated application server, such as Cisco Unified Communications Manager (UCM), Cisco Unity® Connection, and Cisco Unified Contact Center.

Virtualized Cisco Unified Communications: Built-to-Order or Prepackaged

Cisco Unified Communications on the Cisco Unified Computing System™ (Cisco UC on UCS®) is a build-to-order virtualization option. This solution allows you to purchase hardware and software separately and build the solution yourself. Its benefits include platform flexibility and scalability. Various collaboration applications can be installed on pretested and validated Cisco UCS hardware. This tested and certified Cisco UCS hardware configuration is called the tested reference configuration (TRC).

Cisco Business Edition 6000 (BE6000) and Cisco Business Edition 7000 (BE7000) are prepackaged solution options that ship from the factory with preselected collaboration applications preloaded on a specific Cisco UCS TRC. These prepackaged solution options allow you to order and deploy the solution as a bundled package. The benefits of these solution options include ease of ordering and installation.

Table 1 provides a side-by-side view of the three solution options.

Table 1. Cisco Unified Communications Virtualization Options

Attribute	Cisco UC on UCS: Built-to-Order Solution Option (Tested Reference Configurations)	Cisco Business Edition 7000: Prepackaged Solution Option	Cisco Business Edition 6000: Prepackaged Solution Option
Capacity	Megacluster of up to 80,000 users	Optimized for 1000 to 5000 users but can be used as "building block" to scale-out for larger deployments.	Maximum 1000 users Maximum 1200 devices in medium-density server, and 2500 devices in high-density server
Platform	• Cisco UCS C-Series Rack Servers and B-Series Blade Servers TRC • Hardware only; no VMware or unified communications applications preloaded or suggested	• Cisco UCS C240 M3 SFF Rack Server platform • VMware and eight unified communications applications preloaded • Host Virtualization Software: Cisco UC Virtualization Hypervisor 5.1 • Guests: Depending on application capacity point, each server typically supports four to six guest virtual machines	• Cisco UCS C220 M3 SFF Rack Server platform • VMware and eight unified communications applications preloaded • Host Virtualization Software: Cisco UC Virtualization Hypervisor 5.1 • Guests: ◦ **Medium-density server** that supports up to five guest virtual machines (four unified communications applications and one provisioning application) ◦ **High-density server** that supports up to nine guest virtual machines (eight unified communications applications and one provisioning application)
Installation and provisioning	Native management interface of each application and Cisco Prime™ Collaboration Provisioning that can manage Cisco UCM, Cisco Unity Connection, and Cisco Unified Presence	• Optional Cisco Prime Collaboration for Cisco UCM, Cisco Unity Connection, and Cisco Unified IM & Presence • Preloaded software as shown in Table 3	• Cisco Prime Collaboration Provisioning for Cisco UCM, Cisco Unity Connection, and Cisco Unified CM - IM & Presence • Preloaded software as shown in Table 2
Ordering	Separate SKUs for hardware components, VMware vSphere Hypervisor, software applications, and licenses	Individual top-level SKUs: • Export restricted: BE7K-K9 • Export unrestricted: BE7K-K9-XU Quoting through Cisco Commerce Workspace and stockable SKUs.	Individual top-level SKUs for four models: • Medium density: BE6K-ST-BDL-K9= • Medium density export unrestricted: BE6K-ST-BDL-XU= • High density: BE6K-STBDL-PLS-K9= • High density: BE6K-STBDL-PLS-XU= Quoting through Cisco Quick Pricing Tool (QPT) or Cisco Commerce Workspace, and stockable SKUs.
Pricing	Purchase hardware components, VMware vSphere Hypervisor, software applications, and licenses separately according to solution requirements*.	Purchase server hardware (includes virtualization software and application software as listed in Table 3) as a single SKU. Add UCL, CUWL, PCP, VCS, etc. licenses as needed.	Purchase server hardware, VMware vSphere Hypervisor, and software applications (as listed in Table 2) as a single SKU. Add 25-users license starter bundle. Buy more user licenses as needed.

* For Cisco UC on UCS, you need to order additional parts independent of the Cisco Unified Communications applications and virtualization software. Virtualized deployment on Cisco UCS does not change the pricing, licensing, or ordering models used for Cisco Unified Communications applications. For example, applications priced and licensed under Cisco Unified Workspace Licensing (UWL) or Cisco User Connect Licensing (UCL) are configured the same way whether they are to be deployed on VMware with Cisco UCS or on Cisco 7800 Series Media Convergence Servers.

Cisco UC on UCS TRC: Build-to-Order Solution Option

Cisco offers virtualized unified communications and collaboration applications on specific configurations of the VMware vSphere (VMware ESXi) hypervisor and Cisco UCS servers and various storage configurations.
The TRC includes the following:

- Server model and local components (CPU, RAM, adapters, and local storage), orderable at the part-number level or as hardware-only bundles
- Required RAID configuration (RAID 5, RAID 10, etc.) indicated when the TRC uses direct attached storage (DAS)
- Guidance on hardware installation and basic setup only
- Diskless Cisco UCS B-Series Blade Servers able to connect to customer-provided third-party Fiber Channel storage area network (SAN)-attached disk arrays

Here are some examples of TRCs:

- Cisco UCS B230 M2, TRC 1: Half-width blade server, dual Intel Xeon processor E7-2870 (10 cores at 2.4 GHz), 128 GB of RAM, Cisco UCS M81KR Virtual Interface Card (VIC), diskless, and VMware and unified communications applications boot from Fiber Channel SAN.
- Cisco UCS C220 M3S Rack Server (small form factor [SFF], TRC 1): One-rack-unit (1RU) rack-mount server, dual Intel Xeon processor E5-2609 (four cores at 3.3 GHz), 64 GB of RAM, Ethernet ports on motherboard, optional third-party network interface card (NIC),and VMware and unified communications applications boot from DAS (eight 300-GB 15,000-rpm SFF disks with RAID 5).

For more information, refer to “Cisco Unified Communications Virtualization TRCs” in the “For More Information” section at the end of this document.

Cisco Business Edition Portfolio: Prepackaged Solution Options

Cisco offers virtualized unified communications and collaboration in a bundled package running on the Cisco UCS C220 M3 SFF or C240 M3 SFF Rack Server in a specific TRC:

- TRC for Cisco Business Edition 6000 medium-density server: 1RU rack-mount server, dual Intel Xeon processor E5-2609 (four cores at 2.4 GHz), 32 GB of RAM, Ethernet ports on motherboard, VMware and unified communications applications boot from DAS (four 500-GB 7200-rpm SFF disks with RAID 10), and one 650W power supply (second power supply is optional).
- TRC for Cisco Business Edition 6000 high-density server: 1RU rack-mount server, dual Intel Xeon processor E5-2665 (eight cores at 2.4 GHz), 48 GB of RAM, Ethernet ports on motherboard, VMware and unified communications applications boot from DAS (eight 300-GB, 15,000-rpm SFF disks with RAID 5), and two 650W power supplies.
- TRC for Cisco Business Edition 7000 server: 2RU rack-mount server, dual Intel Xeon processor E5-2640 (six cores at 2.50 GHz), 64 GB of RAM, Ethernet ports on motherboard and 3rd-party NIC, VMware and unified communications applications boot from DAS (twelve 300-GB, 10,000-rpm SFF disks with two RAID 5 volumes), and two 1200W power supplies.
- Preloaded (not preinstalled) unified communications applications in the data store of the servers, as shown in Table 2.

Standard mechanisms include the following:

- Open Virtualization Format (OVF) is an open standard for describing a virtual-machine template. The virtual-machine template defines the virtual hardware configuration of the virtual machine: the number of processors (virtual CPU [vCPU]) and the amount of memory (virtual RAM [vRAM]). For example, using Cisco Collaboration sizing rules, the TRC for the Cisco Business Edition 6000 medium-density server supports eight vCPUs; the TRC for the Cisco Business Edition 7000 supports twelve vCPUs.
- Open Virtualization Archive (OVA) is an open standard for packaging and distributing software images. OVA contains OVF and ISO images of the application software. An ISO image is a CD-ROM or DVD image saved in ISO-9660 format, which has been used to distribute application software in the past.

Installation media is stored in the data store of the Cisco Business Edition 6000 and Cisco Business Edition 7000 servers in OVA format. You choose the unified communications applications you need and install them using the installation media stored (preloaded) in the data store. Installation time for each application varies.

For more information, refer to “Cisco Business Edition Installation Guide” in the “For More Information” section later in this document.

Table 2. Co-resident Collaboration Applications on Cisco Business Edition 6000

Application		Capacity	vCPU	vRAM	vDisk	Distribution Type
Maximum capacity	**Medium-density server**	Four unified communications applications plus one provisioning application	8	32 GB	4x 500 GB	-
	High-density server	Eight unified communications applications plus one provisioning application	16	48 GB	8x 300 GB	-
Preloaded Applications						
Cisco Prime Collaboration		1000 users on Cisco UCM, Cisco Unity Connection, and Cisco Unified Presence	1	2 GB	1x 90 GB	OVA
Cisco Unified Communications Manager		1000 users, 50 sites, and 1200 devices (medium-density server) or 2500 devices (high-density server)	2	4 GB	1x 80 GB	ISO and OVA
Cisco Unity Connection		1000 voice mailboxes	1*	4 GB	1x 160 GB	ISO and OVA
Cisco IM and Presence		1000 full Cisco Unified Presence users	1	2 GB	1x 80 GB	ISO and OVA
Cisco Unified Contact Center Express		100 agents	2	4 GB	1x 145 GB	ISO and OVA
Cisco TelePresence® Video Communication Server (VCS)		100 traversal and 100 nontraversal calls	2	4 GB	1x 128 GB	OVA
Cisco Emergency Responder		1000 users	2	4 GB	1x 80 GB	ISO and OVA
Cisco Paging Server		1000 users	1	4 GB	1x 80 GB	OVA
Applications to Be Purchased Separately						
Cisco Unified Attendant Console		Advanced or Standard model options**	1	4 GB	1x 72 GB	OVA

* One vCPU should be left unused for the VMware ESXi scheduler if Cisco Unity Connection is deployed in a virtual machine.

** For more information, refer to “Cisco Unified Attendant Consoles” in the “For More Information” section.

Note: Cisco approved third-party collaborations applications can be installed as per the “Co-residency policy for Cisco Business Edition Portfolio” in the “For More Information” section.

Table 3. Co-resident Collaboration Applications on Cisco Business Edition 7000

Application	Capacity	vCPU	vRAM	vDisk	Distribution Type
Maximum capacity	**Typically 4 to 6 applications per server, based on application capacity point.**	12	62 GB	Two volumes of ~1.36 TB each	-
Preloaded Applications					
Cisco Prime Collaboration Provisioning		4	8 GB	1x 120 GB	OVA
Cisco Unified Communications Manager	For VM specifications and application options supported, visit: http://www.cisco.com/go/uc-virtualized.				ISO and OVA
Cisco Unity Connection					ISO and OVA
Cisco IM and Presence					ISO and OVA
Cisco Unified Contact Center Express					ISO and OVA
Cisco TelePresence® Video Communication Server (VCS)		2	6 GB	1x 4GB + 1x 128 GB	OVA
Cisco Emergency Responder					ISO and OVA
Cisco Paging Server					OVA
Applications to Be Purchased Separately					
Cisco Unified Attendant Console	Advanced or Standard model options**	1	4 GB	1x 72 GB	OVA

* One vCPU should be left unused for the VMware ESXi scheduler if Cisco Unity Connection is deployed in a virtual machine.

** For more information, refer to “Cisco Unified Attendant Consoles” in the “For More Information” section.

Note: Cisco approved third-party collaborations applications can be installed as per the “Co-residency policy for Cisco Business Edition 6000” in the “For More Information” section.

The Cisco Business Edition 6000 medium-density server can host any combination of the maximum number of supported applications (four unified communications and one management) within the limits of eight vCPUs. Examples follow:

- Cisco Prime Collaboration + Cisco UCM + Cisco Unity Connection + Cisco IM and Presence + Cisco TelePresence VCS (seven vCPUs and 32 GB of vRAM) for collaboration with video.
- Cisco Prime Collaboration + Cisco UCM + Cisco Unity Connection + Cisco IM and Presence + Cisco Unified Contact Center Express (seven vCPUs and 32 GB of vRAM) for collaboration with contact center.
- Cisco Prime Collaboration + Cisco UCM + Cisco Unity Connection + Cisco IM and Presence + Cisco Emergency Responder (seven vCPUs and 32 GB of vRAM) for collaboration with emergency responder.
- Cisco Prime Collaboration + Cisco UCM + Cisco IM and Presence + Cisco Unified Contact Center Express + Cisco TelePresence VCS (eight vCPUs and 32 GB of vRAM) when voicemail is not required.

The Cisco Business Edition 6000 high-density server can host all the nine applications listed in Table 2 within the limits of 16 vCPUs. The Cisco Business Edition 7000 server can host all applications listed in Table 2 at higher capacity point (1-5 users) within the limits of 12 vCPUs.

Note: Full-feature redundancy is supported for all core applications in a WAN or LAN environment when additional servers are deployed.

Figure 1 illustrates the collaboration applications that can be used with a single Cisco Business Edition 6000 or Cisco Business Edition 7000.

Figure 1. Cisco Business Edition Portfolio, Solution Components

For More Information

- Cisco Business Edition 6000: http://www.cisco.com/go/be6000
- Cisco Business Edition 7000: http://www.cisco.com/go/be7000
- Cisco Unified Communications virtualization wiki: http://www.cisco.com/go/uc-virtualized
- Cisco Business Edition 6000 Installation Guide: http://www.cisco.com/en/US/products/ps11369/prod_installation_guides_list.html
- Cisco Unified Communications Virtualization TRCs: http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware#Table_1_-_UC_on_UCS_TRCs
- Unified Communications Virtualization Sizing Guidelines: http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines
- Cisco Unified Attendant Console: http://www.cisco.com/en/US/partner/products/ps7282/index.html
- Co-residency policy for Cisco Business Edition Series: http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/BE6000/Coresidency/9_x/BE6K_coRes.html

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