Podatkovni centri nove generacije

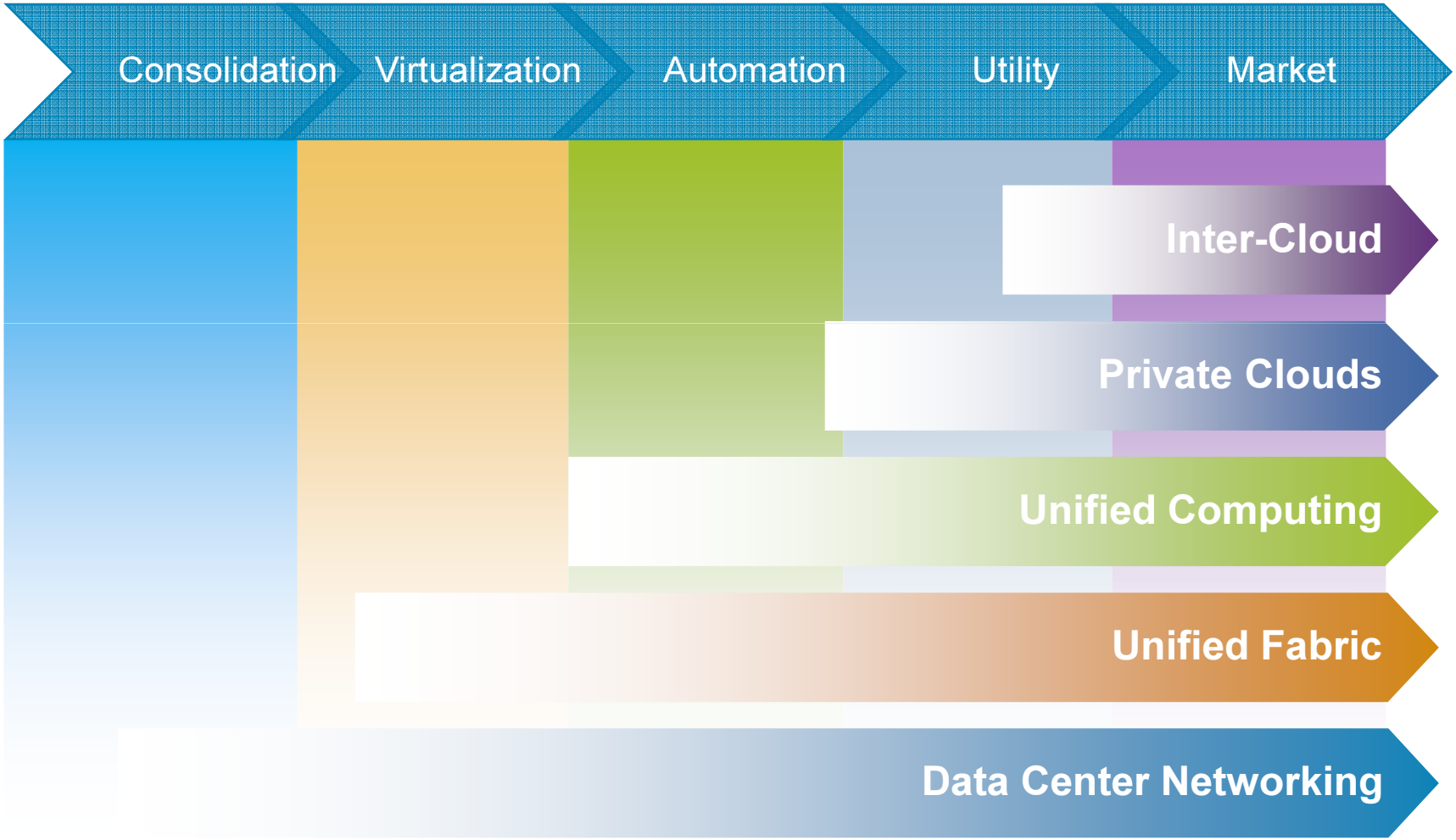
Cisco Unified Computing System

Luka Markota

lmarkota@cisco.com

Systems engineer

Unified Computing Continues Data Center 3.0 Strategy

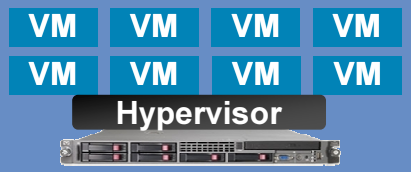


Server Virtualization - Key DC Trend

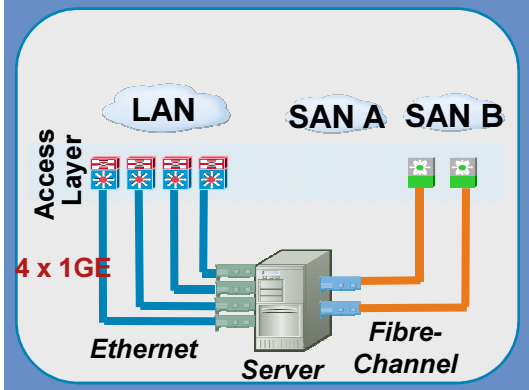
Today

- Many under utilized servers
- Cable sprawl
- High power, cooling costs
- High CAPEX
- For every $1 spent on server capex ~$5 spent on opex

Virtualization Step1

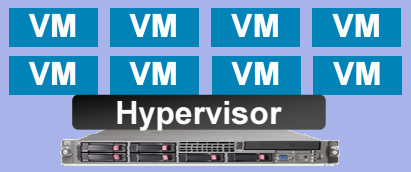


GE

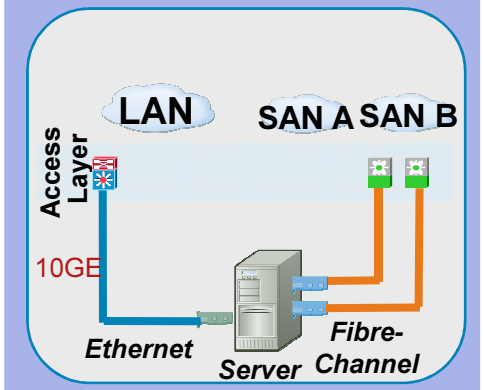


- Cable sprawl
- power, cooling costs
- Less number of access layer Ethernet ports

Virtualization Step2

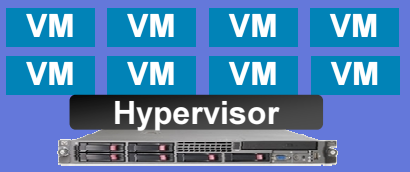


10 GE

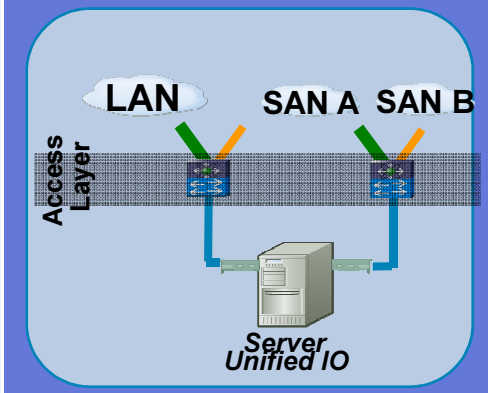


- GE to 10GE in access layer
- Less interfaces – reduced Cable sprawl
- Savings from power and cooling

Virtualization Step3



10 GE/FCOE



- Unified I/O - LAN & SAN consolidation
- Reduce NICs, HBAs,
- Reduce cabling
- More Savings from power and cooling
- Lower capex

Cisco Unified Computing System

The Cisco Unified Computing System is designed to dramatically reduce datacenter total cost of ownership while simultaneously increasing IT agility and responsiveness.

Process Automation (ITIL)

Business Service Management

Operations and Support

Automated Provisioning

- Embedded single point of management and provisioning
- Visibility and control across technology silos
- Ongoing management and compliance

Virtualized Services

- Fine-grained control, portability, and visibility of network, compute, and storage attributes
- Increased Processor Efficiency with Hypervisor Bypass

Industry Standard Servers

- Intel Xeon Processor 5500 series.
- More than double the memory capacity of competing systems
- Blade Form Factor

Unified Fabric

- Wire once, low latency FC and Ethernet
- Virtualization aware
- Dramatic reduction in adapters, switches, pass thru modules

Up to 90% greater administrator efficiency, with faster changes and fewer incidents

performance via Cisco Hypervisor Bypass Technology

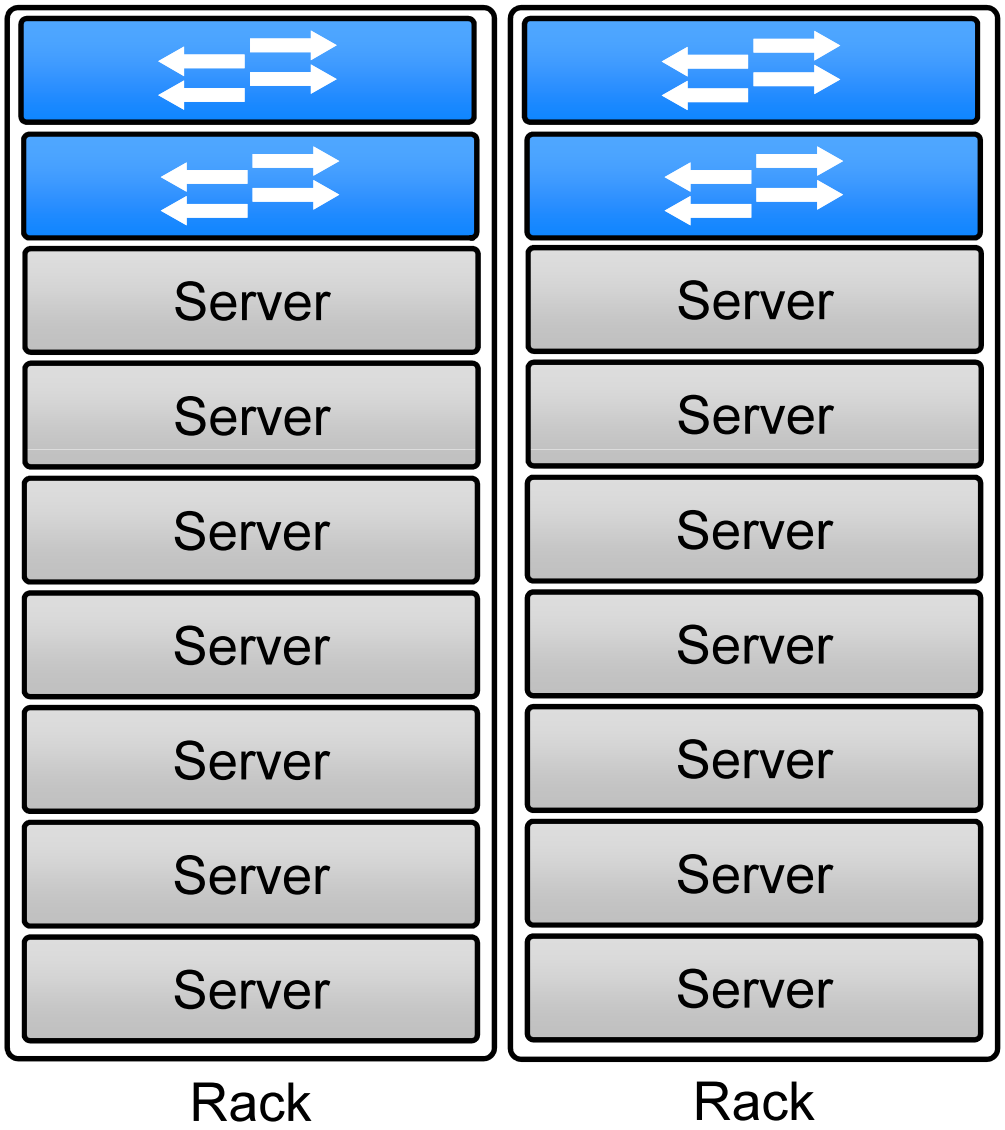
purchase, manage, power, and cool

Up to 30% lower memory and SW licensing costs via Cisco Extended Memory Technology

Scalable Unified Fabric that delivers up to 320 server nodes in a single system

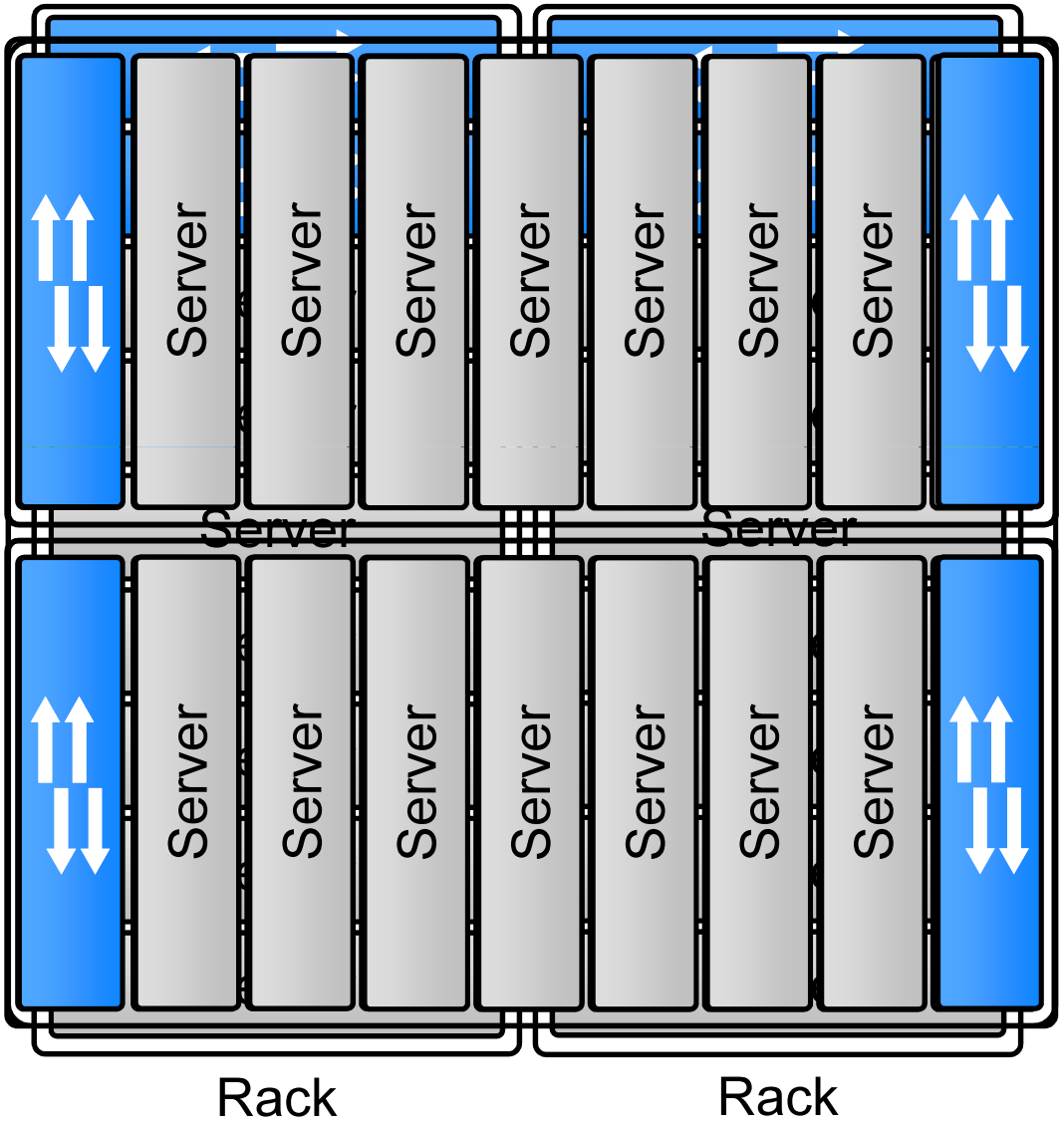
Server evolution

Server Deployment: Rackmounts

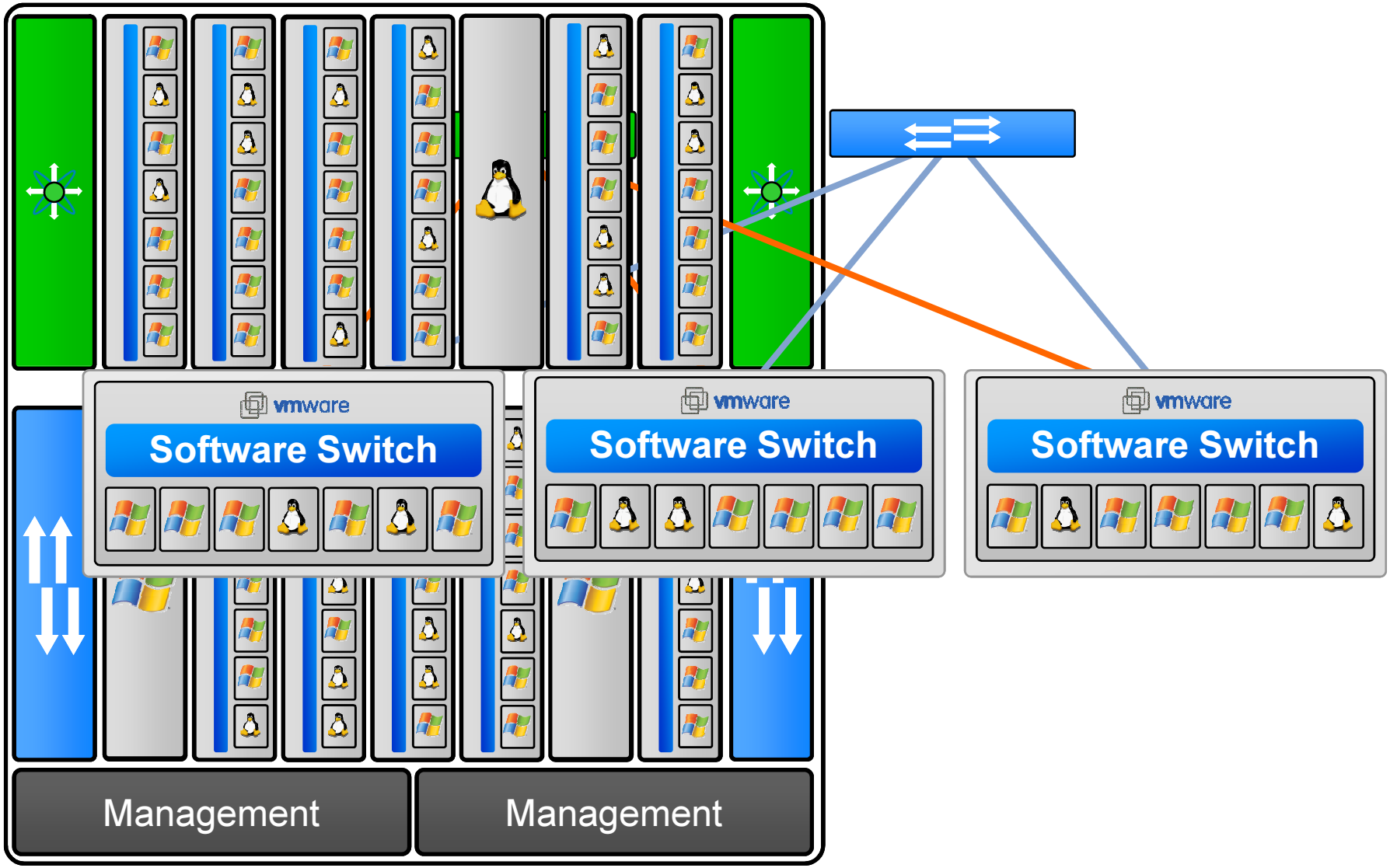


- First generation
  - Rack-optimized
  - Top of Rack or End of Row switches
  - Cables
- Benefits
  - Space utilization
  - Highly flexible
- Weakness
  - Cabling
  - Serviceability
  - Power efficiency

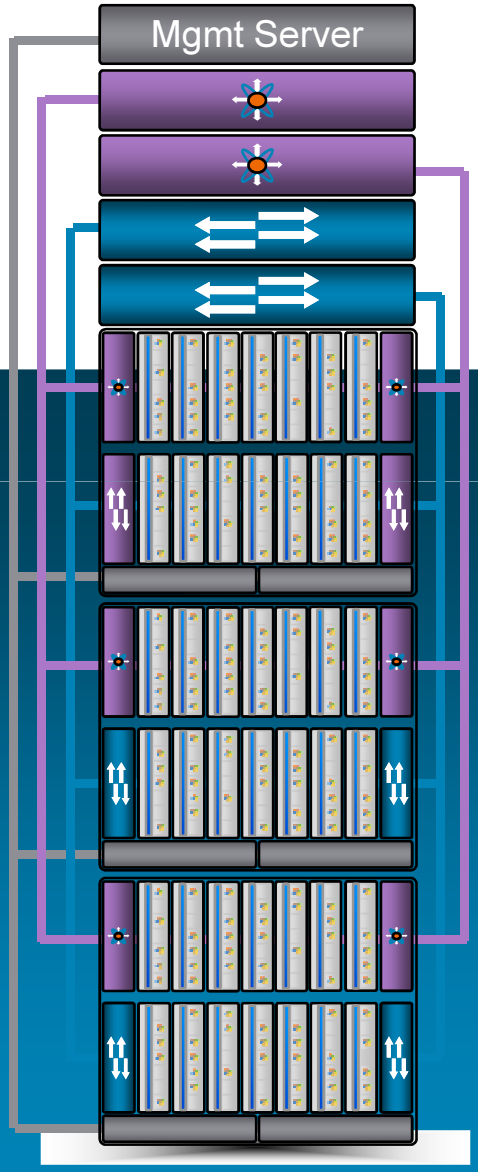
Server Deployment: Blades



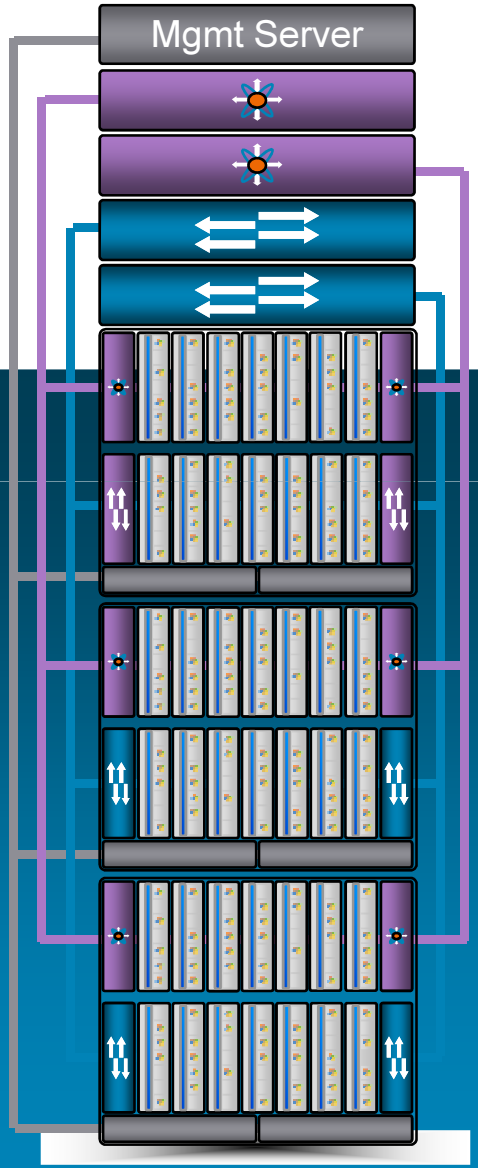
Server Deployment Scale



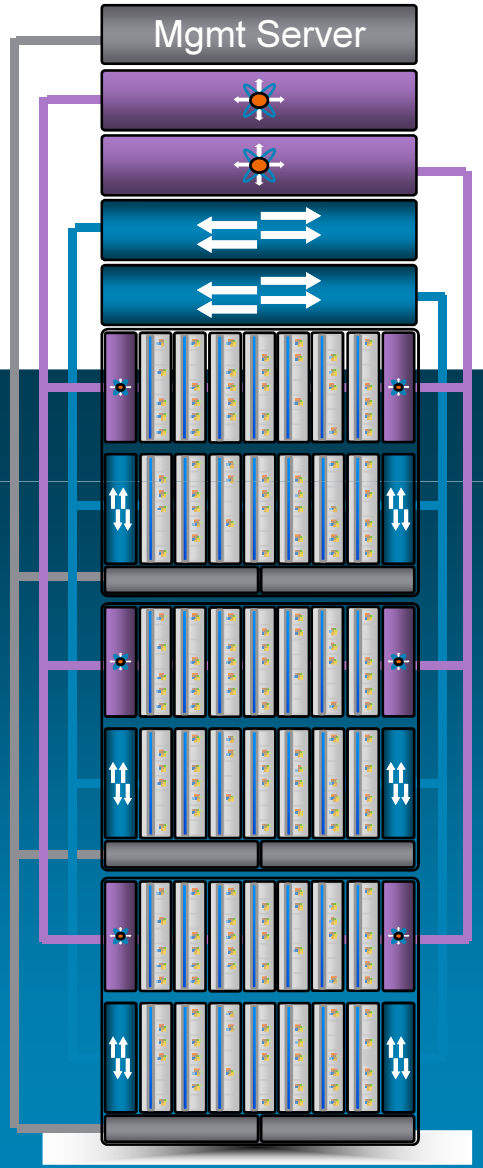
Simplifying the Data Center



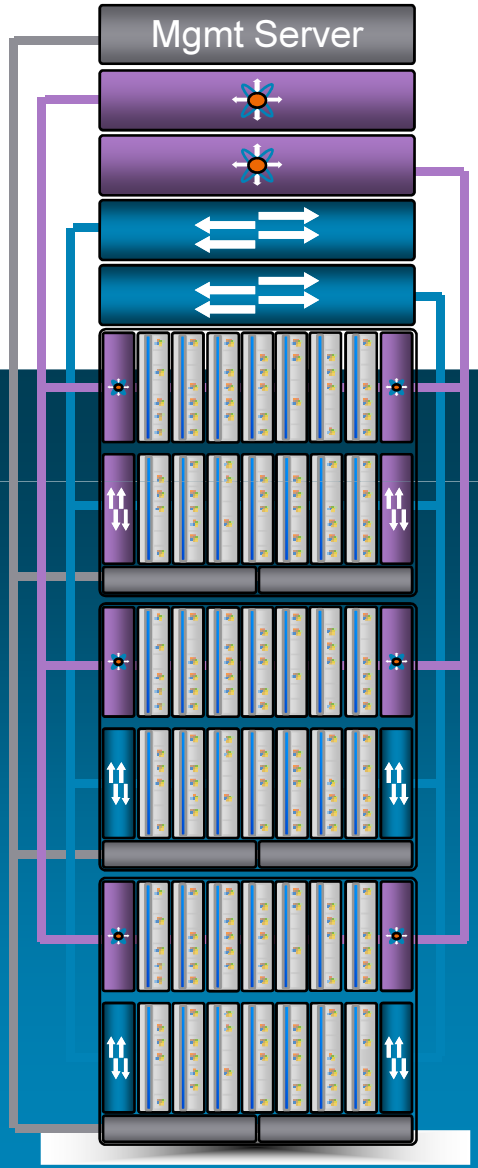
Simplifying the Data Center



A cohesive solution

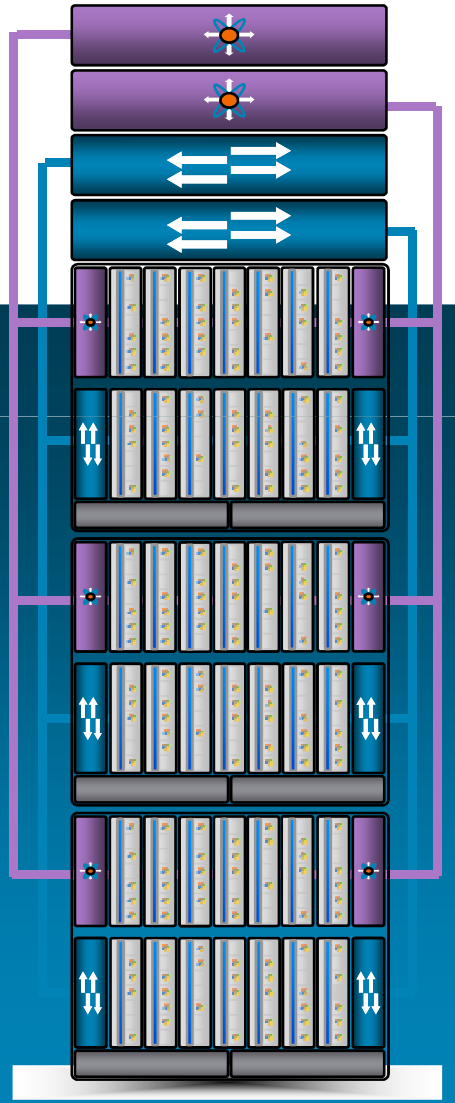


Simplifying the Data Center

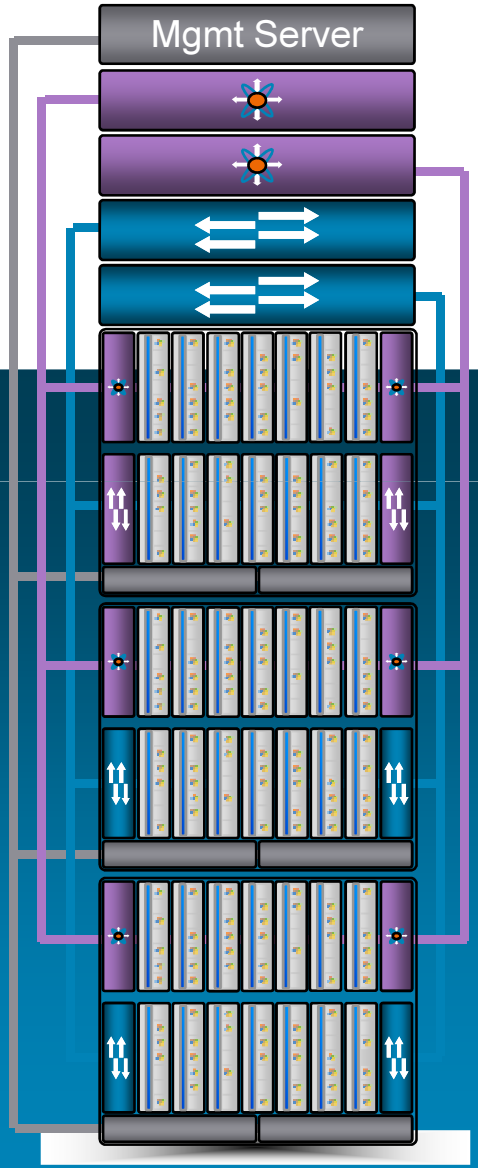


A cohesive solution

- Embed management

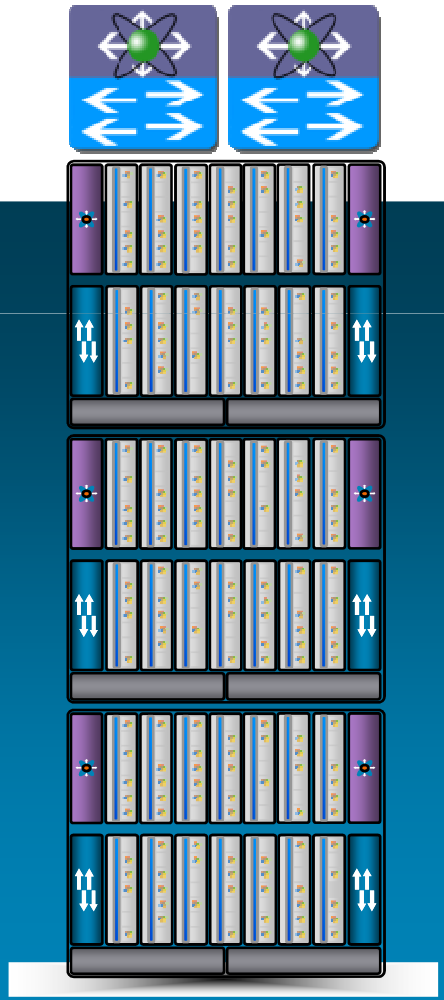


Simplifying the Data Center

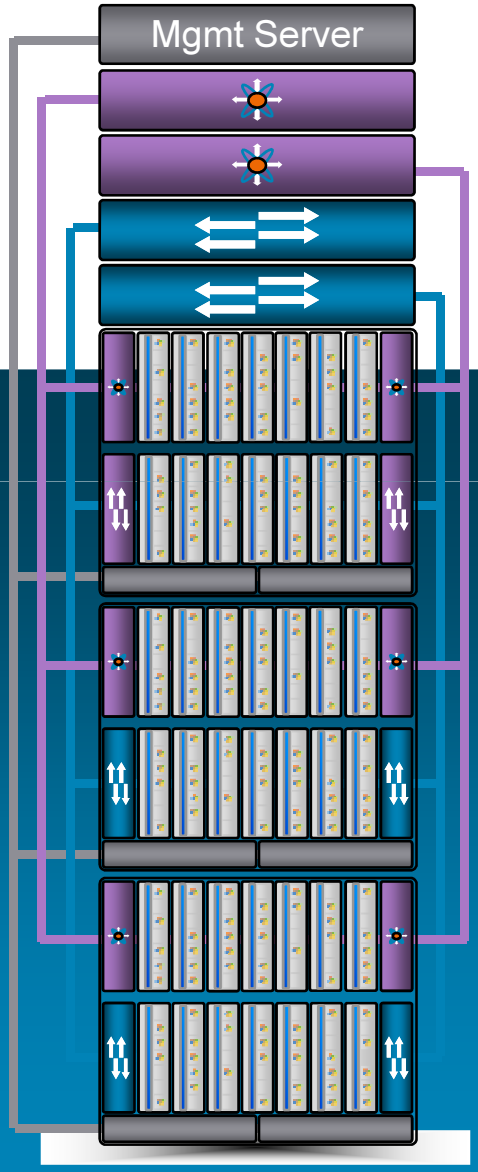


A cohesive solution

- Embed management
- Unify fabrics

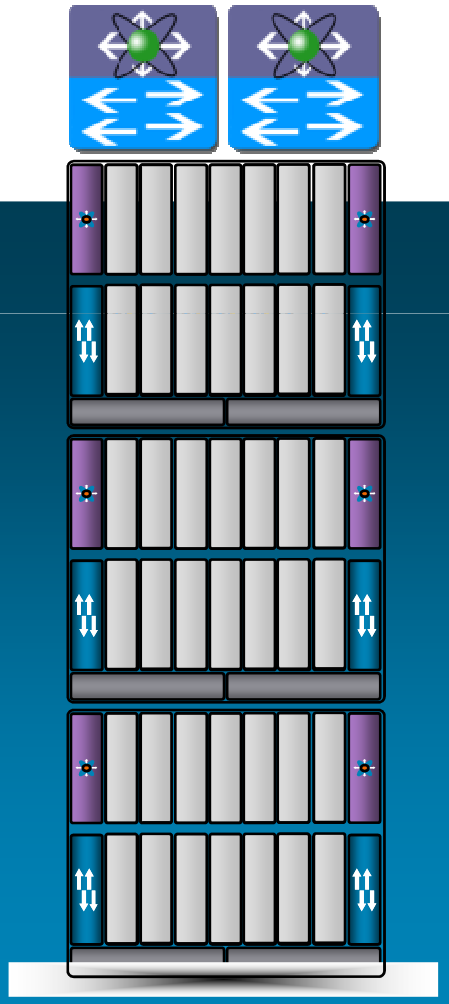


Simplifying the Data Center

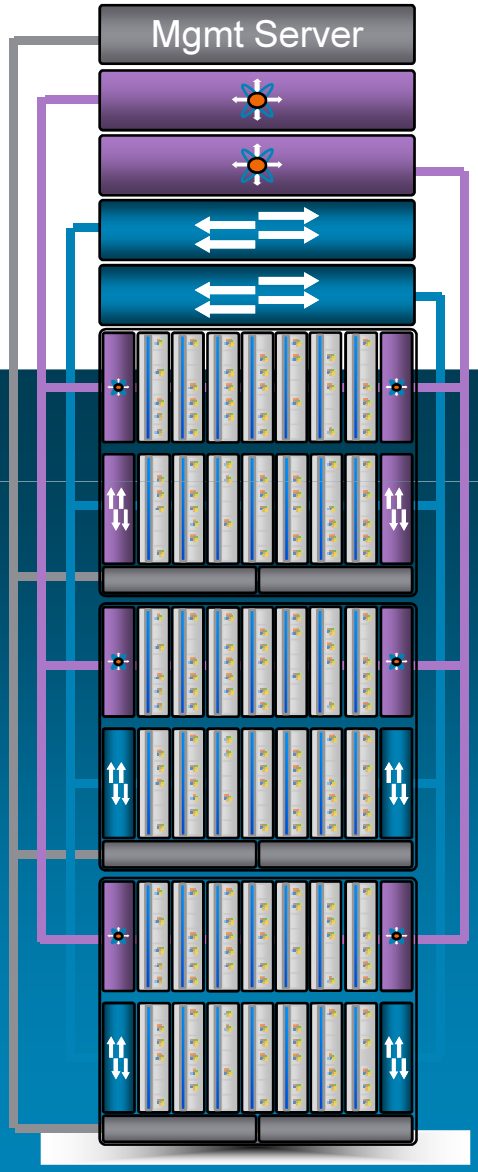


A cohesive solution

- Embed management
- Unify fabrics
- Optimize virtualization

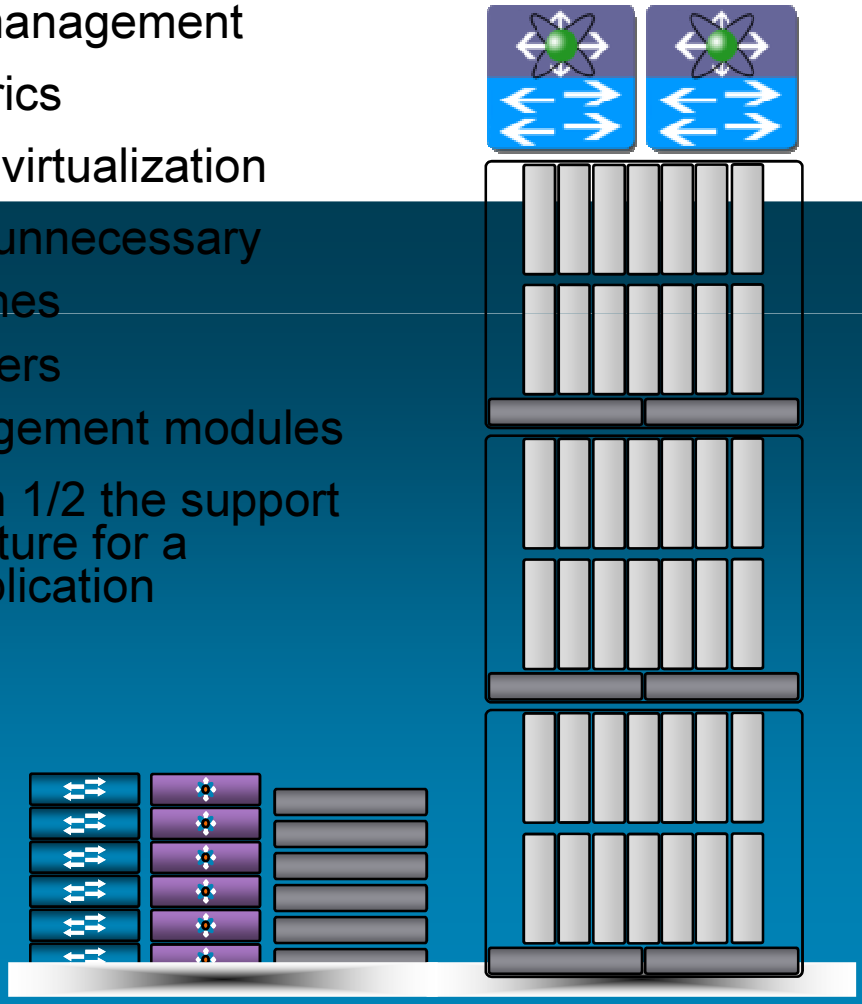


Simplifying the Data Center



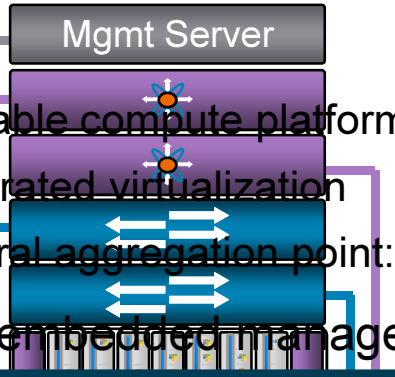
A cohesive solution

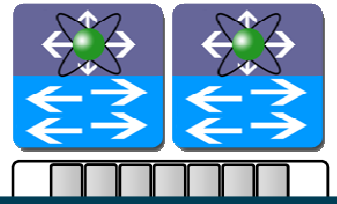
- Embed management
- Unify fabrics
- Optimize virtualization
- Remove unnecessary
  - Switches
  - Adapters
  - Management modules
- Less than 1/2 the support infrastructure for a given application



Cisco Unified Computing System

- UCS
  - Scalable compute platform
  - Integrated virtualization
  - Natural aggregation point: Network
- Unified embedded management



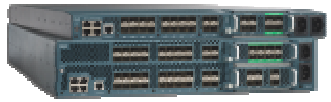


UCS Components

UCS Building Blocks

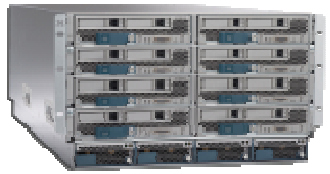
UCS Manager
Embedded– manages entire system

UCS Fabric Interconnect
20 Port 10Gb FCoE
40 Port 10Gb FCoE

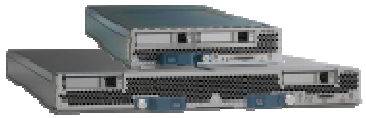


UCS Fabric Extender
Remote line card

UCS Blade Server Chassis
Flexible bay configurations



UCS Blade Server
Industry-standard architecture



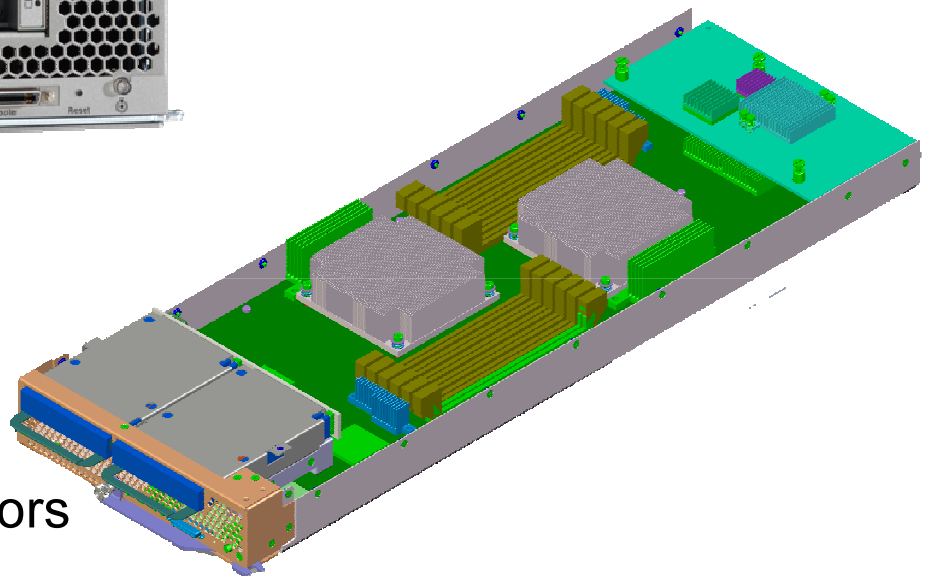
UCS Virtual Adapters
Choice of multiple adapters

Blade Chassis

- 6RU Chassis
  - Blades and Power supplies plug-in from front
- Blades
  - Power & cooling budget allows leading edge processor performance and memory capacity
  - Combinations of half slot and full slot blades
    - Up to 8 Half slot blades
    - Up to 4 Full slot blades

- Power Supplies
  - 4x 2,500W hot-plug Power Supplies
  - 90% efficient
  - N+N redundancy (grid redundant)
  - No zoning
  - 4 single phase 220V, IEC320-C19

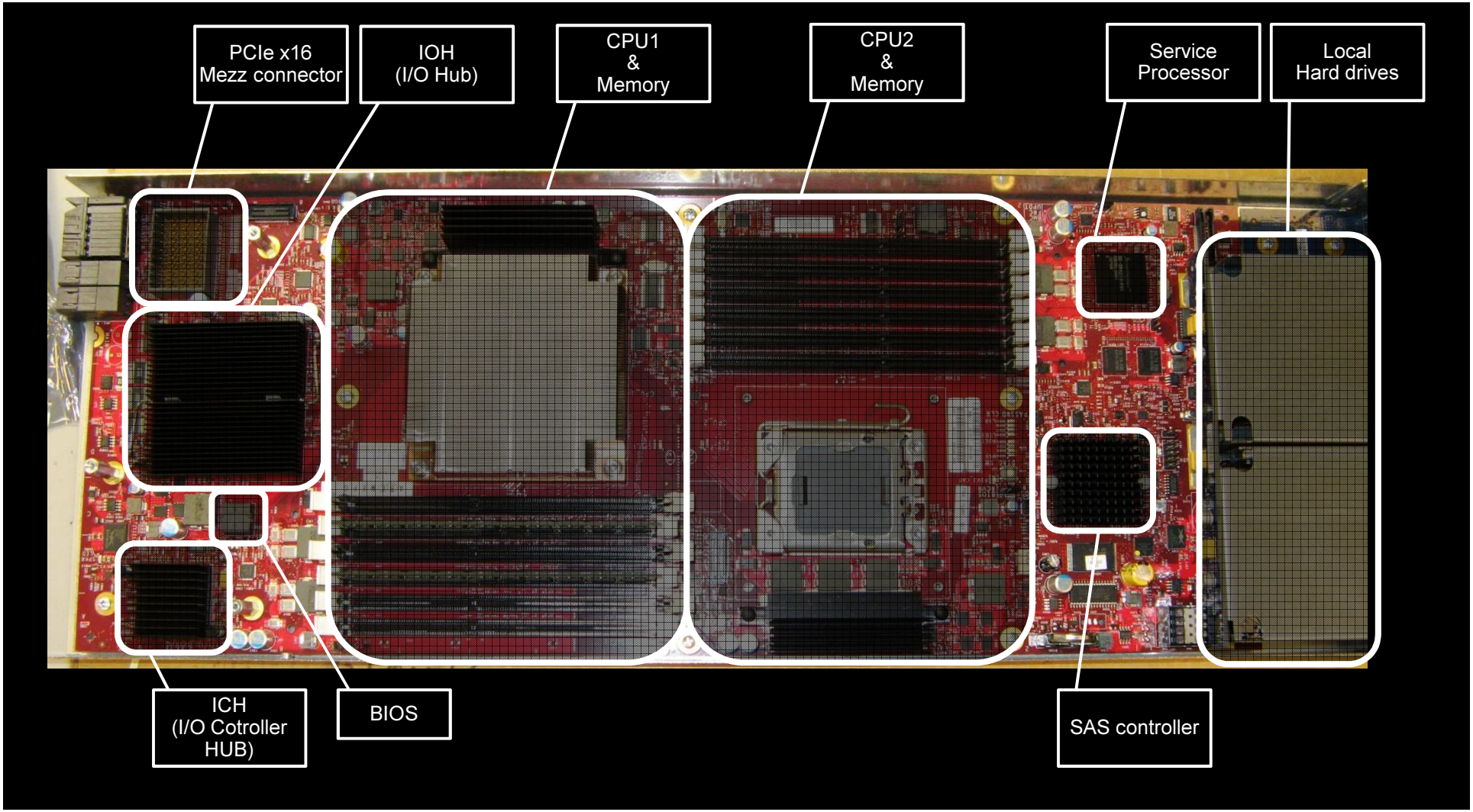
UCS B200 M1 Blade



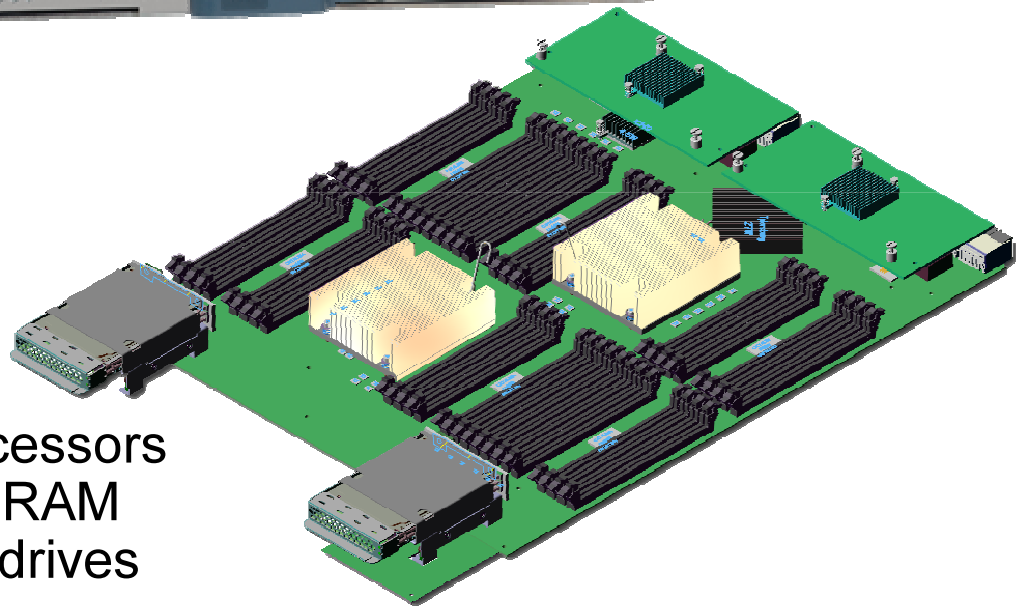
Blade Attributes:

–2 x Intel Xeon 5500 Series Processors
–12 x DIMM slots - up to 96GB RAM
–2 x optional SAS hot-plug hard drives
–RAID 0, 1, 0+1
–1 x 10Gb dual port mezzanine adapter
–Remote and local access to keyboard, video, mouse, serial
–Integrated with UCS Manager

UCS B200 M1 overview



UCS B250 M1 Blade

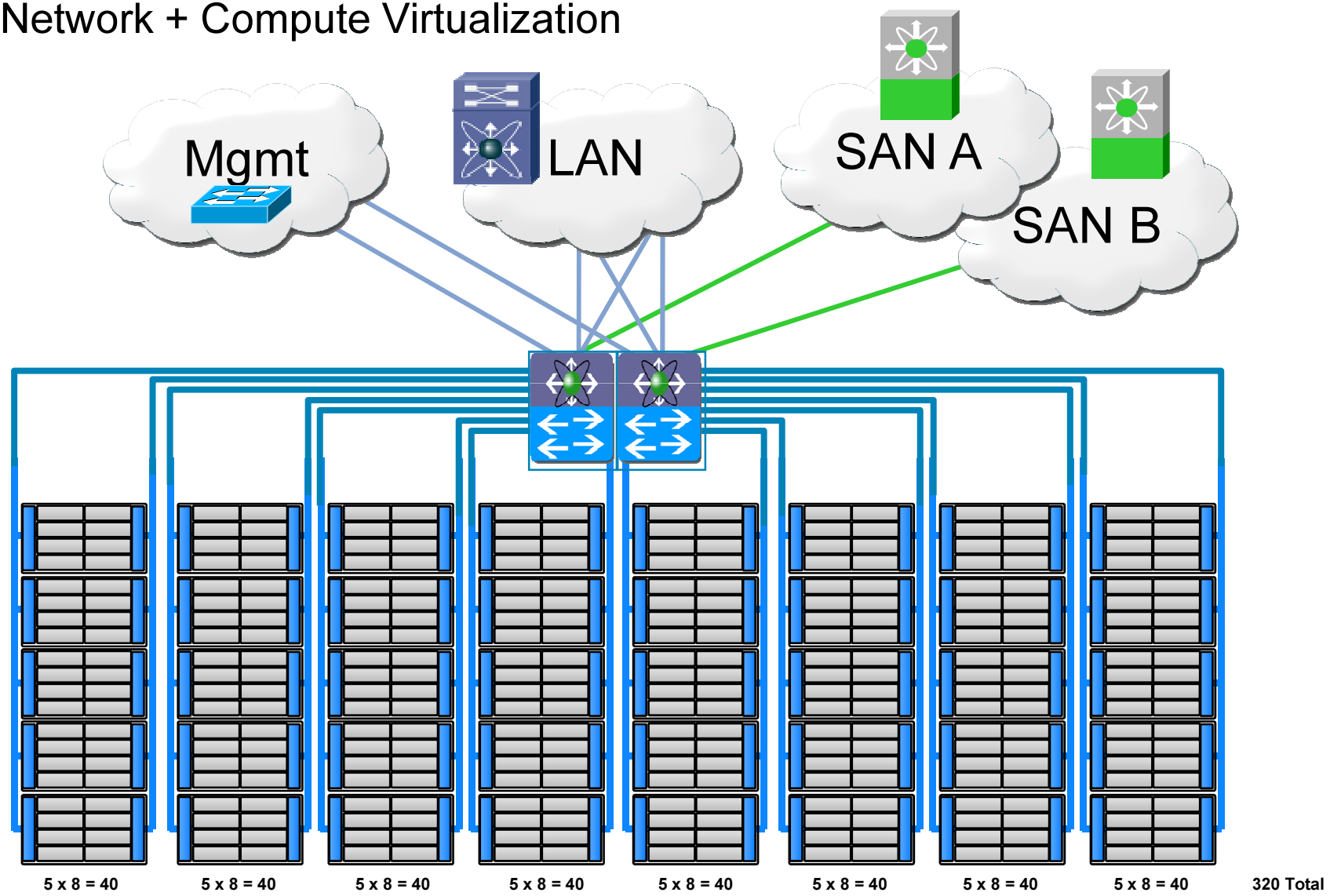


Blade Attributes:

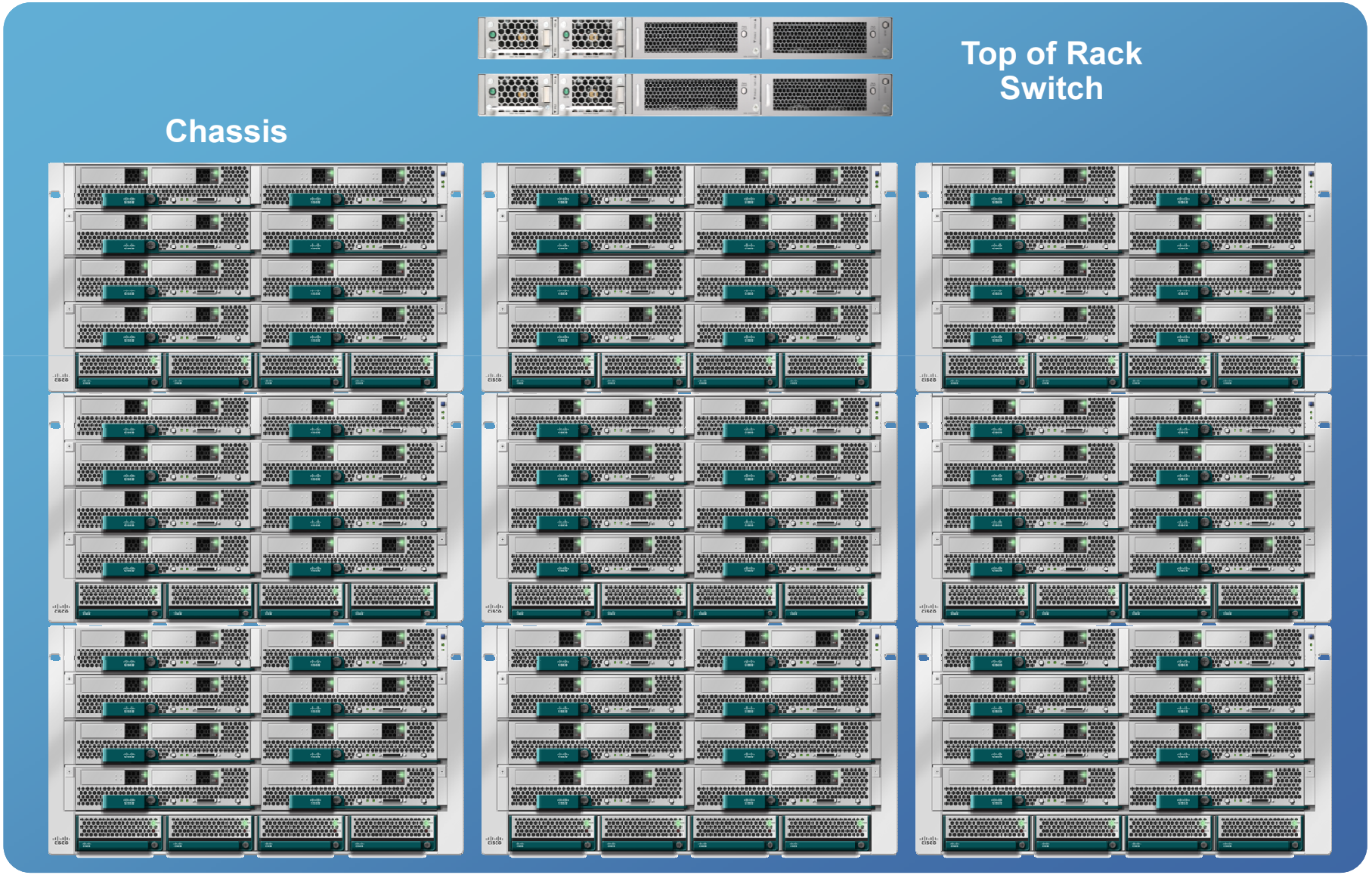
–2 x Intel Xeon 5500 Series Processors
–48 x DIMM slots - up to 384GB RAM
–2 x optional SAS hot-plug hard drives
–RAID 0, 1
–2 x 10Gb dual port mezzanine adapter
–Remote and local access to keyboard, video, mouse, serial
–Integrated with UCS Manager

Single Integrated System

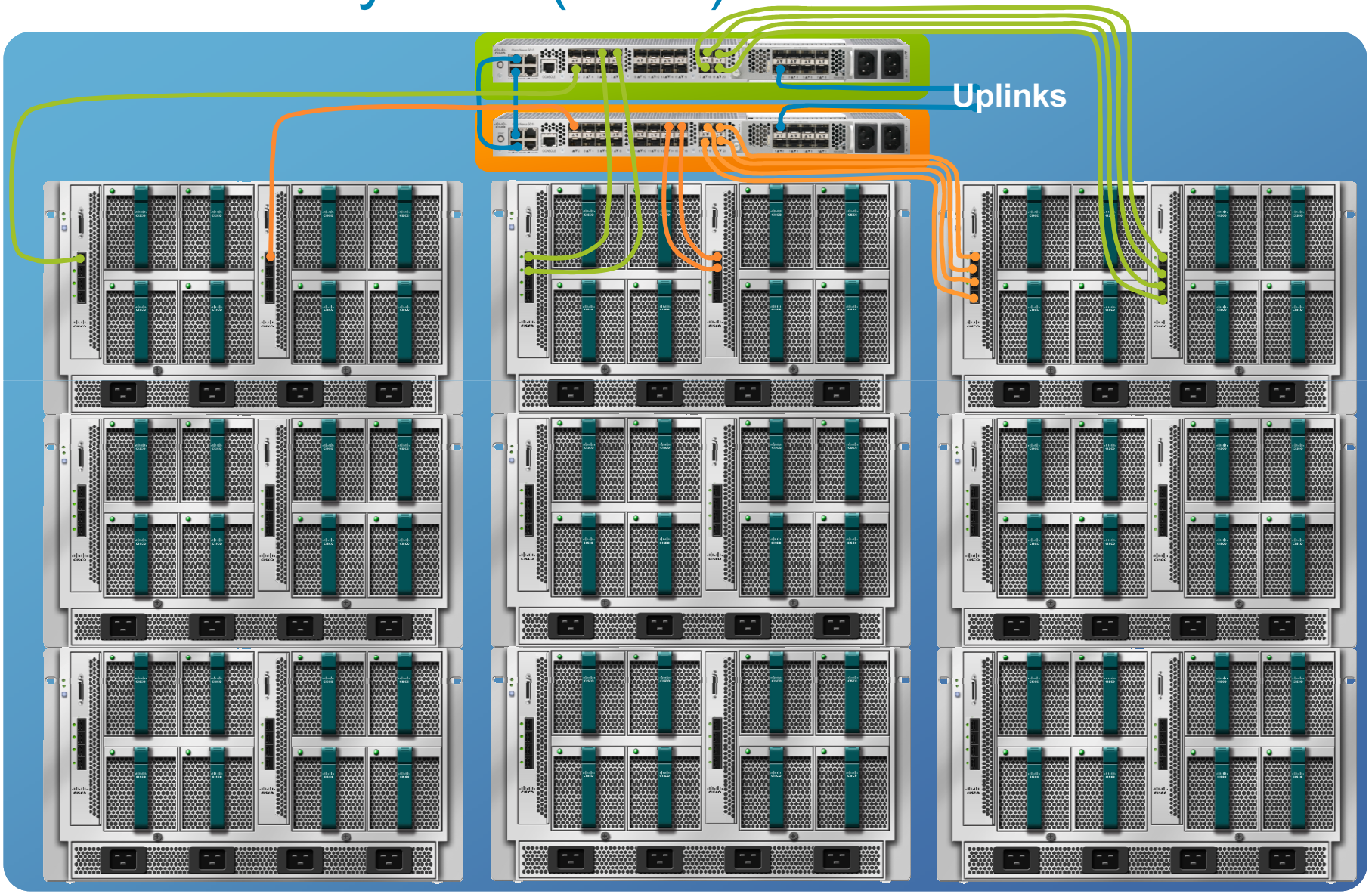
- Network + Compute Virtualization



Overall System (Front)



Overall System (Rear)



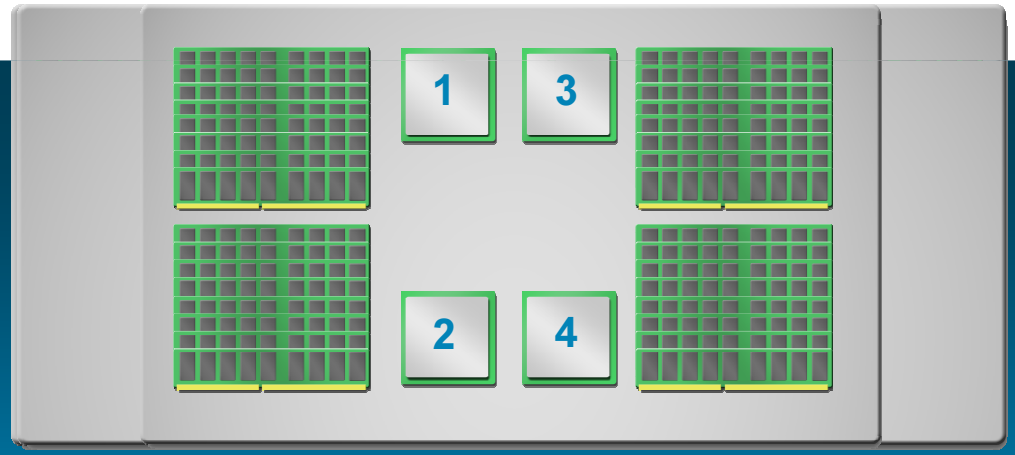
Memory Expansion

Memory Expansion

Higher server consolidation & larger VM density

Reduces CPU, power/cooling, and SW licensing costs

Competition - max 18 & high density with proprietary tech

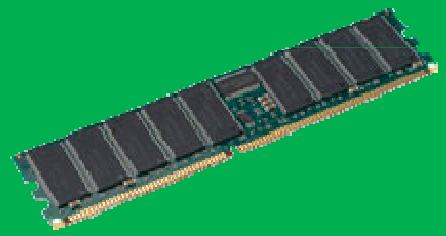


Savings

Cisco Extended Memory solution

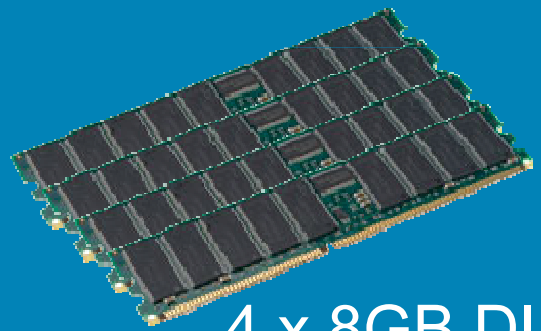
Intel's Nehalem memory controller is designed for future DIMM technology

32GB DIMM



Does not exist

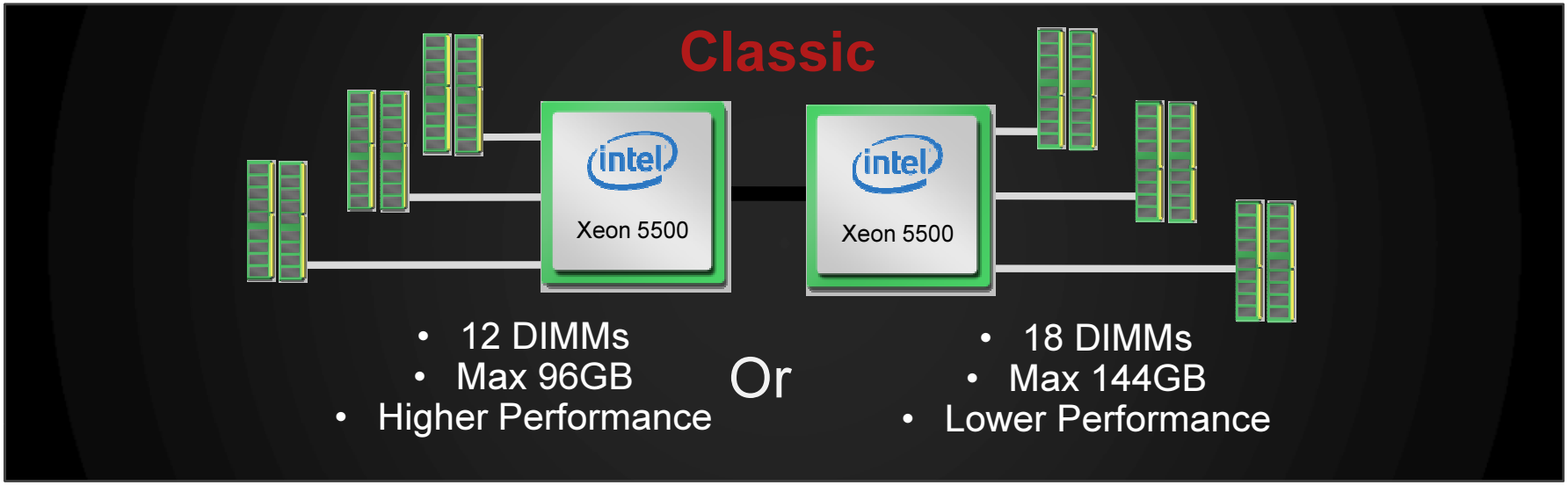
32GB DIMM

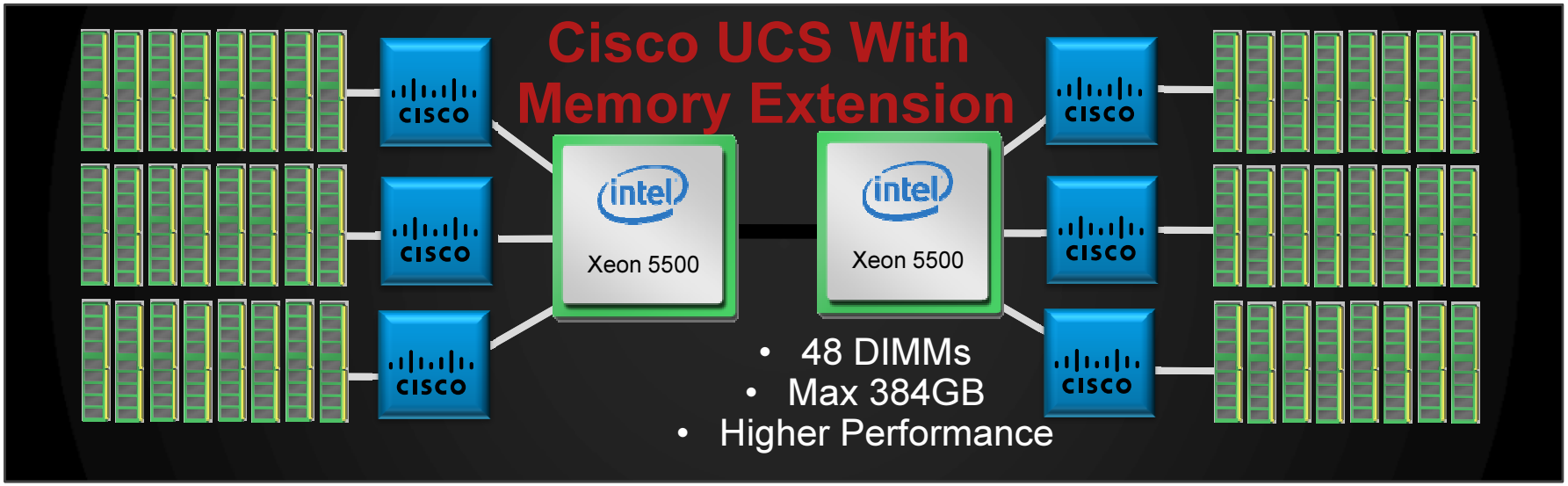


4 x 8GB DIMM

Cisco Extended Memory technology makes four DIMMs look like one!

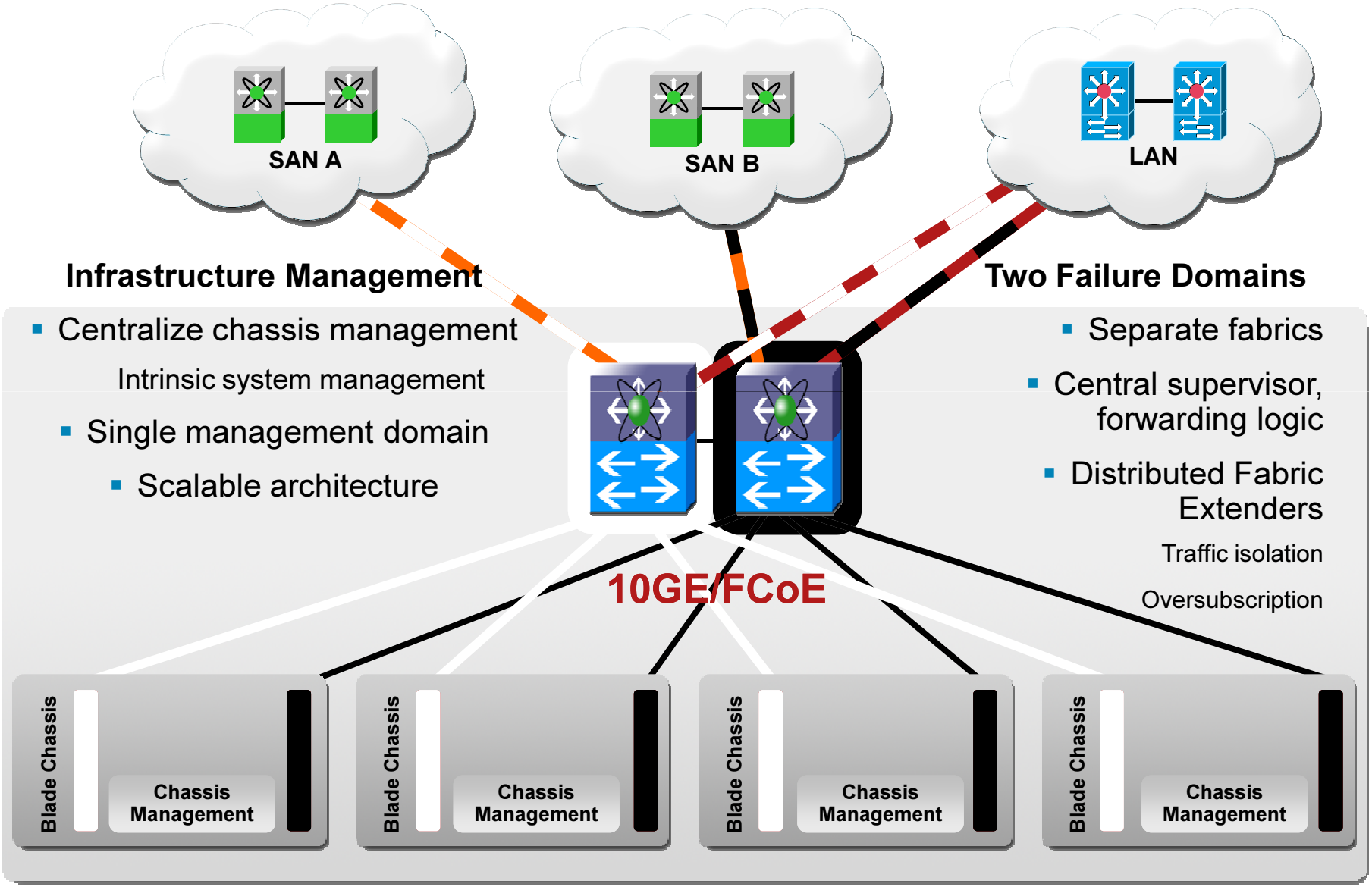
Optimizing Memory with the Xeon 5500



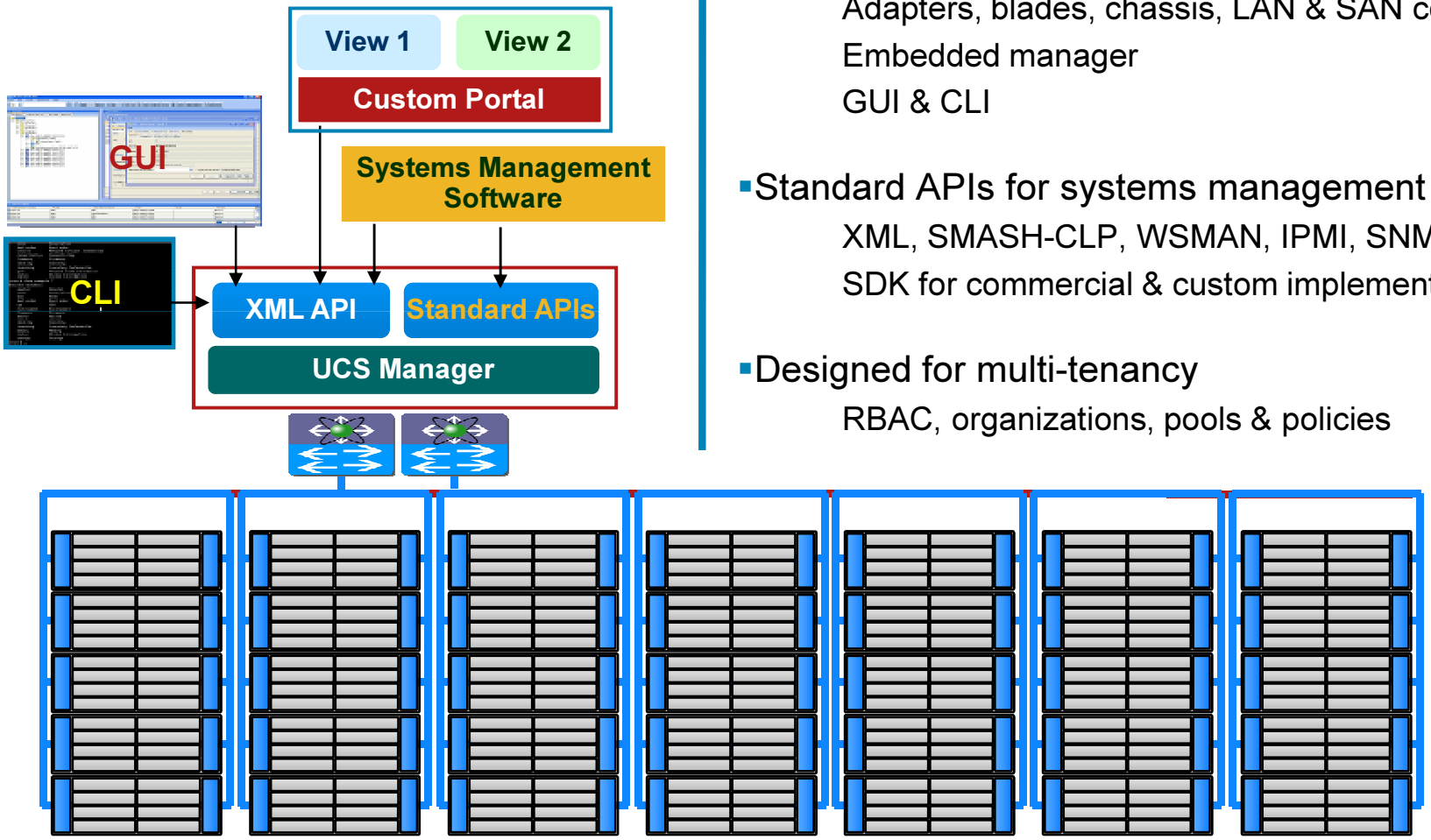


Management

Unified Management



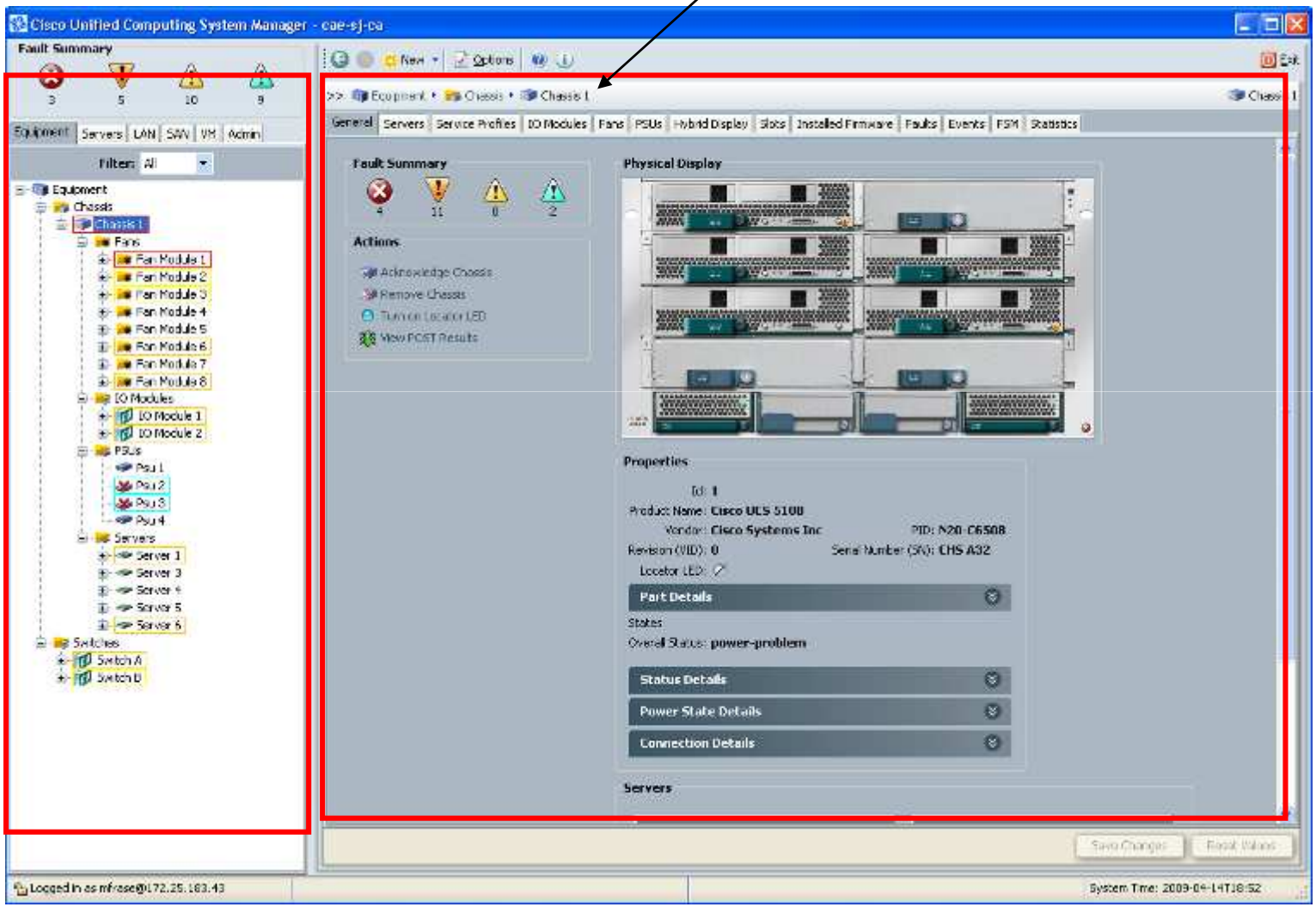
Unified Management



- Single point of device management
  - Adapters, blades, chassis, LAN & SAN connectivity
  - Embedded manager
  - GUI & CLI
- Standard APIs for systems management
  - XML, SMASH-CLP, WSMAN, IPMI, SNMP
  - SDK for commercial & custom implementations
- Designed for multi-tenancy
  - RBAC, organizations, pools & policies

UCS Graphical interface

Top directory map tells you where you are in tree



NAVIGATION PANE **CONTENT PANE**

C-Series
Rack mounted servers

Customer Choices for Innovation

Fabric

Innovations

- Unified Fabric
- Fabric Extender
- VN-Link

Unified

Innovations

- Unified management
- Unified Fabric
- Extended Memory
- Fabric Extender
- Virtualized Adapter
- Hypervisor bypass
- VN-Link

Compute

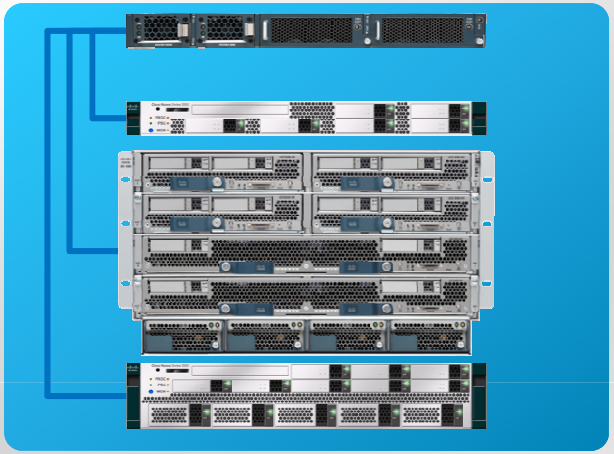
Innovations

- Extended Memory
- Virtualized Adapter
- Hypervisor bypass
- Unified Management

Work in any data center environment

Options to Deploy Innovation

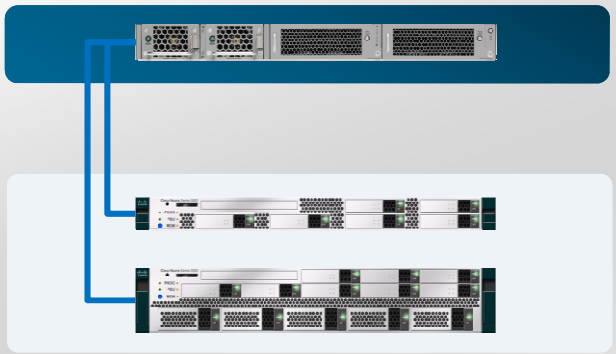
Integrated



Existing mgmt tools *plus*
UCS Manager
Integrated mgmt tools

Available in CY2010

Build Your Own



Existing mgmt tools

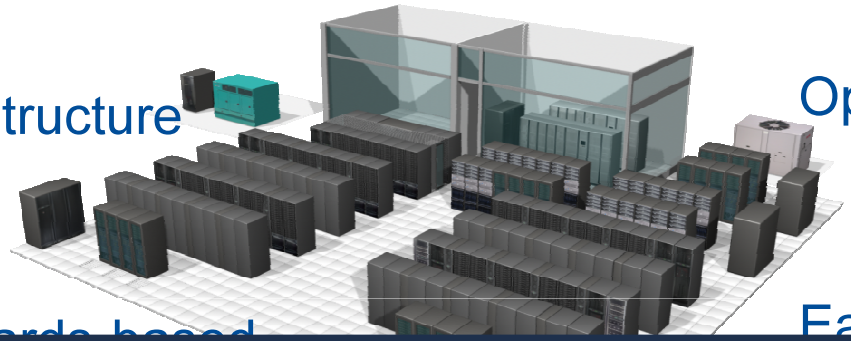
SMASH CLP, SNMP, IPMI

Key Customer Requirements for Server Infrastructure

Scalable Infrastructure

Energy Efficient

Consolidated Infrastructure



Optimized for Virtualization

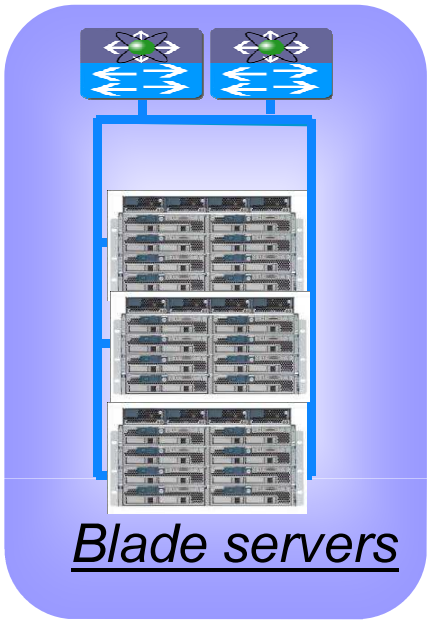
Open / Standards-based

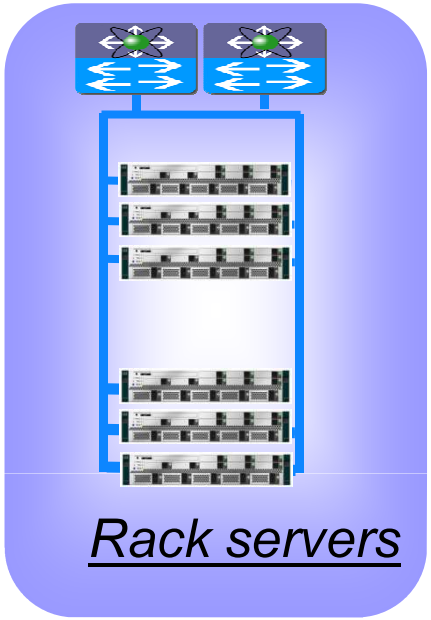
Easy to Manage

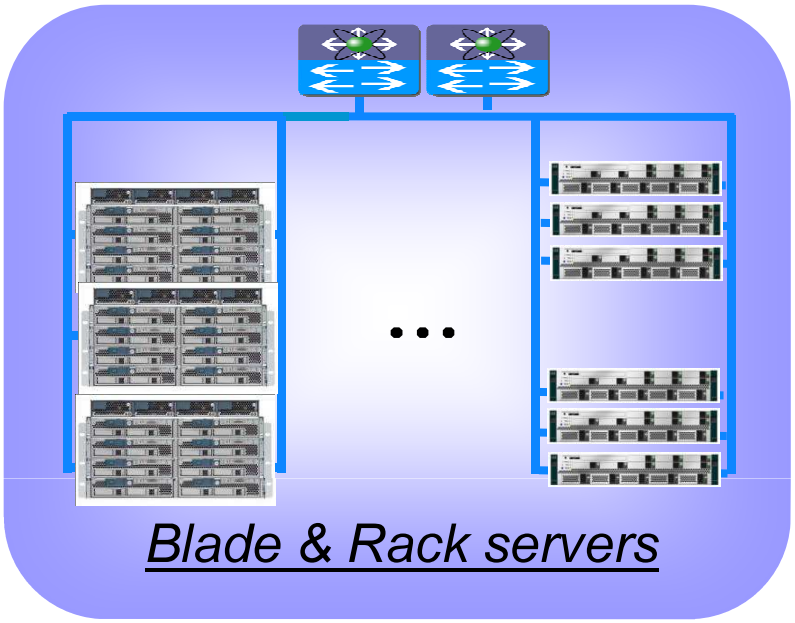
Cisco Solution

Cisco Unified Computing System

Cisco UCS Architecture is Form-Factor Neutral
Customer Has Choice







Whether blade or rack form-factor, Cisco UCS customers benefit from

- Consolidated & Unified Infrastructure
- Unified Management & Dynamic Provisioning
- Virtualization Optimization
- Memory extension technology

Cisco UCS Rackserver Features & Benefits

UCS offers Significant Value

Features	Benefits
▪ Intel Nehalem EP Processors	▪ Performance
▪ RAID, Redundant power & fan	▪ Availability
▪ Front accessible HDDs & fans	▪ Serviceability
▪ Memory Extension Technology	▪ Scalability
▪ Unified Mgmt	▪ Manageability
▪ VN-LINK Technology	▪ Virtualization Ready

Key Cisco Differentiators

Cisco UCS C-Series Rack-Mount Servers

UCS C250 M1

UCS C210 M1

UCS C200 M1

Item	CPU	Size	Memory	Disks	Adaptor
UCS C250 M1 (memory intensive)	Intel Nehalem EP	2RU	48 DIMM 384 GB	8 SAS/SATA Drives	5 PCIe
UCS C210 M1	Intel Nehalem EP	2RU	12 DIMM 96 GB	16 SAS/SATA Drives	5 PCIe
UCS C200 M1	Intel Nehalem EP	1RU	12 DIMM 96GB	4 SAS/SATA Drives	2 PCIe

Cisco UCS C250-M1 Overview

2RU Virtualization & Database Server

2RU , 2-socket Server for Enterprise Data Centers

Target Applications:
Virtualization, Database and other Memory Intensive Applications

- Form-Factor
  - 2 Rack Units
- Processor
  - 2 x Nehalem EP
- Memory
  - Memory Extension Technology
  - 48 DDR3 DIMM slots
  - Up to 384 GB memory
- IO
  - 5 x PCIe slots
  - 4 x 10/100/1000 LOM ports
  - Up to 8 SFF SAS/SATA Drives
- Availability
  - Redundant Power Supplies & Fans
- Serviceability
  - Front accessible FANs & Disks
  - LEDs
- Management
  - 2 x 10/100 Mgmt ports
  - Cisco Lights-out Mgmt

Cisco UCS C210-M1 Overview

2RU General Purpose Server

2RU , 2-socket Server for DC & Branch/Remote Offices

Target Applications:
Web, App and Infrastructure Applications with High IO capabilities

- Form-Factor
  - 2 Rack Units
- Processor
  - 2 x Nehalem EP
- Memory
  - 12 DDR3 DIMM slots
  - Up to 96 GB memory
- IO
  - 5 x PCIe slots
  - 2 x 10/100/1000 LOM ports
  - Up to 16 SFF SAS/SATA Drives
- Availability
  - Redundant Power Supplies & Fans
- Serviceability
  - Front accessible Disks
  - LEDs
- Management
  - 1 x 10/100 Mgmt port
  - Cisco Lights-out Mgmt

Cisco UCS C200-M1 Overview

1RU General Purpose Server

1RU , 2-socket Server for DC & Branch/Remote Offices

Target Applications:

Web, App and Infrastructure Applications

- Form-Factor
  - 1 Rack Unit
- Processor
  - 2 x Nehalem EP
- Memory
  - 12 DDR3 DIMM slots
  - Up to 96 GB memory
- IO
  - 2 x PCIe slots
  - 2 x 10/100/1000 LOM ports
  - 4 x 3.5” SAS/SATA Drives
- Availability
  - Redundant Power Supplies & Fans
- Serviceability
  - Front accessible Disks
  - LEDs
- Management
  - 1 x 10/100 Mgmt port
  - Cisco Lights-out Mgmt

Summary

Announcing Unified Computing System

A single system that unifies

- Compute: Industry standard x86
- Network: Unified fabric
- Virtualization: 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

Business Benefits

Unified Computing System

Reduces total cost of ownership

- CAPEX: Up to 20% reduction on average
- OPEX: Up to 30% reduction on average
- Cooling and power efficient

Increases business agility

- Provision applications in minutes instead of days
- Automation reduces service outages
- Just-in-time resource provisioning

Investment protection

- Industry standards-based
- Co-exist with existing data center infrastructure
- Leverage existing management applications via API

Cisco Unified Computing System

Technology Partners

	Adapter	OS	Hypervisor	Application	Mgmt	Storage
bmcsoftware					BladeLogic	
EMC²					Smarts	CLARiion/ Symmetrix
EMULEX	CNA					
intel	10 GbE					
Microsoft		Windows Server	Hyper-V	SQL Server	System Center	
NetApp					System Center	FAS
Novell		SUSE Linux				
ORACLE		OEL	Oracle VM	Oracle RAC Oracle DB		
QLOGIC	CNA					
redhat		RHEL				
SAP				Business Suite		
vmware			ESX		vCenter	

Summary

The Right Solution at the Right Time

Virtualization has created a market transition

A unique opportunity to create a more agile and efficient infrastructure where resources can dynamically move within the data center

Cisco is uniquely positioned

to lead the transformation to the next generation data center with a new architectural approach

The Unified Computing System

is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system

The Unified Computing System unleashes the power of virtualization

Helping customers to reduce TCO, increase business agility and improve energy efficiency