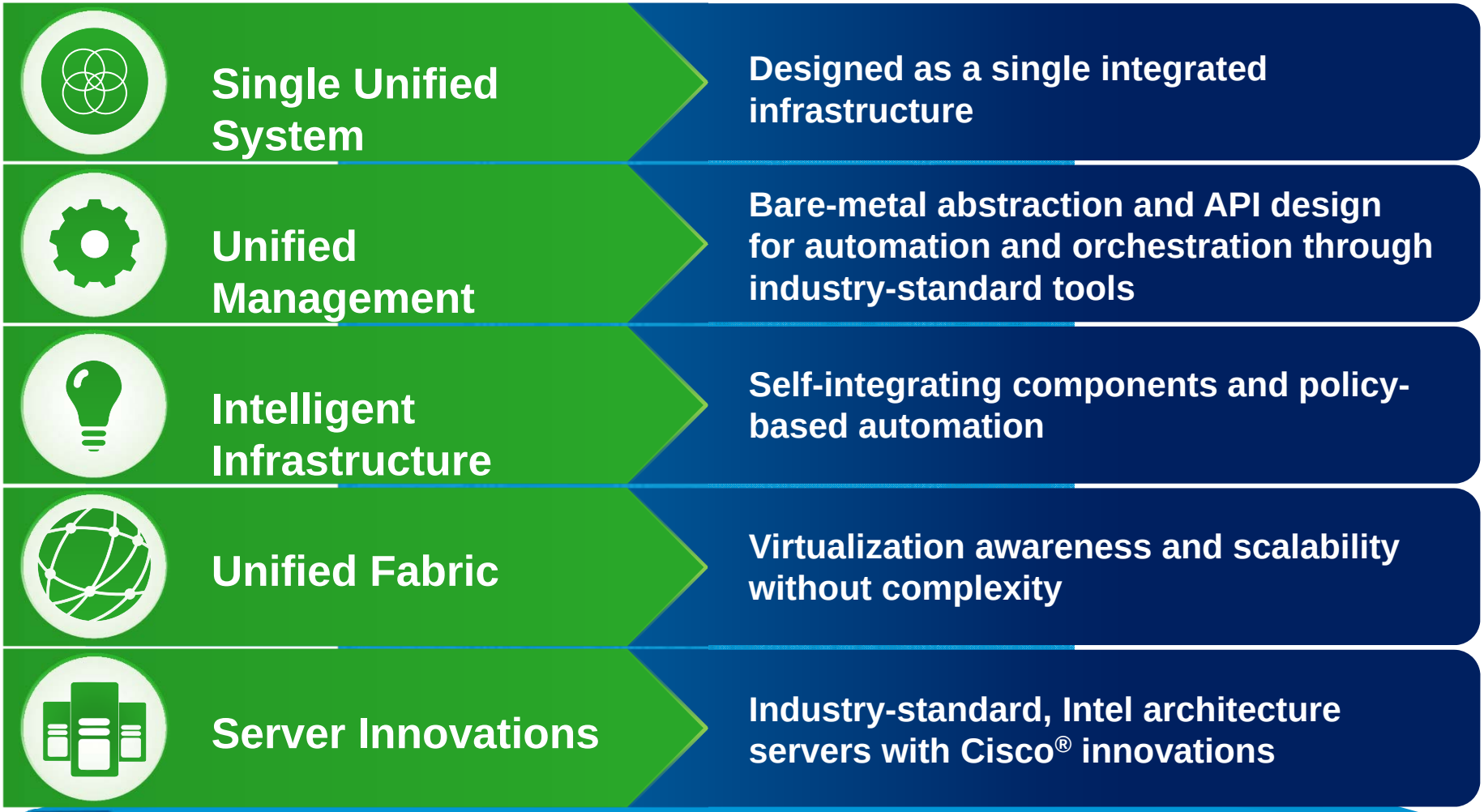
Cisco Unified Computing System – 3rd Generation

Marian Klas, Cisco Systems

Cisco Unified Computing System

Single System: Computing, Networking, Virtualization, and Storage Access



Third-Generation Fabric Computing

2012 Product Innovation Across the Cisco UCS Platform

Unified Management: Blade and Rack, and Physical and Virtual

4 New Intel Xeon E5 Cisco UCS® C-Series Rack Servers

3 New Intel Xeon E5 Cisco UCS B-Series Blade Servers

Cisco UCS 6248/6296UP Fabric Interconnect

Cisco UCS VIC 1240, 1280, and 1225

Cisco UCS 2204/2208

Unified Management

Industry-Leading Computing

Faster Applications Fewer Complications Smarter Servers

Highly Scalable Unified Fabric

High-Performance Virtual Networks

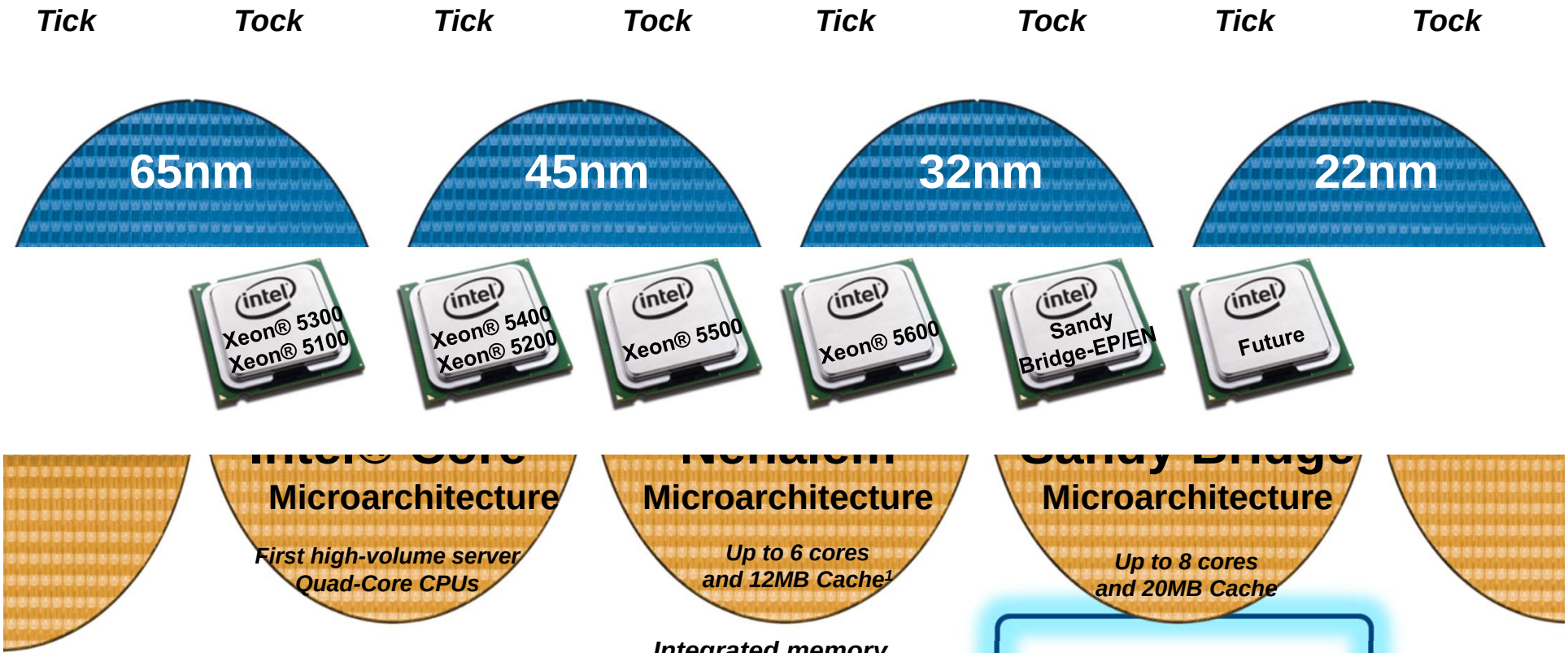
Cisco Servers Powered by the Intel® Xeon® Processor Family

Cisco UCS
Next Generation Computing

Introducing New Intel Xeon E5 CPU Family

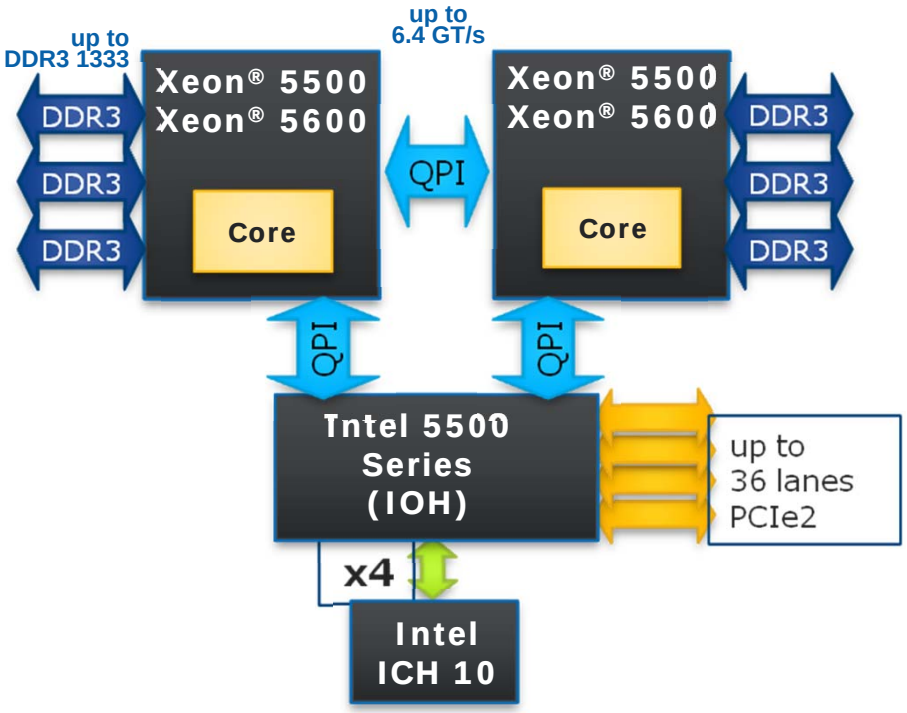
Tick-Tock Development Model

Sustained Xeon® Microprocessor Leadership



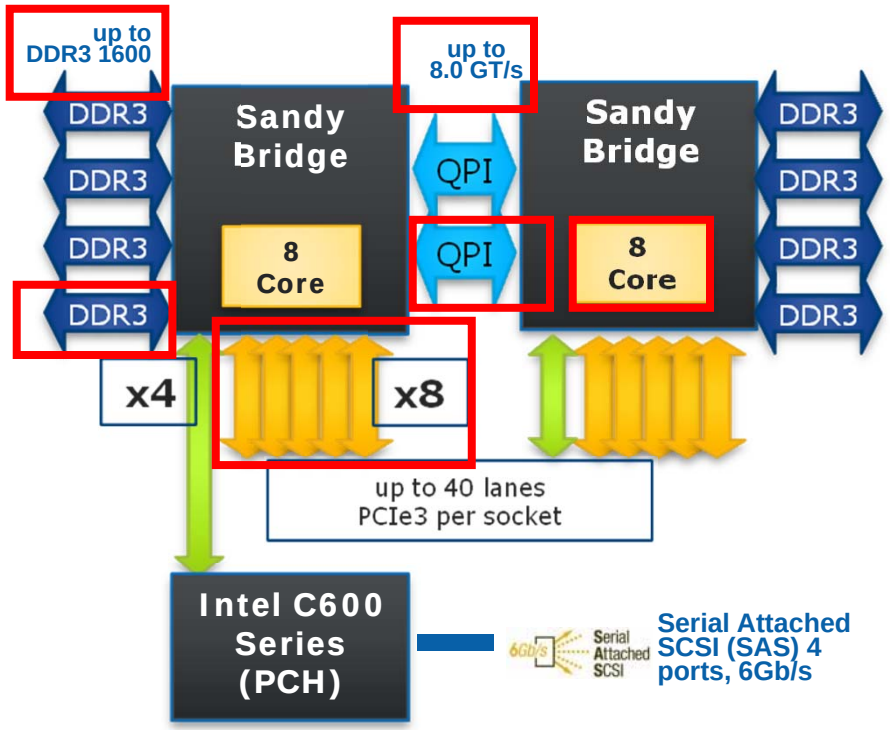
Xeon® 2S Platform Comparison

Xeon® 5500 / 5600 based Platform



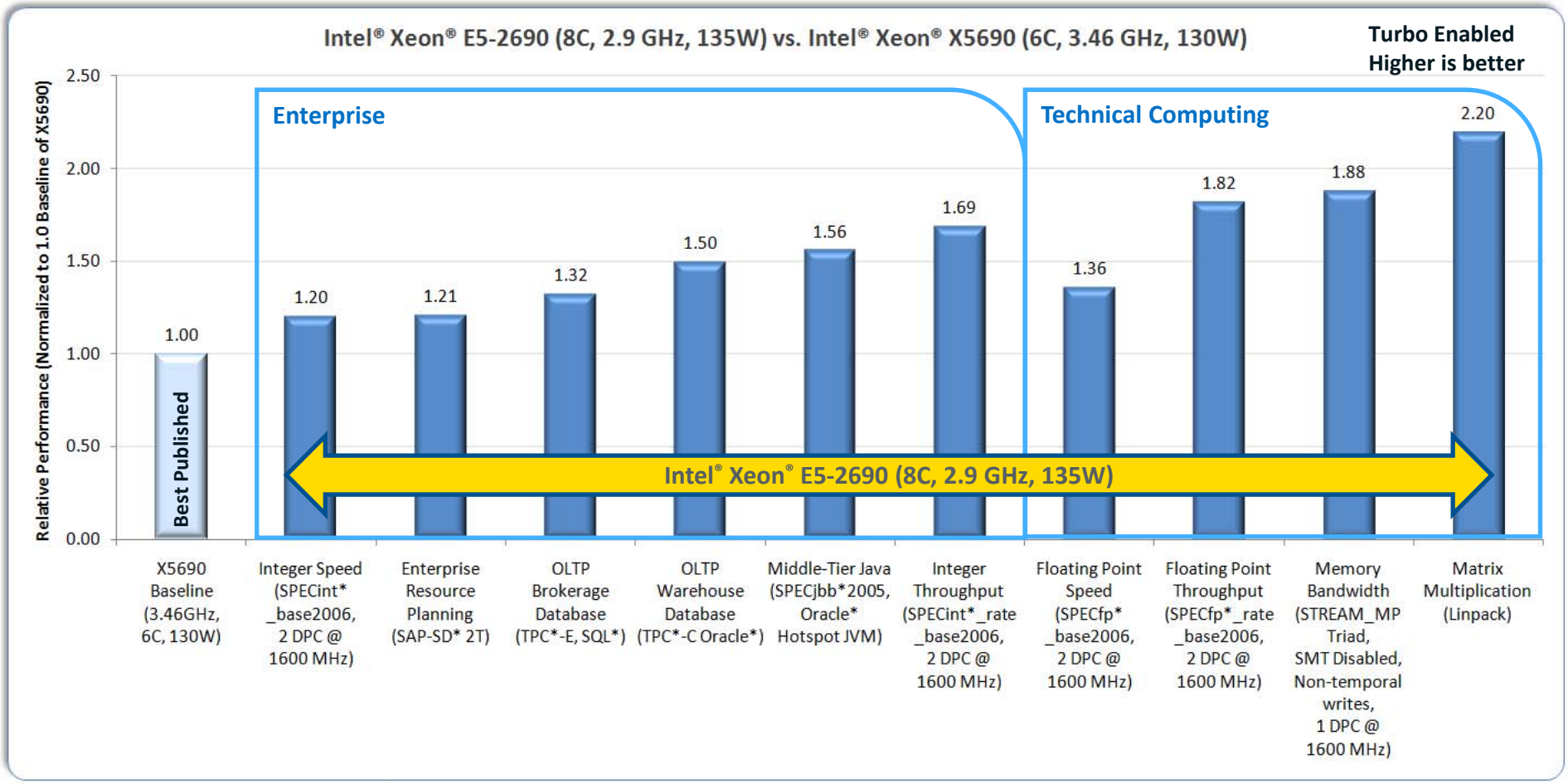
- Up to 18 DIMMs per 2S platform
- Up to 36 PCIe2 lanes
- Two-chip IOH / ICH

E5-2600 Product Family based Platform



- Up to 8 Cores
- Up to 24 DIMMs @1666 Mhz
- Up to 80 PCIe lanes
- Two QPI links @ 8.0GT/s between CPUs
- One-chip Platform Controller Hub (PCH)
- Integrated PCI-E Gen 3

Intel® Xeon® Processor E5-2600 Product Family Generational Performance Summary



Intel® Xeon® processor E5-2690 delivers performance gains up to 2.2x

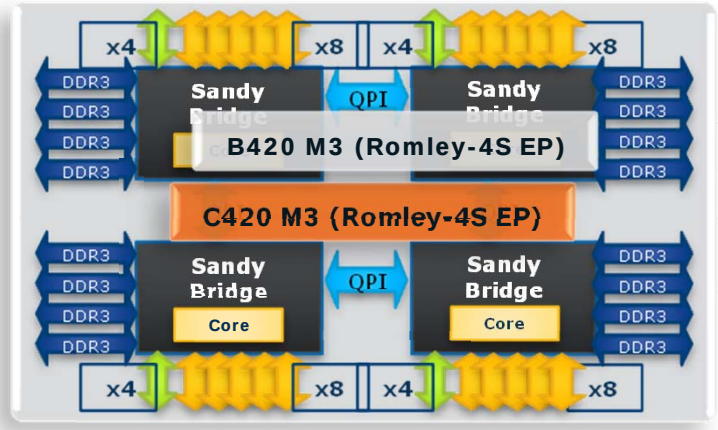
Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Linpack performance may vary based on thermal solution.
Source: Intel internal measurements and best published results as of September 2011. Please reference back up slides for configuration details.
For more information go to http://www.intel.com/performance

Sandy Bridge Platform Flexibility

E5-4600

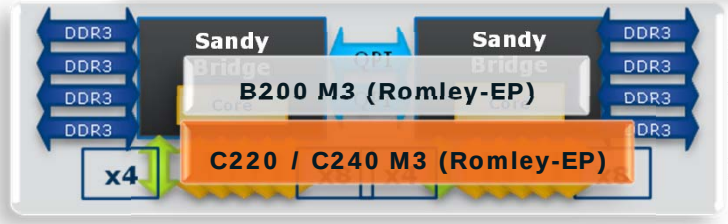
Density and Cost Optimized 4S



- Up to 4 CPUs
- Up to 48 DIMMs
- Up to 160 PCIe3 lanes
- Two QPI links per CPU (ring topology)

E5-2600

Highest Performance Max Memory



- Up to 24 DIMMs
- Up to 80 PCIe 3.0 lanes
- Two QPI links

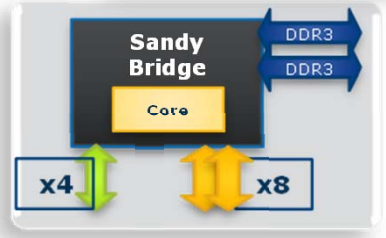
E5-2400

Density and Cost Optimized 2S

- Up to 12 DIMMs
- Up to 48 PCIe 3.0 lanes
- One QPI link

E3-1200

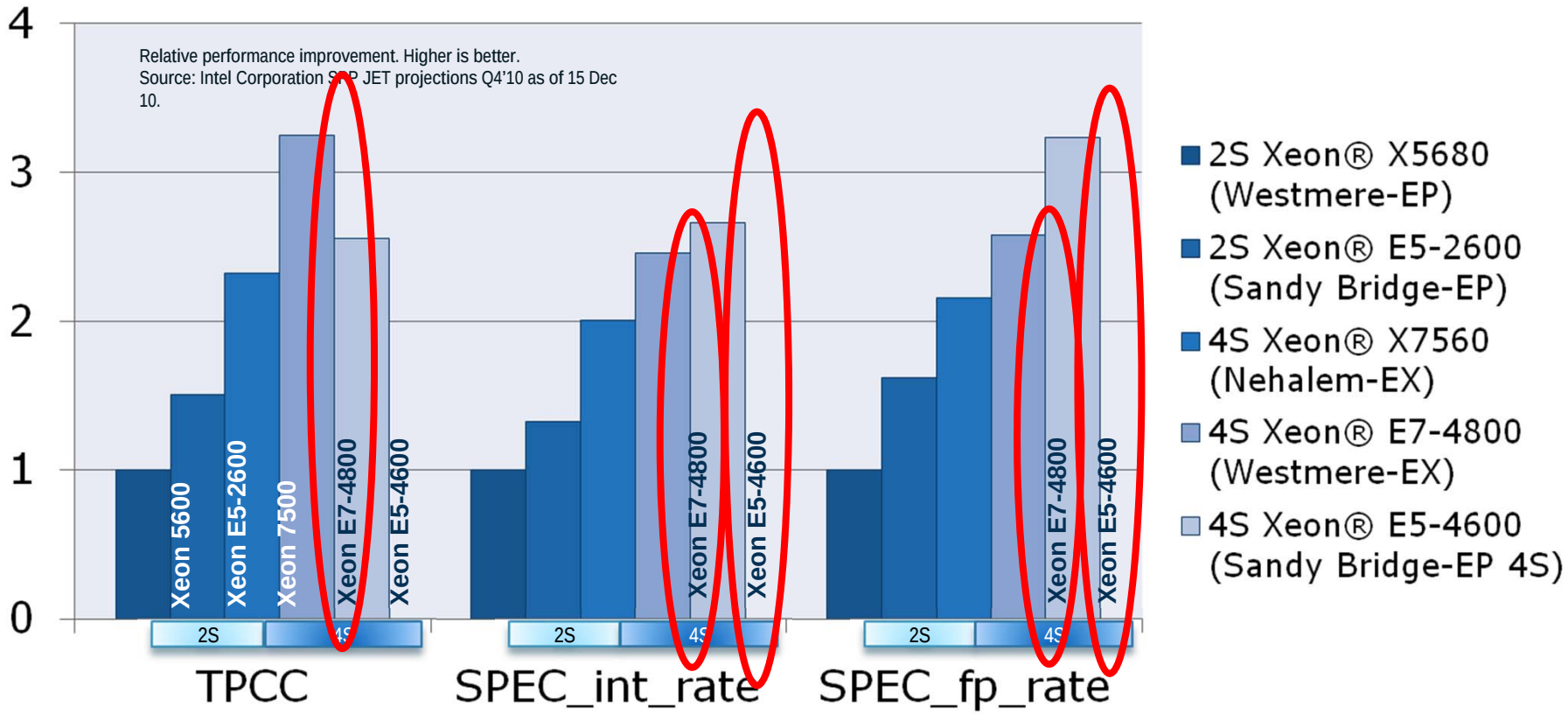
Lowest Cost (1S only)



- Up to 4 DIMMs
- Up to 20 PCIe 2.0 lanes

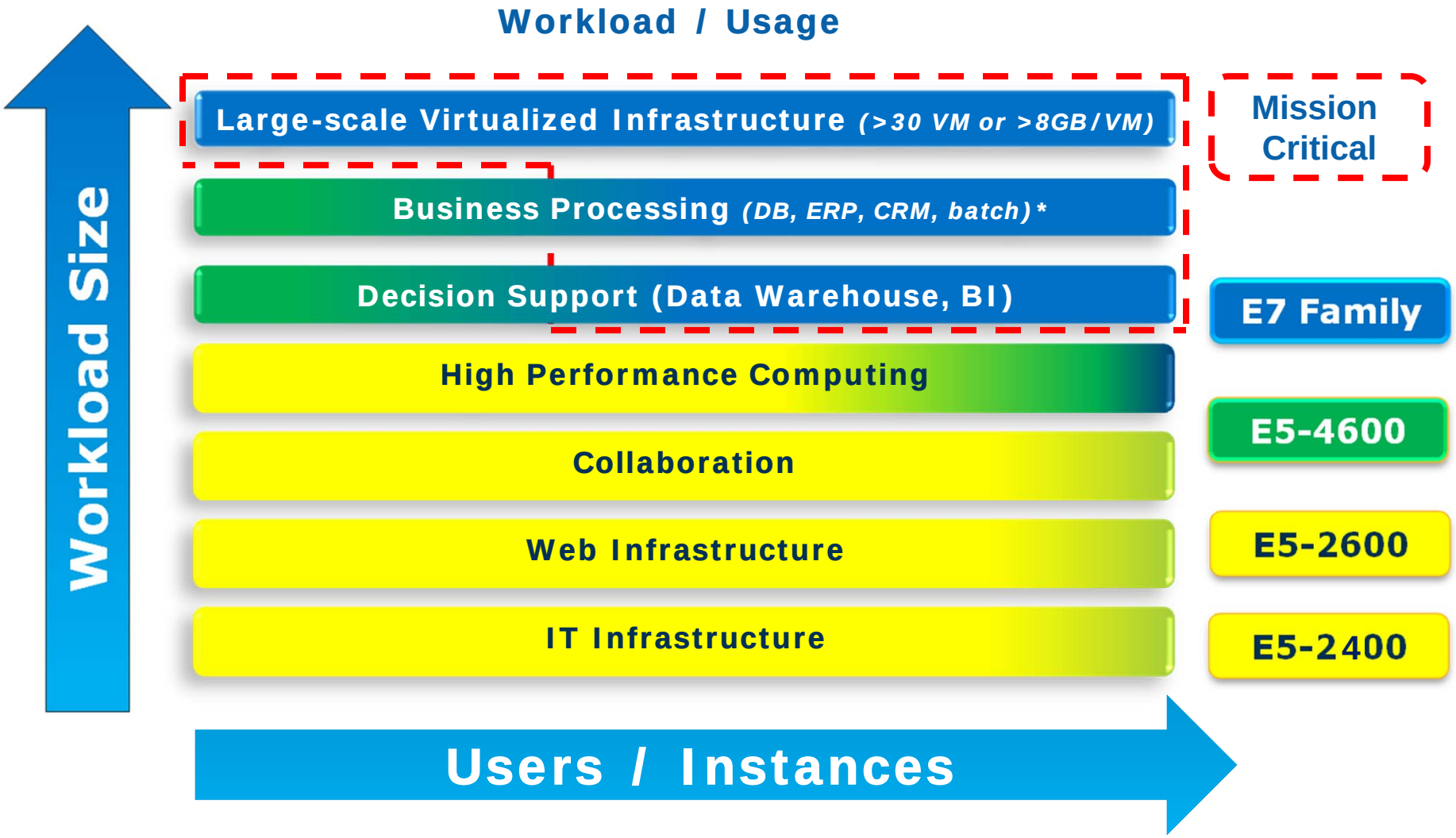
Sandy Bridge Performance Summary

Intel® Xeon® Processor E5 and E7 Families (2S/4S)



Xeon® E5-2600 & E5-4600 for technical compute solutions
Xeon® E7-8800/4800 for data-demanding application performance

Intel® Xeon® Processor Workloads:
Intel Xeon Processor E7 Family vs. Intel Xeon Processor E5 Family



* For directional guidance only. This is not a server selection guide. Actual server sizing is a relatively complex effort involving workload characterization including such considerations as type of application, size of workload, number of users, type of transaction, SLA response times, targeted utilization, level and estimation accuracy of workload baseline/peak/growth, physical or managerial constraints, need to maintain a single state at all times to ensure all users see the same results at any given time, cost to migrate to a scale-out alternative, and system availability requirements.

Compute Options – Xeon 5600 and E7 based

Blade

B200 M2
2 Socket Intel 5600, 2 SFF Disk, 12 DIMM

B250 M2
2 Socket Intel 5600, 2 SFF Disk, 48 DIMM

B230 M2
2 Socket Intel E7, 2 SSD Disk, 32 DIMM

B440 M2
4 Socket Intel E7, 4 SFF Disk, 32 DIMM

Rack Mount

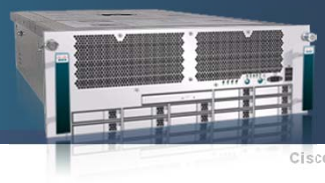
C200 M2
2 Socket Intel 5600, 4 or 8 Disks, 12 DIMM, 2 PCIe 1U

C210 M2
2 Socket Intel 5600, 16 Disks, 12 DIMM, 5 PCIe 2U

C250 M2
2 Socket Intel 5600, 8 Disks, 48 DIMM, 5 PCIe 2U

C260 M2
2 Socket Intel E7, 16 Disks, 32-64 DIMM, 7 PCIe 2U

C460 M2
4 Socket Intel E7, 12 Disks, 64 DIMM, 10 PCIe 4U



What's New: Compute

Performance Optimized for Bare-Metal, Virtualized and Cloud Applications

Industry-leading compute without compromise

Scale Out	Enterprise Performance	Intensive / Mission Critical

Rack

UCS C24 M3
Entry, expandable rack server for storage intensive workloads

UCS C240 M3
Ideal platform for Big Data, ERP and database applications

UCS C420 M3
Unified Computing in an Enterprise Class, 4-socket rack server for large, memory intensive bare metal & virtualized applications

UCS C22 M3
Entry rack server for distributed & web infrastructure applications

UCS C220 M3
Versatile, general purpose enterprise infrastructure and application server

Blade

UCS B22 M3
Entry blade server for IT infrastructure and web applications

UCS B200 M3
Optimal choice for VDI, Private Cloud or dense virtualization / consolidation workloads

UCS B420 M3
Unified Computing in an Enterprise Class, 4-socket blade for large, memory intensive bare metal & virtualized applications

Cisco UCS: Many Server Form Factors, One System

B200 M3 Blade Server

Industry-Leading Density Without Compromise

Unified Computing in an enterprise-class blade server for memory and I/O-intensive collaboration, decision support and virtualized applications

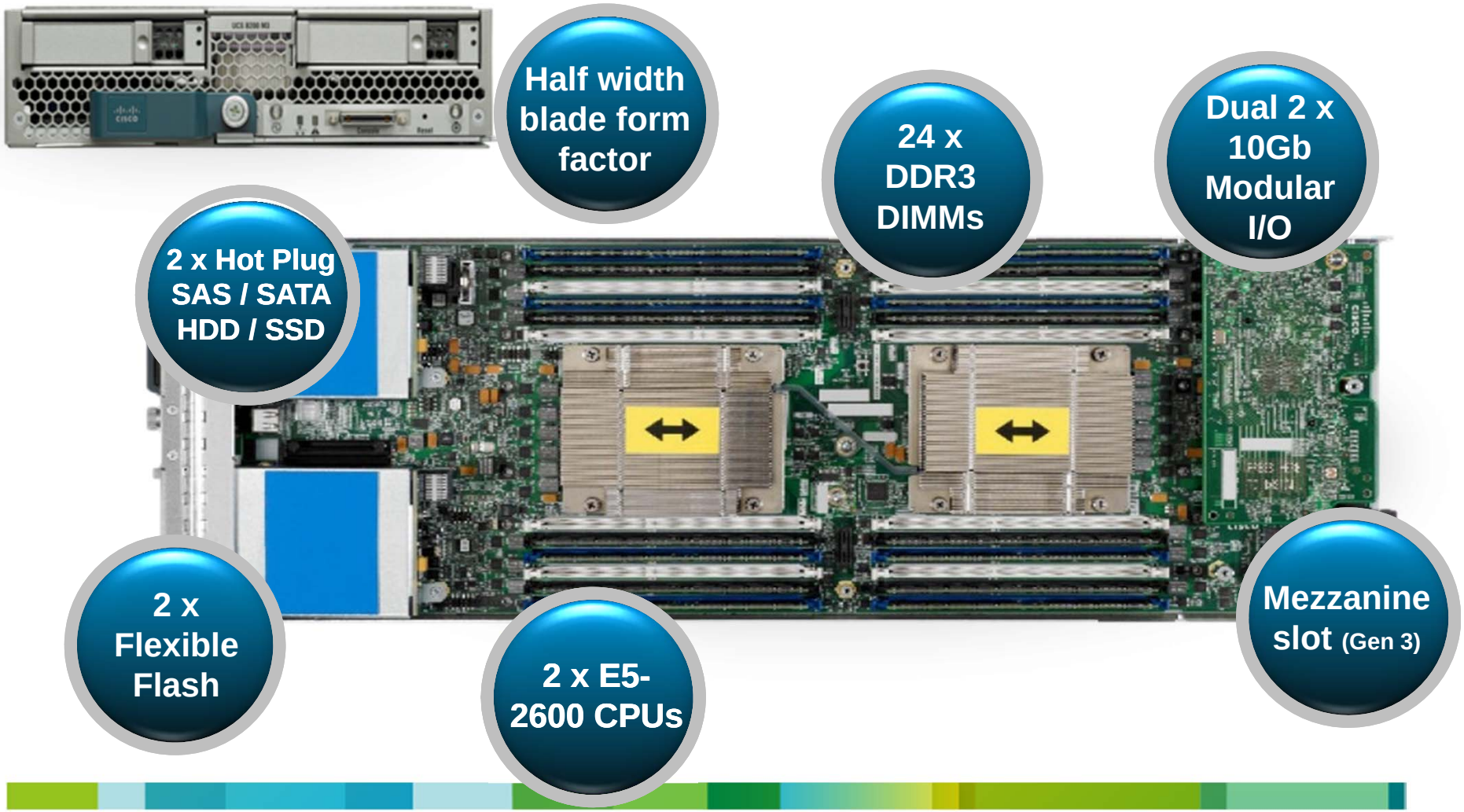
- **Enterprise performance and advanced capabilities**
- **Expanded feature set I/O and integrated dual 20GbE**
- **Balanced performance and density**
- **Advanced features without compromise**

UCS B200 M3
Performance-Optimized Enterprise Blade Server

Half-Width Blade Form Factor	**2 x Flexible Flash 16GB SD Cards**	**Dual 2 x 10Gb Modular I/O**	**2 x Hot Plug SAS / SATA HDD / SSD**
2 x E5-2600 CPUs	**Internal USB 2.0 port**	**24 x DDR3 DIMMs**	**1 x Mezzanine slot (Gen 3)**

Cisco UCS B200 M3

Most Dense Blade Server on the Planet!



C220 M3 Rack Server

Expanding the Unified Computing Portfolio

Unified Computing in an enterprise-class, rack-mount server for EDA, decision support and virtualized applications

- **Industrial design enhancements**
- **Best server consolidation economics and footprint**
- **Silicon and system level enterprise features for datacenter general purpose compute**
- **Expanded feature set Storage and I/O**

UCS C220 M3
Density-optimized, Enterprise-class 1 RU Rack Server

2 x E5-2600 CPUs

2 x Flexible Flash 16GB SD Cards

1RU Rack form factor

8 x SFF/4 x LFF Hot Plug
SAS / SATA HDD /SSD

Dual 1GbE LOM

2 x Common Form-Factor PSUs
(90+ Platinum)

2 x PCIe Gen 3 Slots

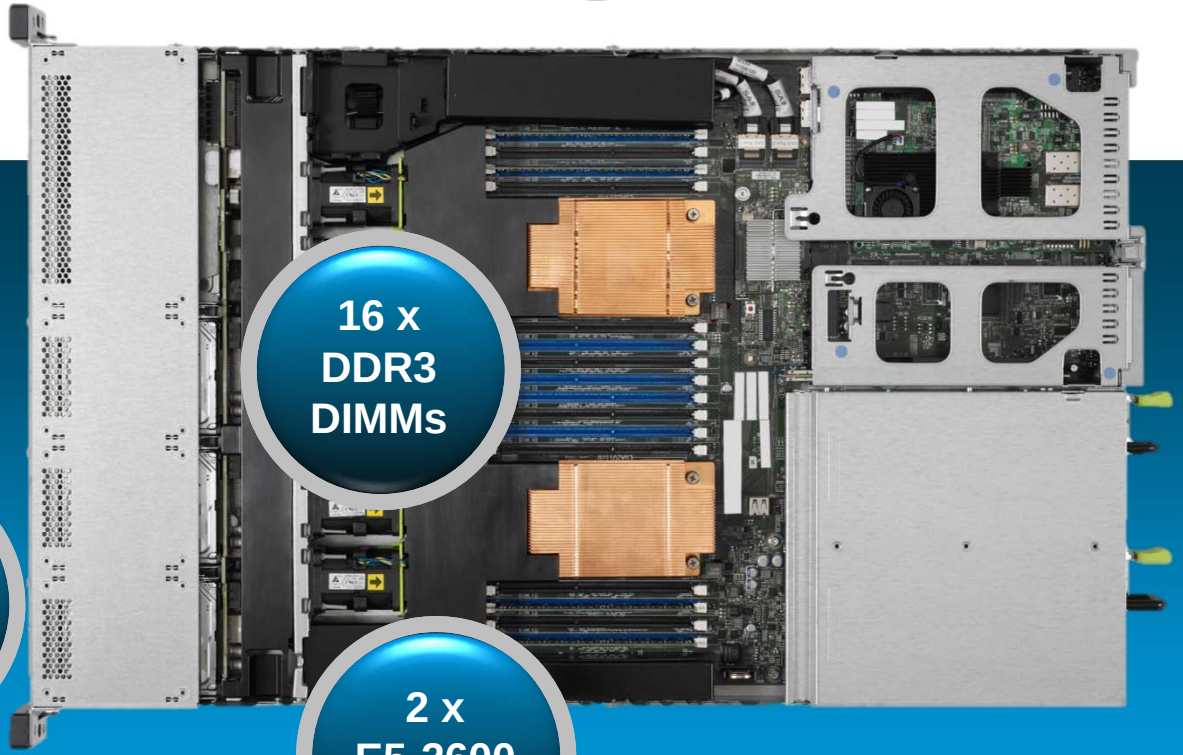
C220 M3 Rack Server

Density-optimized, Enterprise-class, 1 RU Rack Server

1RU Rack form factor

Dual 1GbE LOM

8 x SFF
4 x LFF
Hot Plug
SAS / SATA HDD /SSD



16 x DDR3 DIMMs

2 x PCIe Gen 3 Slots

2 x Flexible Flash

2 x E5-2600 CPUs

2 x Common Slot PSU
(90+ Platinum)

C240 M3 Rack Server

Expanding the Unified Computing Portfolio

Unified Computing in an enterprise-class, rack-mount for storage-intensive, collaboration, decision support and virtualized applications

- **Ideal for Storage-optimize enterprise workloads**
- **Expanded feature set for Storage, network and I/O**
- **Silicon and system level enterprise features for datacenter general purpose compute**
- **Tool-less access and enhanced usability features**

UCS C240 M3
Storage-Optimized, Enterprise Class, 2 RU Rack Server

2 x E5-2600 CPUs

2 x Flexible Flash 16GB SD Cards

2RU Rack form factor

24 x SFF/12 x LFF Hot Plug
SAS / SATA HDD /SSD

24 x DDR3 DIMMs

2 x Common Form-Factor PSUs
(90+ Platinum)

5 x PCIe Gen 3 Slots

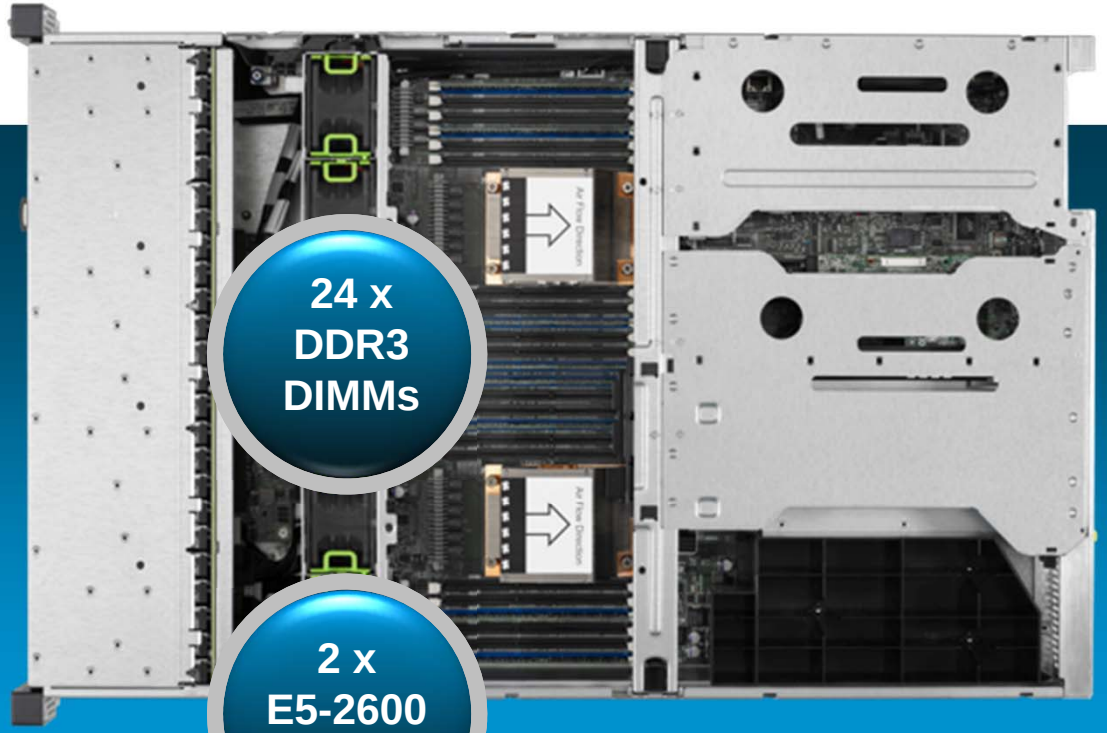
C240 M3 Rack Server

Storage-Optimized, Enterprise Class, 2 RU Rack Server

2RU Rack form factor

Quad 1GbE LOM

24 x SFF
12 x LFF
Hot Plug
SAS / SATA HDD / SSD



24 x DDR3 DIMMs

5 x PCIe Gen 3 Slots

2 x Flexible Flash

2 x E5-2600 CPUs

2 x Common Slot PSU
(90+ Platinum)

B22 M3 Blade Server

Expanding the Unified Computing Portfolio

Balanced price/performance feature set to address quick deployment of scalable IT infrastructure and Web 2.0 applications

- **Ideal for distributed workloads**
- **Two-socket expandable capabilities with cost-optimized feature set**
- **Up to 8x10 GbE throughput** (redundant 4x10GbE)
- **Integrated LSI HW RAID**

UCS B22 M3

Cost-Optimized, Entry-Level Blade Server

Half width blade form factor	**12 x DDR3 1600-MHz DIMMs**	**2 x Flexible Flash 16GB SD Cards**	**1 x Mezzanine slot for VIC 1280 or 3rd party mezzanine**
1 or 2 x E5-2400 CPUs	**2 x hot plug SAS / SATA HDD / SSD**	**Internal USB 2.0 port**	**Dual 2 x 10Gb optional modular LOM (VIC 1240)**

C22 M3 Rack Server

Expanding the Unified Computing Portfolio

Unified Computing in an entry-level, efficient and affordable rack-mount server for HPC, big data, IT, distributed and web infrastructure workloads

- **Ideal for HPC scale out applications and SMB customers**
- **Enterprise compute with entry-level economics**
- **Industrial Design Enhancements**
- **Most dense, cost-optimized rack server**

UCS C22 M3
Affordable, Space-Optimized 1 RU Rack Server

2 x E5-2400 CPUs	**8 x SFF Hot Plug** SAS / SATA HDD /SSD	**2 x PCIe Gen 3 Slots**
1RU Rack form factor	**Dual 1GbE LOM**	**Common Form-Factor PSUs** (90+ Platinum)

C24 M3 Rack Server

Expanding the Unified Computing Portfolio

Unified Computing in an entry-level, efficient and expandable, rack-mount server for storage-intensive big data, IT infrastructure and small database workloads

- **Ideal for distributed, storage-intensive applications**
- **Expanded feature set Storage**

UCS C24 M3
Affordable ,Storage-Optimized 2RU Rack Server

2 x E5-2400 CPUs

24 x SFF Hot Plug
SAS / SATA HDD /SSD

5 x PCIe Gen 3 Slots

2RU Rack form factor

12 x DDR3 DIMMs
up to 192GB

2 x Common Form-Factor PSUs
(90+ Platinum)

B420 M3 Blade Server

Expanding the Unified Computing Portfolio

nified Computing in an enterprise-class, 4-socket blade for large, emory-intensive bare-metal and virtualized applications

- **Performance intensive and high density virtualization**
- **4-socket capabilities with the economics of of a 2-socket platform**
- **Expanded storage feature set**
- **Integrated dual 20Gb/E + two mezzanine slots**

UCS B420 M3

Dense, Performance-Optimized Enterprise Blade Server

Availability 4QCY12

4 x E5-4600 CPUs

2 x Flexible Flash 16GB SD Cards

Full width blade form factor

4 x SFF Hot Plug
SAS / SATA HDD /SSD

Up to 160 Gb I/O Bandwidth

48 DDR3 DIMMs

1GB Flash-Backed Write Cache
(Optional)

C420 M3 Rack Server

Expanding the Unified Computing Portfolio

Unified Computing in a cost-optimized, 4-socket rack-mount server for large, enterprise-class, memory-intensive, bare-metal and virtualized applications

- **4-socket performance with 2-socket economics**
- **Performance-intensive and large-scale virtualization**
- **Expanded storage feature-set and options**
- **[illegible] diagnostics**

UCS C420 M3
Memory-Optimized , Enterprise Class, 4-socket, 2 RU Rack Server
Availability Q4CY12

4 x E5-4600 CPUs

2 x Flexible Flash 16GB SD Cards

2RU Rack form factor

16 x SFF Hot Plug
SAS / SATA HDD /SSD

48 x DDR3 DIMMs
up to 1.5TB

7 x PCIe Gen 3 Slots

2 x Common Form-Factor PSUs
(90+ Platinum)

Cisco UCS
Next Generation Networking

UCS Fabric Infrastructure Portfolio Expansion

	2009	2011	2012
FABRIC INTERCONNECTS	 UCS 6120  Ethernet and FC Expansion Modules	 UCS 6248UP (Unified Ports)  16 Unified Ports	 UCS 6296UP (Unified Ports)
BLADE CHASSIS IO MODULES	 UCS 2104 IO Module	 UCS 2208 IO Module	 UCS 2204 IO Module

UCS 6200 Series Networking Fabric

48 Unified Port Fabric Interconnect

UCS-FI-6248UP

UCS-FI-E16UP

- **Performance for improved Workload Density**
  - **High Density 48 Ports in 1RU**
  - **Increased 1Tbps Switching Performance**
- **Flexibility to defer port usage type and number at design time rather than purchase time**
  - **Flexibility to configure any port at Ethernet (1/10 Gigabit with SFP+) or FCoE or Native FC Ports (8/4/2/1G with FC Optics)**
  - **All Ports usable as uplinks/ downlinks**
- **Latency Lowered to 2.0us within Switch**
- **Power Optimized with 80 PLUS Gold Efficiency**
- **Investment Protection with Backward and Forward Compatibility**

FLEXIBILITY, UTILIZATION **BETTER APP. PERFORMANCE**

UCS 6200 Series Networking Fabric

96 Unified Port Fabric Interconnect

UCS-FI-6296UP

3x UCS-FI-E16UP

- Performance for improved Workload Density
  - High Density 96 Ports in 2RU
  - Increased 2Tbps Switching Performance
- Flexibility to defer port usage type and number at design time rather than purchase time
  - Flexibility to configure any port at Ethernet (1/10 Gigabit with SFP+) or FCoE or Native FC Ports (8/4/2/1G with FC Optics)
  - All Ports usable as uplinks/ downlinks
- Latency Lowered to 2us within Switch
- Power Optimized with 80 PLUS Gold Efficiency
- Investment Protection with Backward and Forward Compatibility

FLEXIBILITY, UTILIZATION **BETTER APP. PERFORMANCE**

UCS 6000 Series Fabric Interconnects

Unified Computing Market Leading Platforms

Flexibility

Scalability

Multi-purpose

Product Features and Specs	UCS 6120XP	UCS 6140XP	UCS 6248UP	UCS 6296UP
Switch Fabric Throughput	520 Gbps	1.04 Tbps	960 Gbps	1.92 Tbps
Switch Footprint	1RU	2RU	1RU	2RU
1 Gigabit Ethernet Port Density	8	16	48	96
10 Gigabit Ethernet Port Density	26	52	48	96
8G Native FC Port Density	6	12	48	96
Port-to-Port Latency	3.2us	3.2us	2.0us	2.0us
# of VLANs	1024	1024	4096*	4096*
Layer 3 Capability			✔*	✔*
40 Gigabit Ethernet Ready			✔*	✔*
DC Power Supply	No	No	Oct '11	TBD

*Not at FCS—Radar Features

BACKWARD COMPATIBILITY **FORWARD COMPATIBILITY**

UCS 2208 IO Module

Enable Dual 40 Gbps to Each Blade Server

UCS-IOM-2208XP

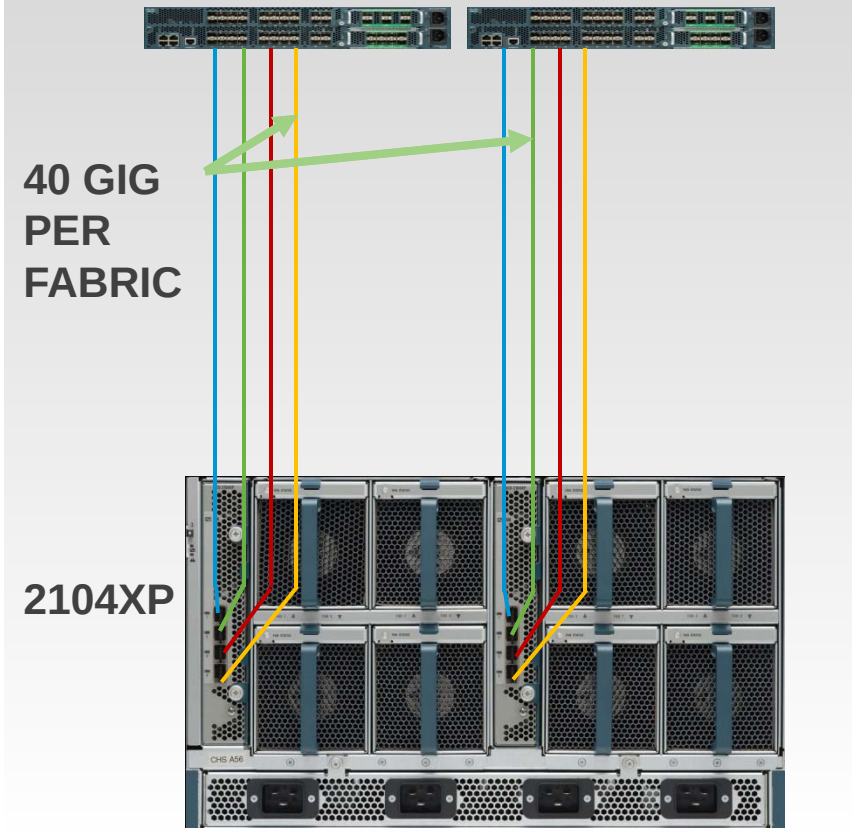
- **Bandwidth increase for improved response esp for bursty Applications**
  - **80G to the Network**
  - **320G to the Host Redundant**

  (4x10G/ Half width slot; 8x10G/ Full width slot)
- **Latency Lowered to 0.5us within IOM**
- **Investment Protection with Backward and Forward Compatibility**

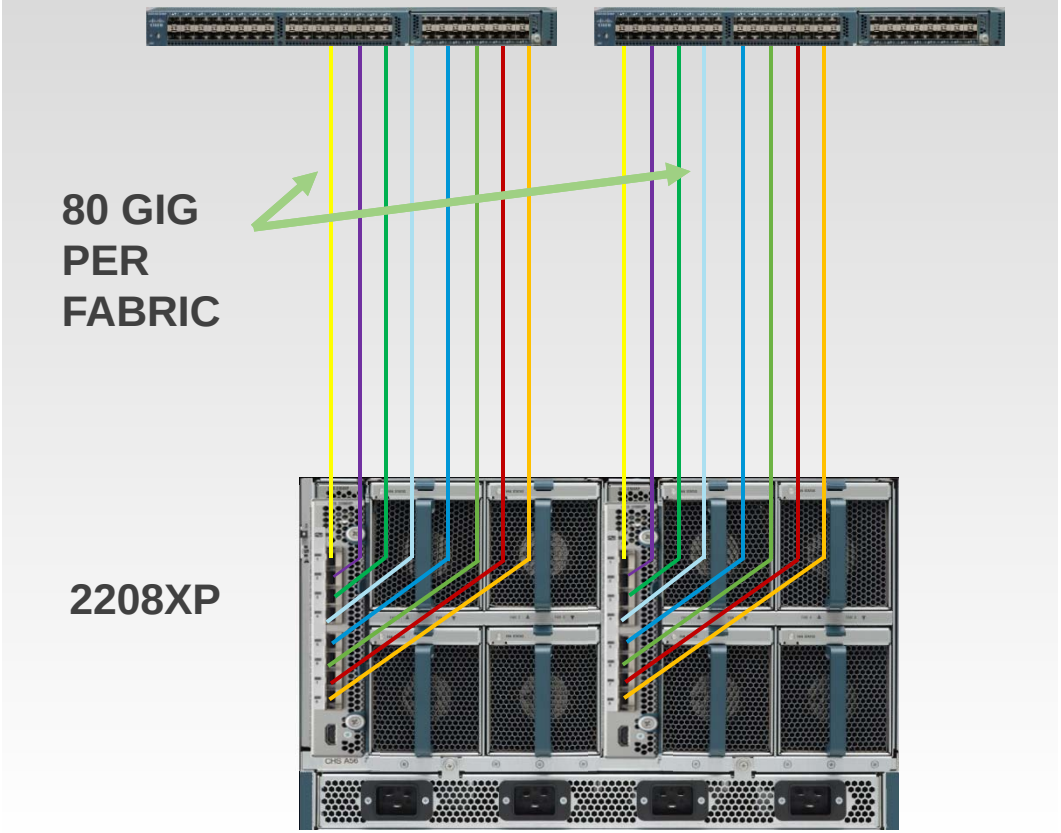
BANDWIDTH FOR BURSTY APPLICATIONS

Double Chassis Throughput

80 GBPS



160 GBPS



Increased Bandwidth Access to the Blades

4 LINKS, DISCREET—1st Gen

Available Bandwidth Per Blade—10 Gb (5gb Per Side)

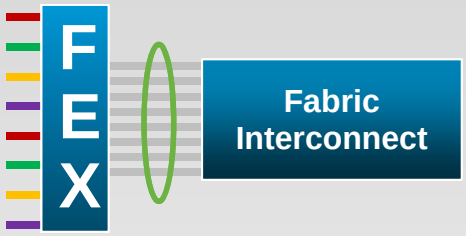
- Statically pinned to Individual fabric links
- Deterministic Path

8 LINKS, DISCREET

Available Bandwidth Per Blade—20 Gb (10 Gb Per Side)

- Statically pinned to Individual fabric links
- Deterministic Path
- No oversubscription, each blade gets 20 Gb

8 LINKS, PORT-CHANNEL



Available Bandwidth Per Blade—up to 160 Gb (80 Gb Per Side)

- Statically pinned to Port-channel
- Shared bandwidth, better bandwidth utilization.

UCS 2204 IO Module

Enable Dual 20 Gbps to Each Blade Server

UCS-IOM-2204XP

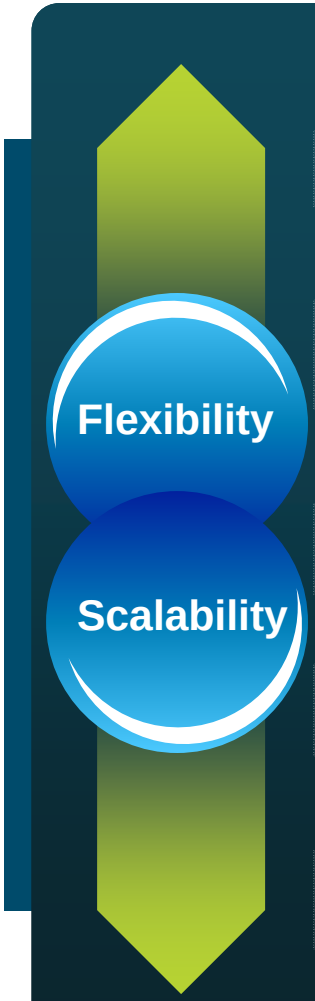
- **Bandwidth increase for improved response esp for bursty Applications**
  - **40G to the Network**
  - **160G to the Host Redundant**

  (2x10G/ Half width slot; 4x10G/ Full width slot)
- **Latency Lowered to 0.5us within IOM**
- **Investment Protection with Backward and Forward Compatibility**

BANDWIDTH FOR BURSTY APPLICATIONS

Cisco UCS I/O Modules

Cisco 2100 and 2200 Series Fabric Extenders: Generation Comparison



QoS	Simple register	ACL based	ACL based
Host ports	8	32	16
Network ports	4	8	4
Classes of service	4 (3 enabled)	8	8
Port speed	1/10-GB fixed location	1/10-GB anywhere	1/10-GB anywhere
EtherChannels	HI > NI only 4 ports	Both directions 8 ports	Both directions 8 ports
Policers	None	64 per 8 ports	64 per 8 ports
IEEE 1588 support	No	Yes	Yes
Latency	~800 nanoseconds	~500 nanoseconds	~500 nanoseconds
Adapter redundancy	1 mLOM only	mLOM and mezzanine	mLOM and mezzanine

UCS VIC 1200 Series—80 Gbps to the Host

Adapter and Virtual Machine Fabric Extender

PORT DENSITY TO MATCH CORE DENSITY

- Dual 40 Gbps to a single half-width slot
- Easy upgrade path for BW to server blade
- Uses 4x10 EtherChannel, HW 40Gb Capable
- vNICs/vHBAs NOT limited to 10Gb

PCIE & NETWORK INTERFACE VIRTUALIZATION

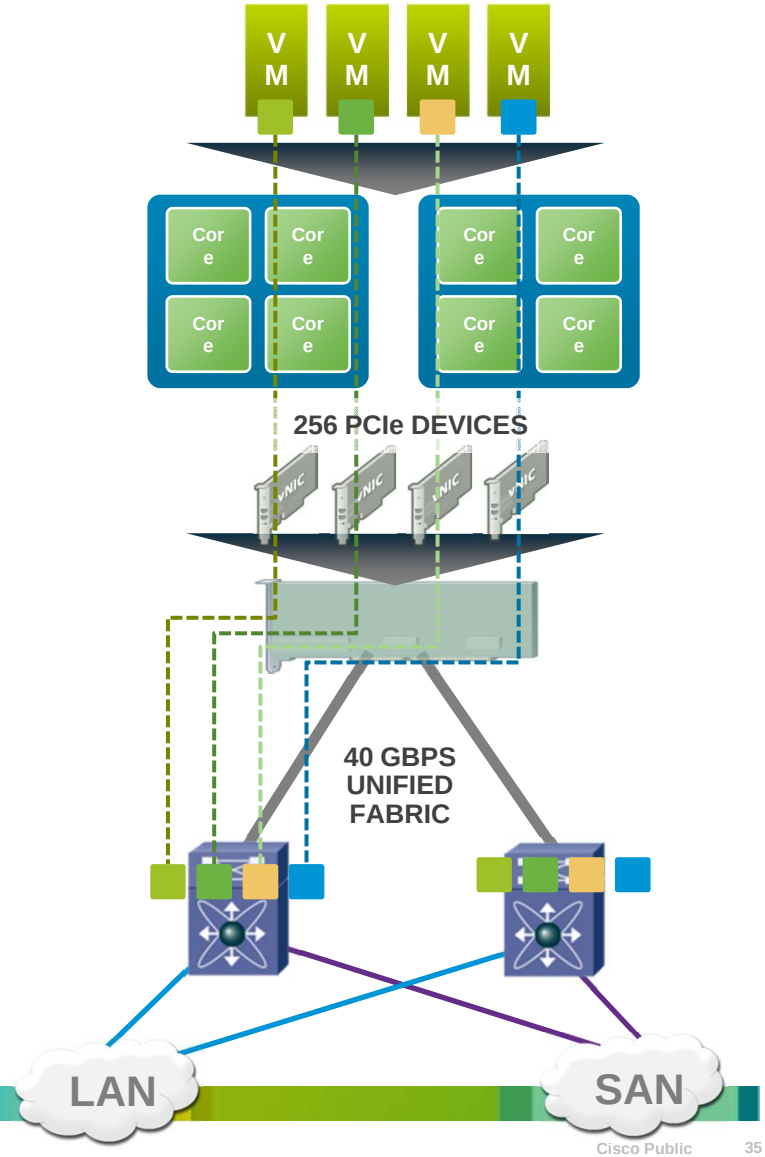
- Up to 256 PCIe devices and associated switch interfaces
- OS independent PCIe Virtualization

VM FEX MODE

- Virtual and physical collapsed into a single network
- VMs get dedicated switch interface (vEth)
- Full network visibility (span, statistic) at vEth level

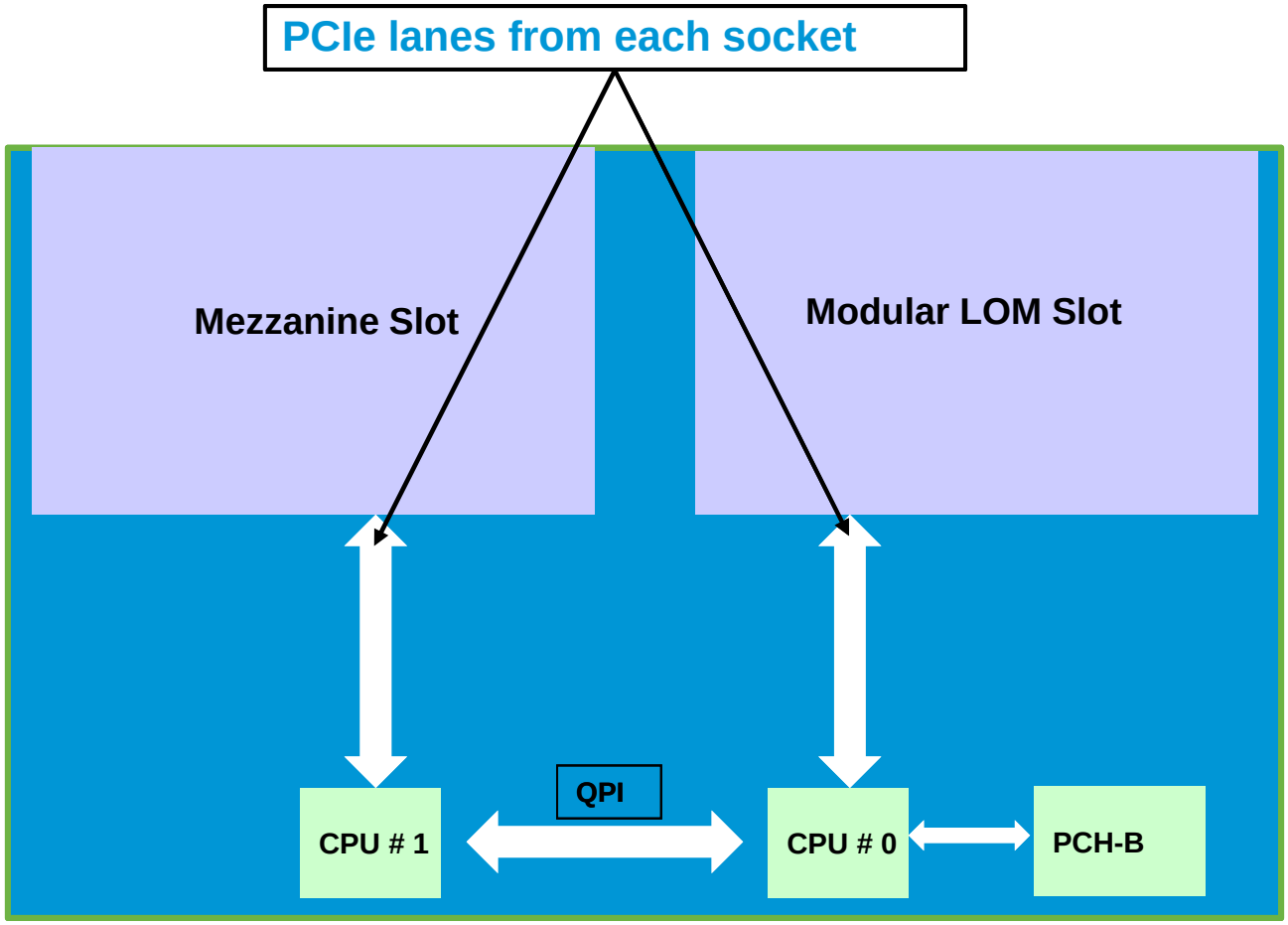
VIRTUAL SERVICE CAPABLE

- Hardware support for vPath (for Virtual Services)

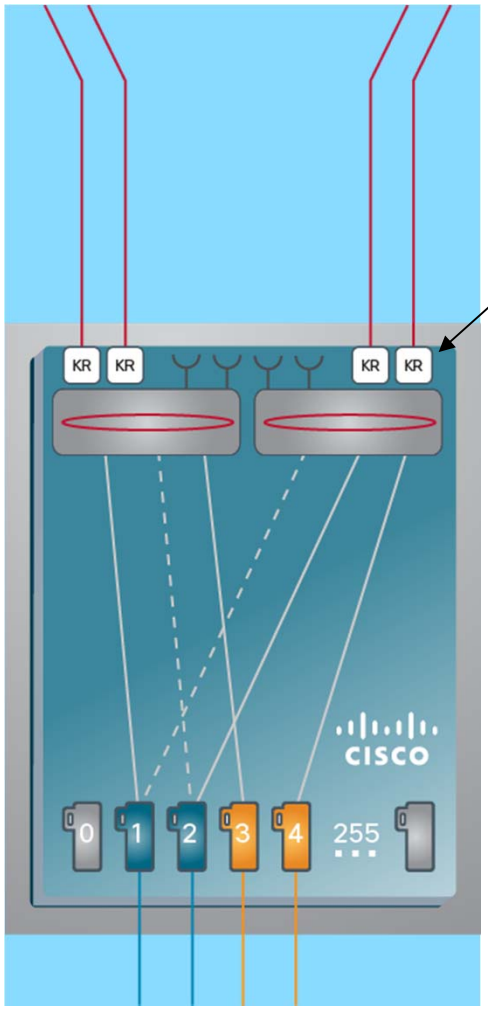


B200 M3 I/O Block Diagram

Modular LOM and Mezzanine slot

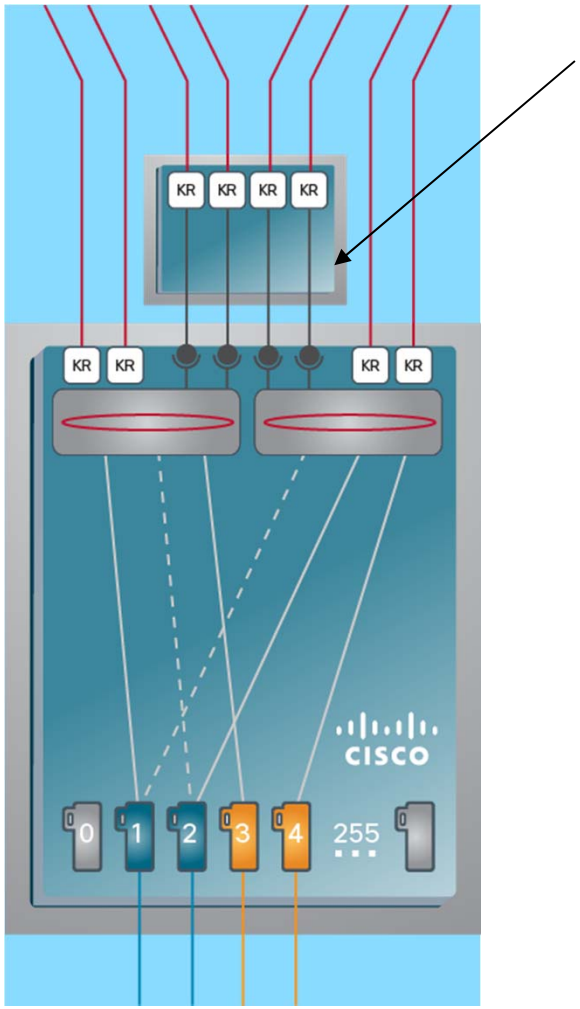


Introducing UCS VIC 1240 Modular LOM



- Based on the same ASIC like VIC 1280
- PCIe Devices 256 (vNICs or vHBA)
- Support VM-FEX for ESX, RHEL-KVM and *HyperV (future)*
- Base option supports dual 2x10Gb

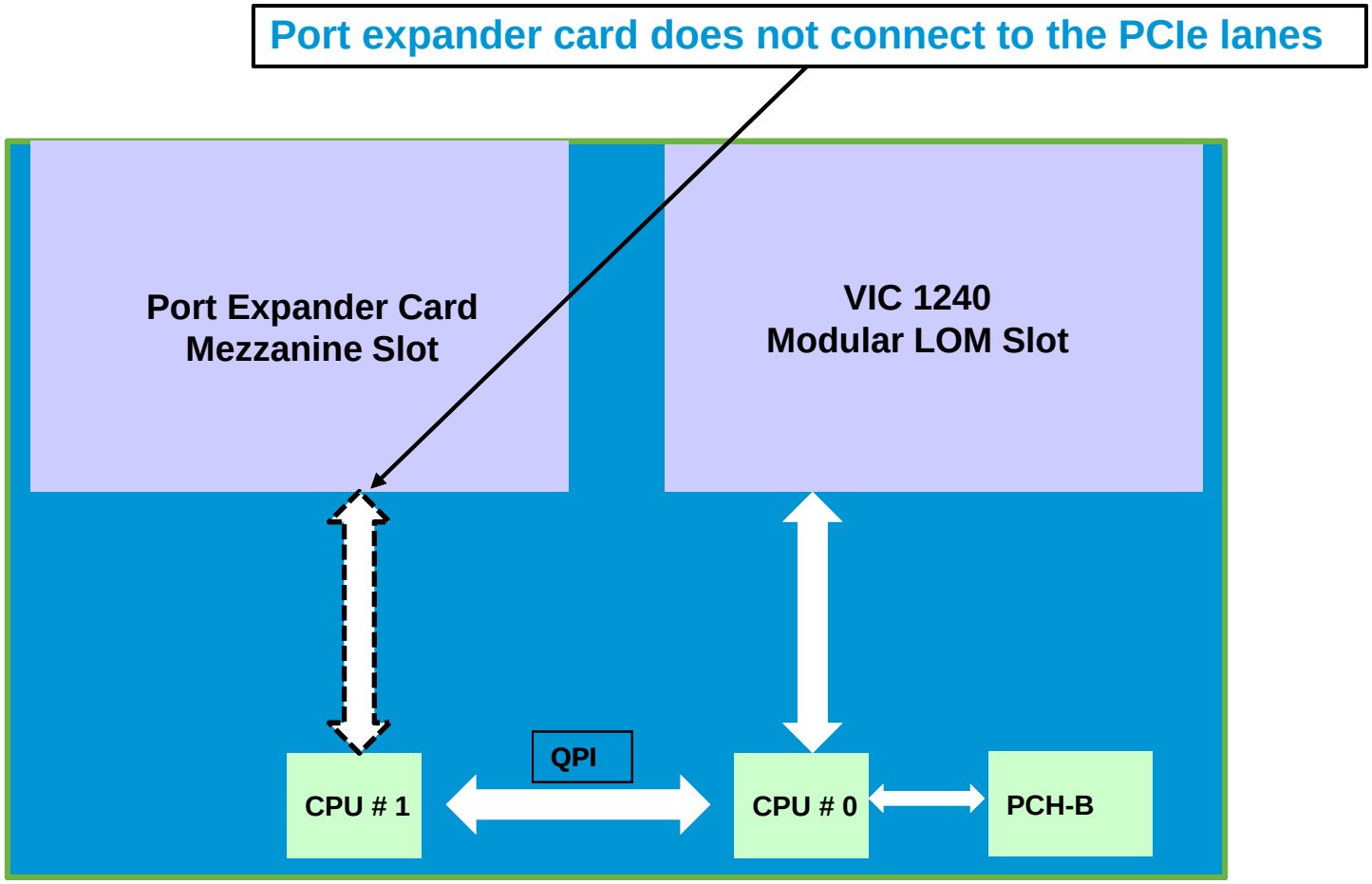
Port Expander Card for VIC 1240



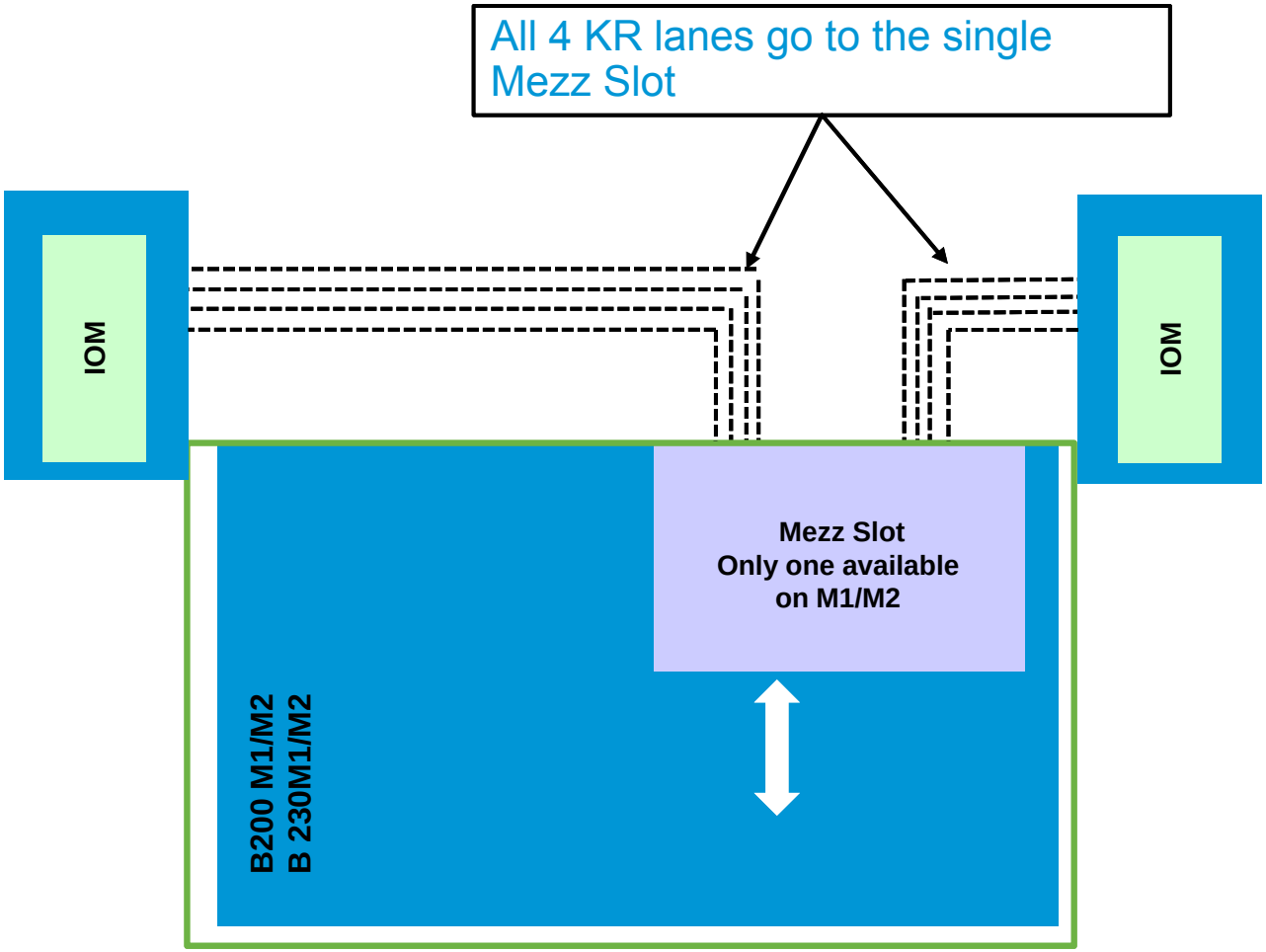
- Option to enable all port of 2nd Gen VIC ASIC
- Fits in the Mezzanine slot of B200M3
- Port Expander has no PCIe presence
- It is a “passive connector” device

B200 M3 I/O Block Diagram

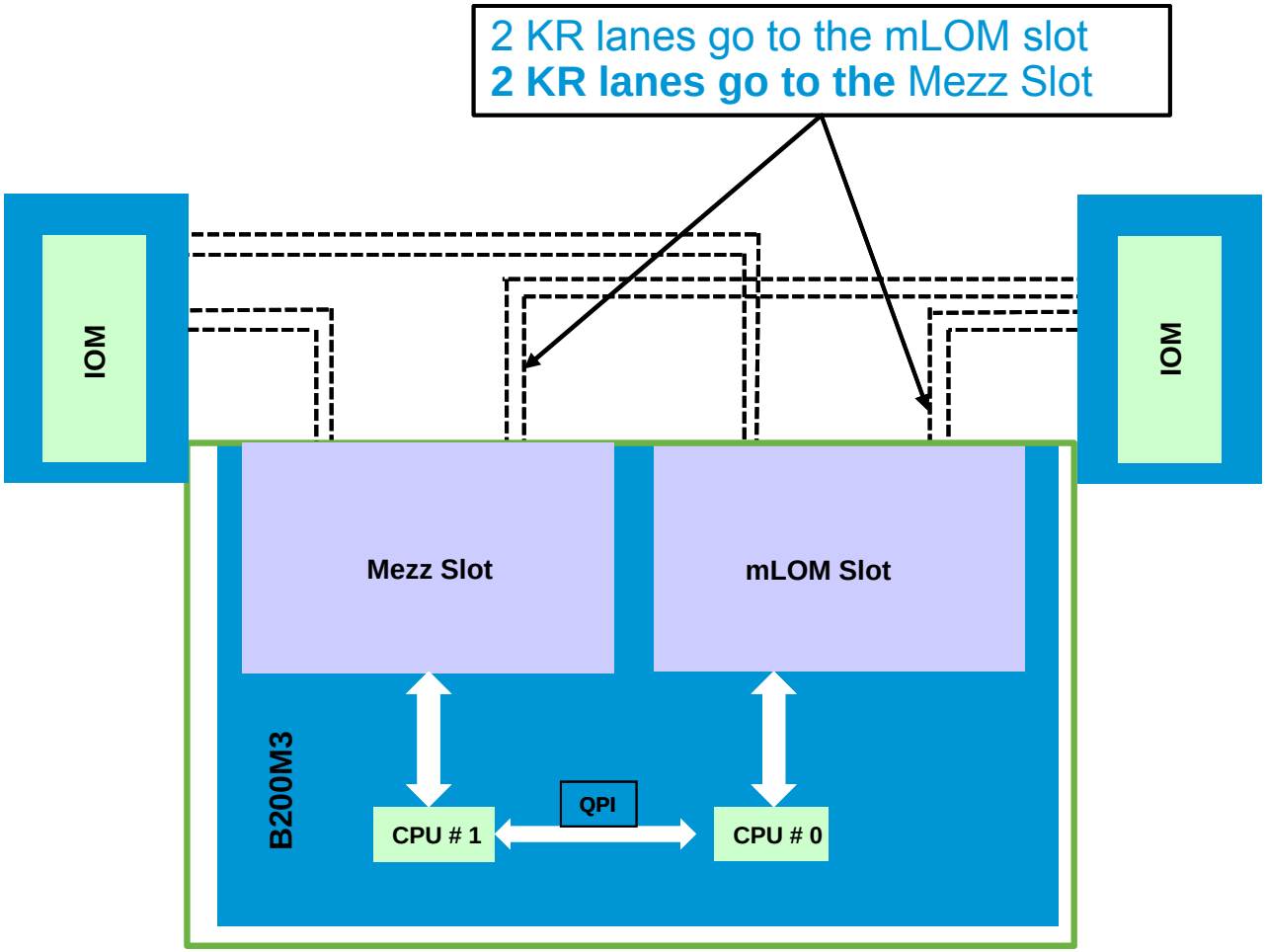
VIC 1240 and Port Expander Card for VIC 1240



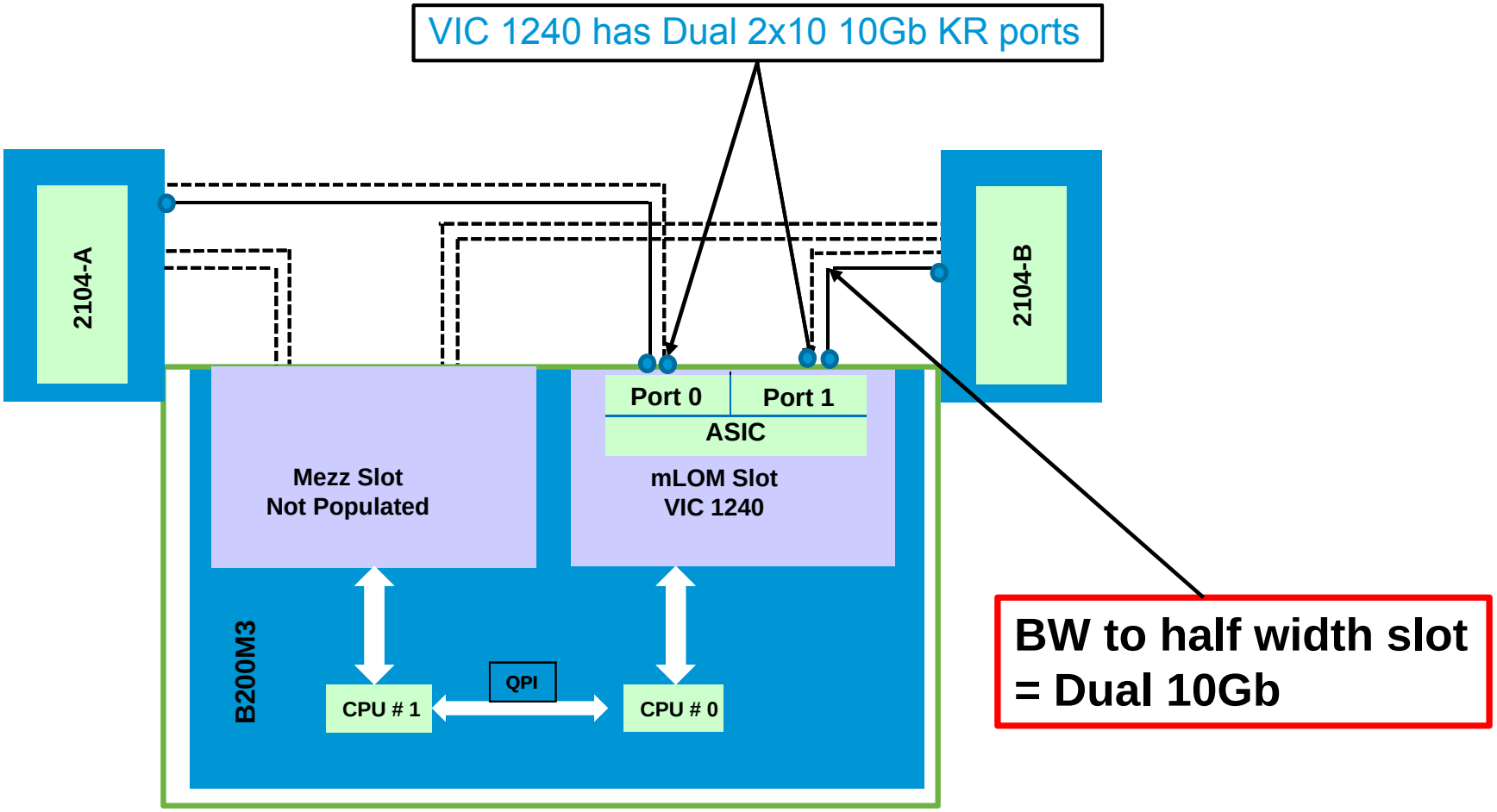
Backplane lanes for M1/M2 Blades



Backplane lanes for B200 M3

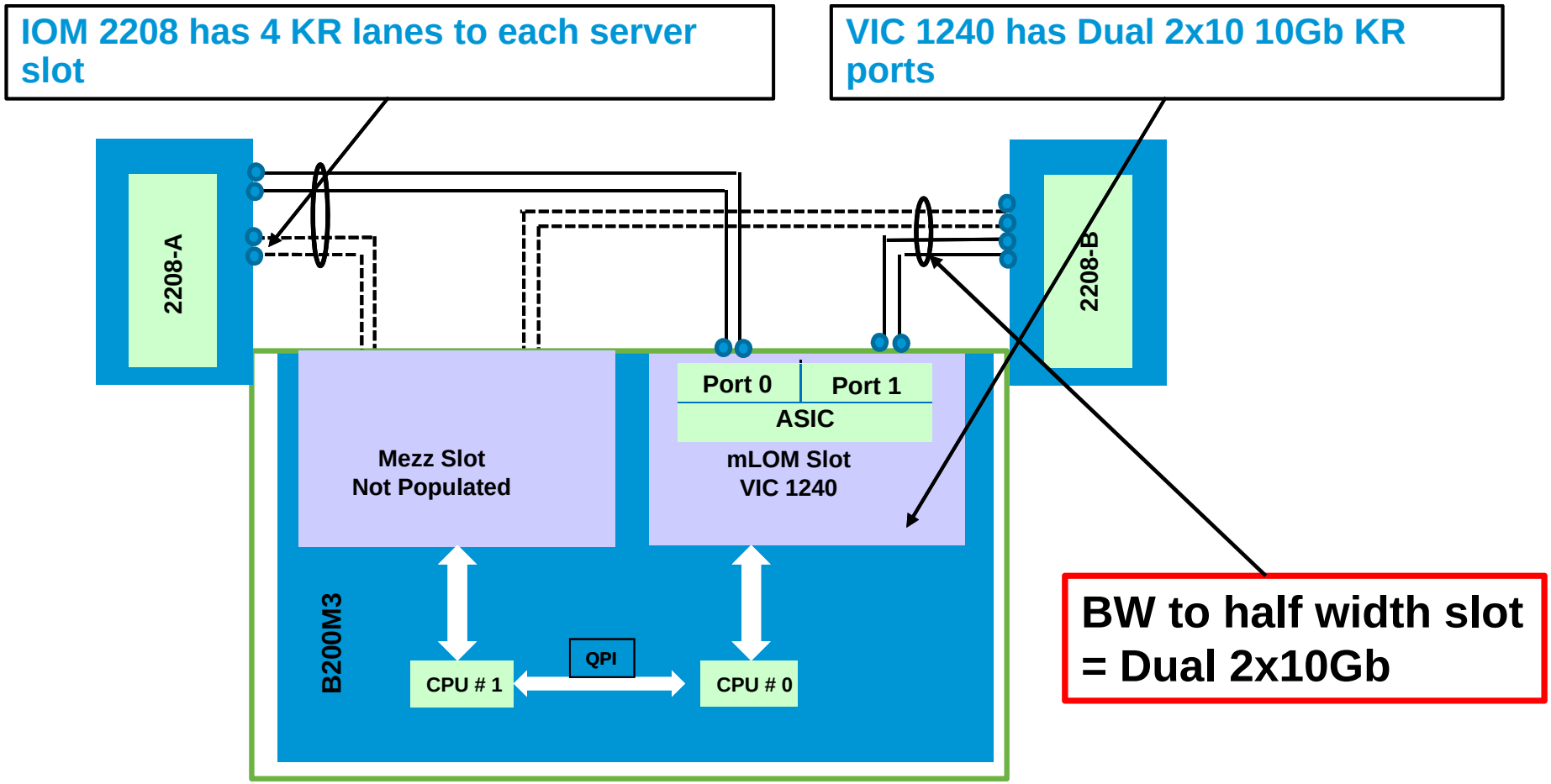


IOM 2104 with VIC1240 in B200M3

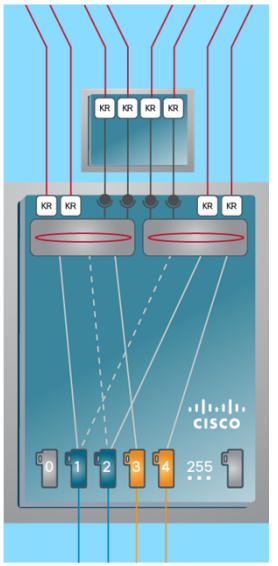


Only *valid* adapter option with IOM 2104

IOM 2208 with VIC1240 in B200M3



IOM 2208 with VIC1240 & Port Exp Card in B200M3



Port Expander for VIC 1240 enables 2 additional ports of VIC 1240 ASIC to each fabric

2208-A

2208-B

Port 0

Port 1

ASIC

Mezz Slot
Port Expander Card
For 1240

mLOM Slot
VIC 1240

B200M3

CPU # 1

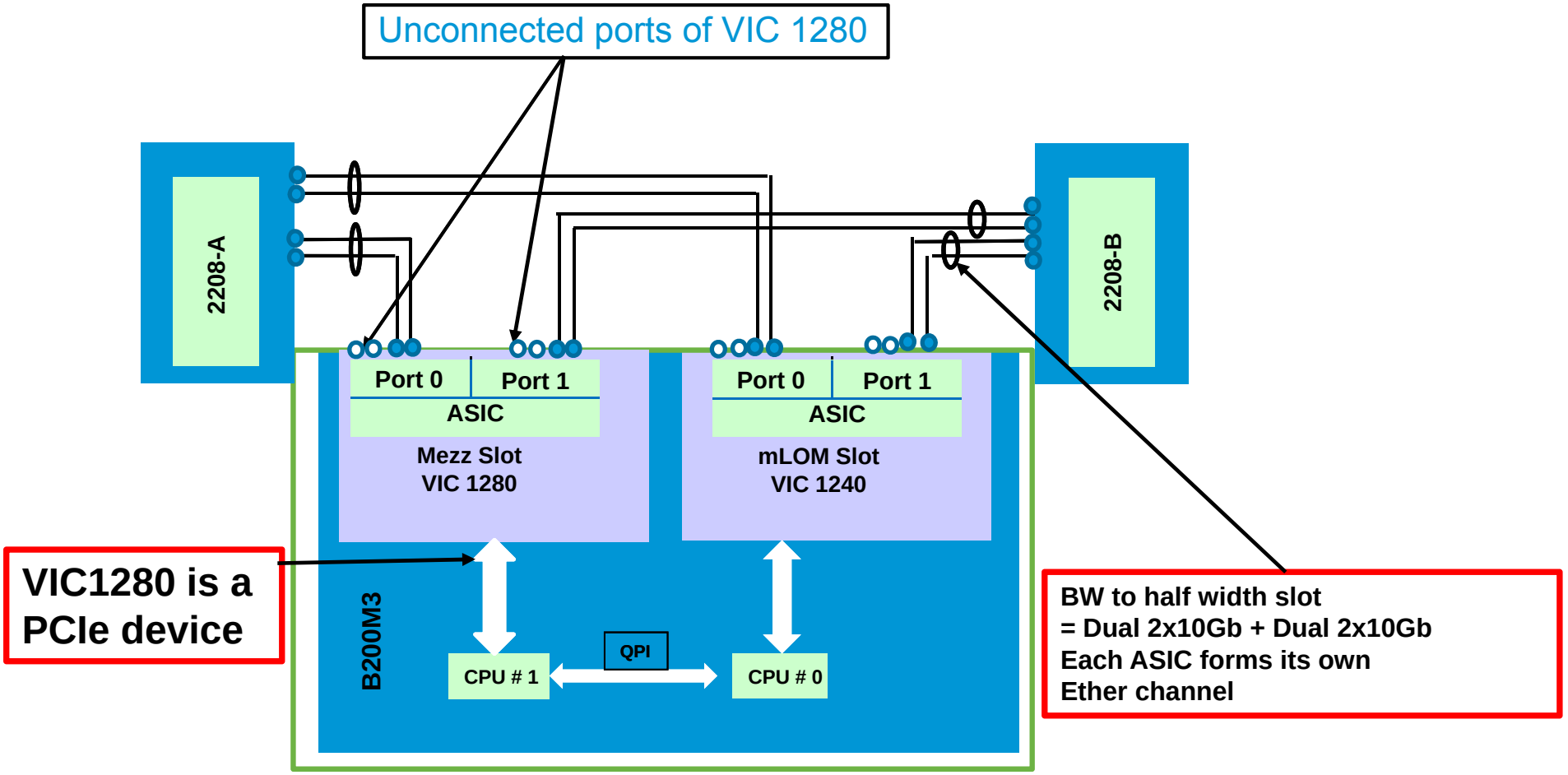
QPI

CPU # 0

BW to half width slot = Dual 4x10Gb

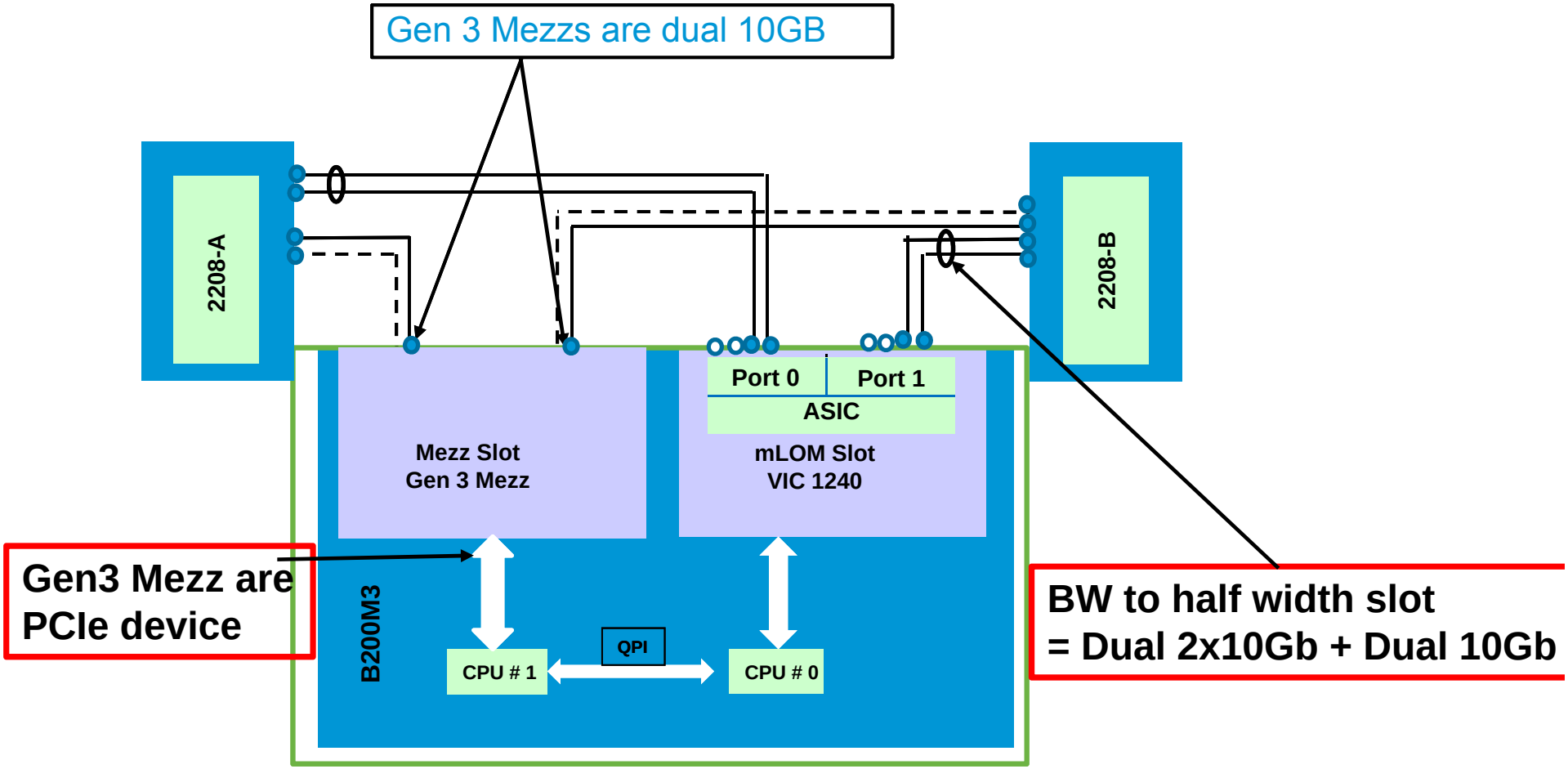
Full BW of 2nd Gen VIC ASIC exposed

IOM 2208 with VIC1240 & VIC 1280 in B200M3



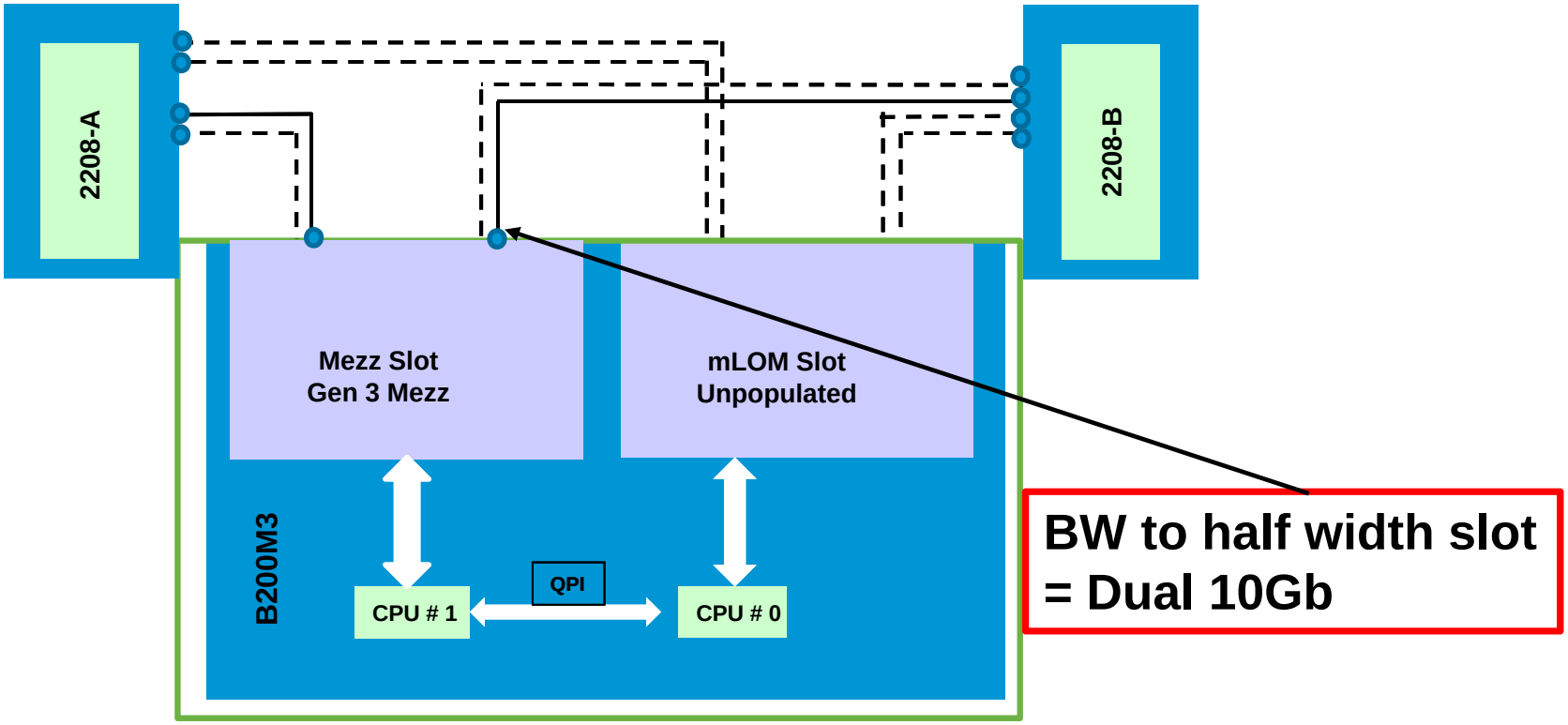
Adapter level "Redundancy" available with M3 blades

IOM 2208 with VIC1240 & Gen 3 Mezz in B200M3



Flexibility to choose a 3rd party Mezz to complement VIC 1240

IOM 2208 Gen 3 Mezz in B200M3



Flexibility to choose a 3rd party Mezz without VIC

B200 M3 I/O Infrastructure Benefits

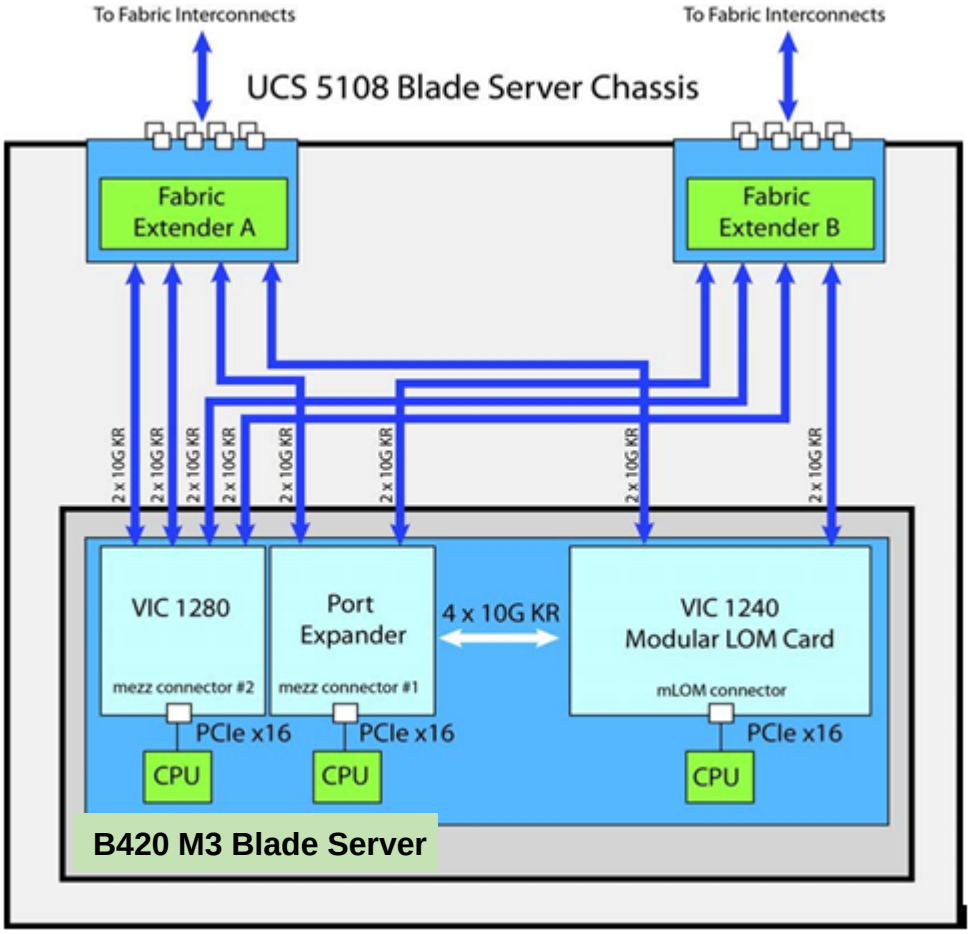
Quadruple the Performance without any addition in management complexity

- Aggregate 80 Gb each half width blade
- Create vNICs and vHBAs like you did with M81KR
- vNICs and vHBAs can run faster than 10Gb
  - Etherchannel will load balance between member ports

Flexibility and Reliability without compromises

- Flexibility
  - Entry level I/O options (IOM 2204, Gen 3 Mezz)
  - Mezzanine slot available for reliability with additional VIC card OR 3rd party Mezz
  - Future special functions Mezz cards (Flash etc)
- Reliability with Fabric Failover, Ether Channel and Adapter redundancy
- Industry leading performance available via Port Expander for the VIC 1240

B420 M3
Max IO configuration



Summary

Integrated Solutions

Innovations with Industry Leaders

Vertical Solution Focus




Healthcare | Financial Services | Manufacturing | Retail

Applications

- Enterprise Apps: Oracle E-Business Suite, SharePoint Server 2010, PeopleSoft, SAS, Siebel, SAP, Microsoft Dynamics, Exchange
- Databases: Oracle Database, Microsoft SQL Server, MySQL
- Business Analytics/ Big Data: SAS, SQL Server 2008 R2 Fast Track Data Warehouse, SAP HANA & BWA, Greenplum, cloudera, hadoop, ParAccel
- Virtual Desktop: Citrix XenServer, vmware, Microsoft

Management

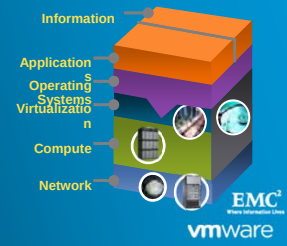
cisco, bmcsoftware, Microsoft, vmware, EMC², solarwinds, DynamicOps, ca technologies, cloupia, symantec., IBM, hp invent, Zenoss, Compuware

Operating System and Hypervisor

Windows Server, Windows Server Hyper-V, redhat, Oracle Linux, Oracle Solaris

Smart Solutions

VBLOCK



FLEXPOD

VXI

RISC Migration

Cisco/EMC Scale-Out SAP HANA example – 4TB Server Memory

Cisco® Management

1 Cisco UCS C200 Management Server
2 Cisco 2911 ISR Console Server
1 mgmt. pack per appliance (up to 40 blades)

Cisco® Unified Fabric

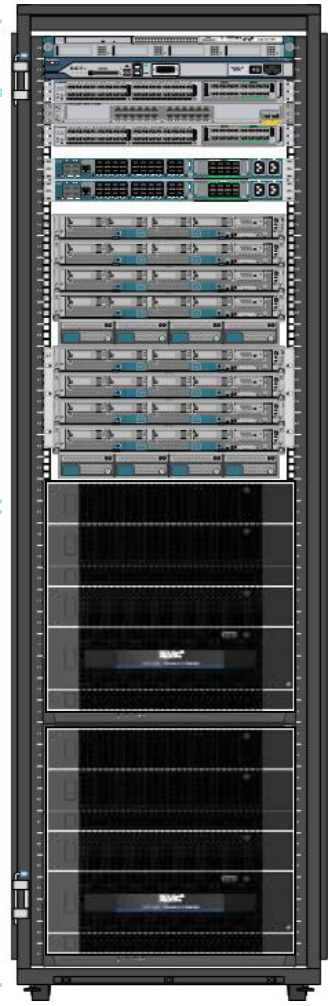
2 Cisco Nexus® 5548 with fabric services
2 Cisco Nexus® 2224 Fabric Extender

Cisco® UCS Platform

2 Cisco UCS 6248 Fabric Interconnect
2 Cisco UCS 5108 Blade Server Chassis
8 Cisco UCS B440 M2 plus VIC

EMC Storage

2 EMC VNX 5300



1 Rack Data Center Solution

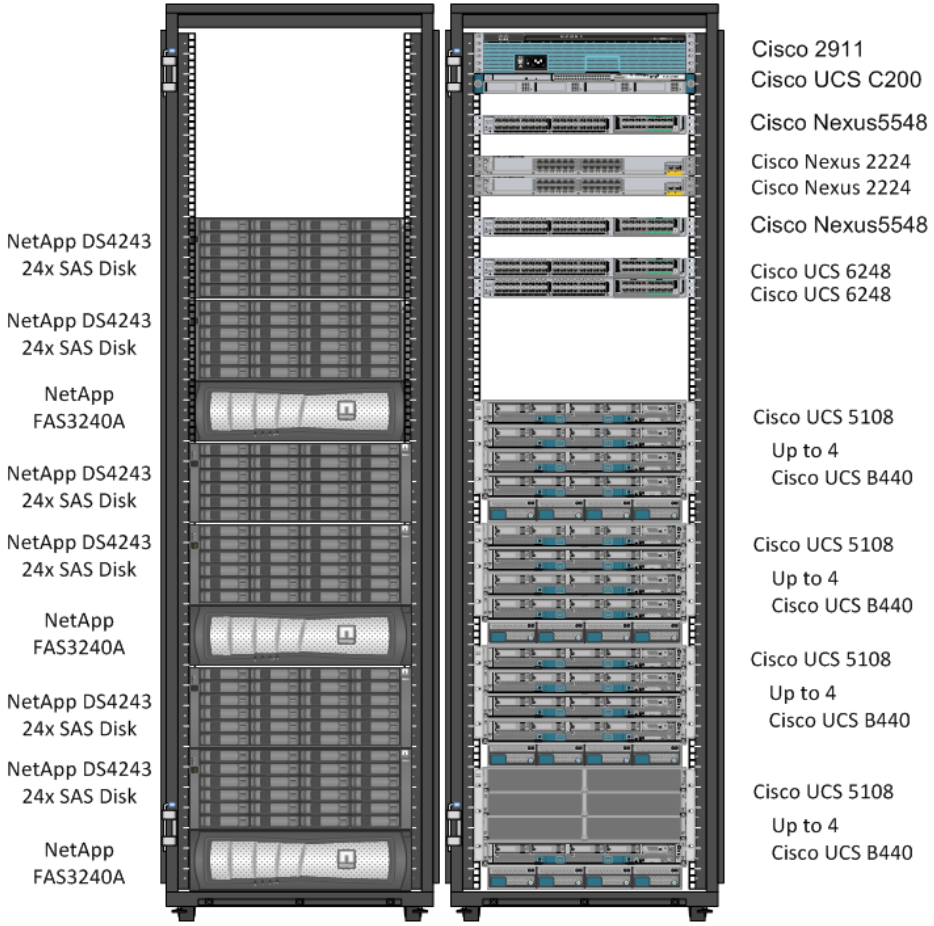
32 Westmere CPUs (320 cores)
4 TB server memory
80-Gbps interconnect (8x 10 GE)

Cisco/NetApp Scale-Out SAP HANA example – 6TB Server Memory

- **Redundant Infrastructure**
- **1 Storage per 4 Active nodes**
- **PXE boot with NFS, no FC, no iSCSI**

Validated for, but not limited to:

- **2 – 16 Active nodes**
- **1 – X Standby nodes**



Cisco Reference Architecture for EMC's Greenplum MR

Next-Generation Enterprise-Ready Hadoop Reference Architecture

- Hardware and software validated
- Greenplum MR Hadoop software
- Red Hat Linux OS
- Cisco UCS® C-Series C210-M2/C240-M3 Rack Servers
- Cisco UCS fabric interconnects and Cisco Nexus® fabric extenders
- Cisco UCS Manager
- Ultra fast, high endurance Intel 710 SSD

Cisco UCS Performance—64 World Records

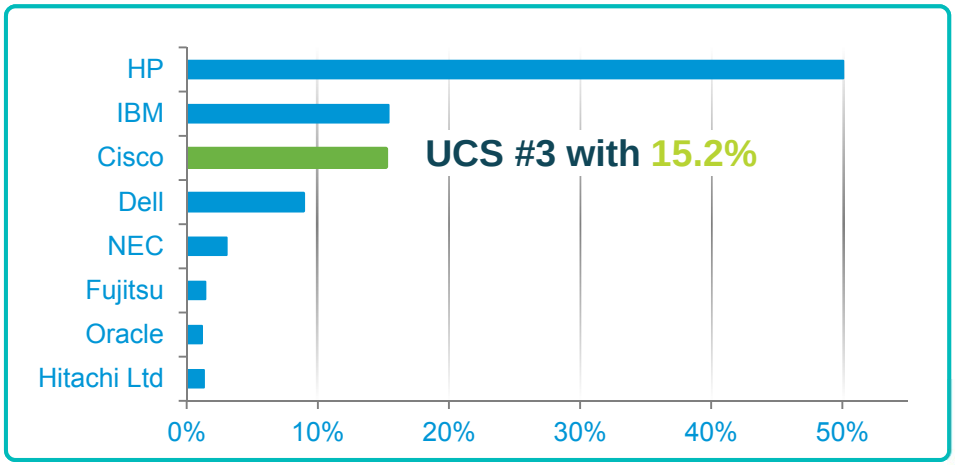
A History of World Record Performance on Industry Standard Benchmarks

Cisco UCS Benchmarks that held world record performance records as of date of publication

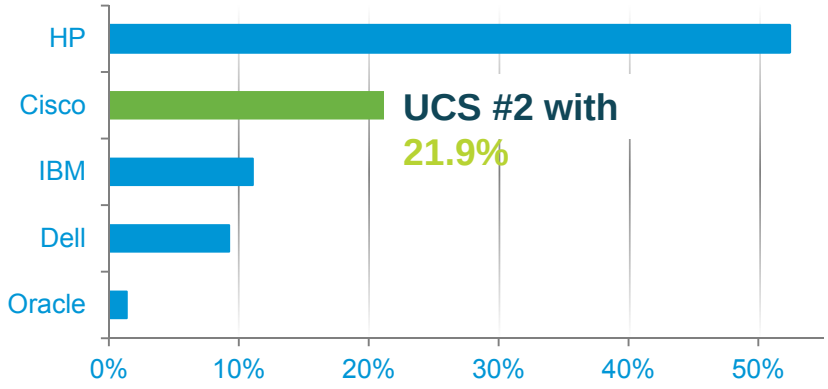
Customers Have Spoken

X86 Server Blade Market Share, Q2CY12[1]

Worldwide



North America



- UCS momentum is fueled by game-changing innovation; Cisco is quickly passing established players[1]
- x86 Blade servers are growing over twice as fast as the overall x86 computing market[2]

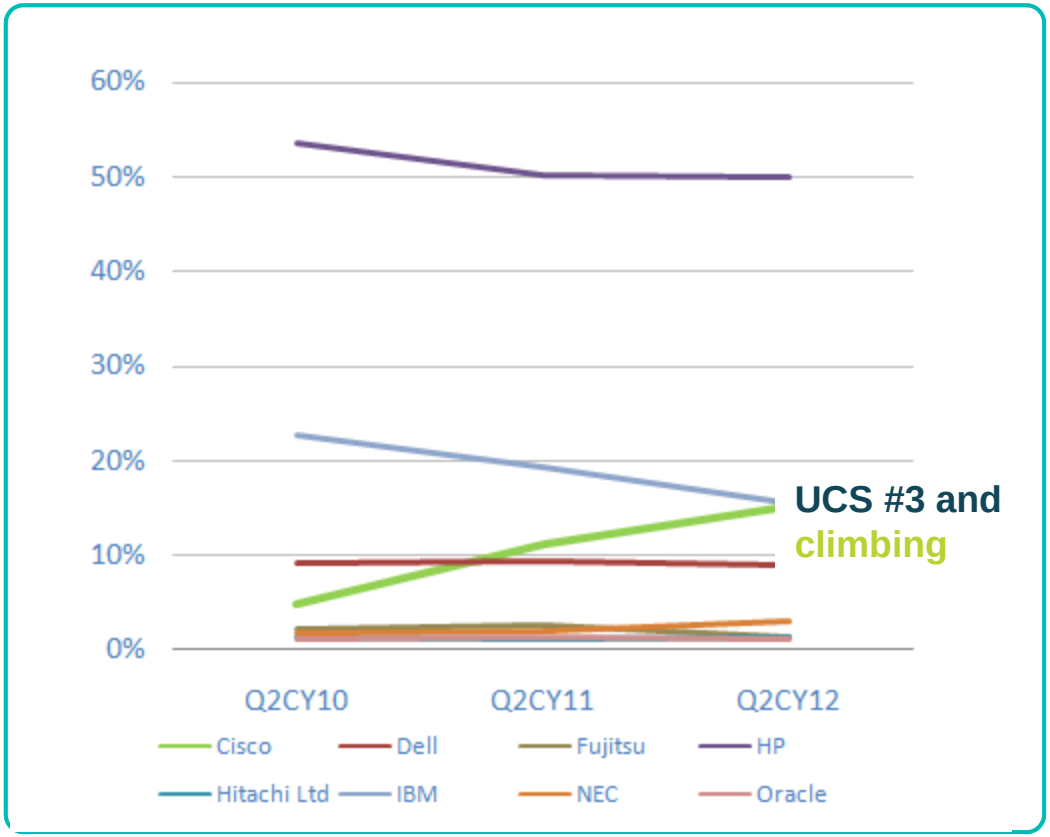
UCS After Only Three Years

- Maintained #2 in N. America (21.9%) and #2 in the US (22.2%)[1]
- Maintained #3 worldwide in x86 Blades with 15.2%, just behind IBM's 15.4%[1]

Source: [1] IDC Worldwide Quarterly Server Tracker, Q2 2012, August, 2012, Revenue Share [2] IDC Q1 CY12 Server Forecaster, Based on x86 Blade Revenue

They Said It Couldn't Be Done

Worldwide X86 Server Blade Market Share



- UCS impacting growth of established vendors like HP
- Legacy offerings flat-lining or in decline
- Cisco growth out-pacing the market

Market Appetite for Innovation Fuels UCS Growth

- Customers have shifted 15.2% of the global x86 blade server market to Cisco and over 21.9% in North America

Demand for Data Center Innovation Has Vaulted Cisco Unified Computing System (UCS) to the #3 Leader in the Fast-Growing Segment of the x86 Server Market

Source: IDC Worldwide Quarterly Server Tracker, Q2 2012 Revenue Share, August 2012

Competence Center Invitation

Tempest Cisco UCS kompetenčné centrum

- ucs.tempest.sk
  TEMPEST a.s., GBC IV, Galvaniho 17/B, Bratislava
- Technology and solutions focus
  - Servery Cisco UCS B-Series a Cisco UCS C-Series
  - Data centers and Virtualization
  - Cloud
  - Storage
  - Applications
  - Disaster Recovery and Business Continuity
- Ecosystem partner's use cases
  - EMC, NetApp
  - SAP
  - Microsoft, VMware, Citrix, Oracle

Tempest Cisco UCS KC aktivity

- Workshops
- Trainings
  - Cisco UCS
  - Cisco DC LAN/SAN Infrastructure
  - Vblock, FlexPod
  - EMC/NetApp storage
  - VMware/Citrix/Microsoft server virtualization
  - VMware/Citrix/Microsoft desktop virtualization
  - Cloud computing – Cisco CIAC
  - Disaster recovery solutions (EMC RecoverPoint , Avamar, etc.)
- Proof-of-concept testing
  - Network design, Interoperability, Comparative and Aplplication Migrattion Tests
  - Applications testing (Exchange, SharePoint, SQL, etc.)
  - Solution benchmarking
  - Virtualization testing (sizing, migrations, etc.)
  - Virtual desktops PoC
  - Disaster recovery scenarios testing

Najbližší Tempest Cisco UCS KC Workshop

- Dátum: 8.november 2011
- Téma: UCS riešenia a VMware virtualizačná platforma
- Agenda:
  - UCS Architecture overview
  - how can your's IT benefit from Cisco UCS
  - VMware deployment on Cisco UCS platform
  - Cisco UCS face-to-face
- Pre koho je workshop určený:
  - IT špecialisti
  - IT administrátori
  - systémoví a sieťoví administrátori
- Registrácia na: ucs.tempest.sk

Thank you.