



## Implementing\_Virtualization\_Deployments

This wiki space contains information to install and configure a virtualized UC deployment. It assumes the specific UC deployment has been designed; all hardware, software, and licenses have been procured; and you are ready to deploy the solution. See **[Before You Buy or Deploy - Considerations for Design and Procurement](#)** for information and considerations in designing and procuring a virtualized UC solution. See **[Ongoing Virtualization Operations and Maintenance](#)**.

 **Note:** If *not* specifically addressed in this web space, assume the operation or behavior of the Unified Communications applications is the same as on a bare metal deployment (MCS server deployment).

 **Note:** See [Downloading and Deploying OVA Templates from Cisco.com](#) for more information on downloading OVA templates from Cisco.com (CDC).

The Unified Communications (UC) applications from Cisco are supported when running in a virtual environment only when the virtual environment meets the specifications in this web page. Deviations from these specifications result in an unsupported deployment. Running real-time applications in a virtual environment requires more constraints than typical non-real time applications. All those constraints are listed in this web page.


When running UC on a virtualized platform, installation, configuration, upgrading and monitoring of the hardware and VMware software must be done manually. The "appliance model" of UC on bare metal does not apply when the UC applications are running virtualized. There are four distinct Layers to configure and manage when running UC virtualized. Each of these is addressed below:


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## Configuring Hardware Platforms

The first step on any virtualized UC deployment is to configure the hardware platform.

 **Note:** Hardware configuration, including raid configuration, BIOS settings, firmware upgrades/configuration and monitoring of hardware health is *not* done by the UC applications when running virtualized, regardless of the hardware platform.

 **Note:** Cisco supports the use of VMware EVC mode at the "Intel Xeon Core I7" level or higher. This allows configuring ESXi clusters with hosts with "Nehalem/Core I7" and newer CPU models. Intel Xeon Core I7/Nehalem processor and subsequent generations of the Xeon processors are the only processors supported for running UC virtualized.


There are two types of supported hardware platforms:

- If you are deploying on a TRC, see **[Tested Reference Configurations \(TRC\)](#)** for specific information on how to configure your server.
- Otherwise, configure your hardware according to the **[Specification Based Hardware Support \(Specs-Based\)](#)** page.

For ANY virtualized UC deployment there are requirements for performance of the disk storage subsystem. Cisco TRC's that use local disk storage (DAS) for virtual machines are pre-engineered to meet these requirements. For ANY other virtualized UC deployment using DAS storage or SAN storage, click here for requirements.

# Installing and configuring the ESXi Virtualization Software

After hardware configuration is complete, VMware vSphere ESXi must be installed. The term *host* is used to refer to a hardware platform running virtualization software. The virtualization DocWiki pages use this term.

 **Note:** If you are running ESXi 4.1 or later, depending on the UC application product version (VOS/ Linux version) you must **Disable LRO**

- The *ONLY* supported virtualization software is **VMware vSphere ESXi**. See **Unified Communications VMware Requirements** for more information.
- Specific installation instructions are available in various UCS documents.
  - ◇ [Cisco Unified Communications Manager on Virtual Servers](#) - for Cisco UC on UCS Tested Reference Configurations
  - ◇ [Home page to get to Cisco UCS B-Series and UCS C-Series technical documentation](#)
  - ◇ [Home page to get to VMware vSphere ESXi technical documentation](#)

## vCenter Requirements


vCenter is used to manage and monitor ESXi servers. It collects and logs performance information for all virtual machines and ESXi hosts under its control. Cisco requires the use of vCenter to manage any specs-based deployments of virtualized UC. If you are deploying a TRC configuration, it is very highly recommended to use vCenter, because it can be extremely beneficial in debugging problems, however, it is not required.

If you want to deploy vCenter it is important to note that the free version of ESXi, the vSphere hypervisor, does not allow the host to be managed by vCenter. See **Information on vCenter installation** and [home page to get to VMware vCenter Server technical documentation](#).

## Supported Applications and Deploying the OVA templates

Once ESXi is running on the hardware platform, the host is ready to *host* virtual machines. Virtual machines are referred to as *guests*, a term used throughout this wiki space.

The first step is to create the virtual machine(s) on the host. Cisco requires that Cisco-generated OVA templates be used to create the virtual machines to run the UC applications. These OVA templates contain aligned disk partitions and other specific configurations that are required.

 **Note:** Cisco TAC support **REQUIRES** that installation uses a supported VM configuration from deploying the Cisco-provided OVA. If you do not use the Cisco-provided OVA, you will likely get

unaligned storage, the application may generate alerts, and Cisco TAC may require you to correct the issue before they can provide further troubleshooting. [Click here for more details.](#)

The application links on [www.cisco.com/go/uc-virtualized](http://www.cisco.com/go/uc-virtualized) will take you to a page containing a download link for the required OVA file.

## Installing UC Applications in the VM

Once the virtual machines have been created using the OVA templates, you are ready to install the UC application(s) into the virtual machine(s).

Overall, the installation process is nearly identical to installing bare-metal on an MCS server. However, the following differences should be noted:

1. The installation DVD can be used remotely through the VI Client, or locally on the host, if the host has a DVD (b-series blades, for example do not have a DVD). Alternately, you can convert the DVD into an .iso file and install by uploading the .iso file to your ESXi datastore. It is beyond the scope of this documentation to support conversion of the DVD to an .iso file, however there is software and freeware available for doing this. An example of freeware is MagicDisc and their **5 simple steps for creating a bootable .iso image from a DVD.**
2. An external (stratum 5 or better) NTP server is required and must be accessible. Using local hardware clock is not an option.
3. NIC speed/duplex settings are not available, as these are inherited from the ESXi host.
4. If your installation fails, and you need to collect the install logs, **collection must be done through the serial port of the virtual machine.**
5. The **Auto Answer File (AFG) must be used through the virtual floppy drive.**
6. After installation, if the viClient shows VMware Tools Out of Date, you will need to **upgrade VMware Tools.**

## Differences When Running UC in a Virtual Environment

- **Licensing Model for Virtualized UC Applications**
- **How to Dump Install Logs to the Serial Port of the Virtual Machine**
- **How to Use the AFG with the Virtual Floppy Drive**
- **VMware Tools**
- BIOS boot order: read the Release Notes for the OVA that you are deploying for instructions on how to set the BIOS boot order.

## VM Deployment Density

How many and what combination of virtual machines can be run on an ESXi host? See **Unified Communications Virtualization Sizing Guidelines** for more information.

## VMware Feature Support

Not all VMware vSphere features are supported, and some are supported only with restrictions. See **Unified Communications VMware Requirements** for more information on VMware vSphere feature support and virtualized UC applications.

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