

# Cisco UC on UCS

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**Cisco Mid-Atlantic User's Group**

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## Agenda

- **UCS Solution Overview and Impact**
- **Compute Platform Specifications**
  - UCS B-Series
  - UCS C-Series
- **UCS Design and Deployment Considerations**
- **Example Build-Out (C-Series)**

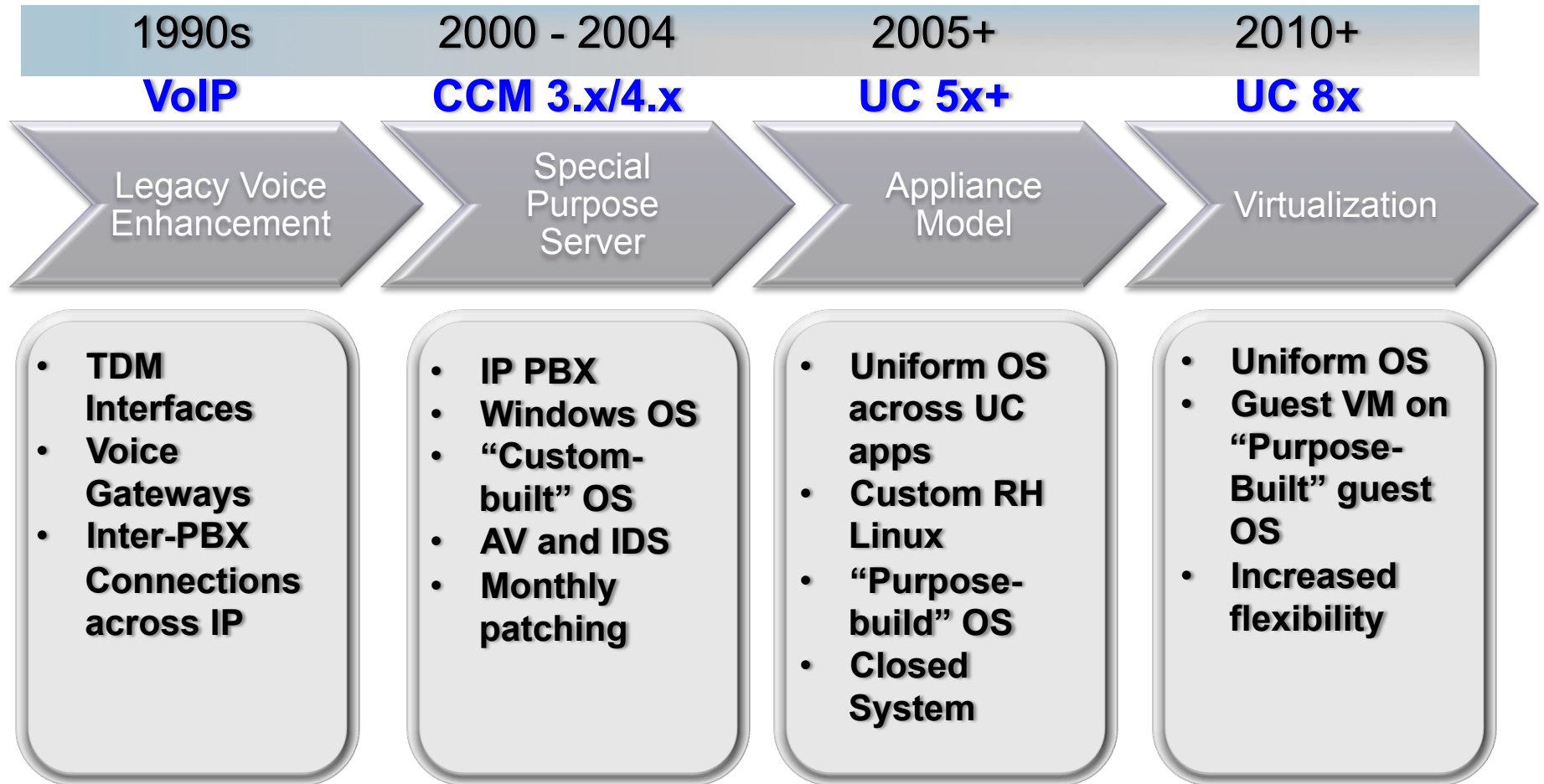
## Q&A Policy

- **Each section break will provide an opportunity for Q&A**

**UC on UCS**

# **UCS SOLUTION OVERVIEW AND IMPACT**

# UC Platform Evolution





# What are the benefits?

**UC solutions leverage the full benefits of a converged network. UCS leverages the benefits of virtualization. UC on UCS combines both to deliver immediate benefit and long-term extensibility**

## Reduce Capital Expenditures

- Fewer servers, adapters, cables
- Consolidate voice, video, data, mobility, storage access
- Reduce storage needs

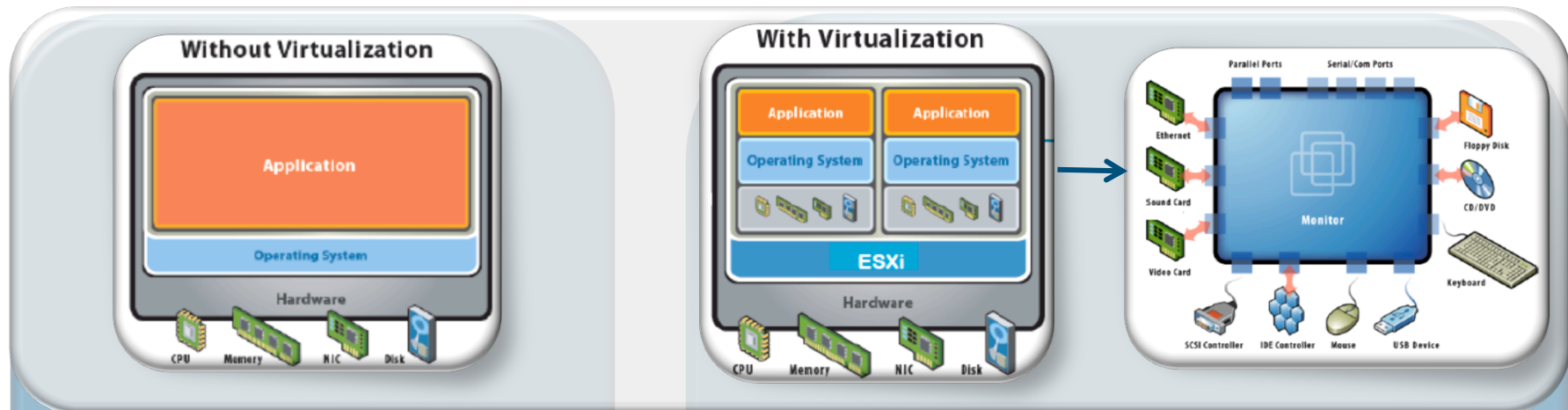
## Reduce Operating Expenses

- Consolidate system management
- Facilities cost
- Cabling and wiring changes

## Increase Business Agility

- Ease of provisioning new services
- Accelerates rollout
- A new model for lower environment testing

# Architectural Shift



- Cisco UCOS on bare metal
- UCOS w/ specific HW
- UC Application runs on UCOS

- UCS Compute Platform
- VMWare ESXi hypervisor
- Virtual Machine (VM)
  - UCOS on hypervisor
  - UC App on UCOS
- Multiple VMs on single hypervisor

# Architectural Advantages

## Partitioning



Run multiple applications on a single physical server.

## Isolation



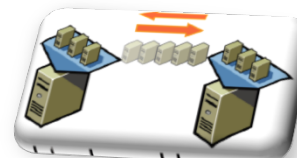
Each VM is isolated from other VMs/apps on same server.

## Encapsulation



VMs are encapsulated in files.

## Hardware Independence\*



Run a VM on any server without modification of HW drivers.

# MCS and UCS Platforms

Scalability low to high



MCS 7845



UCS C210 M1



UCS B200



MCS 7835



UCS C210 M2



MCS 7825



UCS C200 M2



MCS 7816



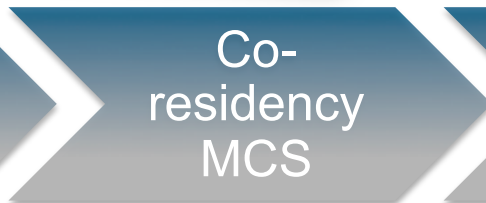
MCS 7828



Standalone  
MCS



Standalone  
Virtual



Co-  
residency  
MCS



Co-  
residency  
Virtual

**UC on UCS**

# **UCS B-SERIES OVERVIEW**

# Components of the UCS B-Series



UCS Manager: Embedded Hardware

UCS Interconnect  
6120XP  
6140XP



UCS 2104XP  
Fabric Extender



UCS 5108 Blade  
Server Chassis

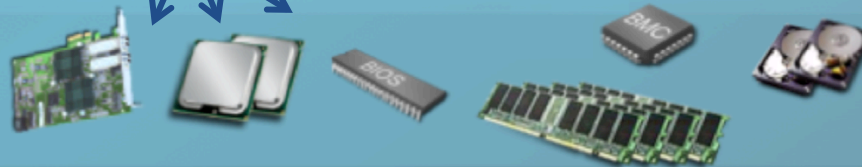


UCS B200

Blade Servers  
UCS B200Mx  
UCS B250Mx

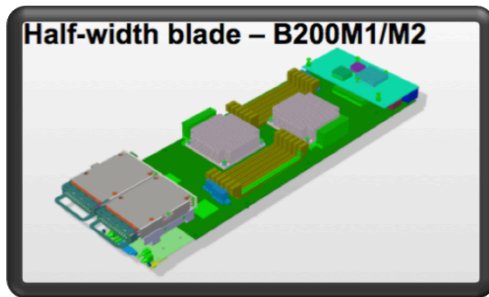


Compute  
resources  
CPU/RAM/IO

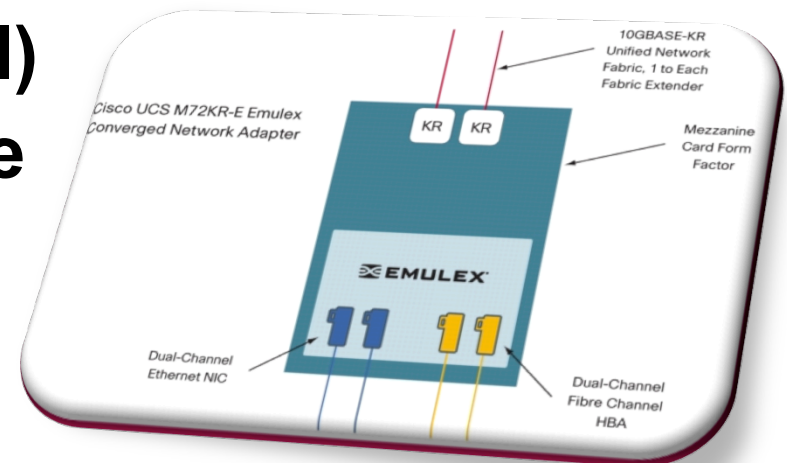




# UCS-B Blade Support (UC on UCS)

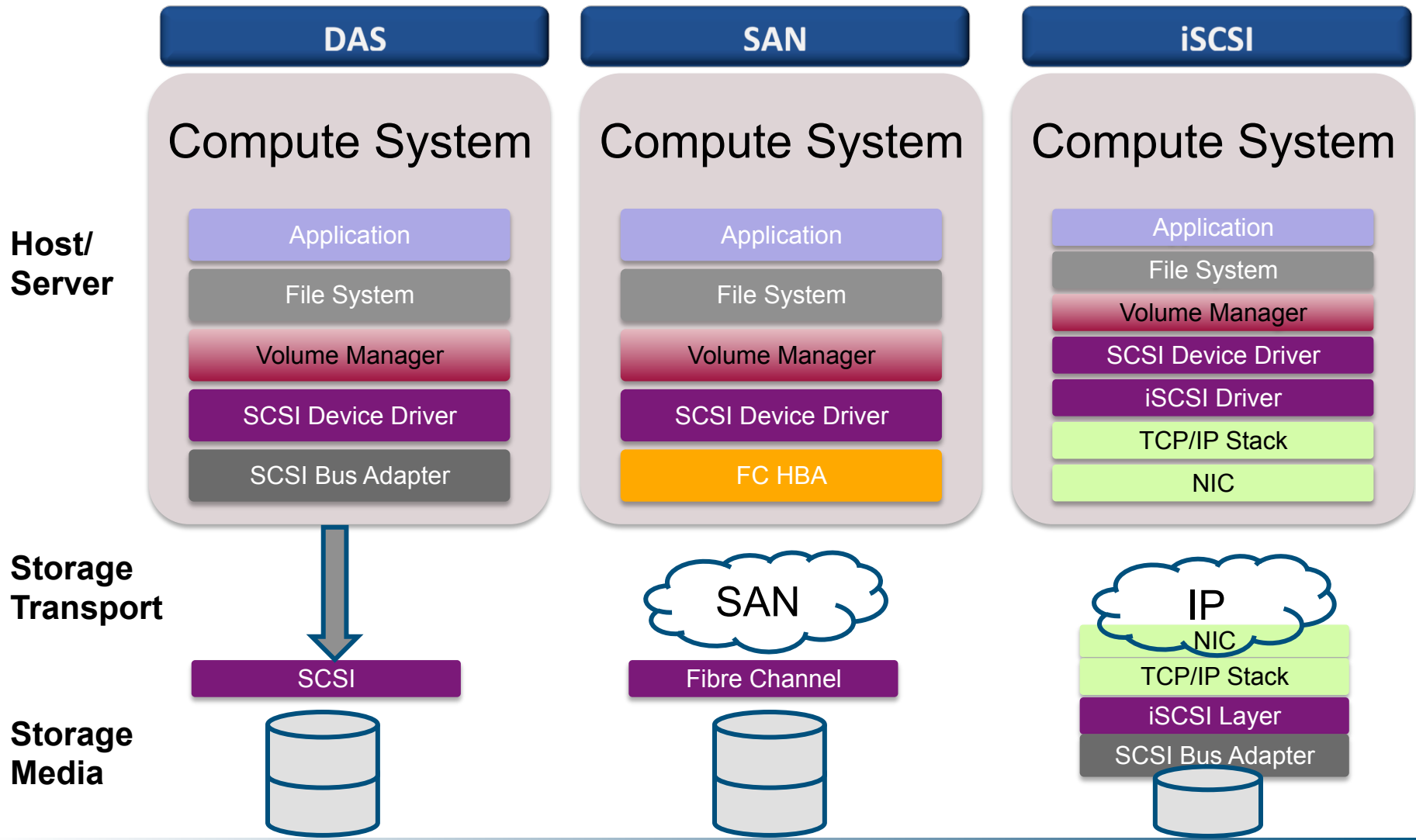


- UC on UCS supports half-width blade (B200M1/M2)
- UC on UCS **not** supported with full-width blade (B250M1/M2)
- M1: 2 x Intel 5540 (Nahalem) processors
- M2: 2 x Intel 5640 (Westmere) processors
- 2 x SAS hard drives (optional)
- Blade and HDD hot pluggable
- Blade Service Processor
- 10Gb **CNA** or 10GbE adapter



Converged Network Adapter (CNA)

# DAS vs. iSCSI vs. SAN



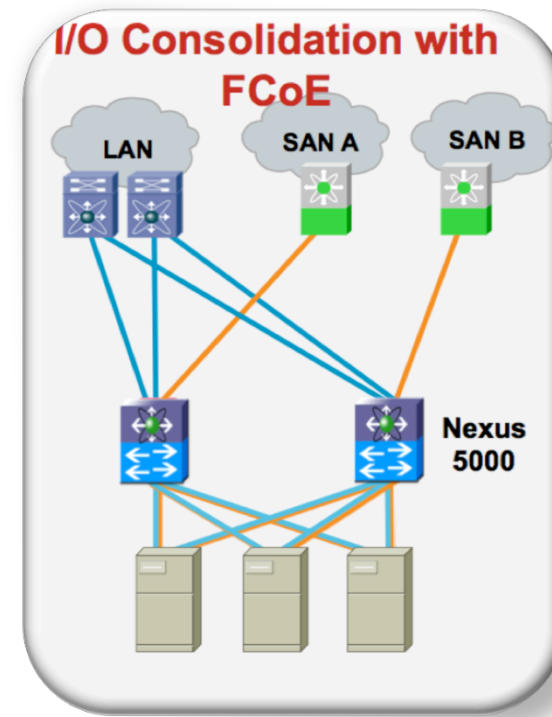
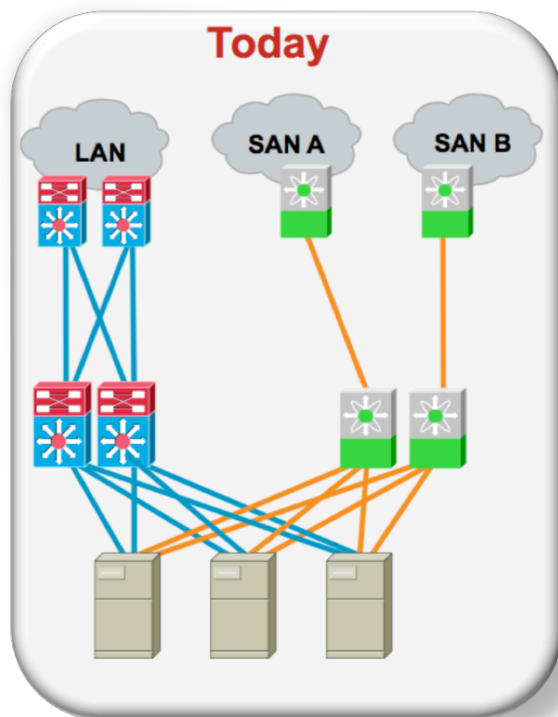


# Storage Area Network (SAN)

- **With the UCS B-Series SAN using FC is the only storage method supported (for UC on UCS)**
- **SAN vs. DAS:**
  - **DAS: Storage is directly attached**
  - **SAN: Storage is located across a distance**
- **SAN vs. NAS:**
  - **NAS uses protocols such as NFS or SMB/CIFS where it is clear that the storage is remote**
  - **With SAN, compute resource uses disk block I/O**
- **High-performance of FC provides high I/O**
- **Lower TCO relative to DAS since storage can be shared**
- **VCE and vBlock support – by exception**

# Consolidation and FCoE

- Separate network infrastructure
- Separate cabling == too much cabling
- UCS can aggregate FC/LAN
- Nexus can break it out further
- Net impact: aggregation and reduction of cable plant in DC



**UC on UCS**

# **UCS C-SERIES OVERVIEW**

# C-Series Overview

- **General purpose 1 RU or 2 RU rack-mount servers**
- **Useful for environments requiring distributed resources**
- **Flexible range of compute resources to allow customization to specific needs (HDD vs. RAM vs. CPU)**
- **Each appliance has the Cisco Integrated Management Console (CIMC) for remote management**
- **Each appliance can run a local hypervisor (ESXi)**
  - **Managed with vSphere server or client/server**
- **Easier to deploy in a “UC Only” scenario**

# C-Series Rack-Mount Servers



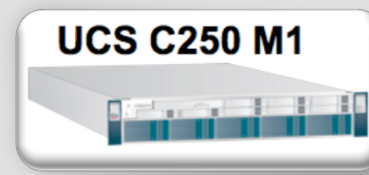
- 2x5506 (8 core)
- 1 RU
- Max 96GB RAM
- 4x3.5" SAS/SATA
- 2 PCIe slots



- 2x5500 or 5600 CPU
- 2 RU
- Max 192GB RAM
- 16 SFF SAS/SATA
- 5 PCIe slots



- 2x5540 (8 core)
- 2 RU
- Max 96GB RAM
- 16 SFF SAS/SATA
- 5 PCIe slots



M1 or M2

- 2x5500 or 5600 CPU
- 2 RU
- Max 384 GB RAM
- 8 SFF SAS/SATA
- 5 PCIe slots
- **Not Supported for UC Applications**

**UC on UCS**

# **UCS TESTED REFERENCE CONFIGURATIONS**

# Tested Reference Configuration (TRC)

- **The Challenge: a “diner menu” of options**
- **What is a Tested Reference Configuration?**
  - **UCS server configuration built to specific Voice Technology Group (VTG) capacity and co-residency scenarios**
  - **Specific server types and storage options**
  - **Orderable using Cisco VTG SKUs or a built-to-order set of data center SKUs**
  - **Specific configurations tested in lab**
- **TAC Supported configurations**
- **Documentation provided around TRCs**



# UCS B200 M1 Blade Server

TRC	CPU	RAM	Storage	Adapters	Notes
1	Dual E5540 (8 cores)	36 GB	DAS RAID1 <sup>A</sup> FC SAN <sup>B</sup>	3 <sup>rd</sup> Party CNA	UCS-B200M1-VCS1
2	Dual E5540 (8 cores)	36 GB	Diskless <sup>C</sup>	3 <sup>rd</sup> Party CNA	Data center SKU/build

- A. Use DAS for VMWare hypervisor**
- B. Use fibre channel SAN for UC applications**
- C. Use SAN for VMWare diskless boot and UC applications**





# UCS B200 M2 Blade Server

TRC	CPU	RAM	Storage	Adapters	Notes
1	Dual E5640 (8 cores)	48 GB	DAS RAID1 <sup>A</sup> FC SAN <sup>B</sup>	Cisco VIC	UCS-B200M2-VCS1
2	Dual E5640 (8 cores)	48 GB	Diskless <sup>C</sup>	Cisco VIC	Data center SKU/build

- A. Use DAS for VMWare hypervisor**
- B. Use fibre channel SAN for UC applications**
- C. Use SAN for VMWare diskless boot and UC applications**



# UCS C200 M2 Rack-Mount Server

TRC	CPU	RAM	Storage	Adapters	Notes
1	Dual E5506 (8 cores)	24 GB	DAS RAID1 <sup>A</sup> DAS RAID1 <sup>B</sup>	GbE NIC	UCS-C200M2-VCD2

- A. Use DAS for VMWare hypervisor**
- B. Use DAS for UC applications**

- Equivalency: MCS 7825-I2**
- This configuration only supported for <1,000 users**
- Application co-residency is supported**
- Up to 4 VMs per compute system**



# UCS C210 M1 Rack-Mount Server

TRC	CPU	RAM	Storage	Adapters	Notes
1	Dual E5540 (8 cores)	12 GB	DAS RAID1 <sup>A</sup> DAS RAID5 <sup>B</sup>	GbE NIC	UCS-C210M1-VCD1 <sup>C</sup>
2	Dual E5540 (8 cores)	36 GB	DAS RAID1 <sup>A</sup> DAS RAID5 <sup>D</sup>	GbE NIC	UCS-C210M1-VCD2
3	Dual E5540 (8 cores)	36 GB	DAS RAID1 <sup>A</sup> SAN for UC	GbE NIC 4G FC HBA	Data center SKUs only

- A. Two DAS disks for VMWare hypervisor**
- B. Four DAS disks for UC applications**
- C. Only supports a single VM (Not a recommended Configuration)**
- D. Eight DAS disks for UC applications**

- **Equivalency: MCS 7845-I3**
- **Application co-residency is not supported on TRC 1**
- **Application co-residency is supported on TRC 2 and 3**
  - **Up to 4 VMs per compute system**



# UCS C210 M2 Rack-Mount Server

TRC	CPU	RAM	Storage	Adapters	Notes
1	Dual E5640 (8 cores)	48 GB	DAS RAID1 <sup>A</sup> DAS RAID5 <sup>B</sup>	GbE NIC	UCS-C210M2-VCD2
2	Dual E5640 (8 cores)	48 GB	DAS RAID1 <sup>A</sup> SAN for UC	GbE NIC	Data center SKUs only
3	Dual E5640 (8 cores)	48 GB	Diskless <sup>C</sup>	GbE NIC 4G FC HBA	Data center SKUs only

- A. Two DAS disks for VMWare hypervisor**
- B. Eight DAS disks for UC applications**
- C. Use SAN for VMWare diskless boot and UC applications**

- **Equivalency: MCS 7845-I3**
- **Application co-residency is supported**
- **Up to 4 VMs per compute system**

**UC on UCS**

# **DESIGN AND DEPLOYMENT CONSIDERATIONS**

# General Guidelines and Considerations

- **VMWare ESXi is the only hypervisor supported**
  - ESXi is packaged in VTG bundles
  - Customers can provide their own ESXi licenses
  - When running VMs with more than 4 vCPUs, ESXi Enterprise Plus is required
- **Most UCS configurations support co-residency**
  - Up to 4 UC VMs per blade/rack-mount server
  - Co-residency is restricted to **UC applications only**
- **At this time, using more powerful compute services doesn't translate to higher capacities**

# Applications that Support Virtualization

- **Foundation Services – Call Processing**
  - CUCM 8.0(2) and later
  - CUCM-BE 8.5(1) and later
  - CUxAC limited to B200M1 TRC 1 and ESXi 4.0
  - CER 8.5(1) and later
  - SME 8.5(1) and later
- **Management (CUOM, etc.): 7.1 and later**
- **Foundation Services – Messaging**
  - Unity 7.0(2) and later
  - Unity Connection 8.0(2) and later
- **Collaboration Services - Presence**
  - CUPS 8.0(2) on some UCS TRCs and 8.5(1) on others
- **Contact Services**
  - CCX 8.0(2)SU2 and 8.5(1)+
  - CCE (various – see addendum)

*\*Details on UC application support by UCS platform is provided as an addendum*

# Abbreviated ESXi Support Matrix

Application	ESXi 4.0 or 4.0 Update 1	ESXi 4.1
UCM	8.0(2) and later	8.0(3) and later
UCMBE-6000	8.5(1) and later	8.5(1) and later
CER	8.5(1) and later	Not supported
Session Manager	8.5(1) and later	8.5(1) and later
Unified Attendant Console	8.0(3) and later Limited to B200M1 TRC1	Not supported
CUCxn	8.0(2) and later	8.0(3) and later
Unity	7.X and later	7.X and later
CUPS	8.0(2) and later	8.0(2) and later
UCCX	8.0(2) and later or 8.5(1) and later	8.0(2) SU2 and later or 8.5 (1) and later

***\*Not all TRCs are supported, a complete matrix is available on DocWiki and in reference materials***



# UC Application Design

- **All current UC deployment models are supported**
- **SRND application-layer guidelines are the same on UCS**
  - Sizing of VM guests
  - Quantity and role of servers
  - CoWAN rules and latency requirements
- **There are no software checks to ensure common sense (i.e. running Pub/Sub on same compute platform)**
- **Mixed clusters of UCS and MCS is supported**
  - Direct attached devices such as MoH live stream requires MCS
- **UC application HD/Redundancy rules are the same**

# UC Application Virtualization Key Points

- Hypervisor support ESXi 4.0, 4.0u1, 4.1
- ESXi feature support is **limited** (see reference materials)
- SAN storage only for UCS B-Series
- SAN or DAS option for C-Series
- FC SAN only, no support for NAS or iSCSI
- Diskless server boot support with ESXi 4.1
- One VM is typically the same as a physical MCS
  - But VMs are measured by: vCPU, vRAM, vDisk, vNIC
- CUC guests on a UCS platform require a dedicated CPU core for ESXi Scheduler
- Unity requires CPU Affinity

# VM Sizing and OVA

- A UC VM TRC is typically based on MCS 7845-I3
- Characteristics are included in an OVA file

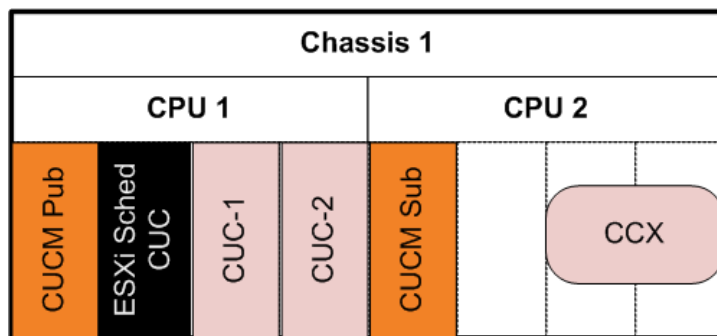
Product	Users	vCPU	vRAM (GB)	vDISK (GB)
CUCM	1,000	1	4	2x80
	7,500	2	6	2x80
CUC	500	1	2	1x160
	5,000	2	4	1x200
	10,000	4	4	2x146
	20,000	7	8	2x300
Unity	5,000	2	4	4x24
	15,000	4	4	4x24
CUP	2,500	2	4	1x80
	5,000	4	4	2x80
UCCX	300	2	4	2x146

**NOTE: CUC requires an additional core for the ESXi instance. 1 per UCS (not 1 per CUC VM)**

# Design Illustration: Common Sense Rules

- Assume a small site, 500 users + 50 CC agents

Option 1

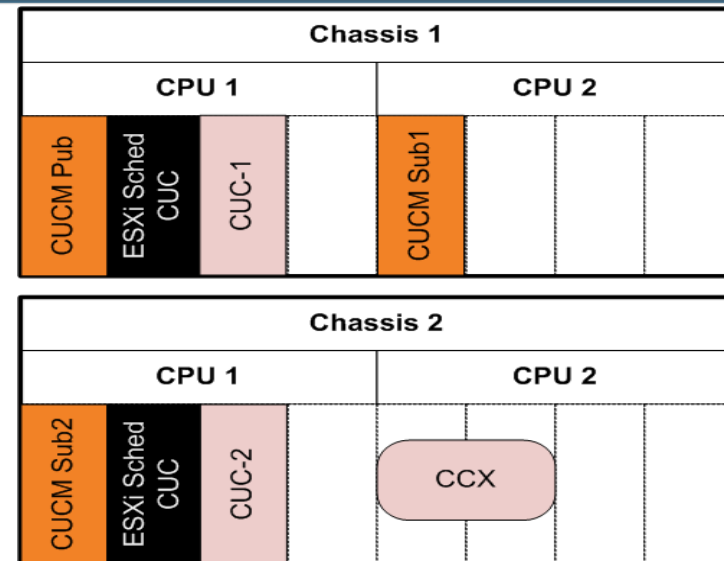


- **PROS:**
  - 5:1 Server consolidation
  - 2 RUs

*What is wrong with this picture?*

- **CONS:**
  - Single point of failure!
  - Need common sense rules

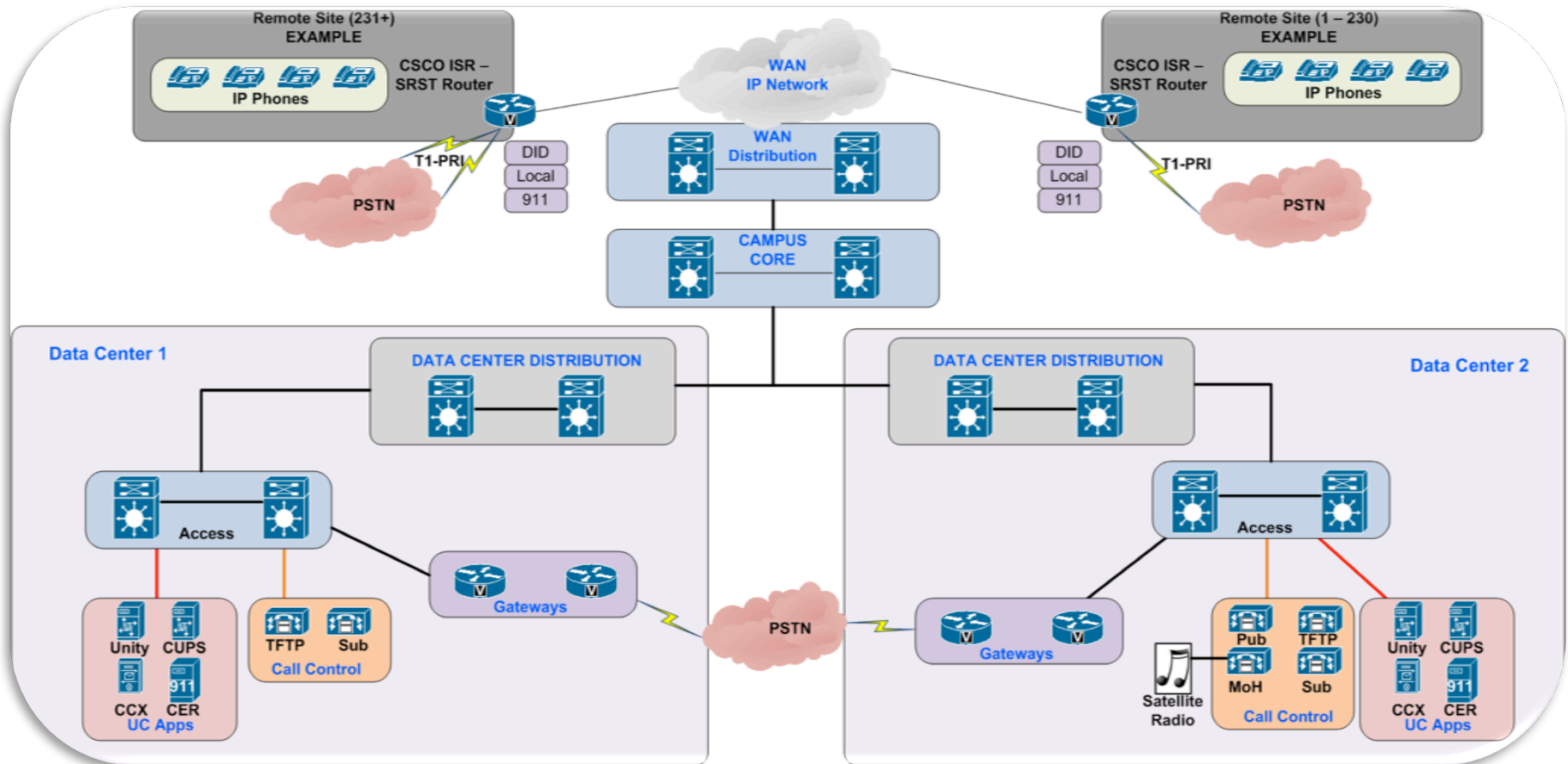
Option 2



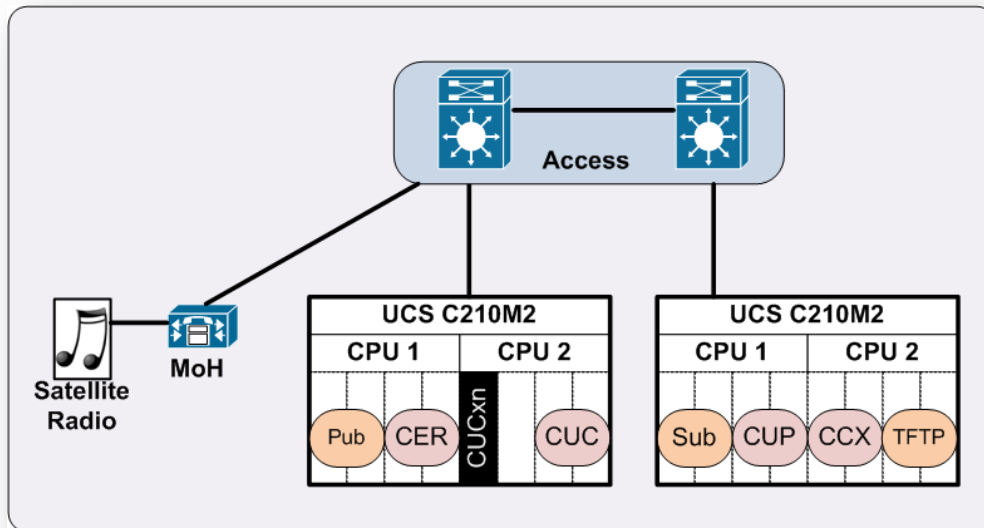
- **Characteristics:**
  - 6:2 Server consolidation
  - 4 RUs
  - App redundancy
  - Extra capacity

# Sample MCS Design– 5000 User

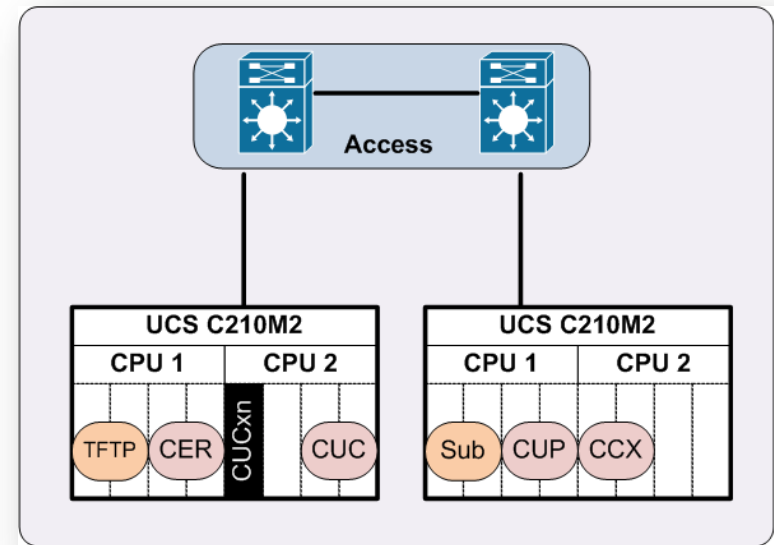
- Assume medium deployment 5000 users



# Sample UCS Design – 5000 User



- **Data Center 1 Characteristics:**
  - 7:2 Server consolidation
  - Dedicated MoH for live feed
  - 6 RU (vs. 16 RU)



- **Data Center 2 Characteristics:**
  - 6:2 Server consolidation
  - 4 RU (vs. 12 RU)

# Sample UCS Design – 5000 User (2)

## Design Characteristics

- **Platform: C210-M2**
- **TRC: #1**
- **UC App Versions:**
  - **CUCM 8.0(2) or later (Recommend 8.5(1) in this configuration)**
  - **CER 8.5(1) or later**
  - **CUC 8.0(2) or later (Recommend 8.5(1) in this configuration)**
  - **CUPS 8.5 or later**
  - **UCCX 8.5(1) or later**

# Management Considerations

- **UCS Platform**
  - B-Series UCS Manager (Centralized Mgmt up to half-size blades)
  - C-Series uses CIMC
- **Vmware**
  - Cisco does not dictate management solution for Vmware
  - Strategy depends on number of images
    - vSphere Client: Thick client that directly manages ESXi host or connects to vCenter Server to manage all ESXi hosts
    - vCenter Server: Windows server provides central point of management
- **UC Applications**
  - RTMT has several new counters specific to SAN I/O perf.
  - Hardware states are transparent to UC apps, rely on Vmware management tools



# Licensing

- **First rule of licensing, we do not talk about licensing...**
- **Licensing process is the same, but the “key” is different for VM**
- **License MAC:**
  - **NOT the NIC MAC**
  - **Hash based on:**

Timezone	NTP Server 1	NIC speed	Hostname
IP Address	IP Mask	GW Address	Primary DNS
SMTP Server	Certificate Info		

- **Once you change one of the parameters above, you will enter a 30 day grace period to get a new license**
- **Changing settings back will revalidate existing license**
- **So, now we know why proper design foresight is key**

**UC on UCS**

# **EXAMPLE BUILD-OUT C-SERIES**

## Example Build-Out

- **Install and physically connect UCS**
- **Update BIOS and CIMC**
- **Install and configure ESXi**
- **Install vSphere Client**
- **Customize vSphere configuration**
- **Creating UC VM guest machines**

# UCS: Basic Connectivity and Net Config



- Install in rack
- Connect **Power**, **CIMC**, **USB Keyboard**, and **VGA**
- Configure CIMC Network Parameters
  - Power on
  - F8 on boot
  - Disable DHCP and configure IP addr/mask/gw
- Reload server and configure RAID
  - Example: UCS-C210M1-VCD2
  - Disk 1 and 2: RAID1+0 (ESXi Hypervisor)
  - Remaining disks: RAID5 (VM Images)

# UCS: Update BIOS (Recommended)

[Home](#) > [Products](#) > [Unified Computing and Servers](#) > [Cisco UCS C-Series Rack-Mount Servers](#) > [Cisco UCS C210 M2 General-Purpose Rack-Mount Server](#) > [Software on Chassis](#)

- **Download Software from CCO (above)**
- **Check current BIOS (F2 on boot)**
- **If Current BIOS is Older than CCO**
  - Expand ZIP and save BIOS image to flash drive
  - Connect flash drive to UCS and reboot
  - Enter F6 on boot and choose “Start EFI Shell”
  - Upgrade begins automatically
  - When upgrade complete, reboot by entering “restart” at Shell> prompt

# CIMC: Update Management Console

 > [Products](#) > [Unified Computing and Servers](#) > [Cisco UCS C-Series Rack-Mount Servers](#) > [Cisco UCS C210 M2 General-Purpose Rack-Mount Server](#) > [Software on Chassis](#)

- **Check current version of CIMC**
  - <https://CIMCIPAddress/>
- **Logon (default admin/password)**
- **Go to Admin**
- **Select Firmware Management**
- **Check CIMC Firmware Image 1 to see if older than CCO version**
- **Download CIMC .bin file from CCO (above)**
- **Perform the upgrade**



# CIMC: Update Management Console

The screenshot displays the Cisco Integrated Management Controller (CIMC) web interface. The browser address bar shows the URL `https://10.3.2.250/index.html`. A login dialog box is overlaid on the page, containing the text "Cisco Integrated Management Controller" and "Version: 1.0(1)". The dialog includes fields for "Username:" and "Password:", along with "Log In" and "Cancel" buttons. Below the dialog, the "Firmware Management" section is visible, showing the "CIMC Firmware Image 2" with a "Firmware Version: 1.3(1c)" and a "Status: Ready". Below this, the "Last Firmware Update" section shows a "Status: Completed Successfully". The interface also includes a sidebar with navigation options like "Overall System", "Server", "User Management", "Network", "Community", "Certificate", "CIMC Log", "Event Management", "Firmware Management", and "Utilities".

## Example Build-Out

- Install and physically connect UCS
- Update BIOS and CIMC
- **Install and configure ESXi**
- Install vSphere Client
- Customize vSphere configuration
- Creating UC VM guest machines



# Download ESXi Hypervisor and vSphere Client

- [Browse to http://www.vmware.com/](http://www.vmware.com/)
- Go to Products>VMWare vSphere Hypervisor (ESXi)
- Click on Download
- Login or register for free download (or use existing media)
- Choose appropriate ESXi .iso
- Choose VMWare vSphere Client Binary
- *vSphere Licensing:*
  - Customers may provide their own license
  - If ordering a Cisco Collaboration SKU, licensing is included

# Enable Virtual Media

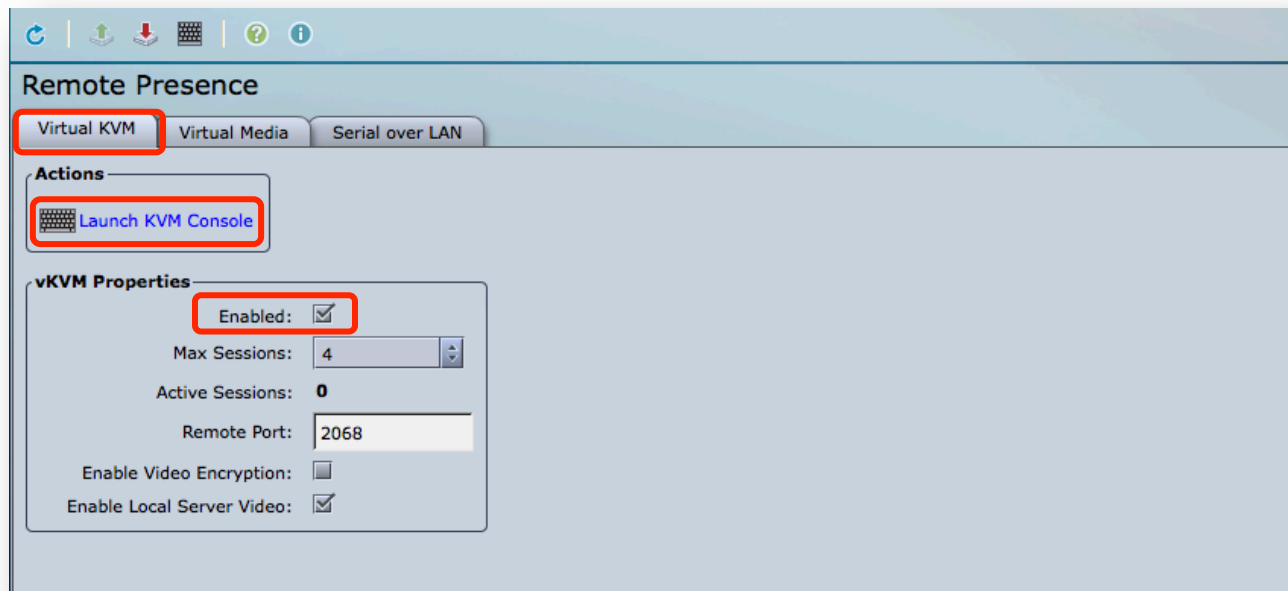
- Connect to CIMC
- Go to Server>Remote Presence
- Select Virtual Media Tab
- Select Enabled Option

The screenshot displays the Cisco Integrated Management Controller (CIMC) WebUI. The browser address bar shows the URL `https://10.3.2.250/index.html`. The page header includes the Cisco logo and the text "Cisco Integrated Management Controller". On the right side of the header, it shows "CIMC Hostname: ucs-c2xx-m1" and "Logged in as: admin@192.168.1.250".

The main content area is divided into two sections. On the left, there is a navigation menu with a "Server" tab selected. Under the "Server" tab, the "Remote Presence" option is highlighted. On the right, the "Remote Presence" section is active, and the "Virtual Media" sub-tab is selected. The "Virtual Media Properties" section shows the "Enabled" checkbox checked, indicating that virtual media is enabled. Other options include "Active Sessions" (0) and "Enable Virtual Media Encryption" (unchecked).

# Launch vKVM

- **Under Remote Presence**
  - **Select Virtual KVM tab**
  - **Ensure that vKVM is enabled**
  - **Click on Launch KVM Console**



# Installing ESXi – Step 1: Installation Media



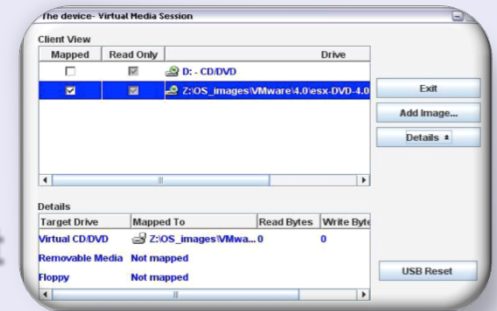
## Option 1: Burn DVD

- Use .iso and burn a bootable DVD
- DVD is mounted directly on UCS
- Press F6 on boot
- Modify Boot Order and Select DVD

*\*This method is used in the demo*

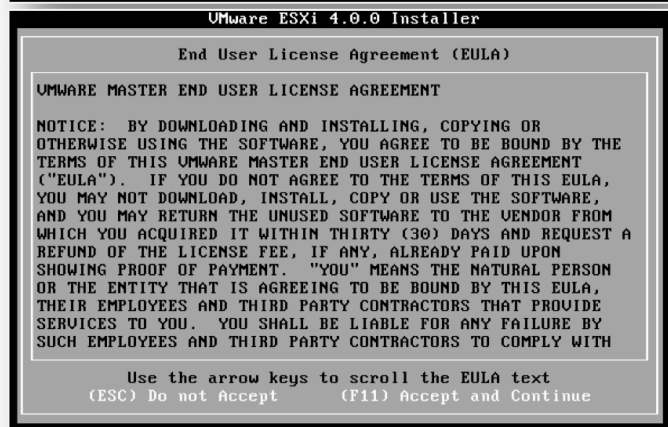
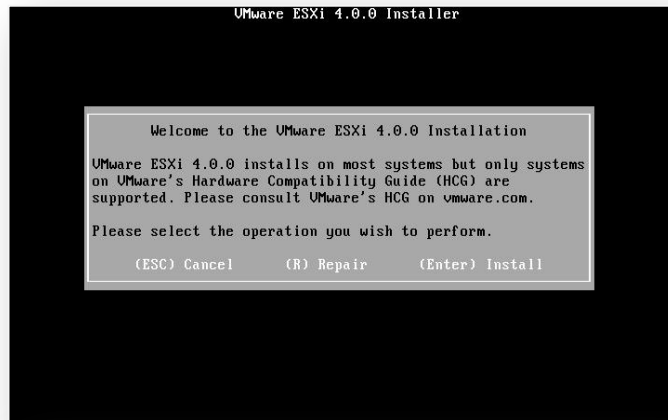
## Option 2: Load From .iso

- The .iso image is loaded from CIMC
- Mapped as a Virtual CD/DVD
- Create mapping BEFORE powering on server
- Press F6 on boot
- Modify Boot Order and select mapped DVD

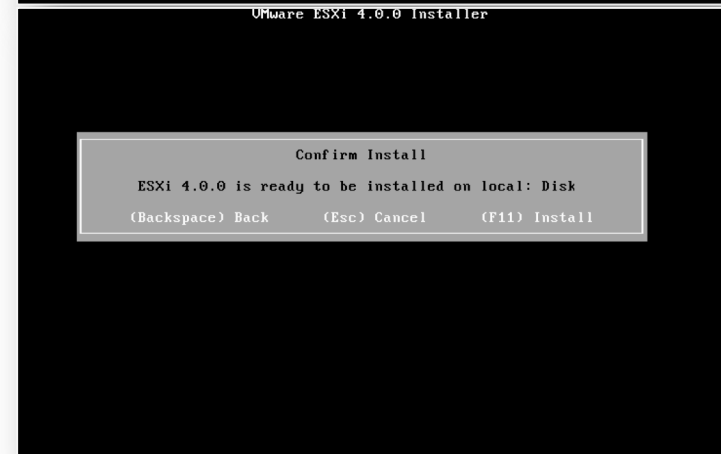
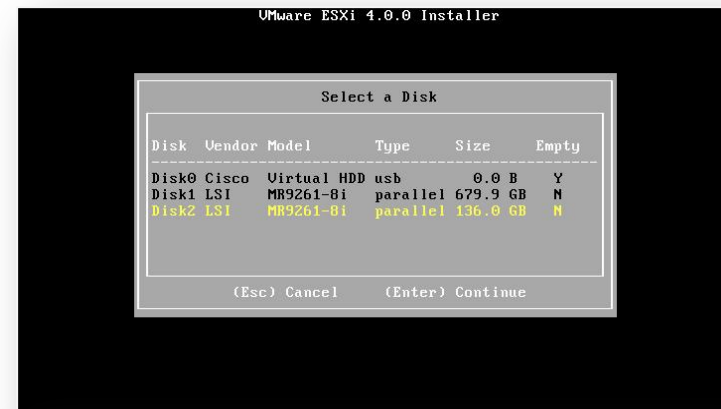


# Installing ESXi – Step 2: Run Install

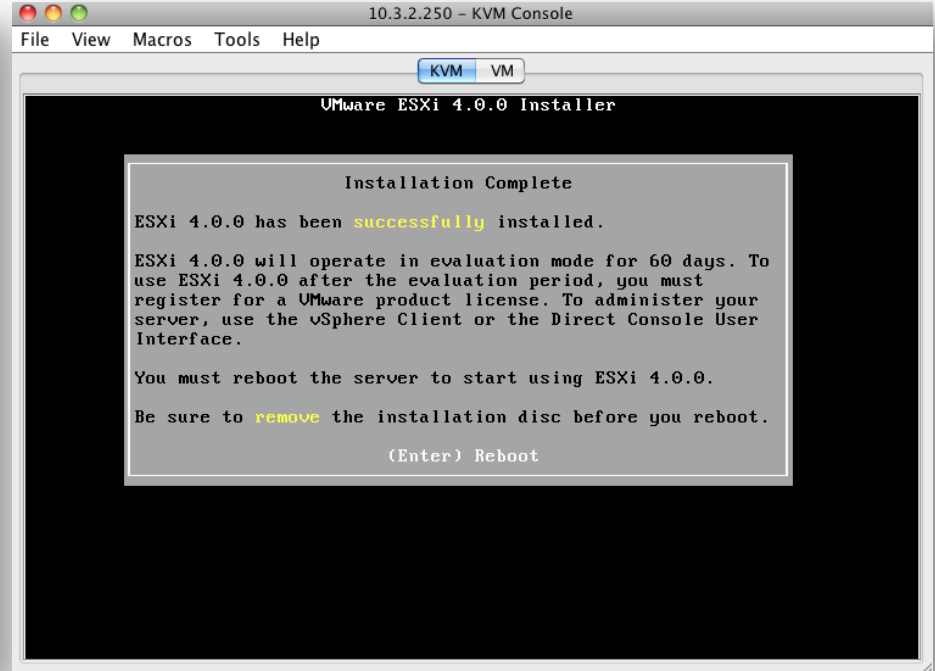
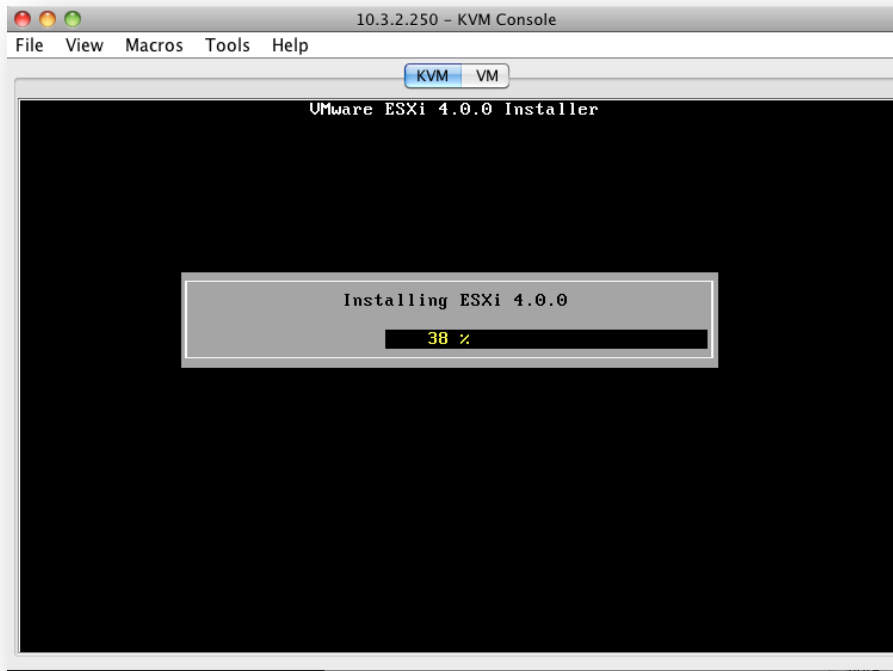
**Choose Enter to Install  
Accept License Agreement**



**Choose Install Location  
Confirm Install**

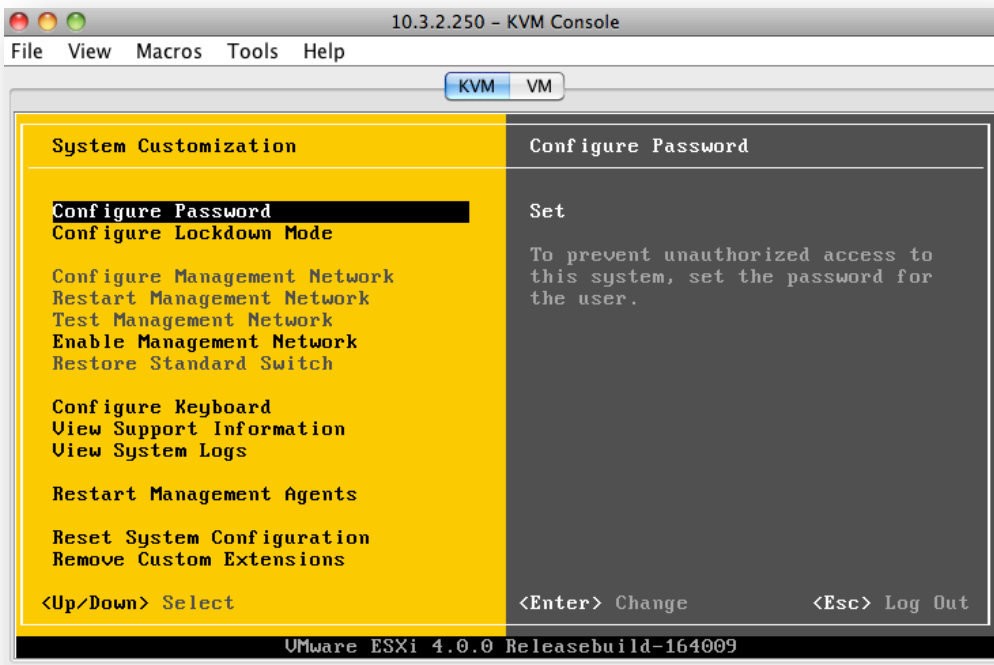


# Installing ESXi – Step 3: Finishing Install



***REMEMBER: Remove the DVD!***

# Post Install Configuration - ESXi



- **Choose F2 from ESXi home screen**
- **Configure root password**
- **Configure Management Network**
  - **Assign vmnet interface**
  - **Configure IP addressing**
- **Test Management Network**
- **Browse to URL to test**

## Example Build-Out

- Install and physically connect UCS
- Update BIOS and CIMC
- Install and configure ESXi
- **Install vSphere Client**
- **Customize vSphere configuration**
- **Creating UC VM guest machines**

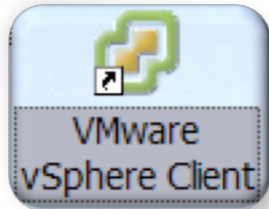


# vSphere Client and vCenter



- **Options to manage hypervisor**
  - vSphere Client (standalone)
  - vSphere Client w/ vCenter
  - vCenter web console
- **If using vSphere Client, use vSphere 4.0, Update 1 (4.0 Build 164009 is very buggy)**
- **You can pull vSphere client by pointing your browser to ESXi management IP**
- **Recommend pulling client from vmware.com (latest compatible)**
- **Install vSphere Client on Windows OS**

# Launching vSphere Client



Run vSphere from the desktop or Start menu

- If managing ESXi directly, enter host name or IP
- If managing via vCenter, enter vCenter server

The image is a screenshot of the VMware vSphere Client login dialog box. The window has a blue header with the VMware logo and the text "VMware vSphere Client". Below the header, there is a grey area with instructions: "To directly manage a single host, enter the IP address or host name." and "To manage multiple hosts, enter the IP address or name of a vCenter Server." There are three input fields: "IP address / Name:" with a dropdown menu showing "10.3.2.249", "User name:", and "Password:". Below these fields is a checkbox labeled "Use Windows session credentials". At the bottom right, there are three buttons: "Login", "Close", and "Help".

***\* Demo manages ESXi Directly***

# vSphere Overview

The screenshot shows the vSphere Client interface. The title bar reads "10.3.2.249 - vSphere Client". The menu bar includes "File", "Edit", "View", "Inventory", "Administration", "Plug-ins", and "Help". The breadcrumb navigation shows "Home > Inventory > Inventory". The left sidebar shows a tree view with "10.3.2.249" selected. The main content area displays a help page for "ucs-esximgmt01.laurel.cndlab.priv VMware ESXi, 4.0.0, 164009". The page has tabs for "Getting Started", "Summary", "Virtual Machines", "Resource Allocation", "Performance", "Configuration", "Users & Groups", "Events", and "Permissions". The "Getting Started" tab is active, showing the heading "What is a Host?". The text explains that a host is a computer using virtualization software like ESX or ESXi to run virtual machines, providing CPU and memory resources. It also mentions that virtual machines can be added to a host by creating a new one or by deploying a virtual appliance. The easiest way to add a virtual machine is to deploy a virtual appliance, which is a pre-built virtual machine with an operating system and software already installed. A diagram illustrates a "Host" (server rack) connected to a "vSphere Client" (laptop) and "Virtual Machines" (stack of boxes). Below the text are "Basic Tasks" with links for "Deploy from VA Marketplace" and "Create a new virtual machine". An "Explore Further" section contains a link for "Learn about vSphere". At the bottom, there is a "Recent Tasks" table with columns: Name, Target, Status, Details, Initiated by, Requested Start Time, Start Time, and Completed Time. The table is currently empty.

10.3.2.249 - vSphere Client

File Edit View Inventory Administration Plug-ins Help

Home > Inventory > Inventory

10.3.2.249

ucs-esximgmt01.laurel.cndlab.priv VMware ESXi, 4.0.0, 164009

Getting Started Summary Virtual Machines Resource Allocation Performance Configuration Users & Groups Events Permissions

close tab X

### What is a Host?

A host is a computer that uses virtualization software, such as ESX or ESXi, to run virtual machines. Hosts provide the CPU and memory resources that virtual machines use and give virtual machines access to storage and network connectivity.

You can add a virtual machine to a host by creating a new one or by deploying a virtual appliance.

The easiest way to add a virtual machine is to deploy a virtual appliance. A virtual appliance is a pre-built virtual machine with an operating system and software already installed. A new virtual machine will need an operating system installed on it, such as Windows or Linux.

**Basic Tasks**

- Deploy from VA Marketplace
- Create a new virtual machine

Explore Further

Learn about vSphere

Recent Tasks

Name	Target	Status	Details	Initiated by	Requested Start Time	Start Time	Completed Time
------	--------	--------	---------	--------------	----------------------	------------	----------------

Tasks wjb

# Summary Tab

- Platform Information
- Compute Resource Information

The screenshot shows the VMware vCenter interface for a host named 'ucs-esximgmt01.laurel.cnclab.priv VMware ESXi, 4.0.0, 164009'. The 'Summary' tab is selected, showing various system metrics and configurations.

**General**

Manufacturer: Cisco Systems Inc  
Model: R200-1120402  
CPU Cores: 8 CPUs x 2.266 GHz  
Processor Type: Intel(R) Xeon(R) CPU ...  
License: vSphere 4 Enterprise ...  
Processor Sockets: 2  
Cores per Socket: 4  
Logical Processors: 16  
Hyperthreading: Active  
Number of NICs: 4  
State: Connected  
Virtual Machines and VMotion Enabled: 2  
VMware EVC Mode: N/A  
FaultTolerance Enabled: N/A  
Active Tasks:  
Host Profile: N/A  
Profile Compliance: ? N/A

**Resources**

CPU usage **2929 MHz** Capacity 8 x 2.266 GHz  
Memory usage **7248.00 MB** Capacity 24507.61 MB

Datastore	Capacity	Free	Last Upd
datastore1	460.75 G	460.20 G	4/7/2011
datastore2	465.50 G	222.94 G	4/7/2011

Network	Type	Nt
vmNetlab1	Standard switch network	2
VM Network	Standard switch network	0

**Host Management**

[Manage this host through VMware vCenter.](#)

# Users, Groups, and Permissions

- NetCraftsmen Recommendation
- Create custom users and groups
- Allows for more granular AAA control

ucs-esximgmt01.laurel.cndlab.priv VMware ESXi, 4.0.0, 164009

Getting Started Summary Virtual Machines Resource Allocation Performance Configuration **Users & Groups** Events Permissions

View: Users Groups Refresh

UID	User	Name
99	nobody	Nobody
502	hailey	hailey
500	wjb	wjb
100	dcui	DCUI User
0	root	Administrator
501	awright	awright
2	daemon	daemon
65534	nfsnobody	Anonymous NFS User
12	vimuser	vimuser

ucs-esximgmt01.laurel.cndlab.priv VMware ESXi, 4.0.0, 164009

Getting Started Summary Virtual Machines Resource Allocation Performance Configuration Users & Groups Events **Permissions**

User/Group	Role	Defined in
vmManagers	Administrator	This object
dcui	Administrator	This object
root	Administrator	This object

# Configuration Tab

ucs-esximgmt01.laurel.cnclab.priv VMware ESXi, 4.0.0, 164009

Getting Started Summary Virtual Machines Resource Allocation Performance Configuration Users & Groups Events Permissions

[Reset Sensor Refresh](#)

**Hardware**

- Health Status
  - [Processors](#)
  - [Memory](#)
  - [Storage](#)
  - [Networking](#)
  - [Storage Adapters](#)
  - [Network Adapters](#)
  - [Advanced Settings](#)

**Software**

- [Licensed Features](#)
- [Time Configuration](#)
- [DNS and Routing](#)
- [Virtual Machine Startup/Shutdown](#)
- [Virtual Machine Swapfile Location](#)
- [Security Profile](#)
- [System Resource Allocation](#)
- [Advanced Settings](#)

Sensor	Status	Reading
[-] Cisco Systems Inc R200-1120...	🔴 Alert	
[+] Processors	🟢 Normal	
[+] Memory	🟢 Normal	
[-] Power	🟢 Normal	
System Board 0 POWER_U...	🟢 Normal	148 Watts
Power Supply 2 PSU2_PIN -...	🟢 Normal	0 Watts
Power Supply 2 PSU2_PO...	🟢 Normal	0 Watts
Power Supply 2 PSU2_IOUT...	🟢 Normal	0 Amps
Power Supply 1 PSU1_PIN -...	🟢 Normal	148 Watts
Power Supply 1 PSU1_PO...	🟢 Normal	140 Watts
Power Supply 1 PSU1_IOUT...	🟢 Normal	11 Amps
Processor 2 VR_CPU2_IO...	🟢 Normal	12.09 Amps
Processor 1 VR_CPU1_IO...	🟢 Normal	11.39 Amps
Power Supply 1: Running/...	🟢 Normal	650 Watts
Power Supply 2: Off Line-D...	🟢 Normal	650 Watts
Power Supply 0 PSU_RED...	🟡 Warning	
Power Supply 2 PSU2_STA...	🔴 Alert	
Power Supply 1 PSU1_STA...	🟢 Normal	
[+] Temperature	🟢 Normal	
[+] Fan	🟢 Normal	
[+] Voltage	🟢 Normal	
[+] Other	🟢 Normal	
[+] Software Components	🟢 Normal	
[+] Storage	🟢 Normal	
[+] Platform Alert	🟢 Normal	
[+] Chip Set	🟢 Normal	

# Configuration Mods

- **Licensing**
  - vSphere ESXi from vmware has an expiration time
  - Upload licenses from vSphere Client
- **Disable Large Receive Offload (LRO)**
  - Advanced settings
  - Select “Net” and scroll halfway down
  - Set parameters from 1 to 0:
    - Net.VmxnetSwLROSL
    - Net.Vmxnet3SwLRO
    - Net.Vmxnet3HwLRO
    - Net.VMxnet2SwLRO
    - Net.Vmxnet2HwLRO
  - Reboot ESXi host

## Example Build-Out

- Install and physically connect UCS
- Update BIOS and CIMC
- Install and configure ESXi
- Install vSphere Client
- Customize vSphere configuration
- **Creating UC VM guest machines**



# Finding the OVA

- CCO, software download

- Choose the OVA based on scale
- Information on OVAs included in reference materials

Download Software  
Select a Product

Enter Product Name e.g. 6500 Switch

Use [Software Download Search](#) to find software

[Home](#) > [Products](#) > [Voice and Unified Communications](#) > [IP Telephony](#) > [Call Control](#) > Cisco Unified Communications Manager (CallManager)

Make a selection to continue

Recently Used Products  
My Added Devices  
Add Device  
Products >  
Technology

- Cisco BTS 10200 Softswitch
- Cisco EGW 2200 Enterprise Gateway
- Cisco Gatekeeper/Multimedia Conference Manager
- Cisco Hosted Unified Communications Services
- Cisco International Dial Plan
- Cisco PGW 2200 Softswitch
- Cisco Small Business Voice Systems
- Cisco Unified Communications 500 Series for Small Business
- Cisco Unified Communications 300 Series for Small Business
- Cisco Unified Communications Manager (CallManager)**
- Cisco Unified Communications Manager Business Edition 6000
- Cisco Unified Communications Manager Business Edition 5000
- Cisco Unified Communications Manager Express
- Cisco Unified Mobility
- Cisco Unified SIP Proxy

System Utility (BARS)  
[Cisco CallManager Version 3.3](#)  
[Cisco CallManager Version 3.2](#)  
[Cisco CallManager Version 3.1](#)

Download Software

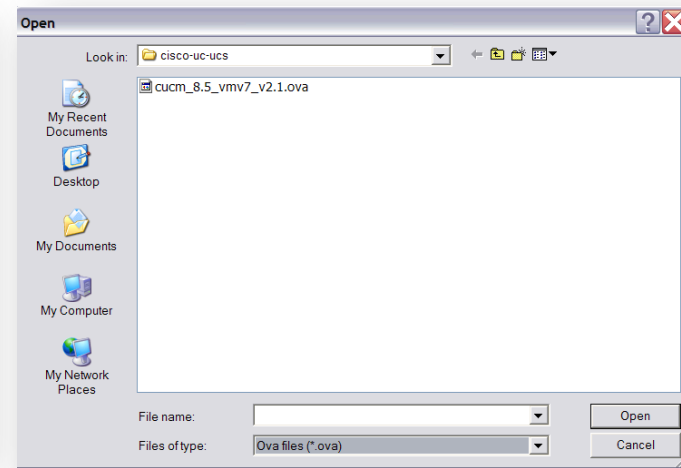
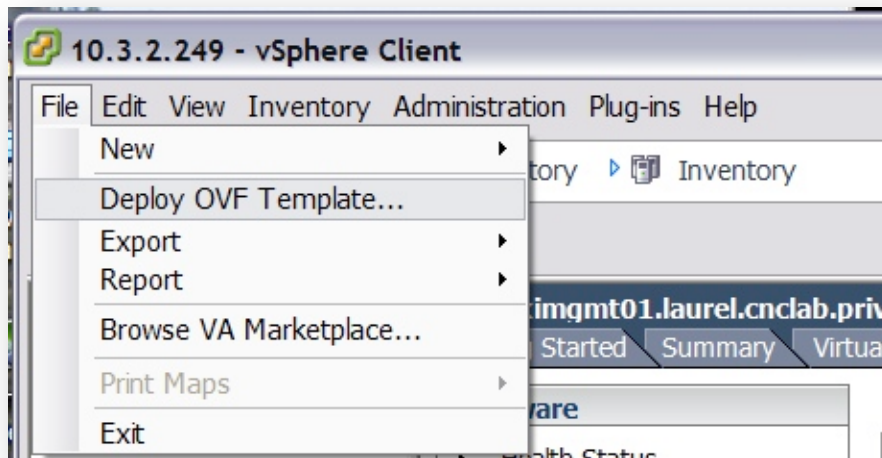
Select a Software Type

[Home](#) > [Products](#) > [Voice and Unified Communications](#) > [IP Telephony](#) > [Call Control](#) > [Cisco Unified Communications Manager \(CallManager\)](#) > [Cisco Unified Communications Manager Version 8.5](#)

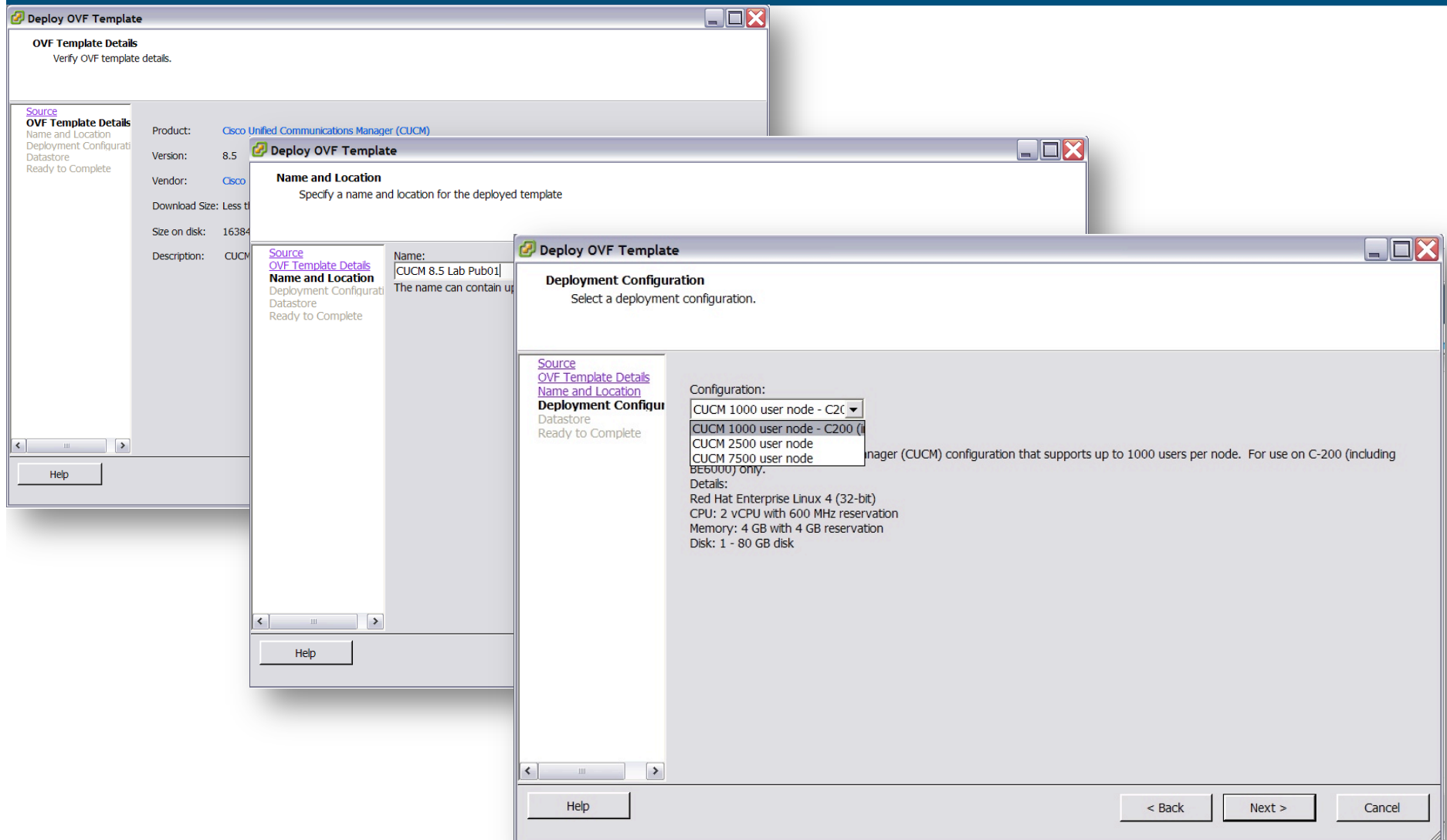
[Intercompany Media Software](#)  
[Unified Communications Manager / CallManager / Cisco Unity Connection Utilities](#)  
[Unified Communications Manager / Cisco Unity Connection Time Zone Updates](#)  
[Unified Communications Manager / Cisco Unity Connection Updates](#)  
[Unified Communications Manager Recovery Software](#)  
**[Unified Communications Manager Virtual Machine Templates](#)**  
[Unified Communications Manager/CallManager Device Packages](#)  
[Unified Communications Manager/CallManager Locale Installer](#)

# Importing the OVA

- **File>Deploy OVF Template...**
- **Browse to OVA file downloaded from CCO**

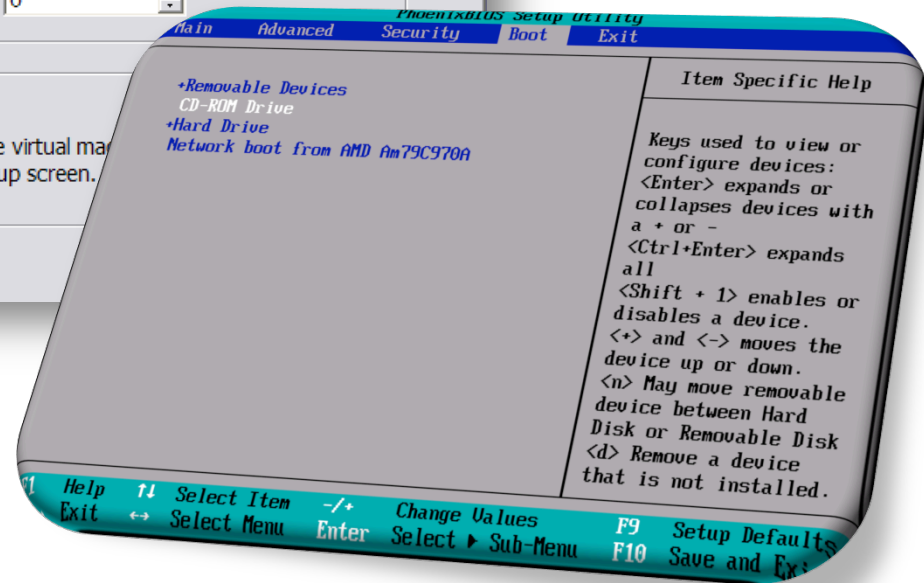
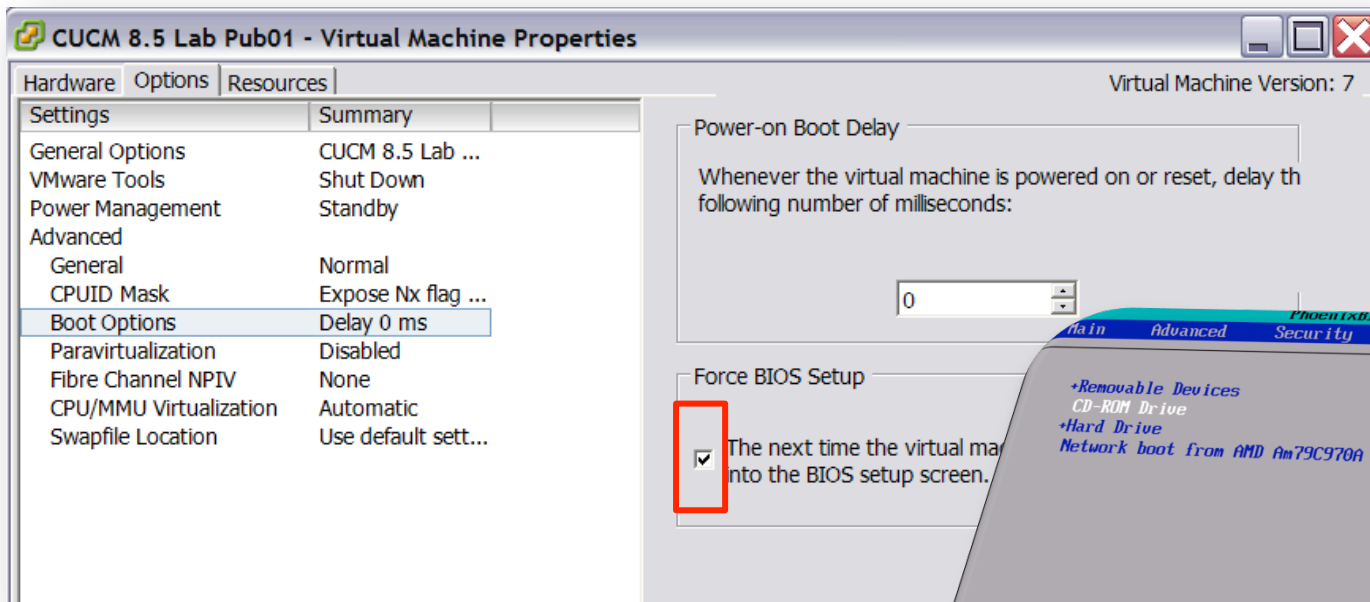


# Importing the OVA



# Preparing VM

- Assign data store
- Assign vmnet
- Force BIOS Setup on initial boot
- Modify boot order to use DVD 1st



# References and Useful Links

- **UCS Reference Configurations**  
[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution\\_overview\\_c22-597556.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution_overview_c22-597556.html)
- **UC SRND**  
<http://www.cisco.com/go/ucsrnd>
- **Doc Wiki for UC Virtualization**  
[http://docwiki.cisco.com/wiki/Unified\\_Communications\\_Virtualization](http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization)
- **UC Virtualization**  
<http://www.cisco.com/go/uc-virtualized>
- **NetCraftsmen Blogs**  
<http://www.netcraftsmen.net/blogs/tags/Unified-Communications/>



# Chesapeake NETCRAFTSMEN

**Telephone: 888-804-1717**

**E-mail: [info@netcraftsmen.net](mailto:info@netcraftsmen.net)**

**UC on UCS**

# **ADDITIONAL MATERIAL**

# OVA Descriptions

[http://docwiki.cisco.com/wiki/Unified\\_Communications\\_Virtualization\\_Downloads\\_%28including\\_OVA/OVF\\_Templates%29](http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Downloads_%28including_OVA/OVF_Templates%29)

Supported OVA Templates: Unified Communications Manager

Application, OVA Capacity and Notes+Download Link	vCPU Cores	vRAM / Memory	vDisk	vNIC	Notes
<a href="#">1000 users (C200 and BE6000 only)</a>	2 (600 MHz reserved)	4 GB (4 GB reserved)	1x 80 GB	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ). Use on C200 only. For use on CUCM-BE 6000.
<a href="#">2500 users</a>	1 (600 MHz reserved)	2.25 GB (2.304 GB reserved)	1x 80 GB	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ). Use on B200 and C210 only.
<a href="#">7500 users</a>	2	6 GB	2x 80 GB <ul style="list-style-type: none"> <li>■ vDisk 1 = Operating System + app binaries</li> <li>■ vDisk 2 = Logs</li> </ul>	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ). Use on B200 and C210 only.

Supported OVA Templates: Cisco Emergency Responder

Application, OVA Capacity and Notes+Download Link	vCPU Cores	vRAM / Memory	vDisk	vNIC	Notes
<a href="#">12,000 users (use CUCM "1000 users")</a>	See CUCM "1000 users"	See CUCM "1000 users"	See CUCM "1000 users"	See CUCM "1000 users"	Requires License MAC ( <a href="#">click here for details</a> ) Limits: <ul style="list-style-type: none"> <li>■ 12,000 IP phones</li> <li>■ 2,500 analog phones</li> <li>■ 1,200 roaming phones (per Emergency Responder cluster)</li> <li>■ 500 LAN switches</li> <li>■ 30,000 switch ports</li> <li>■ 3,000 ERLs</li> </ul>
<a href="#">20,000 users (use CUCM "2500 users")</a>	See CUCM "2500 users"	See CUCM "2500 users"	See CUCM "2500 users"	See CUCM "2500 users"	Requires License MAC ( <a href="#">click here for details</a> ) Limits: <ul style="list-style-type: none"> <li>■ 20,000 IP phones</li> <li>■ 5,000 analog phones</li> <li>■ 2,000 roaming phones (per Emergency Responder cluster)</li> <li>■ 1,000 LAN switches</li> <li>■ 60,000 switch ports</li> <li>■ 7,500 ERLs</li> </ul>
<a href="#">30,000 users (use CUCM "7500 users")</a>	See CUCM "7500 users"	See CUCM "7500 users"	See CUCM "7500 users"	See CUCM "7500 users"	Requires License MAC ( <a href="#">click here for details</a> ) Limits: <ul style="list-style-type: none"> <li>■ 30,000 IP phones</li> <li>■ 10,000 analog phones</li> <li>■ 3,000 roaming phones (per Emergency Responder cluster)</li> <li>■ 2,000 LAN switches</li> <li>■ 120,000 switch ports</li> <li>■ 10,000 ERLs</li> </ul>



# OVA Descriptions (con't)

[http://docwiki.cisco.com/wiki/Unified\\_Communications\\_Virtualization\\_Downloads\\_%28including\\_OVA/OVF\\_Templates%29](http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Downloads_%28including_OVA/OVF_Templates%29)

Supported OVA Templates: Cisco Unity Connection

Application, OVA Capacity and Notes+Download Link	vCPU Cores	vRAM / Memory	vDisk	vNIC	Notes
<a href="#">500 users</a>	1	2 GB	1x 160 GB	1 (with static MAC address)	<p>Requires License MAC (<a href="#">click here for details</a>)</p> <p>Limits for Standalone Configuration:</p> <ul style="list-style-type: none"> <li>16 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>4 ports iLBC or G.722</li> </ul> <p>Limits for Active/Active Cluster Configuration:</p> <ul style="list-style-type: none"> <li>32 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>8 ports iLBC or G.722</li> </ul>
<a href="#">1000 users</a>	1	4 GB	1x 160 GB	1 (with static MAC address)	<p>Requires License MAC (<a href="#">click here for details</a>)</p> <p>Limits for Standalone Configuration:</p> <ul style="list-style-type: none"> <li>24 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>6 ports iLBC or G.722</li> </ul> <p>Limits for Active/Active Cluster Configuration:</p> <ul style="list-style-type: none"> <li>48 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>12 ports iLBC or G.722</li> </ul> <p>For use on CUCM-BE 6000.</p>
<a href="#">5000 users</a>	2	4 GB	1x 200 GB	1 (with static MAC address)	<p>Requires License MAC (<a href="#">click here for details</a>)</p> <p>Limits for Standalone Configuration:</p> <ul style="list-style-type: none"> <li>100 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>25 ports iLBC or G.722</li> </ul> <p>Limits for Active/Active Cluster Configuration:</p> <ul style="list-style-type: none"> <li>200 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>50 ports iLBC or G.722</li> </ul>
<a href="#">10,000 users</a>	4	4 GB	2x 146 GB	1 (with static MAC address)	<p>Requires License MAC (<a href="#">click here for details</a>)</p> <p>Limits for Standalone Configuration:</p> <ul style="list-style-type: none"> <li>150 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>35 ports iLBC or G.722</li> </ul> <p>Limits for Active/Active Cluster Configuration:</p> <ul style="list-style-type: none"> <li>300 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>70 ports iLBC or G.722</li> </ul>
<a href="#">20,000 users</a>	7	8 GB	2x 300 GB or 2x 500 GB	1 (with static MAC address)	<p>Require ESXi Enterprise Plus Licensing since it uses over 4 vCPUs for the Virtual Machine.</p> <p>The datastore where the Connection virtual machine will reside must be formatted with a VMware VMFS block size of 2MB or more. A block size of 1MB limits the maximum virtual hard disk size to 256GB. A block size of 2MB allows 512GB virtual disks.</p> <p>Requires License MAC (<a href="#">click here for details</a>)</p> <p>Limits for Standalone Configuration:</p> <ul style="list-style-type: none"> <li>250 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>60 ports iLBC or G.722</li> </ul> <p>Limits for Active/Active Cluster Configuration:</p> <ul style="list-style-type: none"> <li>500 ports G.711 or G.729a (combined TUI, VUI, or TTS)</li> <li>120 ports iLBC or G.722</li> </ul>

# OVA Descriptions (con't)

[http://docwiki.cisco.com/wiki/Unified\\_Communications\\_Virtualization\\_Downloads\\_%28including\\_OVA/OVF\\_Templates%29](http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Downloads_%28including_OVA/OVF_Templates%29)

Supported OVA Templates: Cisco Unified Presence

Application, OVA Capacity and Notes+Download Link	vCPU Cores	vRAM / Memory	vDisk	vNIC	Notes
<a href="#">1000 users</a>	1 (800 MHz reserved)	2 GB	1x 80 GB	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ) For use on CUCM-BE 6000.
<a href="#">2500 users</a>	2	4 GB	1x 80 GB	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ). Use when migrating from MCS 7825 with disks smaller than 80 GB.
<a href="#">5000 users</a>	4	4 GB	2x 80 GB	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ). Use when migrating from MCS 7845.

Supported OVA Templates: Cisco Unified Contact Center Express

Application, OVA Capacity and Notes+Download Link	vCPU Cores	vRAM / Memory	vDisk	vNIC	Notes
<a href="#">100 agents</a> (Release 8.5(1) only)	2	4 GB	1x 146 GB <ul style="list-style-type: none"> <li>vDisk 1 = Operating System and Unified CCX binaries</li> <li>vDisk 2 = Unified CCX logs</li> </ul>	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> )
<a href="#">300 agents</a> (Release 8.0(2) and Release 8.5(1))	2	4 GB	2x 146 GB <ul style="list-style-type: none"> <li>vDisk 1 = Operating System and Unified CCX binaries</li> <li>vDisk 2 = Unified CCX logs</li> </ul>	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> )
<a href="#">400 agents</a> (Release 8.5(1) only)	4	8 GB	2x 146 GB <ul style="list-style-type: none"> <li>vDisk 1 = Operating System and CUCCX binaries</li> <li>vDisk 2 = UCCX logs</li> </ul>	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> )
<a href="#">Unified CCX WFM</a>	2	2 GB	2x 146 GB <ul style="list-style-type: none"> <li>vDisk 1 = 40 GB Minimum Operating system, Cisco Unified Contact Center Express WFO WFM binaries, SQL Server, SQL Server Data files</li> <li>vDisk 2 = Optional - can be used to hold SQL Server Data files</li> </ul>	1 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ) Capacities <ul style="list-style-type: none"> <li>300 named users</li> <li>150 concurrent users</li> </ul>
<a href="#">Unified CCX WFO QM Configuration (CR/QM/AQM)</a>	2	2 GB	2x 146 GB <ul style="list-style-type: none"> <li>vDisk 1 = 40 GB Minimum Operating system, Cisco Unified Contact Center Express WFO QM binaries, SQL Server, SQL Server Data files</li> <li>vDisk 2 = 146 GB Cisco Unified Contact Center Express WFO QM recordings (Size may vary depending upon usage)</li> </ul>	2 (with static MAC address)	Requires License MAC ( <a href="#">click here for details</a> ) Capacities <ul style="list-style-type: none"> <li>300 named users</li> <li>150 concurrent users</li> <li>150 voice recordings, for all recording types (desktop, server and network)</li> <li>150 voice+screen recordings, for all recording types (desktop, server and network)</li> </ul>

*There are other applications with OVA templates not provided in this presentation.*

# UC Apps that Support Virtualization

## Call Processing and System Management Applications

Application	B200 M2 TRC #1 (DAS+FC SAN)	B200 M2 TRC #2 (Diskless)	B200 M1 TRC #1 (DAS+FC SAN)	B200 M1 TRC #2 (Diskless)	C210 M2 TRC #1 (DAS)	C210 M2 TRC #2 (DAS+FC SAN)	C210 M2 TRC #3 (Diskless)	C210 M1 TRC #1 (DAS, single-VM)	C210 M1 TRC #2 (DAS)	C210 M1 TRC #3 (DAS+FC SAN)	C210 M1 TRC #4 (Diskless)	C200 M2 TRC #1 (DAS)
Unified Communications Manager	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(2) and later	8.0(2) and later	8.0(3) and later	8.5(1) and later
Unified Communications Manager Business Edition 6000	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	8.5(1) and later
Cisco Emergency Responder	8.5(1) and later	Not supported	8.5(1) and later	Not supported	8.5(1) and later	8.5(1) and later	Not supported	8.5(1) and later	8.5(1) and later	8.5(1) and later	Not supported	8.5(1) and later
Session Manager Edition	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	8.5(1) and later	Not supported
Unified Attendant Consoles	Not supported	Not supported	8.0(3) and later	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
UC Management Suite (OM, SM, SSM, PM)	7.1 and later	TBD	7.1 and later	TBD	7.1 and later	7.1 and later	TBD	7.1 and later	7.1 and later	7.1 and later	TBD	7.1 and later

## Messaging and Presence Applications

Application	B200 M2 TRC #1 (DAS+FC SAN)	B200 M2 TRC #2 (Diskless)	B200 M1 TRC #1 (DAS+FC SAN)	B200 M1 TRC #2 (Diskless)	C210 M2 TRC #1 (DAS)	C210 M2 TRC #2 (DAS+FC SAN)	C210 M2 TRC #3 (Diskless)	C210 M1 TRC #1 (DAS, single-VM)	C210 M1 TRC #2 (DAS)	C210 M1 TRC #3 (DAS+FC SAN)	C210 M1 TRC #4 (Diskless)	C200 M2 TRC #1 (DAS)
Cisco Unity Connection	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(2) and later	8.0(3) and later	8.0(2) and later	8.0(2) and later	8.0(2) and later	8.0(3) and later	8.0(2) and later
Cisco Unity	7.0(2) and later	Not supported	7.0(2) and later	Not supported	Not Supported	7.0(2) and later	Not supported	Not Supported	Not Supported	7.0(2) and later	Not Supported	Not supported
Cisco Unified Presence	8.5 and later	8.5 and later	8.0(2) and later	8.5 and later	8.5 and later	8.5 and later	8.5 and later	8.0(2) and later	8.0(2) and later	8.0(2) and later	8.5 and later	8.5 and later

# UC Apps that Support Virtualization

## Contact Center Applications

Application	B200 M2 TRC #1 (DAS+FC SAN)	B200 M2 TRC #2 (Diskless)	B200 M1 TRC #1 (DAS+FC SAN)	B200 M1 TRC #2 (Diskless)	C210 M2 TRC #1 (DAS)	C210 M2 TRC #2 (DAS+FC SAN)	C210 M2 TRC #3 (Diskless)	C210 M1 TRC #1 (DAS, single-VM)	C210 M1 TRC #2 (DAS)	C210 M1 TRC #3 (DAS+FC SAN)	C210 M1 TRC #4 (Diskless)	C200 M2 TRC #1 (DAS)
Unified Contact Center Express / IP IVR	8.0(2) and later or 8.5(1) and later	8.0(2)SU2 and later	8.0(2) and later or 8.5(1) and later	8.0(2)SU2 and later	8.0(2) and later or 8.5(1) and later	8.0(2) and later or 8.5(1) and later	8.0(2)SU2 and later	8.0(2) and later or 8.5(1) and later	8.0(2) and later or 8.5(1) and later	8.0(2) and later or 8.5(1) and later	8.0(2)SU2 and later	8.5(1) and later
Cisco Unified Workforce Optimization (WFO), Quality Management (QM), and WorkForce Management (WFM) <a href="#">↗</a>	Not supported	Not supported	Not supported	Not supported	8.5(1) and later	8.5(1) and later	Not supported	8.5(1) and later	8.5(1) and later	8.5(1) and later	Not supported	Not supported
Unified Contact Center Enterprise	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
- Router, Logger, Rogger, Agent PG, MR PG, VRU PG, Administration and Data Server (AW, AW-CONFIG, AW-HDS, AW-HDS-DDS, HDS-DDS), Administration Client, Outbound Option with SIP Dialer, Support Tools	8.0(2) and later or 8.5(1) and later	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	Not supported	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	Not supported	Not supported
- Progger, Unified ICME/CCH/ICMH, Outbound Option with SCCP Dialer, Webview, EIM/WIM, Expert Advisor, RSM, Unified CRM Connector	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
Unified Intelligence Center	8.0(3) and later	Not supported	8.0(3) and later	Not supported	8.0(3) and later	8.0(3) and later	Not supported	8.0(3) and later	8.0(3) and later	8.0(3) and later	Not supported	Not supported
Unified Contact Center Management Portal	8.0(2) and later or 8.5(1) and later	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	Not supported	Not supported	8.0(2) and later or 8.5(1) and later	Not supported	Not supported	Not supported
Unified Customer Voice Portal (all components)	8.0(1) and later or 8.5(1) and later	Not supported	8.0(1) and later or 8.5(1) and later	Not supported	8.5(1) and later	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
Cisco MediaSense	8.5(2) and later	8.5(2) and later	8.5(2) and later	8.5(2) and later	8.5(1) and later	Not supported	Not supported	8.5(1) and later	8.5(1) and later	Not supported	Not supported	Not supported
Cisco SocialMiner	8.5(2) and later	Not supported	Not supported	Not supported	8.5(1) and later	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported

# Supported VM Features By UC Application

- Following slides show current support matrices
- Legend
  - C: Supported with Caveats
  - P: Partial (limited) support
  - N: No support at this time

# VMWare Feature Support (1)

Feature	CUCM	CER	SME	Unity	CUC	CUP	CCX	CUx AC	Mgmt Suite
VM Templates (OVA)	C	C	C	C	C	C	C	C	C
Copy VM	C	C	C	C	C	C	C	N	N
Restart VM on Different ESXi Host	C	C	C	C	C	C	C	C	C
Resize VM	P	P	P	P	P	P	P	N	N
VMWare Hot Add	N	N	N	N	N	N	N	N	N
Multiple Physical NICs and vNICs	P	P	P	P	P	P	P	P	P
VMWare HA	C	C	C	C	C	C	N	N	PM Only
VMWare Site Recovery Manager	C	C	C	N	N	N	N	N	N
VMWare vNetwork Distributed Switch	C	C	C	C	C	C	C	N	N
VMWare vMotion	C	P	C	N	P	P	C	N	N
Long Distance vMotion	N	N	N	N	N	N	N	N	N
VMWare Dynamic Resource Scheduler	N	N	N	N	N	N	N	N	N
VMWare Dynamic Power Management	N	N	N	N	N	N	N	N	N
VMWare Storage vMotion	C	C	N	N	N	N	C	N	N
VMWare vCenter Update Manager	N	N	N	C	N	N	N	N	N
VMWare Consolidated Backup	N	N	N	C	N	N	N	N	N
VMWare Data Recovery (DR, VDR)	N	N	N	N	N	N	N	N	N
VMWare Snapshots	N	N	N	C	N	N	N	N	N
VMWare Fault Tolerance	N	N	N	N	N	N	N	N	N
VMWare vCenter Converter	N	N	N	N	N	N	N	N	N

# VMWare Feature Support (2)

Feature	CUCM	CER	SME	Unity	CUC	CUP	CCX	CUx AC	Mgmt Suite
VMSafe	N	N	N	N	N	N	N	N	N
VMWare vShield	N	N	N	N	N	N	N	N	N
Virtual Application Packaging of UC Apps	N	N	N	N	N	N	N	N	N
3 <sup>rd</sup> Party VM Backup tools (e.g. Veeam, Viziocore, esXpress, etc.)	N	N	N	N	N	N	N	N	N
3 <sup>rd</sup> Party VM-Based deployment tools (e.g. rPath, Platespin)	N	N	N	N	N	N	N	N	N
3 <sup>rd</sup> Party Physical-to-virtual migration tools (P2V)	N	N	N	N	N	N	N	N	N
All others not listed (ESXi 4.0)	N	N	N	N	N	N	N	N	N
ESXi 4.1 boot from SAN	C	N	C	C	C	N	Yes	N	N
All others not listed (ESXi 4.1)	N	N	N	N	N	N	N	N	N

[http://docwiki.cisco.com/wiki/Unified\\_Communications\\_VMware\\_Requirements](http://docwiki.cisco.com/wiki/Unified_Communications_VMware_Requirements)



# VCE and vBlock0

- **VCE: Virtual Computing Environment coalition**
  - Cisco, EMC, and VMware
  - Partnership to accelerate the move to virtual computing
- **vBlock0 reference architecture**
  - Cisco 5100 blade chassis
  - Cisco 6100 fabric extender
  - Nexus 7k and 5k
  - Celerra Storage (NFS or iSCSI)\*
  - VMware ESXi

*\*UC on UCS supports SAN-only for storage. Vblock0 support by exception only.*



# VCE and vBlock1

- **vBlock1 reference architecture**
  - Cisco 5100 blade chassis
  - Cisco 6100 fabric extender
  - Nexus 7k and 5k
  - Celerra Storage (SAN, NFS, or iSCSI)
  - VMware ESXi 4.1 w/ boot from SAN
- **UC on UCS will be supported in vBlock1, SAN storage mode only**

# Server Considerations – Which Servers to Buy

- **Where does it start making sense to buy UCS instead of MCS?**
  - B-Series: 10-12 MCS (into existing DC/SAN)
  - B-Series: 20-22 MCS (into greenfield DC, no SAN)
  - C-Series: 2 MCS servers
- **If you already have a Data Center w/SAN:**
  - ROI realized much earlier
  - SAN/DC knowledge simplifies deployment
- **Is UC a driver for implementing SAN?**
  - Depends on scale but in general not a driver by itself
  - Much lower ROI due to SAN costs
- **UCS Management**
  - B Series Chassis have centralized management
  - C Series are managed individually