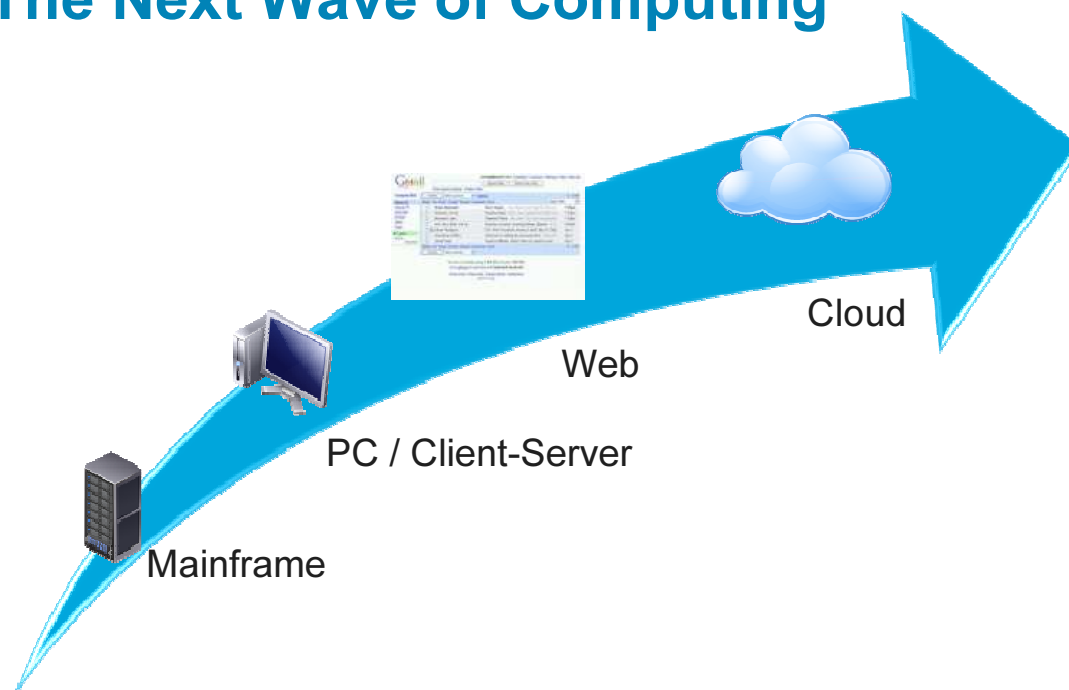


Unified Communications in Virtualised Environments

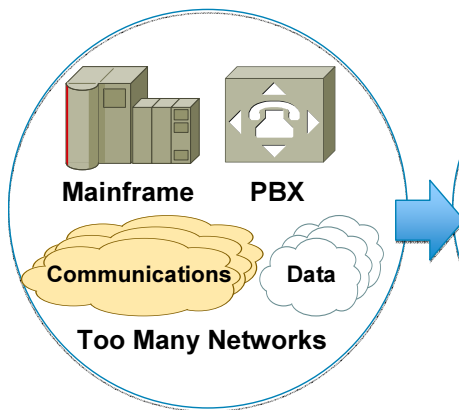


The Next Wave of Computing



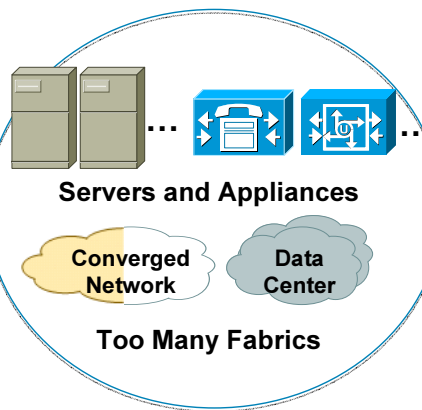
Data Center vs. Communications Architectures

Data Center 1.0 with Traditional Communications



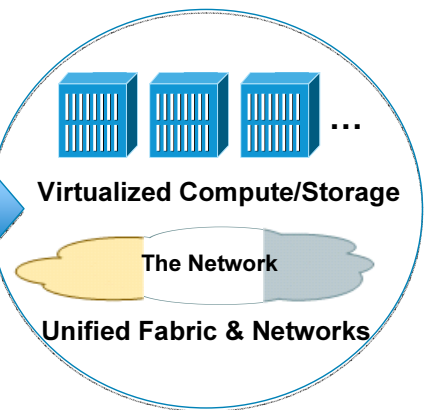
- Centralized Operations
- Controlled but Inflexible
- High TCO

Data Center 2.0 with Unified Communications



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

Data Center 3.0 with Virtualized Communications



- Flexible Operations
- Agility + Governance
- Low TCO

Why Virtualisation?



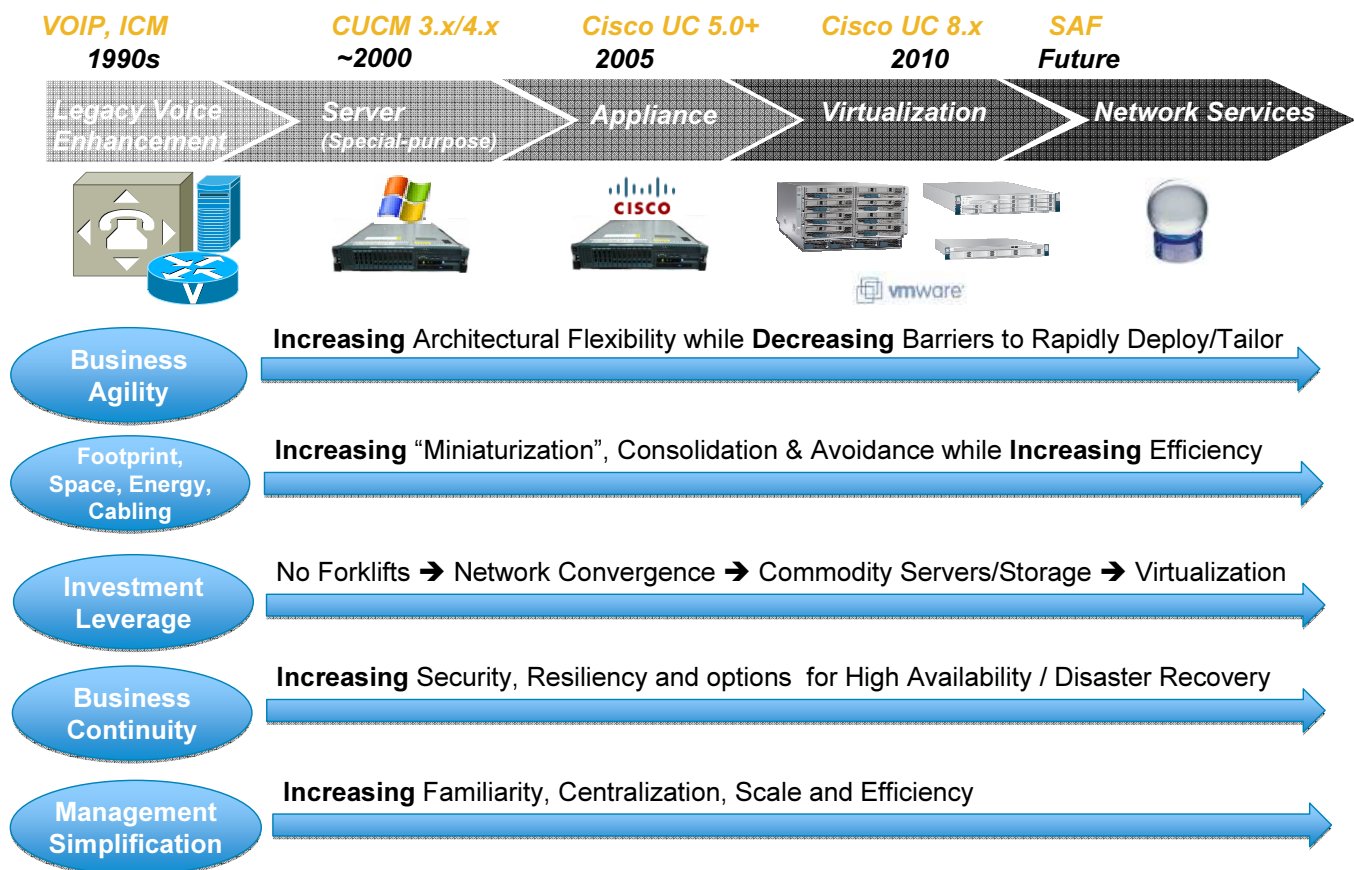
- Physical server consolidation
- Power and cooling
- Physical real estate
- Better resource utilization
- Reduce carbon footprint



- Business continuity
- Speed to deployment
- Simplified management
- Reduced management overhead
- Cost-effective lab and test environments



UC Platform Evolution: Accelerating Pace of Innovation



© 2009 Cisco Systems, Inc. All rights reserved. Cisco Confidential

6

Cisco Unified Computing System (UCS)

A single system that unifies

- Compute: Industry standard x86
- Network: Unified fabric
- Virtualisation: Control, scale, performance
- Storage Access: Wire once for SAN, NAS, iSCSI

Embedded management

- Increase scalability without added complexity
- Dynamic resource provisioning
- Ability to integrate with broad partner ecosystem

Energy efficient

- Fewer servers, switches, adapters, cables
- Lower power and cooling requirements
- Increase compute efficiency by removing I/O and memory bottlenecks

Cisco UCS Building Blocks

Cisco UCS Manager

Embedded in Fabric Interconnect

Cisco UCS 6100 Series Fabric Interconnects

UCS 6120XP 20 Port Fabric Interconnect

UCS 6140XP 40 Port Fabric Interconnect

Cisco UCS 2100 Series Fabric Extenders

Logically part of Fabric Switch

Inserts into Blade Enclosure

Cisco UCS 5100 Series Blade Chassis

Flexible bay configurations

Logically part of Fabric Interconnect

Cisco UCS B-Series Blade Servers

UCS B200 M1 2-Socket Blade Server

UCS B250 M1 2-Socket Extended Memory Blade Server

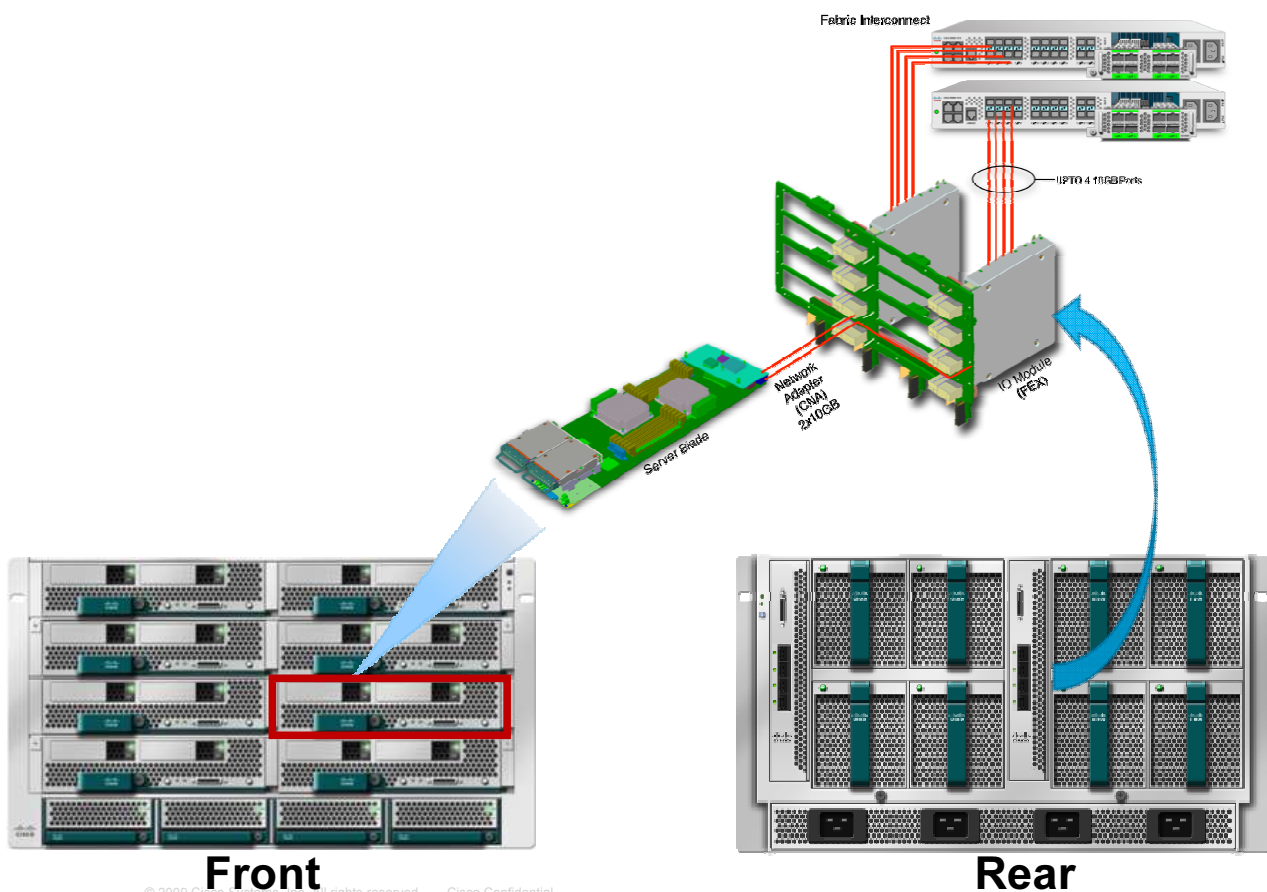
Cisco UCS Converged Network Adapters

Three adapter options

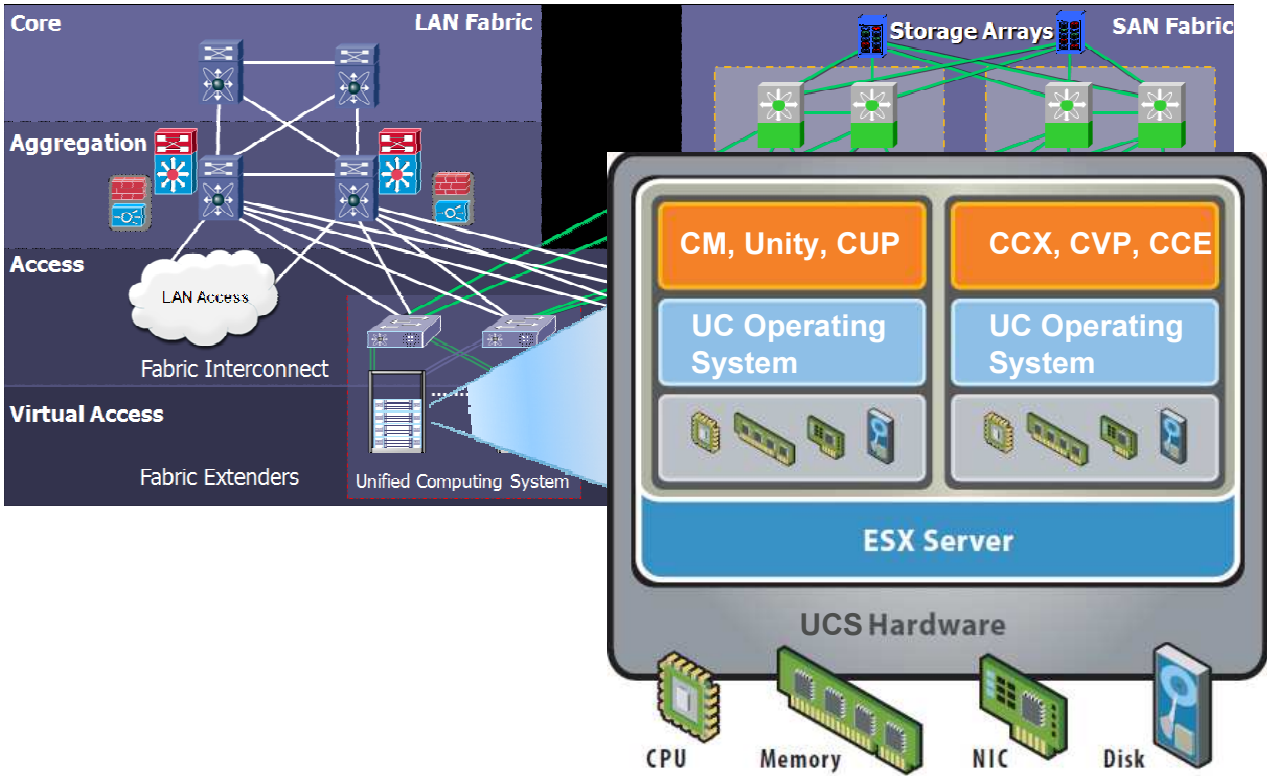
Mix adapters within blade chassis



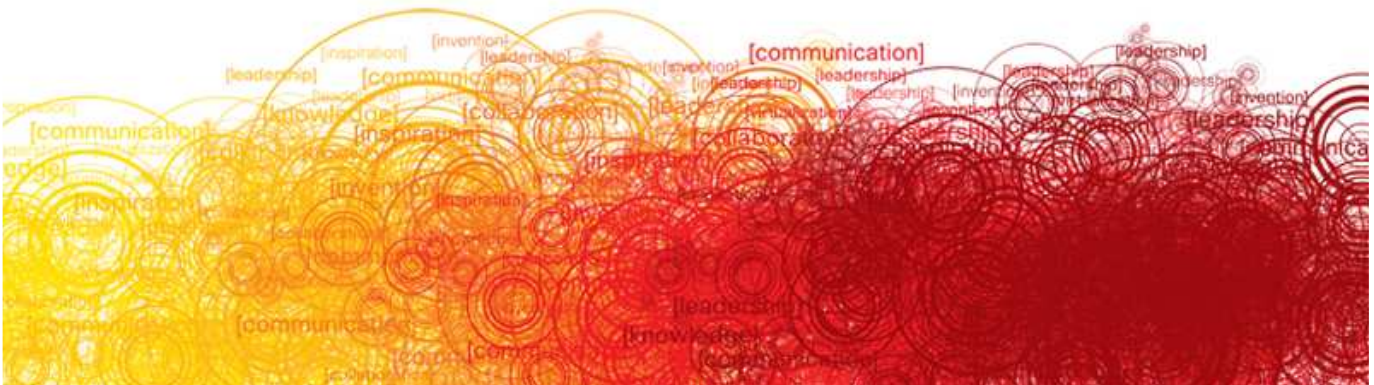
UCS B-Series Chassis Architecture



Unified Compute System Architecture

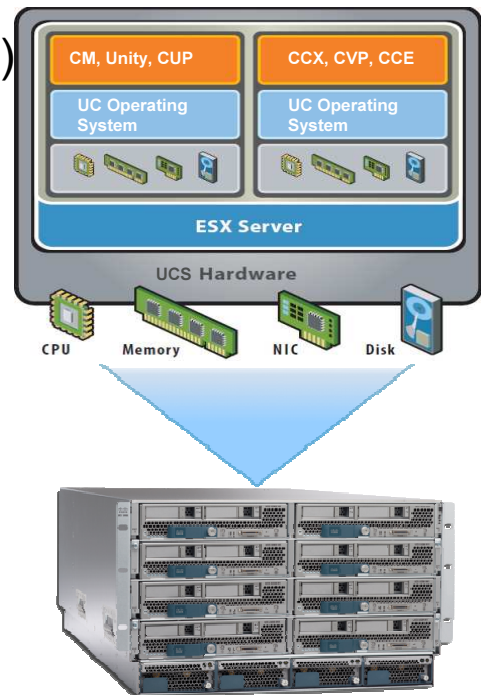


Unified Communications on UCS Solution Overview



UC on UCS Features At-a-Glance

- UC 8.0 on VMware vSphere (ESXi v4)
- UCS hardware must be used
 - Memory, Storage, OS, Boot Policy, etc.
- Restricted VMware feature support
- UCS B-Series
 - FC Storage required
 - Half-width blades only



Small Steps to Virtualisation Support for UC

- Cisco's Unified Communication Suite 8.0 on UCS
- UC on VMware supported in production
- Must be UCS (no other blades)
- Specific VM configurations
- Restricted VMware feature support
- Off box storage with UCS B-Series
- SAN storage – FC only, no current support for NAS/iSCSI
- UCS B-series half-width blades
- Rack mount C-Series Support



UC Applications Supported on UCS

- Cisco Unified Communications Manager (CUCM) 8.0
- Cisco Unity Connection (CUC) 8.0
- Cisco Unified Presence (CUP) 8.0
- Unified Contact Center Enterprise (UCCE) 8.0
- Cisco Voice Portal (CVP) 7.0(2)
- Cisco Unified Expert Advisor (EA) 8.0
- Cisco Contact Center Express 8.0
- Cisco Unity 8.0
- Cisco Unified Communications Management Applications
- Cisco UC Manager Business Edition and Super Cluster are currently not supported

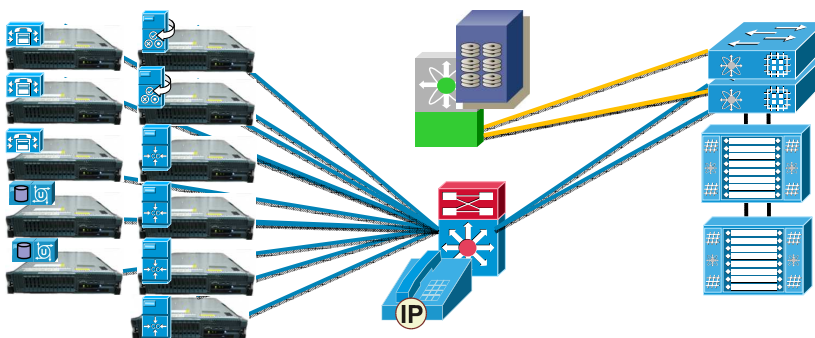
Why UC on UCS

Significant TCO Benefits

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+%)

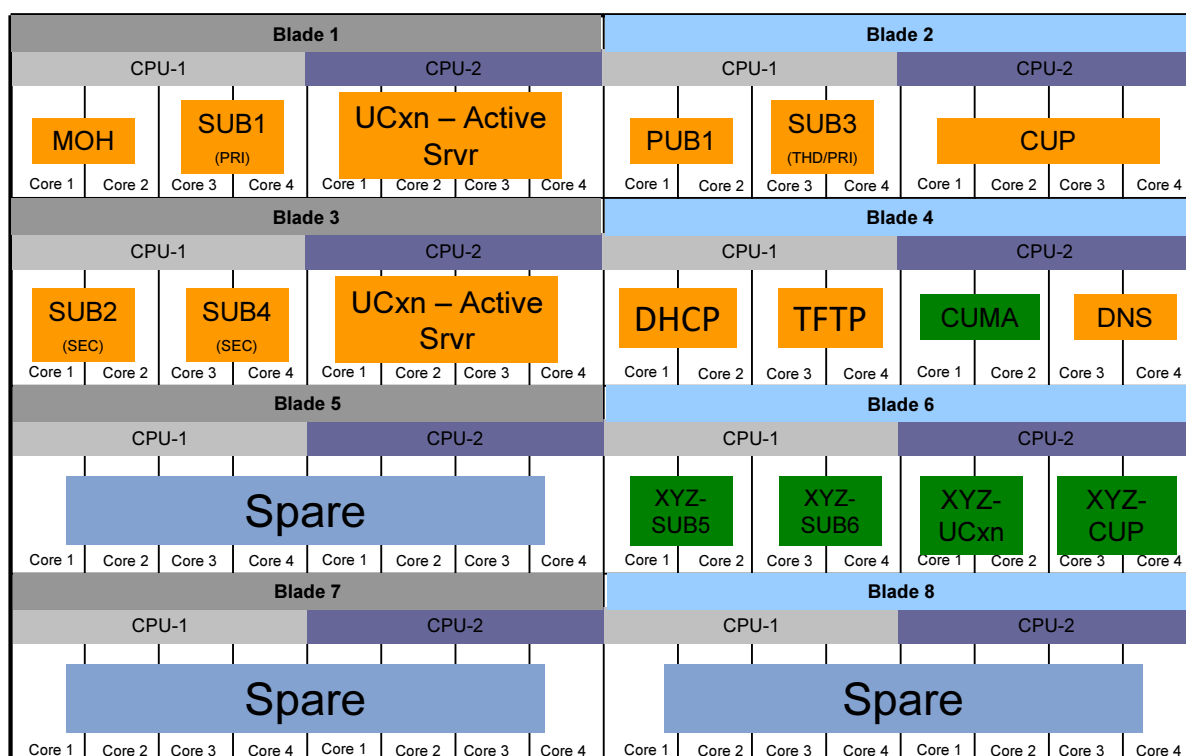
OPEX

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

Virtual Machine Planning/Designing

- Cisco UC applications will **require use of VMware “Reservation”** capability
- Mix of Cisco UC applications on blade is OK – **no non-Cisco UC VM’s** on the blade.
- Test and Support only Specific VM Configurations per Application (CPU, Memory, and Storage)
- **Configuration of the virtual machine is not enforced in software – only through documentation.**
- **No oversubscription of RAM or CPU!**

Hypothetical blade/chassis layout example



3 - 4 Apps per Blade is current Cisco recommendation

Co-residency Dedicated and Virtualised Support

- Supports “Mix & Match” of products subject to supported VM templates and server’s capacity/performance limits
- **Enforcement is via documentation and TAC support**
- 3rd-party support is roadmapped. Targeting key Solutions Plus and OEM vendors, but work required from Cisco and them to support.

They need to support VMware/UCS

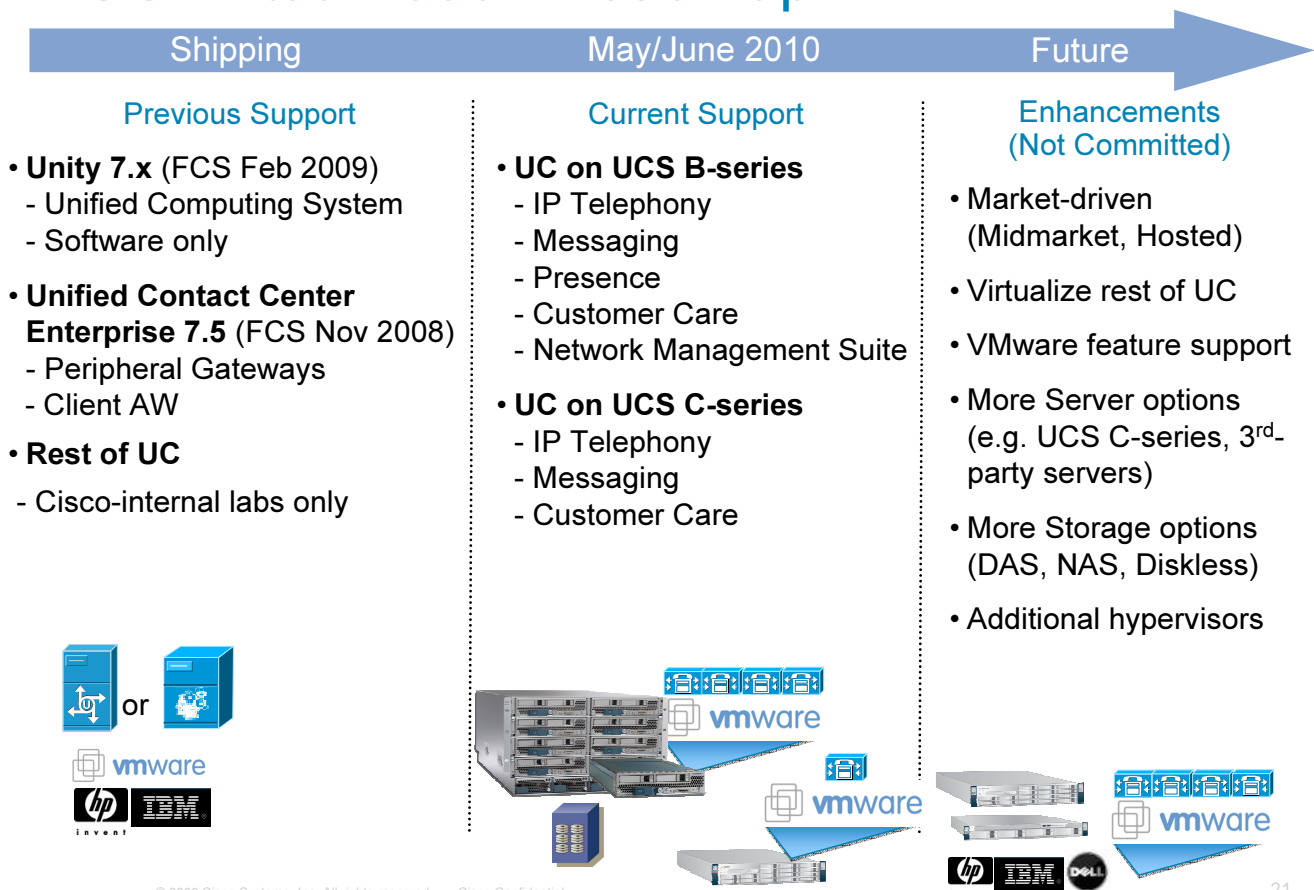
To be co-resident with other apps, we need to support co-residency with them.

C5

VMware vSphere Feature Support

- VMotion – **not supported**
- DRS & Power Management – **not supported**
- Storage VMotion – **not supported**
- Snapshots – **not supported**
- VCB – **not supported**
- Fault Tolerance – **not supported**
- HA – **is supported**
- **Basic Rule of Thumb – if not explicitly listed as supported, it’s not supported**

UC Virtualization Roadmap





SAN Planning – For Your Reference

- SAN storage – FC only
 - DAS/NAS or iSCSI is not supported as of now
- SAN must be on VMware's hardware compatibility list
 - <http://www.vmware.com/resources/compatibility/search.php>
- Examples: EMC Clarion CX4-120,CX4-240; NetApp FAS2000, FAS 30000 Series
- Fiber Channel Drives, 10k or 15k rpm – “tier 1 storage”
- Typical IOPs is 150 per CUCM virtual machine
- Final recommendation per apps is not available – testing/code-optimization is in progress

LAN Planning – For your Reference

- One Management VLAN for ESXi 4.0 network

- This is new requirement

- One IP address per UCS B-series blade server for ESXi access

- One BMC VLAN for KVM over IP network

- This is similar to HP iLOP management console access

- If you have HP MCS servers then you might already be using it

- One IP address per UCS B-series blade server for out of band management

- Application VLAN requirement

- Nothing is changing here

- UCS Manager IP and redundant UCS Fabric Interconnect VLAN requirement (Data Center Team)