# Virtuelizacija i Unified Communications

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EM TSA

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# Agenda

- UC on UCS why ?
- What we support on our UC on UCS solution ?
- What are the management components ?
- Virtualization eXperience Infrastructure ( VXI )
- Tested Reference Configurations
- Lets configure a Solution using UC on UCS
- Q & A

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# UC on UCS why ?

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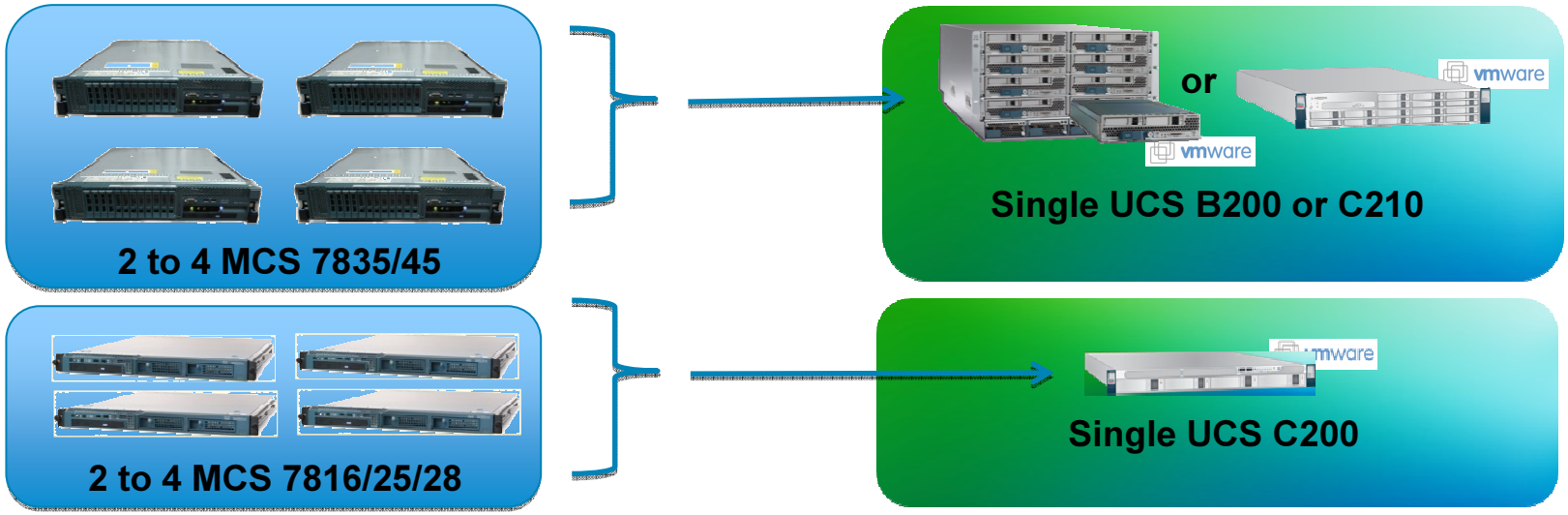
# UC on UCS Value Proposition

## What Business concerns are we addressing?

- **Have your cake and eat it too:** Flexibility with Governance and Cost Control
- **Reduce Total Cost of Ownership:** consolidate everything, simplify management
- **Increasing Business Agility via Cisco Collaboration + Cisco Data Center 3.0**

## Why Cisco?

- **Holistic solution** (just running on VMware is not enough)
- **Broadest support** of virtualized UC capabilities
- **Ecosystem** (VCE, HCS, etc. with VMware, EMC, NetApp)

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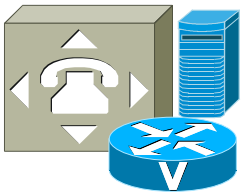
# UC Platform Evolution: Accelerating Pace of Innovation

| VOIP, ICM | CUCM 3.x/4.x | Cisco UC 5.0+ | Cisco UC 8.x | SAF |
|---|---|---|---|---|
| 1990s | ~2000 | 2005 | 2010 | Future |
| Legacy Voice Enhancement | Server (Special-purpose) | Appliance | Virtualization | Network Services |

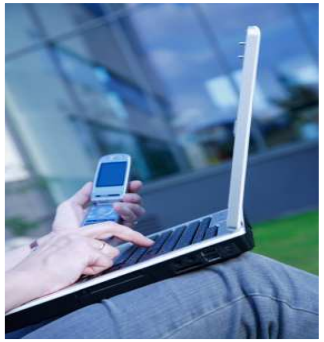




| | |
|---|---|
| Business Agility | Increasing Architectural Flexibility while Decreasing Barriers to Rapidly Deploy/Tailor |
| Footprint, space, Energy, Cabling | Increasing “Miniaturization”, Consolidation & Avoidance while Increasing Efficiency |
| Investment Leverage | No Forklifts ➔ Network Convergence ➔ Commodity Servers/Storage ➔ Virtualization |
| Business Continuity | Increasing Security, Resiliency and options for High Availability / Disaster Recovery |
| Management Simplification | Increasing Familiarity, Centralization, Scale and Efficiency |

# *Cisco Unified Communications on* Cisco Unified Computing System

Cisco Unified Communications Combined with Cisco UCS leverages the full benefits of a converged network and virtualization to deliver real near-term benefits as well as long-term extensibility

## Reduces Capital Expenditures

- Fewer Servers, adapters, cables required
- Consolidate voice, video, data, mobility, storage access
- Reduces storage needs

## Reduces Operating Expenses

- Further consolidates system management
- Reduces facilities costs; power, cooling, space, cabling
- One-time wiring serves all communications

## Increases Business Agility

- Leverages platform/infrastructure to expand applications
- Eases provisioning of new services
- Accelerates collaboration rollout

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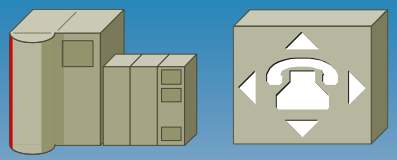
# Data Center vs. Communications Architectures

**Same TCO Drivers: Technology, Facilities, Management Burden**

## Data Center 1.0 with Traditional Communications



Mainframe PBX


Too Many Networks

- Centralized Operations
- Controlled but Inflexible
- High TCO

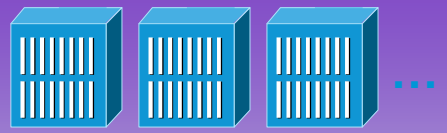
## Data Center 2.0 with Unified Communications

Servers and Appliances


Too Many Fabrics

- Distributed Operations
- Flexibility, but with Sprawl
- Medium to High TCO

## Data Center 3.0 with Virtualized Communications



Virtualized Compute/Storage


Unified Fabric & Networks

- Flexible Operations
- Agility + Governance
- Low TCO

# What we support on our UC on UCS solution ?

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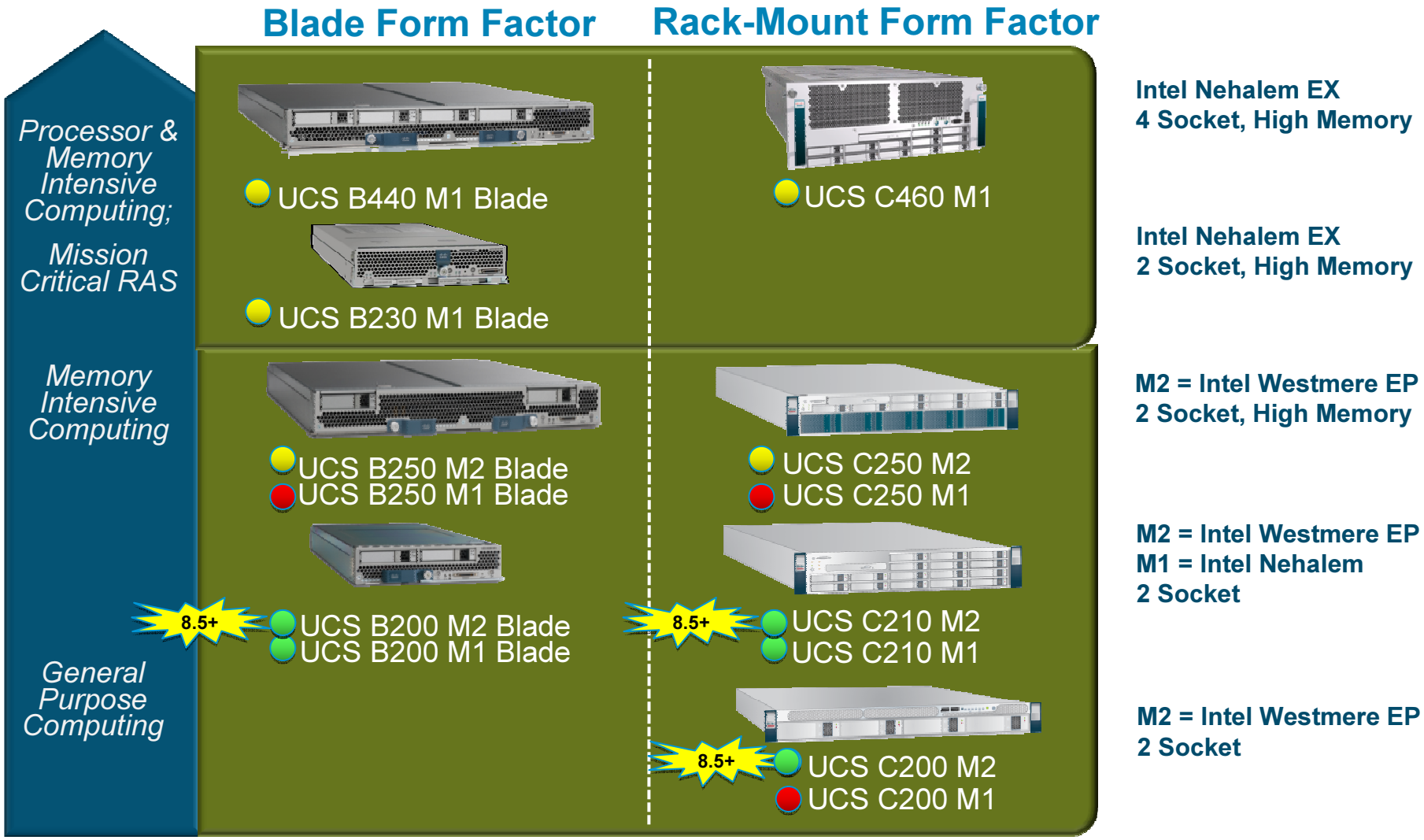
# Collaboration Support for Cisco UCS Portfolio

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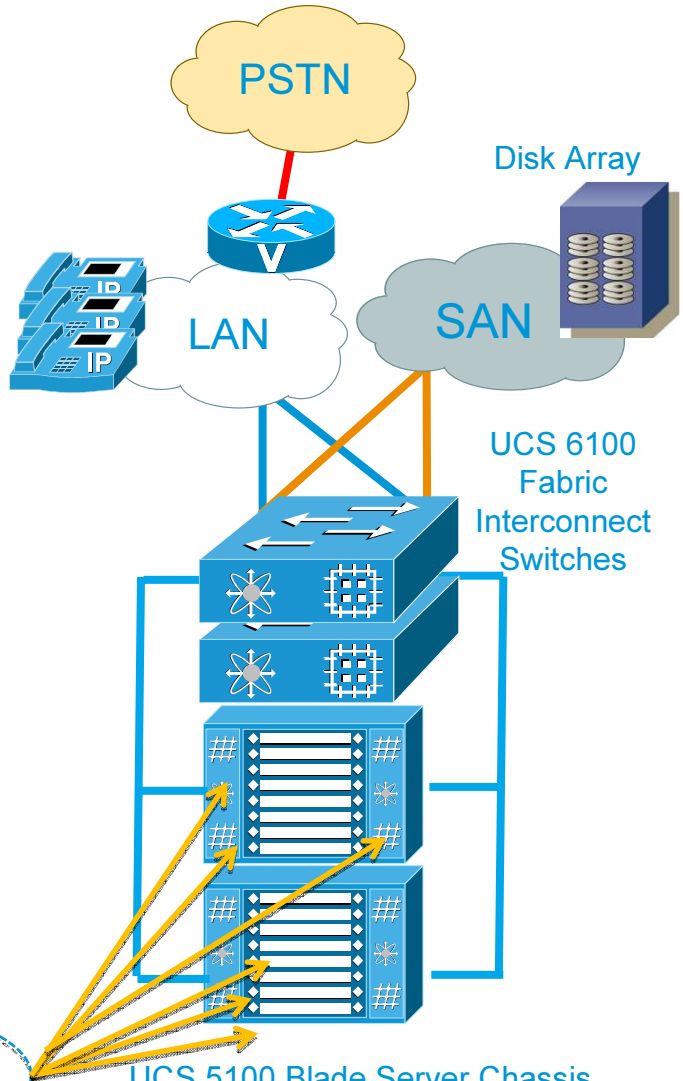
# "UC on UCS" B-series Overview

## Updated for Cisco Unified Communications 8.5(1)

- Broadest support for Virtualized Collaboration
  - Unified Communications Manager with Integrated Mobility
  - Unified Communications Manager – Session Management Edition
  - Emergency Responder
  - Unity Connection and Unity
  - Unified Presence
  - Unified Contact Center (Enterprise & Express)
  - Unified Customer Voice Portal
  - Unified Communications Management Suite

- Target Market
  - Medium to high server count & concentration
  - "Ready, willing, able" to support servers, VMware, storage

- Solution Details
  - **Deployment Models** - application co-residency support
  - **VMware vSphere 4** – ESXi 4.0 only, defined VM templates only, most feature support deferred (Vmotion, etc.)
  - **Supported Servers** – for majority, UCS B200 only at this time
  - **Supported Storage** - for majority, DAS+SAN only

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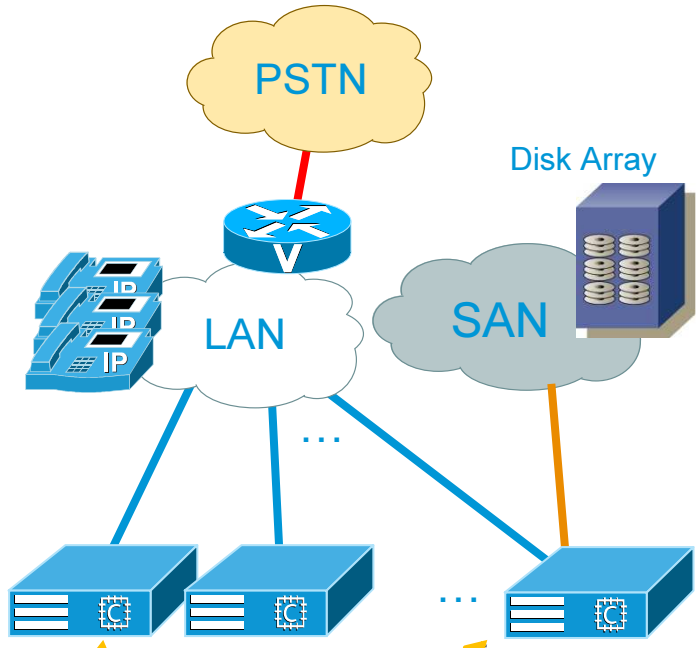
# "UC on UCS" C-series Overview
## Updated for Cisco Unified Communications 8.5(1)

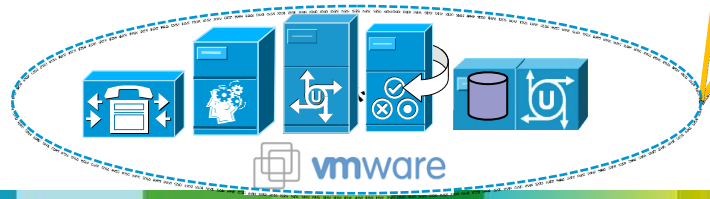
- Initial Collaboration support at FCS
  - Unified Communications Manager with Integrated Mobility
  - Unified Communications Manager – Session Management Edition
  - Emergency Responder
  - Unity Connection
  - Unity (C210 only)
  - Unified Presence
  - Unified Contact Center Express
  - Unified Contact Center Enterprise (C210 only)
  - Unified Customer Voice Portal (C210 only)
  - Unified Communications Management Suite

- Target Market
  - Low to medium server count
  - Ready to move off an appliance model (server/VMware admin)

- Solution Details
  - **Deployment Models** – application co-residency support
  - **VMware vSphere 4** – required, same "rules" as with UCS B-series
  - **Supported Servers** – UCS C210 and C200 M2 only
  - **Supported Storage** – DAS-only for C200, DAS or DAS+SAN for C210




Cisco Unified Communications 8.5(1)+

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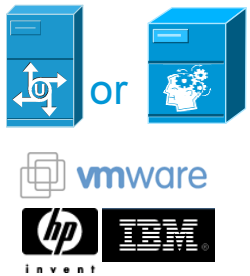
# UC Virtualization Versions

Shipping

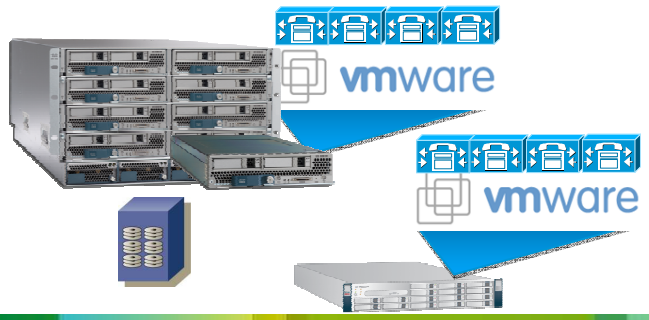
Legacy Virtualization Support

- Unity 7.x (FCS Feb 2009)
  - "Software-only"
- Unified Contact Center Enterprise 7.5 (FCS Nov 2008)
  - "Software-only"
  - Peripheral Gateways
  - Client AW
- Rest of UC
  - Cisco-internal labs only




UC 8.5 on UCS

- UC on UCS B-series
  - UCS B200 M1/M2
- UC on UCS C-series
  - UCS C210 M1/M2
  - UCS C200 M2
- Broad Application Support
  - IP Telephony
  - Session Management
  - Emergency Services
  - Messaging
  - Presence
  - Customer Care
  - Management

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# What are the management components ?

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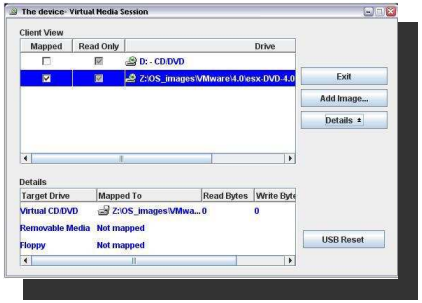
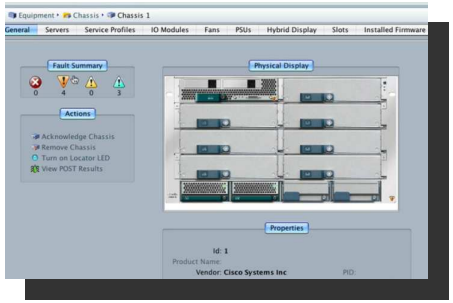
# Management Layers

## B & C Series HW

Virtual KVMoIP
CIMC
UCS Manager








## ESXi Hypervisor

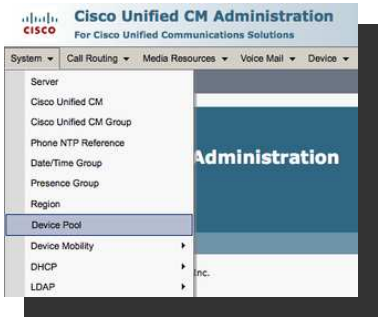
vCenter vs. Standalone

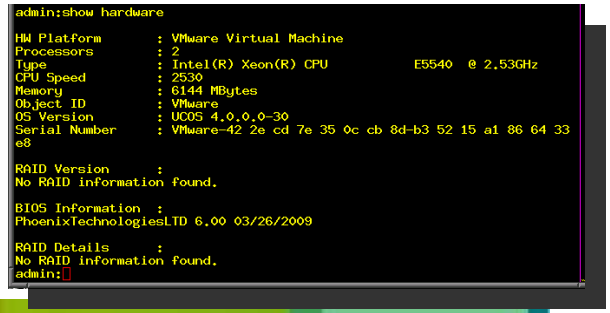

## LAN / SAN / SAN Storage

Depends on the vendor/DC team


## Cisco UC Applications

Web GUI/CLI (CUCM/UnityC/etc)
Windows Apps (UCCE/CVP/etc)

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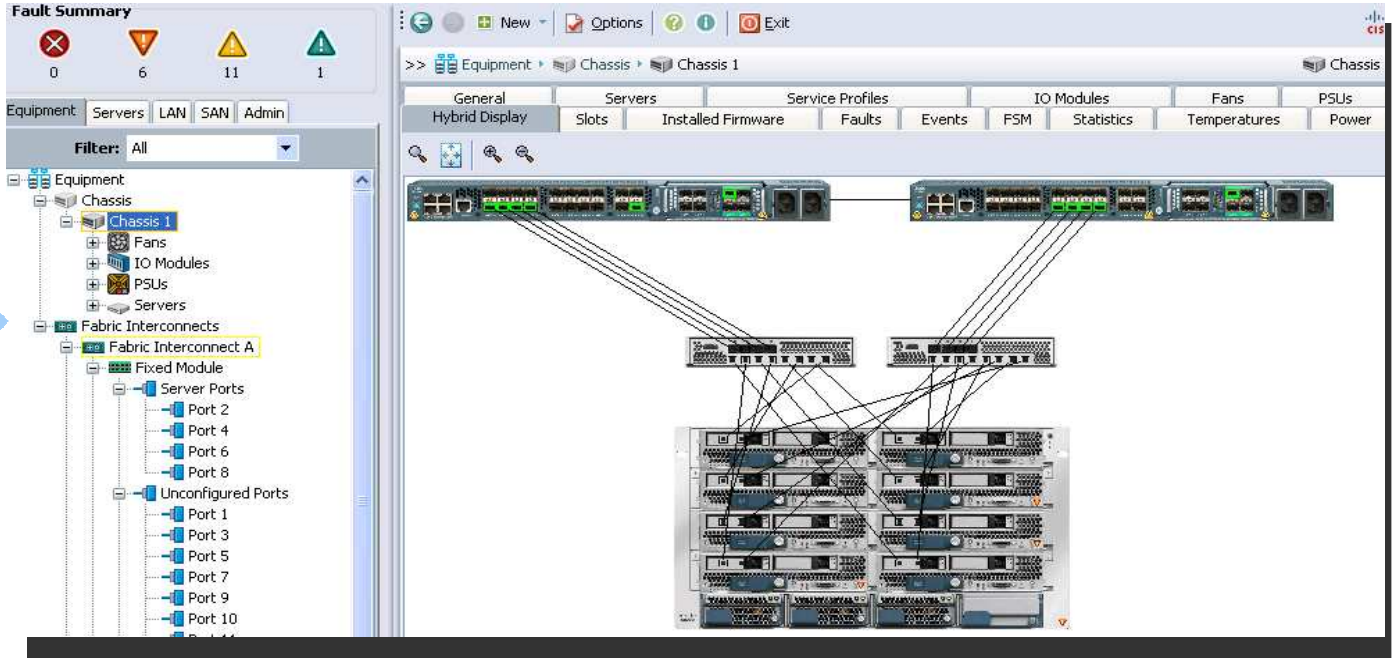
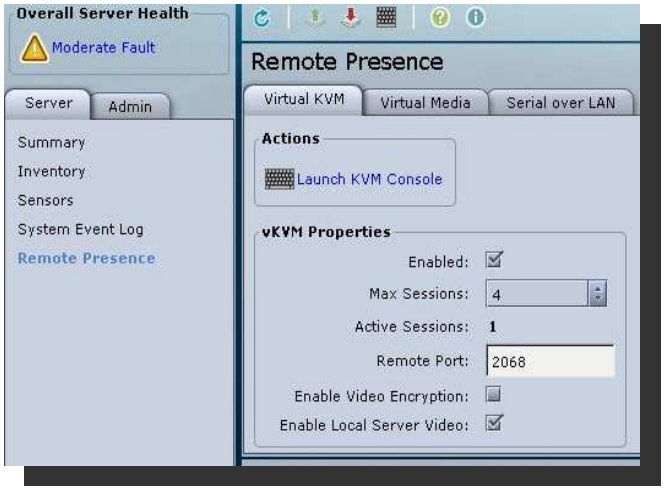
# B & C Series HW Management

**B-Series via UCS Manager**
Chassis
Network Cards
Blades etc.
Virtual KVMoIP




**C-Series via Web Browser**
Inventory
Boot Order
Firmware Mgmt
Virtual KVMoIP





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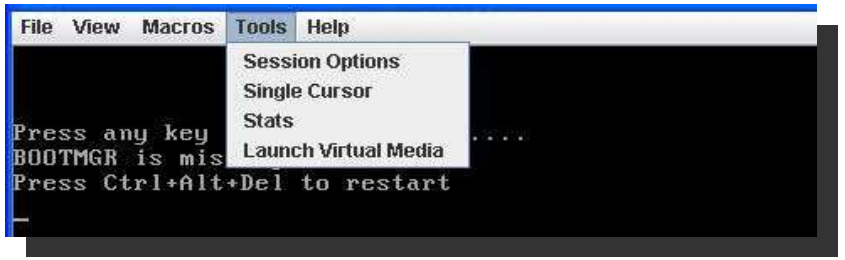
# B & C Series Console Access KVM over IP

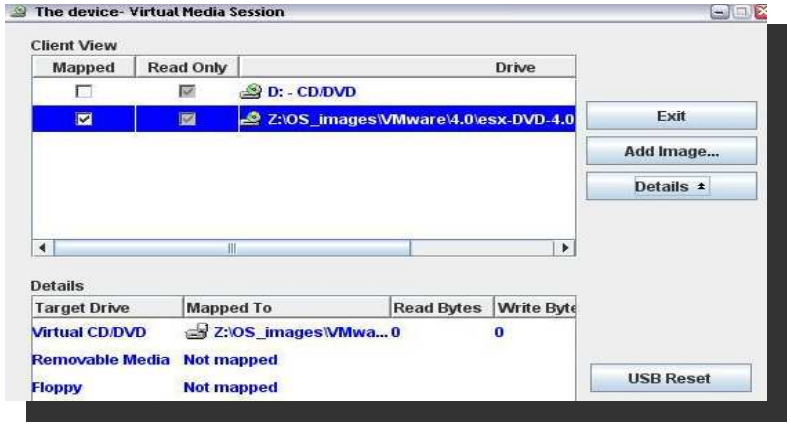
## ESXi Installation

Launch Virtual KVM Console Applet

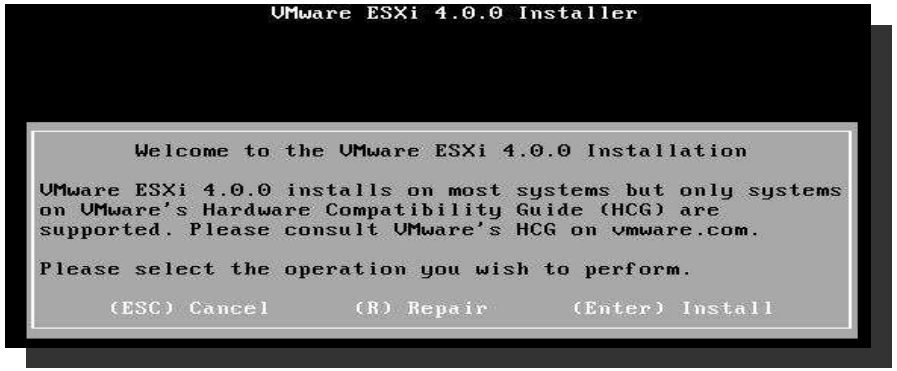
Launch Virtual Media




Map ESXi ISO File as CD/DVD




Start Installation
When done access ESXi via vSphere Client

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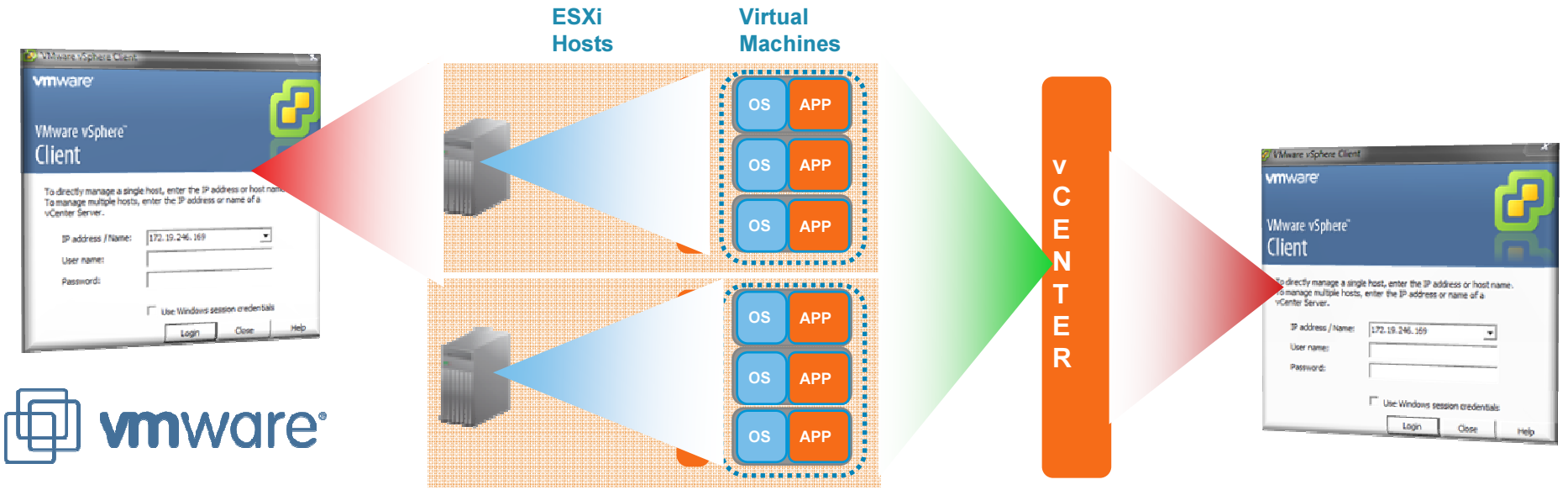
# Managing the System (B & C Series) – VMware Layer

## Post VMware ESXi 4.0 installation and network setup (SAN/LAN etc.)

- ESXi 4.0 Required - Standalone or better
- vSphere client is required
- vCenter is highly recommended
  - B-Series deployments
  - C-Series / smaller deployemtn – standalone client acceptable
  - Enables enhanced VMware features with vCenter

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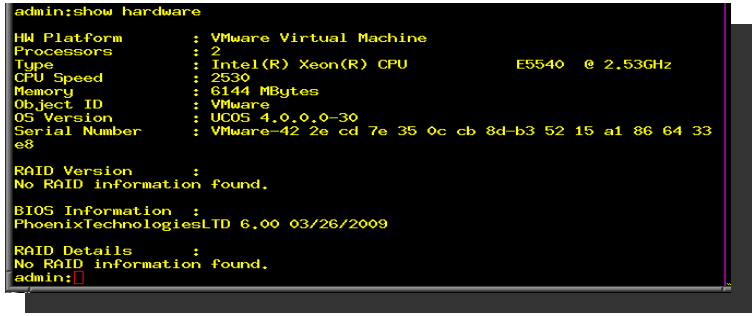
# Managing Virtual UC Application (B & C Series)

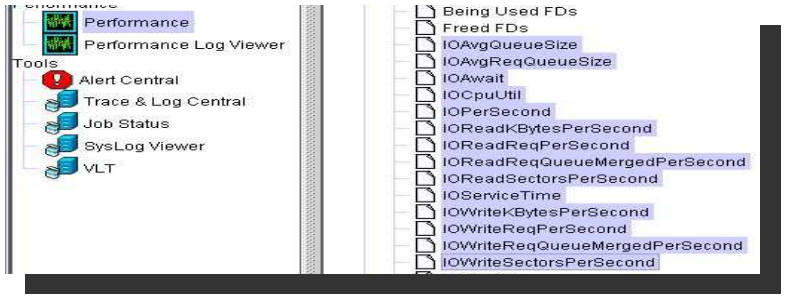
At login to the CLI and GUI, the VM configuration is displayed


Virtual UC Apps are NOT aware of the type of hardware being used (servers) nor the type of storage.




No VM BIOS management
No hardware management and monitoring


New iostat information is added to RTMT and logged (perfomon counters) to help debug Disk I/O related issues on the SAN

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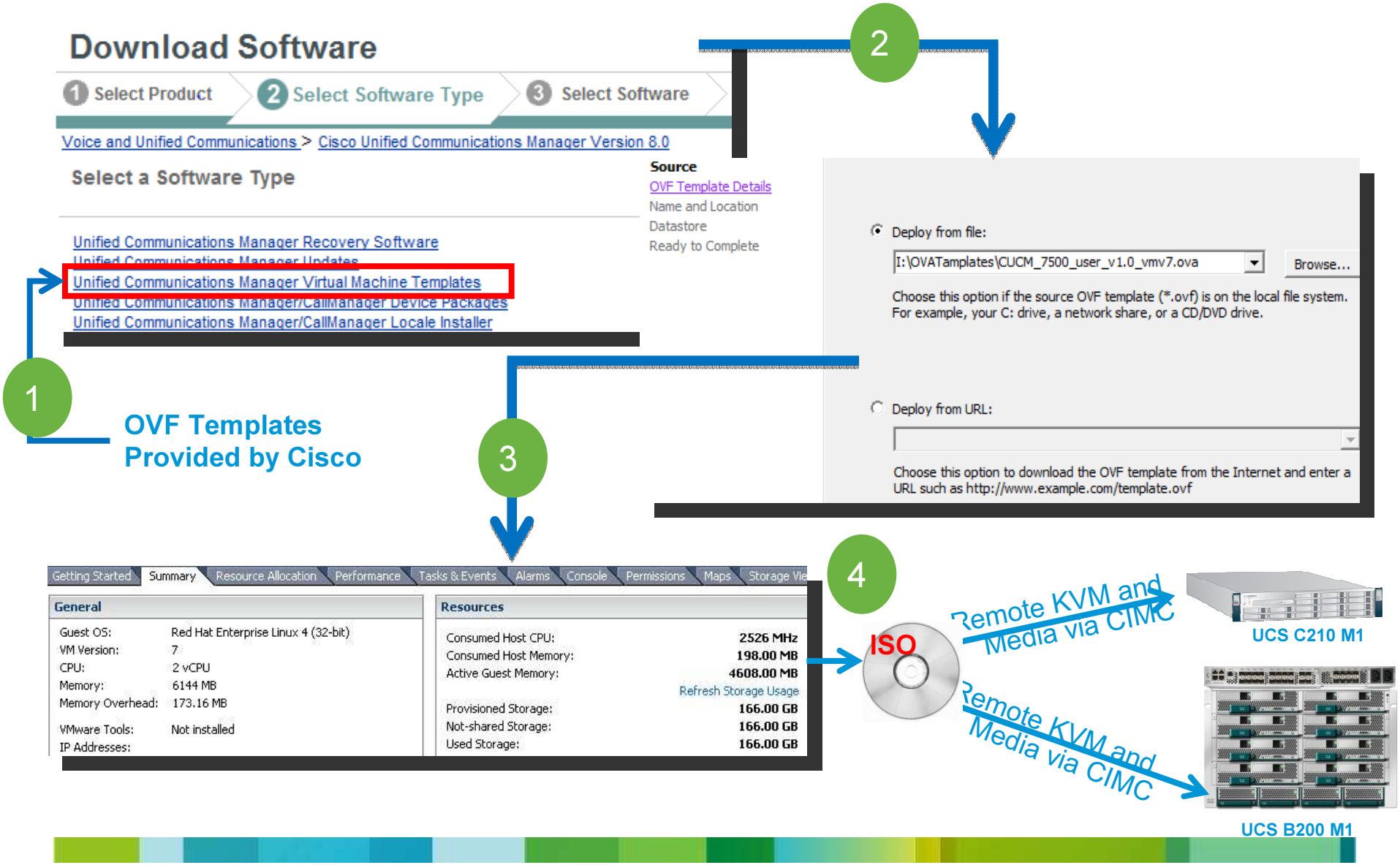
# Deploying UC Virtual Machine – B&C Series




UC VM OVF Templates: http://www.cisco.com/go/uc-virtualized

# Virtualization eXperience Infrastructure ( VXI )

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# IT Struggles To Bring Together VDI And Collaboration

## Desktop Virtualization

Data security & compliance

Business continuity/agility

Reduced TCO

Consistent IT and er
user Experience

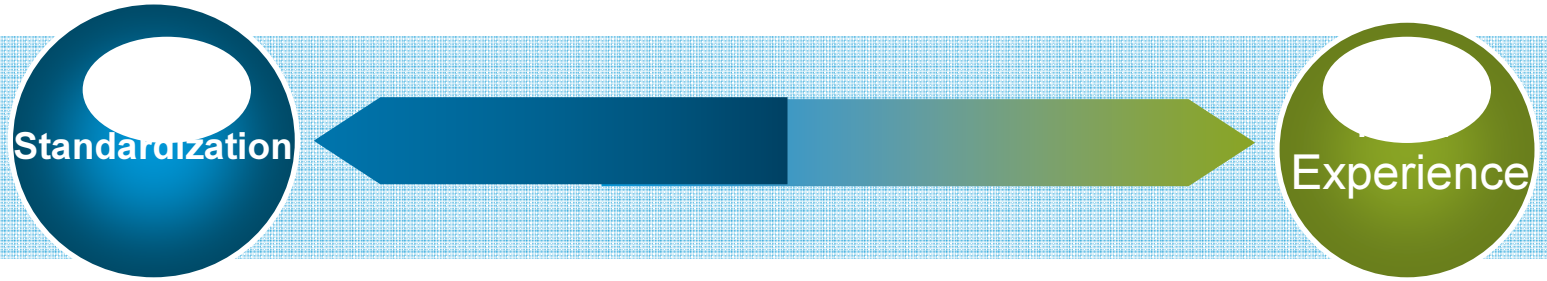
## Collaboration

Video and voice

Interactive

Real time, high quality experience

Range of devices

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# Cisco Vision For Virtualization Experience Infrastructure (VXI)

- Validated desktop virtualization solution
- Fully tested with open ecosystem of partners
- Superior collaboration experience
- Unsurpassed device versatility and mobility
- Enterprise-class performance, security and manageability
- Best in class ROI


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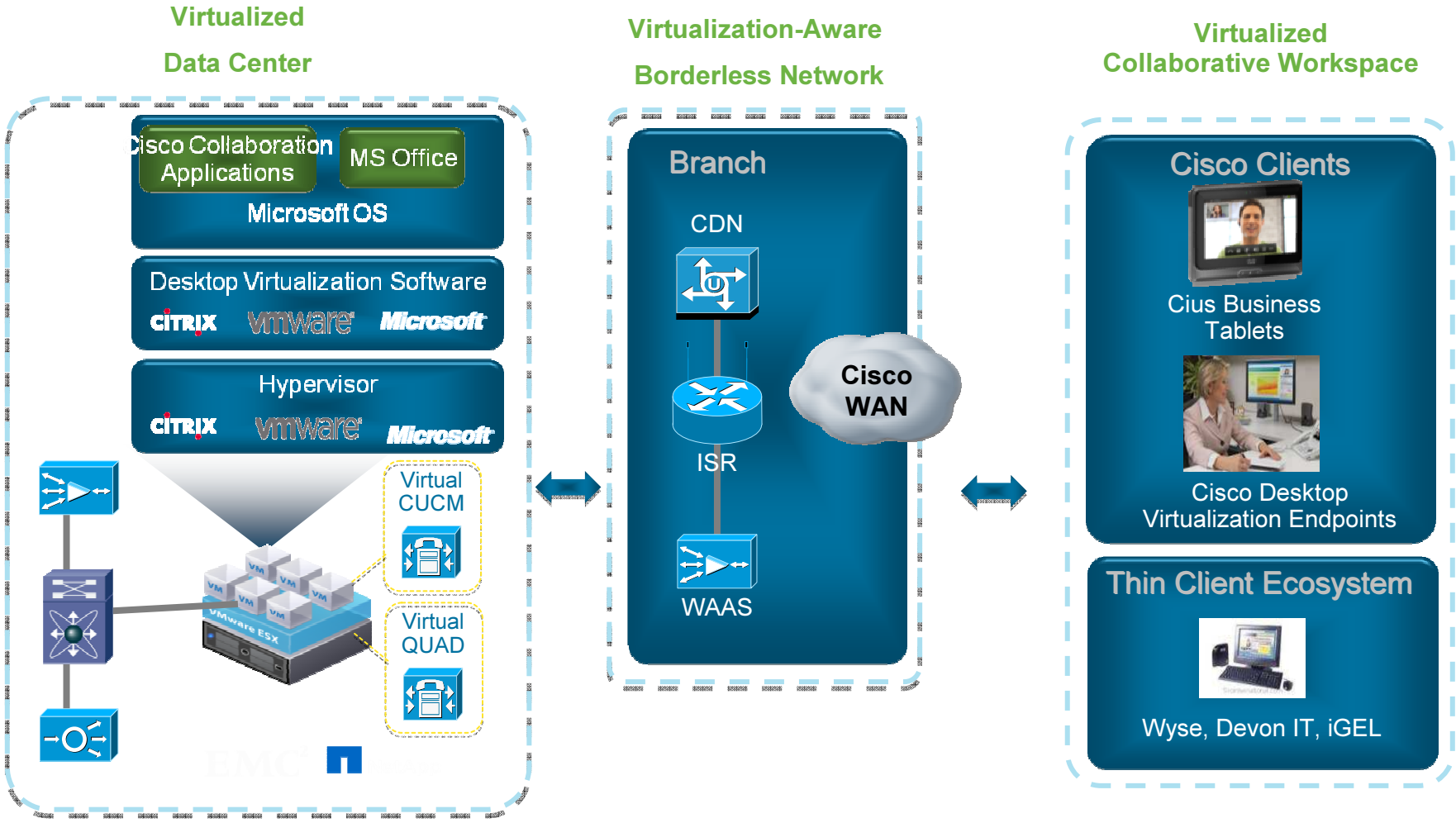
# Cisco Announces Open, Integrated, Validated Architecture And New Ecosystem Partners

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# New Cisco Endpoints To Bring Together VDI And Collaboration

## New Desktop Virtualization Endpoints Simplify IT Deployment, Security, Scalability

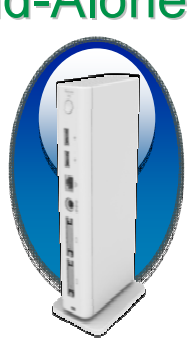
- Integrated form factor for Unified IP Phone 8900/9900 Series uses existing PoE and desktop phone—only requires monitor and keyboard
- Standalone VDI form factor for customers without Unified IP Phone 8900/9900 Series—first PoE Desktop solution

## Cisco Cius: first mobile converged endpoint for voice, video, data applications and VDI

## All endpoints support VMware View 4.5 and Citrix XenDesktop

Integrated

Stand-Alone



Mobile

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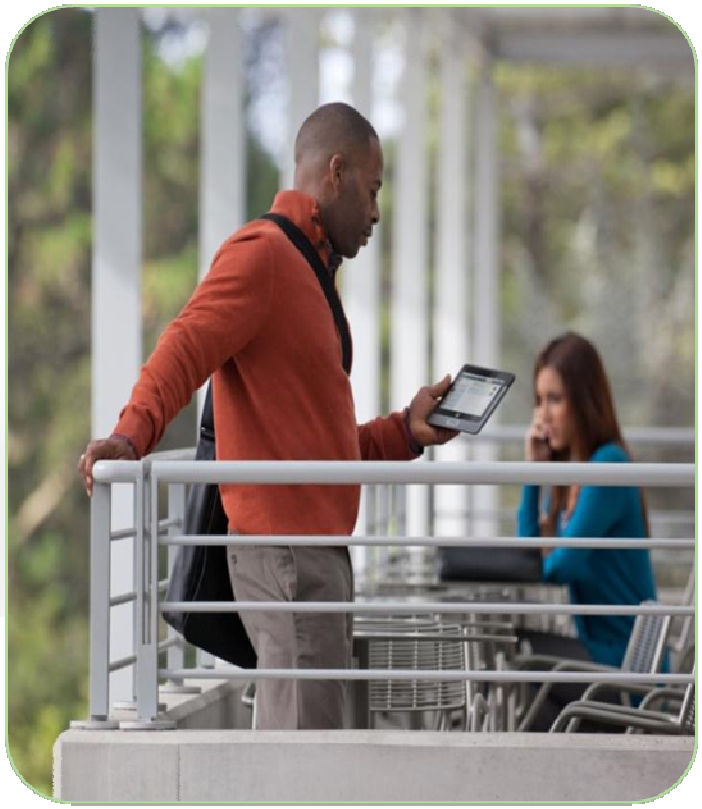
# Cisco VXI : Virtualized Workspace

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



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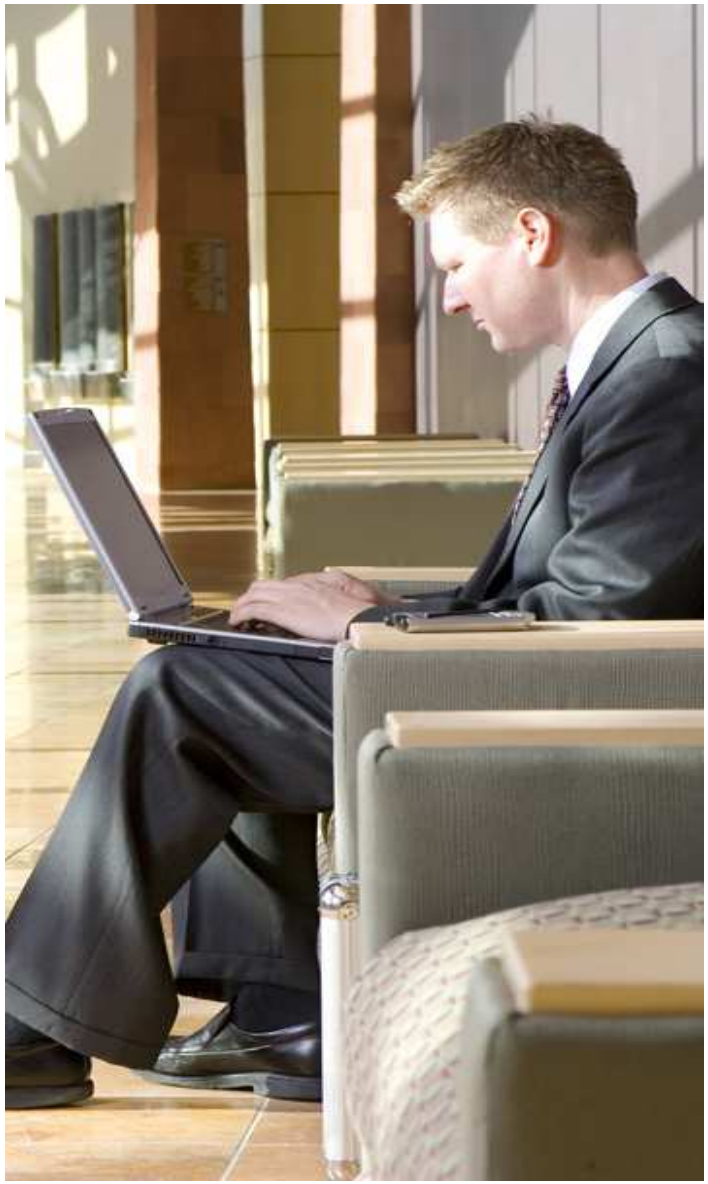
# Cisco Advanced Services Offers for UC on UCS

- Plan & Design Service
  For channel partner enablement
- Configuration & Performance Audit
  For UC, on existing UCS deployment
- Operation Support Planning Workshop
- Pre-Production Pilot Service
  Fixed and Custom options
- Accelerated Deployment Service
  Greenfield and Migration options
- Project Management



For more details, see:
www.cisco.com/go/unifiedcomputingservices and
www.cisco.com/en/US/products/svcs/ps2961/ps2664/serv_group_home.html

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# Tested Reference Configurations

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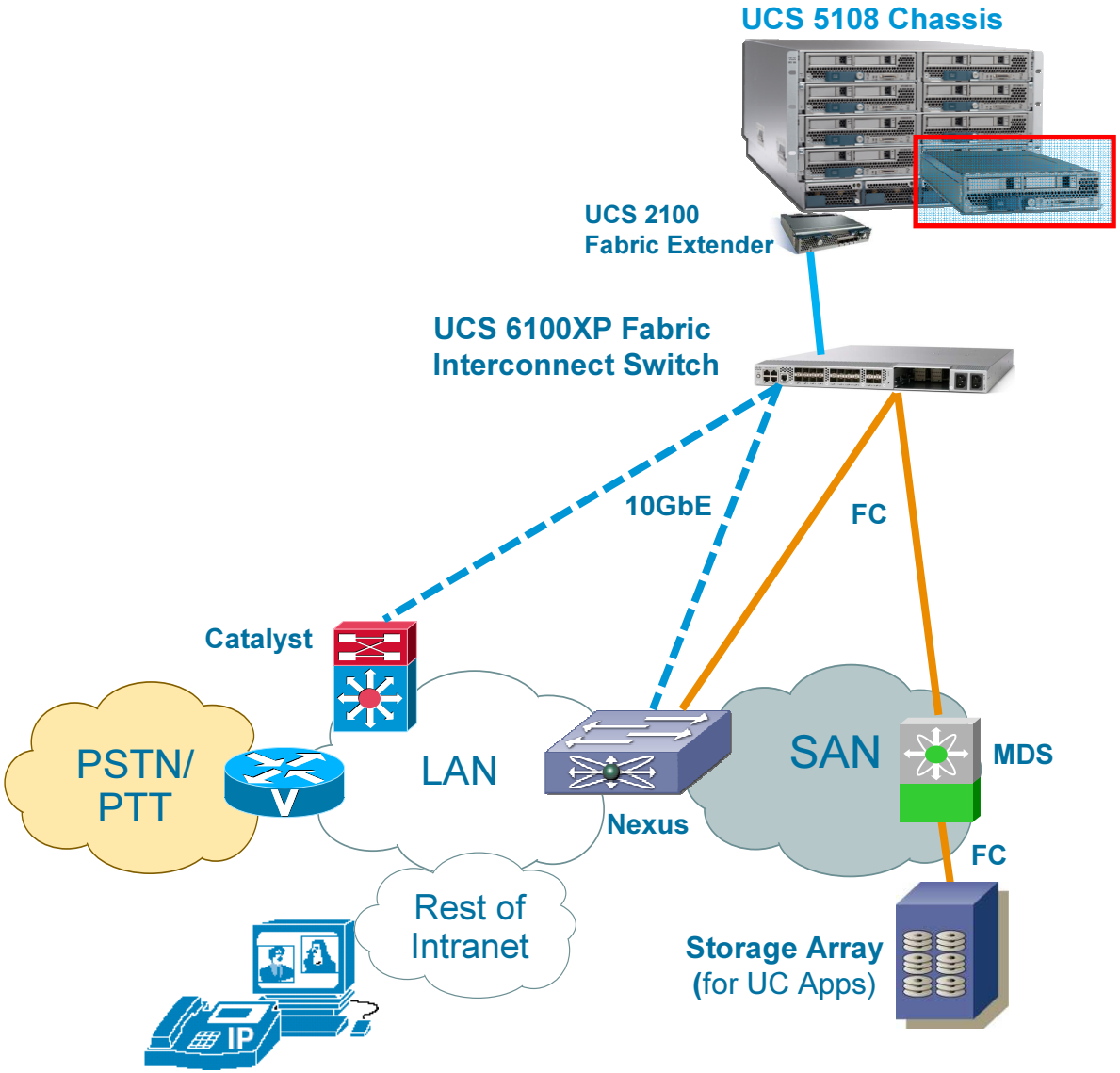
# Cisco UCS B200Mx (UCS-B200Mx-VCS1) B200M1/M2 TRC #1




**Configuration (M1):**

- 32GB RAM
- 2 x 5540 CPU
- 2 x 146GB DAS Drives
- M71kR-Q CNA Adapter

**Configuration (M2):**

- 48GB RAM
- 2 x E5640 CPU
- 2 x 146GB DAS Drives
- UCS M8IKR VIC

**Management:**

- **Supports multiple VMs**
- UCS Manager
- vSphere/vCenter

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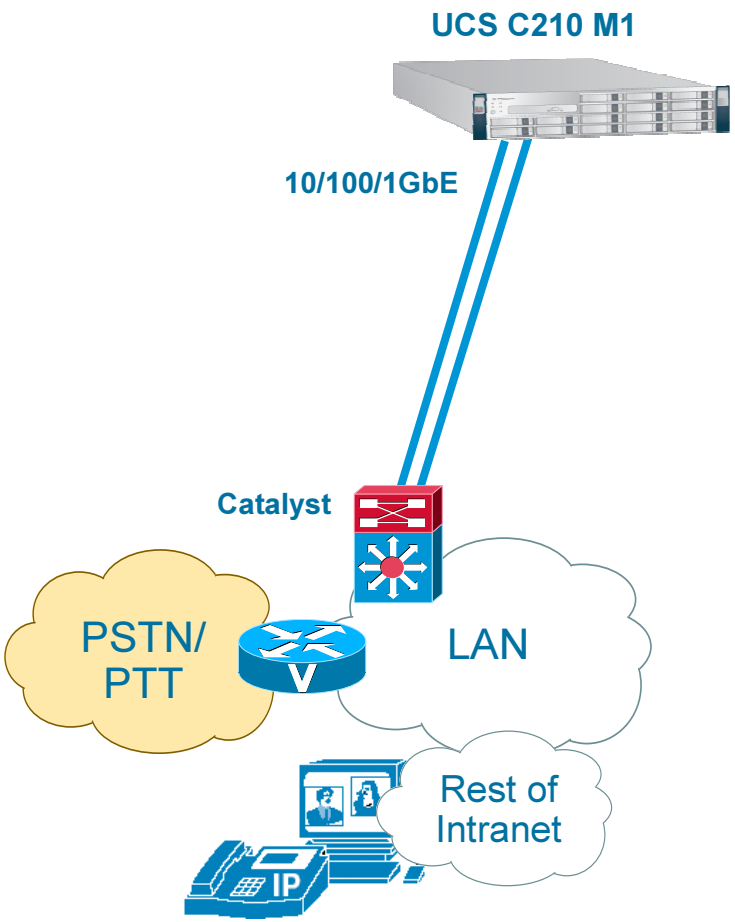
# Cisco UCS C210M1 (UCS C210M1-VCD1)
# C210M1 TRC #1




**Configuration:**

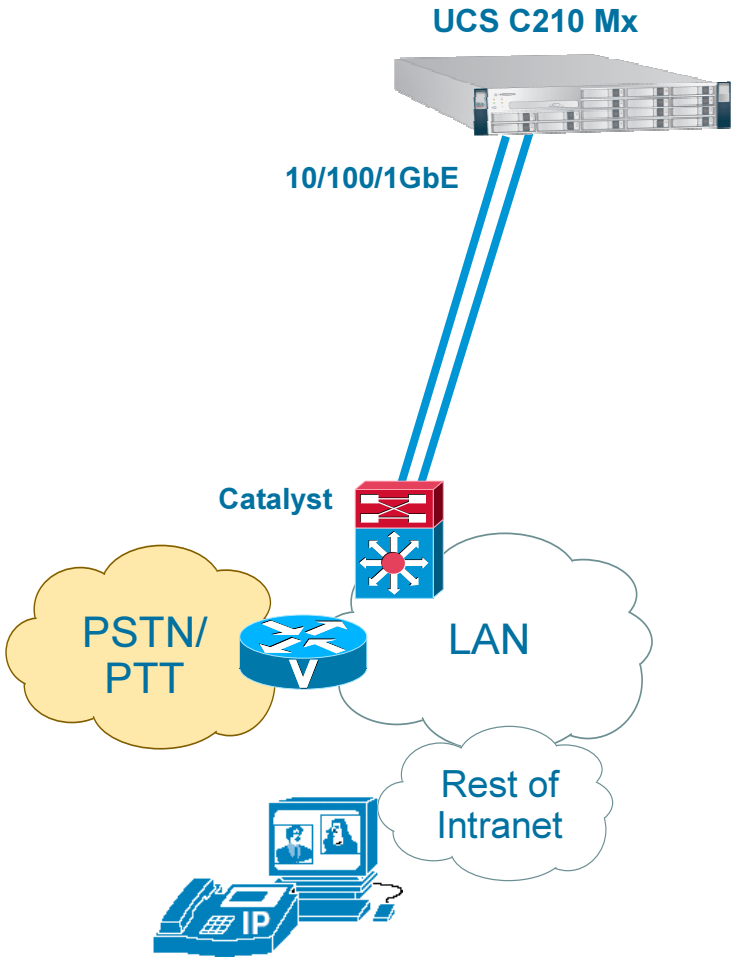
Dual Quad core E5540
12GB RAM
6x146GB DAS Drives
(w/ SAS Extender)
2x1GB NICs Ethernet
1x1GB NIC for CIMC
Not field upgradable

**Management:**

**Supports 1 VM**
CIMC for UCS
vSphere/vCenter

**NO FIELD UPGRADABLE TO C210-M1 TRC#2**

# Cisco UCS C210Mx (UCS C210Mx-VCD2) C210M1 TRC #2 OR C210M2 TRC# 1




## Configuration:

**10x146GB** DAS Drives
(w/ SAS Expander)
**6x1GB** NICs Ethernet
2 motherboard
4 on PCI card
1x1GB NIC for CIMC

## Management:

**Supports multiple VMs**
CIMC for UCS
vSphere/vCenter

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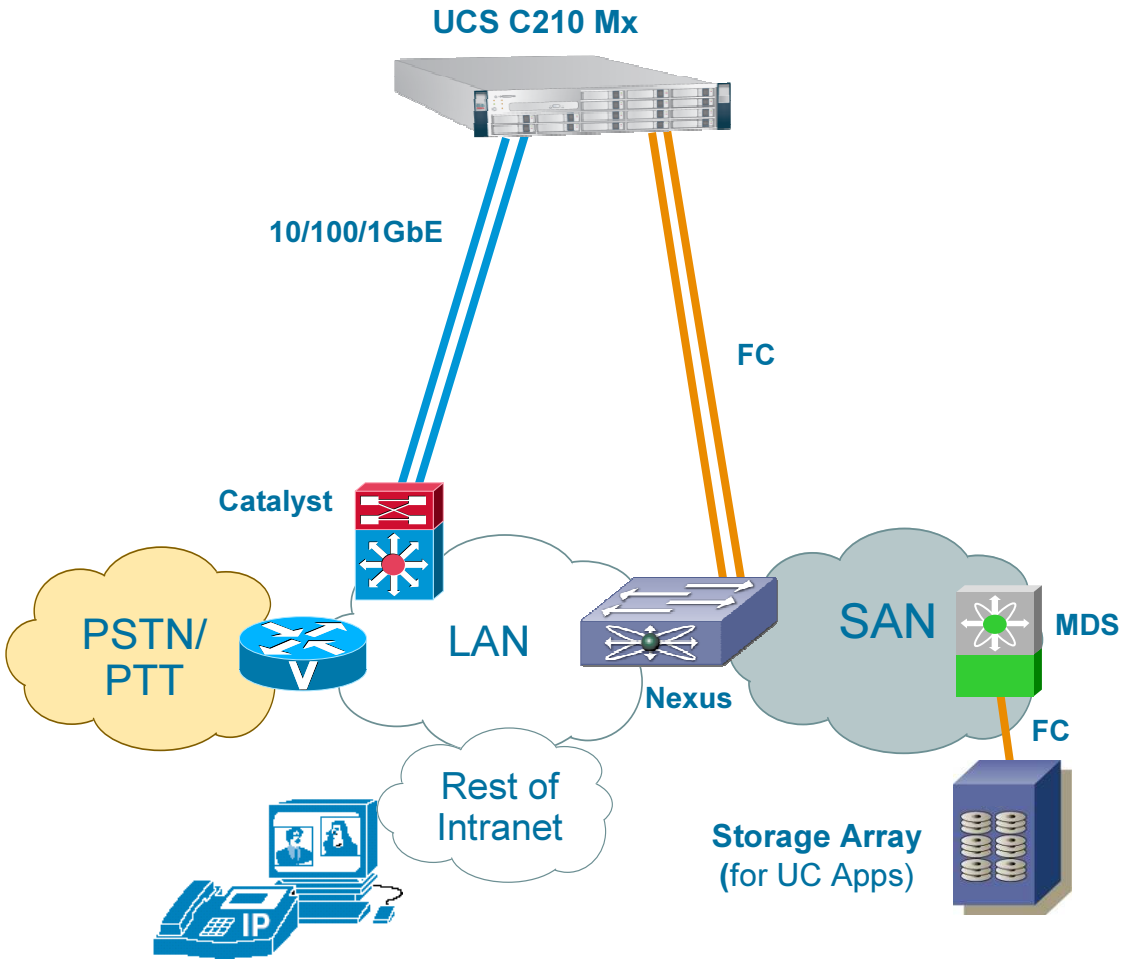
# Cisco UCS C210Mx
# C210M1 TRC #3 OR C210M2 TRC# 2




## Configuration:

**2x146GB** DAS Drives
6x1GB NICs Ethernet
- 2 motherboard
- 4 on PCI card

1x1GB NIC for CIMC
**HBA Adapter**
- 2x4GB for FC

## Management:

**Supports multiple VMs**
CIMC for UCS
vSphere/vCenter

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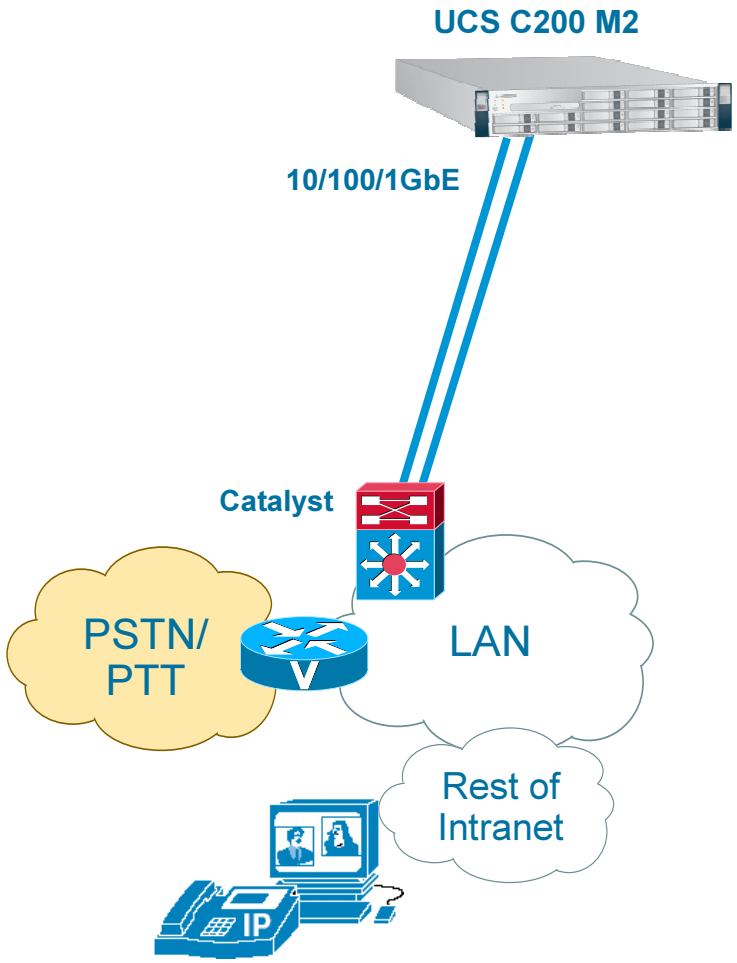
# Cisco UCS C200M2 (UCS C200M2-VCD2) C200M2 TRC #1




## Configuration:

Dual Quad Core E5506
**4x1TB** DAS Drives
24GB RAM
**2x1GB** NICs Ethernet
1x1GB NIC for CIMC

## Management:

**Supports multiple VMs**
CIMC for UCS
vSphere/vCenter

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# Lets configure a Solution using UC on UCS

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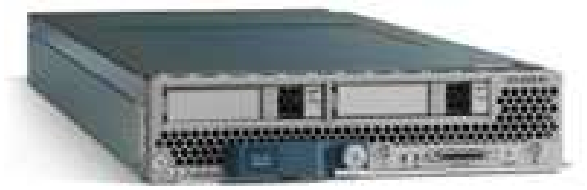
# Virtual Machine specification

- Number of VMs typically the same as physical MCS's
- But Virtual Machines are measured by:
  - -vCPU
  - -vRAM
  - -vDisk
  - -vNICs
- A VM solution can be deployed on any ***"supported"*** hardware mix that meets the specified resource
- Multiple VMs on same physical HW



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# UC Deployment Model (Application)

- **All** UC Deployment Models are supported
  - No change in the current deployment models
  - Base deployment model – Single Site, Centralized Call Processing, etc. are not changing
- **NO** software checks for design rules
  - No rules or restrictions are in place in UC Apps to check if you are running the primary and sub on the same blade
- Clustering over WAN (COW) **is supported**
  - Does not depend on CUCM code or hardware
- Mega-Cluster is **NOT** supported until CUCM 8.5

# Tested Reference Configurations

| Server Model/Generation & Tested Reference Configuration | | Collaboration SKU | Notes |
|---|---|---|---|
| B200 M2 | TRC #1 | UCS-B200M2-VCS1 | Co-res, SAN |
| B200 M1 | TRC #1 | UCS-B200M1-VCS1 | Co-res, SAN |
| C210 M2 | TRC #1 | UCS-C210M2-VCD2 | Co-res, DAS |
| | TRC #2 | DC SKU only | Co-res, SAN |
| C210 M1 | TRC #1 | UCS-C210M1-VCD1 | Single VM, DAS |
| | TRC #2 | UCS-C210M1-VCD2 | Co-res, DAS |
| | TRC #3 | DC SKU only | Co-res, SAN |
| C200 M2 | TRC #1 | UCS-C200M2-VCD2 | Co-res, DAS (1K users) |

M2 TRC are Pre-FCS. Actual HW might change

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Deployment Model | Endpoints | Traffic Mix | Dial Plan | Applications | Media | Output

## Unified Communications Manager | Output

| Output | | Defaults | Help |
|---|---|---|---|
| Unified CM server type | MCS-7845-I3 | MCS-7845-H2 | ? |
| Maximum Desired Unified CM Call Processing Server Pairs per Cluster | 4 server pairs (always minimizes cluster count) | 4 server pairs (always minimizes cluster count) | ? |

| Utilization | IPT Servers |
|---|---|
| Call Processing Capacity Utilized per Call Processing Server | 15.77% |
| Memory Capacity Utilized per Call Processing Server | 22.85% |
| Endpoints Capacity Utilized per Call Processing Server | 88.89% |
| CTI Capacity Utilized per Call Processing Server | 0% |

| Server | |
|---|---|
| Estimated min number of clusters | 1 |
| Publisher Servers | 1 |
| TFTPs Servers | 2 |
| Minimal Number of Unified CM Call Processing Server Pairs | 3 |
| **Total Number of Servers (minimal)** | **9** |

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Deployment Model | Endpoints | Traffic Mix | Dial Plan | Applications | Media | Output

## Unified Communications Manager | Output

| Output | | Defaults | Help |
|---|---|---|---|
| Unified CM server type | VM - 2vCPU 6GB RAM 2 x 80GB vDisk | MCS-7845-H2 | ? |
| Maximum Desired Unified CM Call Processing Server Pairs per Cluster | 4 server pairs (always minimizes cluster count) | 4 server pairs (always minimizes cluster count) | ? |

| Utilization | IPT VMs |
|---|---|
| Call Processing Capacity Utilized per Call Processing VM | 19.46% |
| Memory Capacity Utilized per Call Processing VM | 22.85% |
| Endpoints Capacity Utilized per Call Processing VM | 88.89% |
| CTI Capacity Utilized per Call Processing VM | 0% |

| Server | |
|---|---|
| Estimated min number of clusters | 1 |
| Publisher Servers | 1 |
| TFTPs VMs | 2 |
| Minimal Number of Unified CM Call Processing VMs Pairs | 3 |
| **Total Number of VMs (minimal)** | **9** |

| | vCPUs | RAM (GB) | vDisk (GB) | vNICs |
|---|---|---|---|---|
| **Total Unified CM VM Resources Needed** | 18 | 54 | 1440 | 9 |

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# Supported VM Configurations 8.5(1)

| Product | Scale (users) | vCPU | vRAM (GB) | vDisk (GB) |
|---|---|---|---|---|
| CUCM | 1,000 | 1 | 4 | 2 x 80 |
| CUCM | 7,500 | 2 | 6 | 2 x 80 |
| UCx | 500 | 1 | 2 | 1 x 160 |
| | 5,000 | 2 | 4 | 1 x 200 |
| | 10,000 | 4 | 4 | 2 x 146 |
| | 20,000 | 7 | 8 | 2 x 300 |
| Unity | 5,000 | 2 | 4 | 4 x 24 |
| | 15,000 | 4 | 4 | 4 x 24 |
| CUP | 2500 | 2 | 4 | 1 x 80 |
| | 5,000 | 4 | 4 | 2 x80 |
| UCCX/IPIVR | 300 | 2 | 4 | 2 x 146 |

1 vCPU for UCx ESXi scheduler

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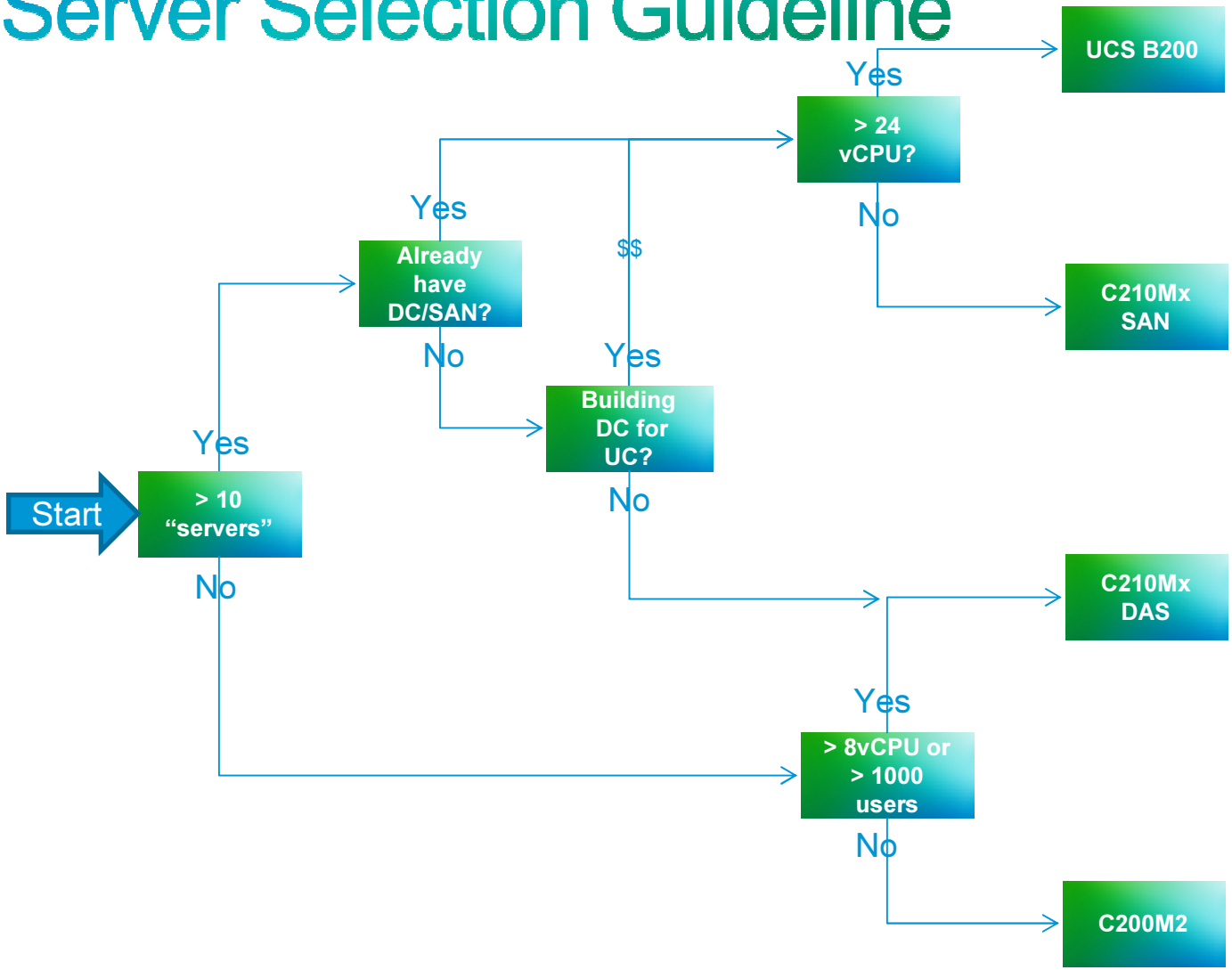
# Server Selection Guideline

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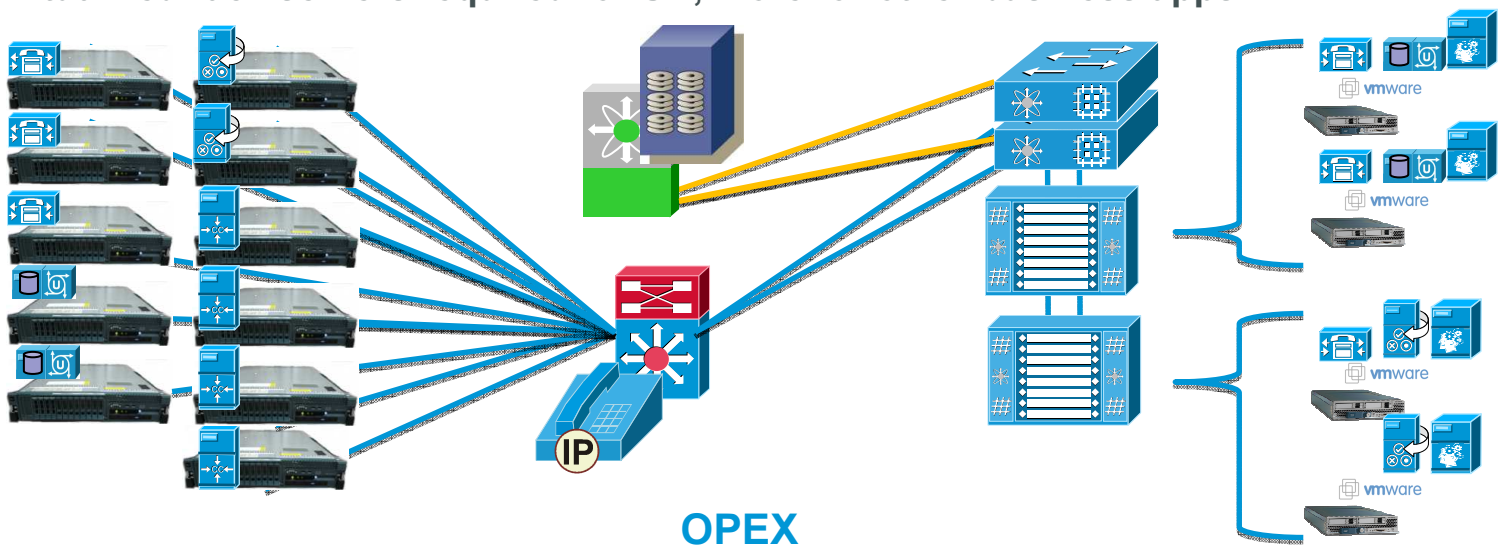
# UC on UCS B-series Value Proposition

## *Significant TCO Benefits to Customer*

**Example: 5,000 users**
**Dial tone, voicemail and Presence, 10% are Contact Center Agents**

**11 non-virtualized rack servers required for UC, more for other business apps**




### CAPEX

- Reduced Server Count (50-75%)
- Storage Consolidation (50+%)
- Reduced Network Ports (50+%)
- Reduced Cabling (50+%)

### OPEX

- Reduced Rack & Floor Space (36%)
- Reduced Power/Cooling (20+%)
- Fewer Servers to Manage (50-75% less)
- Reduced Maintenance/Support Costs (~20%)

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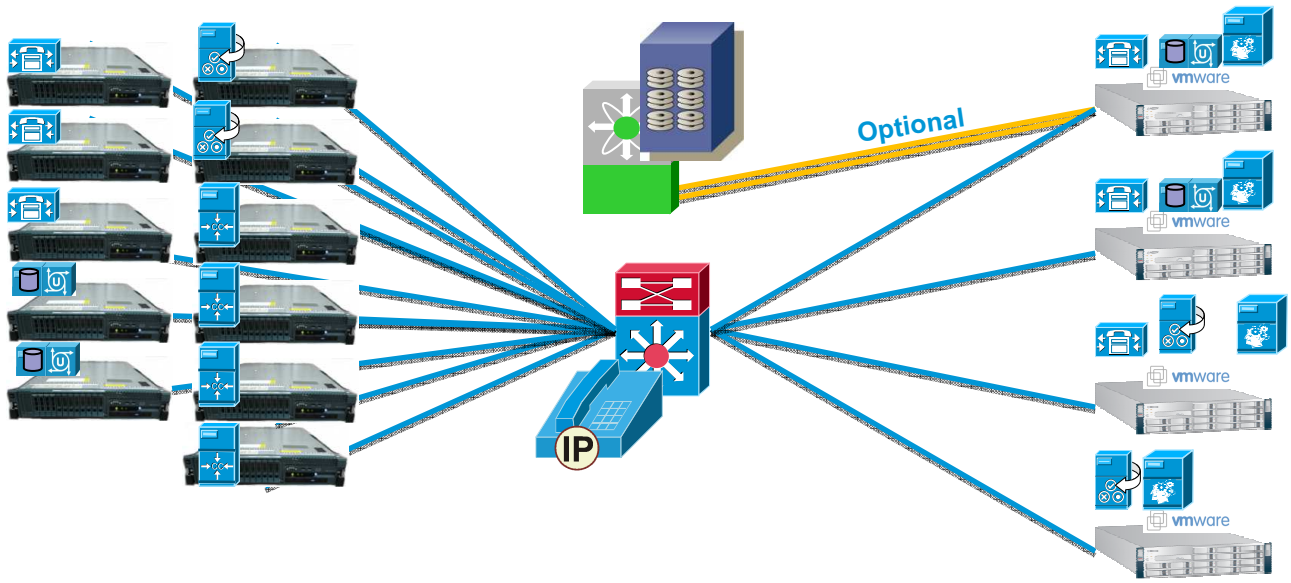
# UC on UCS C-series Value Proposition

## *Significant TCO Benefits to Customer*

**Example: 5,000 users**
**Dial tone, voicemail and Presence, 10% are Contact Center Agents**

**11 non-virtualized rack servers required for UC, more for other business apps**




### CAPEX/OPEX

- Similar Consolidation and Operational Efficiency/Scale benefits as with UC on UCS B-series

### Other Benefits

- Lower initial investment
- Simple entry/migration to virtualized UC – Data Center expertise not required unless using SAN option

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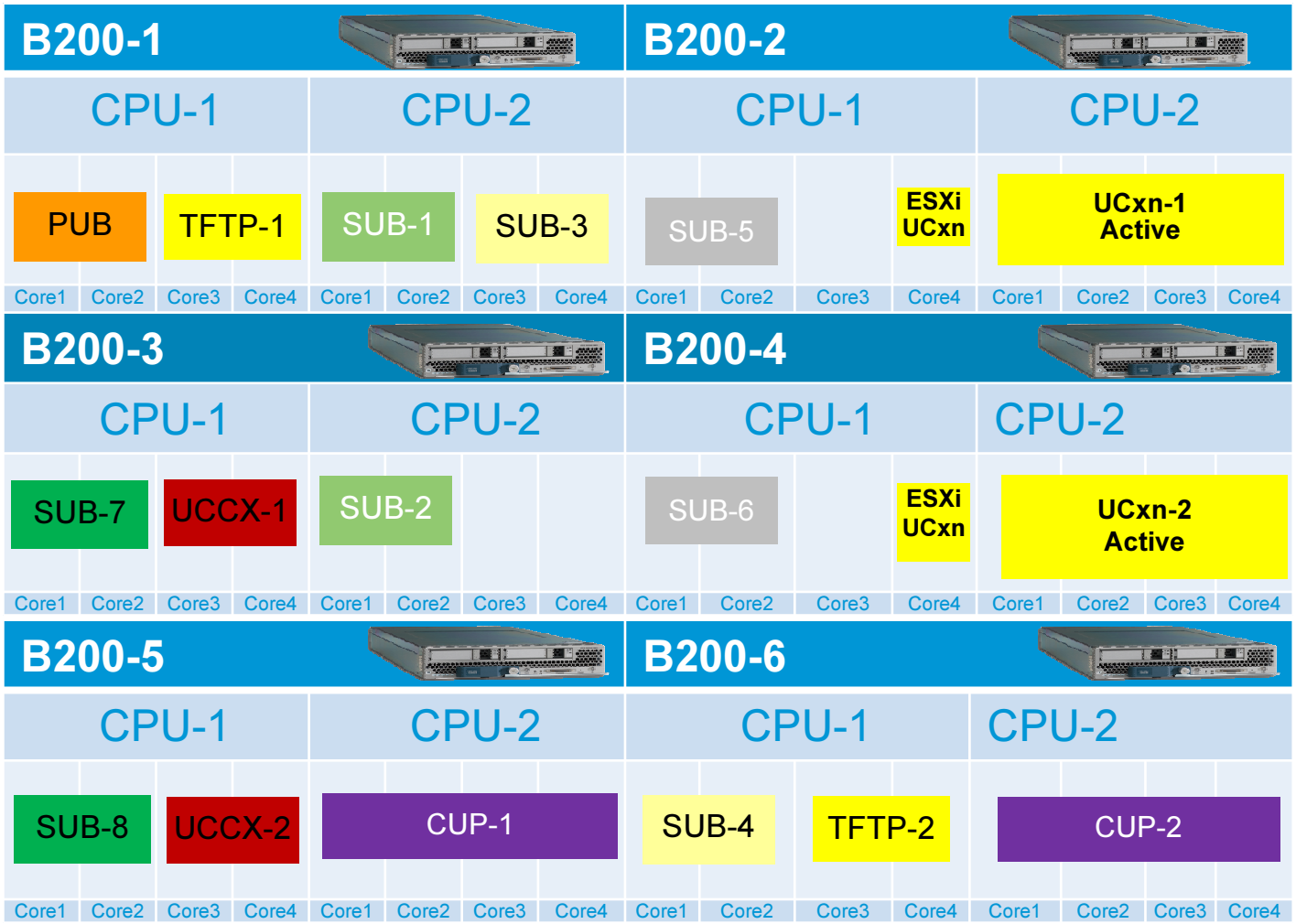
# Server Requirement – 12K Devices/Users




## Input

| |
|---|
| 12K Phones |
| 10K Messaging Users |
| 10K CUPC Clients |
| 240 UCCX Agents<br>10 Supervisors |

## MCS Servers

| | |
|---|---|
| CUCM | 11 |
| UCxn | 2 |
| CUP | 2 |
| UCCX | 2 |
| **Total** | **17** |

## B200 Servers

| | |
|---|---|
| **Total** | **6** |

**OVA USED**

| | | |
|---|---|---|
| **CUCM** | **2 vCPU 6 GB RAM** | **7.5K users** |
| **CUC** | **4 vCPU 4 GB RAM** | **10K users** |
| **CUP** | **4 vCPU 4 GB RAM** | **5K users** |
| **UCCX** | **2 vCPU 4 GB RAM** | **300 agents** |

HQ

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# Q&A

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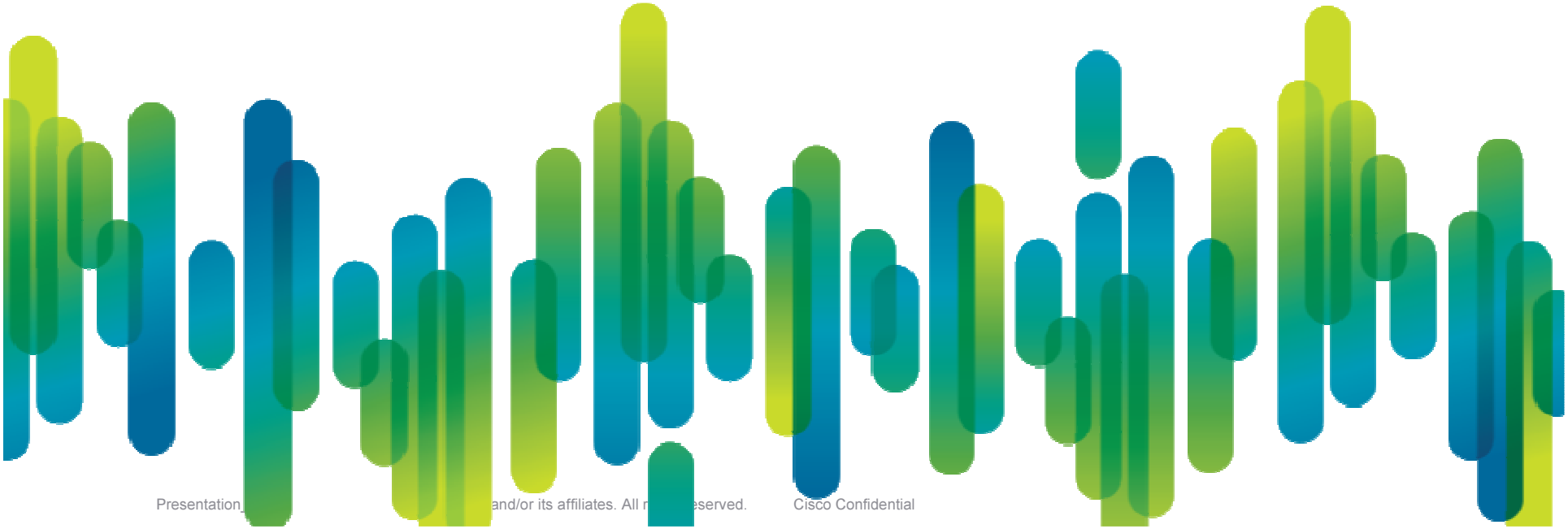

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