



Cisco
Networkers 2011
May 19, Toronto, Canada

Knowledge
Is Power.
Learn. Share. Collaborate.



Cisco Unified Computing System Update

Presented by: **Ivan Kobe**
Consulting Systems Engineer



Cisco
 Networkers 2011
 May 19, Toronto, Canada

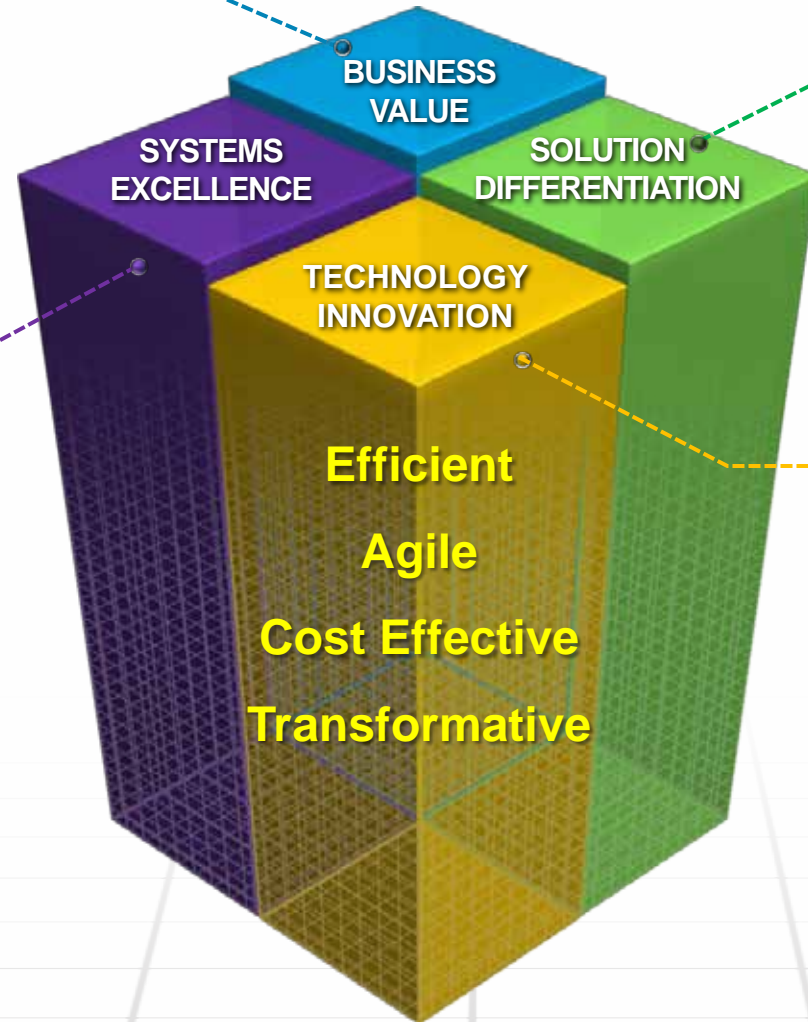
Unified Computing System

Knowledge
 Is Power.
Learn. Share. Collaborate.



BUSINESS VALUE
Lower TCO
Rapid ROI
Superior Agility

SYSTEMS EXCELLENCE
Rapid Deployment
Workload Mobility
Maximized Scaling
Operational Efficiency
Unified IT Workflows



SOLUTION DIFFERENTIATION
Virtualization-Aware
End-to-end Networking
Radical Simplification

TECHNOLOGY INNOVATION
Unified Management
Service Profiles
Open API
Virtual Interfaces
Extended Memory



Unified Computing System



A single system

- § 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

Highly efficient

- § Fewer servers, switches, adapters, cables
- § Lower power and cooling requirements
- § Fewer people to deploy and manage





Cisco
Networkers 2011
May 19, Toronto, Canada

New Data Center Demands

Impact of Virtualization and Cloud

Knowledge
Is Power.
Learn. Share. Collaborate.



Anything-as-a-Service



Heterogeneous
Workloads for
ANY APPLICATION

VM Mobility



Optimize resource
allocation across
ANY LOCATION

Dynamic response



Respond in
real-time at
ANY SCALE



Traditional IT Silos



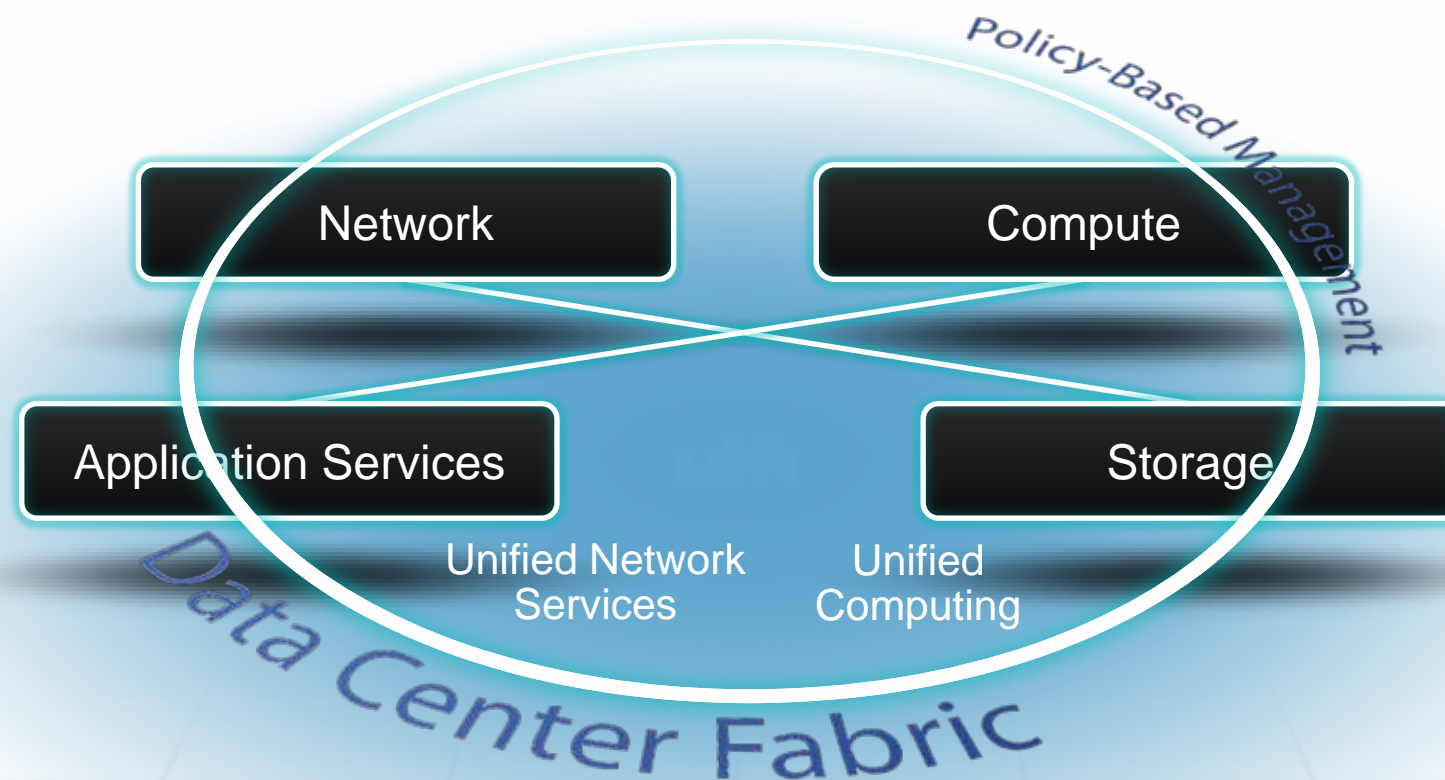
Inefficient Resource Utilization
Operationally Complex—Higher TCO
Promotes Human Silos



Cisco
Networkers 2011
May 19, Toronto, Canada

Cisco Approach: Data Center Fabric

Knowledge
Is Power.
Learn. Share. Collaborate.



Optimized Resource Utilization
Operationally Simple—lower TCO
Overcomes IT Silos



Cisco
Networkers 2011
May 19, Toronto, Canada

Cisco Data Center Fabric Vision

Knowledge
Is Power.
Learn. Share. Collaborate.



Flexible, High-Performance, Secure, Shared Infrastructure

Tightly Integrated Network, Storage, Compute and Application Services

Cisco Life cycle Services and Innovations that facilitate “enter anywhere, grow anywhere”



Open

Integrated

Flexible

Scalable

Resilient

Secure



Cisco
Networkers 2011
May 19, Toronto, Canada

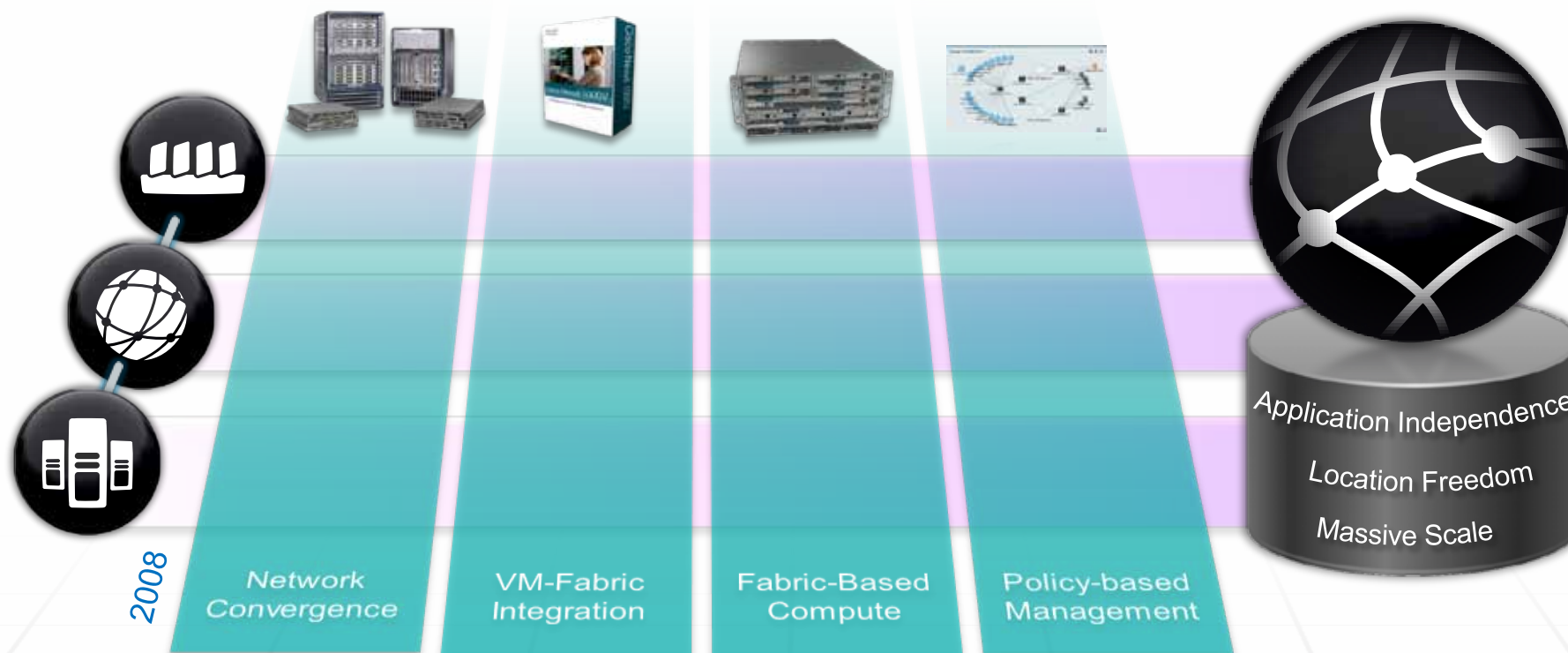
Cisco Data Center Fabric Evolution

Industry-Leading Transitions since 2008

Knowledge
Is Power.
Learn. Share. Collaborate.



Fabric Foundation
to Handle Dynamic
Cloud-Based
Environments



Evolutionary Innovations Offering Investment Protection



Cisco
Networkers 2011

May 19, Toronto, Canada

Knowledge
Is Power.
Learn. Share. Collaborate.



The Benefits of UCS



Modular 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 Compute Options

Industry-standard architecture



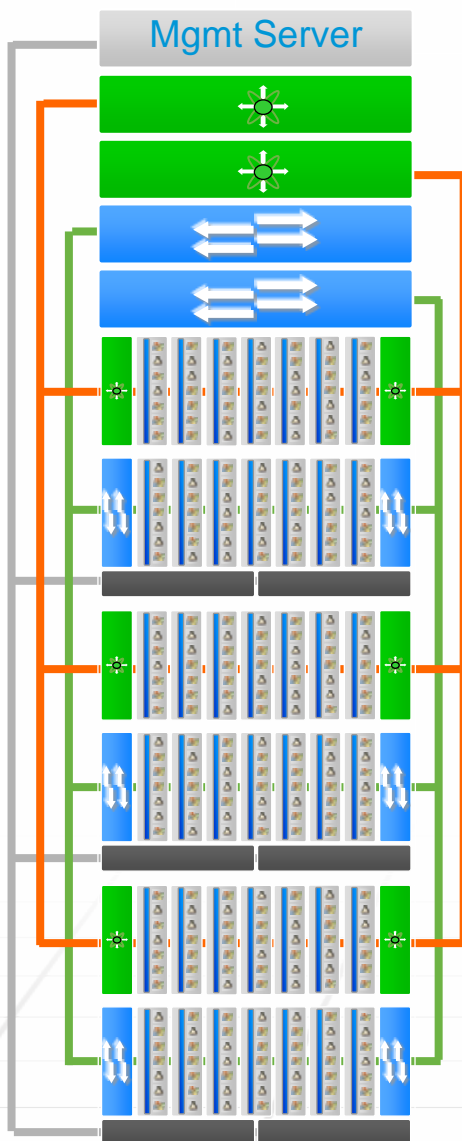
UCS Virtual Adapters

Choice of multiple adapters





Server Deployments Today



Over the past 10 years

- More cores, more memory
- Proliferation of servers & switches
- More switches per server
- Management applied, not integrated

An “accidental” architecture

- Evolved by default vs planned design

Result: Complexity

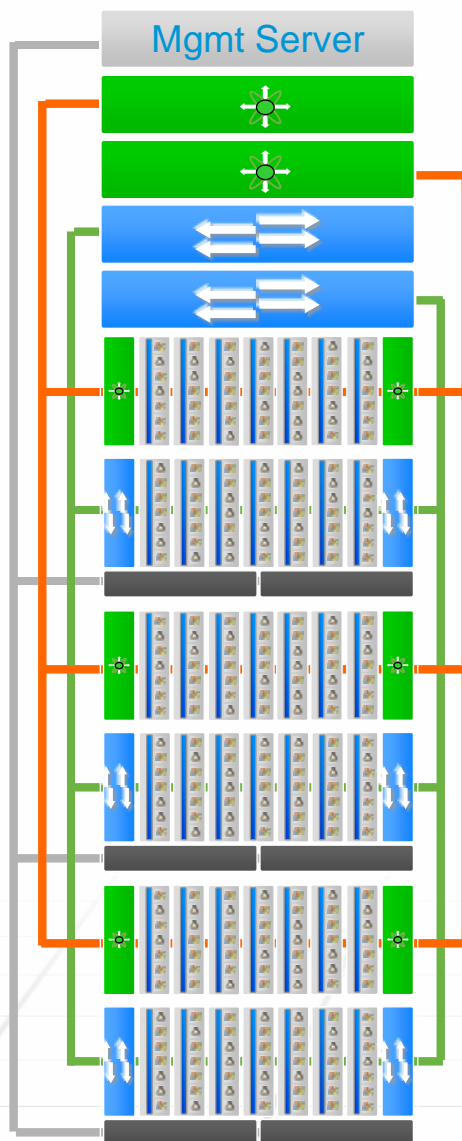
- Many points of management
- Difficult to maintain policy coherence
- Difficult to secure
- Difficult to scale



Cisco
Networkers 2011
May 19, Toronto, Canada

Our Solution

Knowledge
Is Power



- Embed management
- Unify fabrics
- Optimize virtualization
- Remove unnecessary switches, adapters and management modules
- Less than 1/3rd the support infrastructure for a given workload

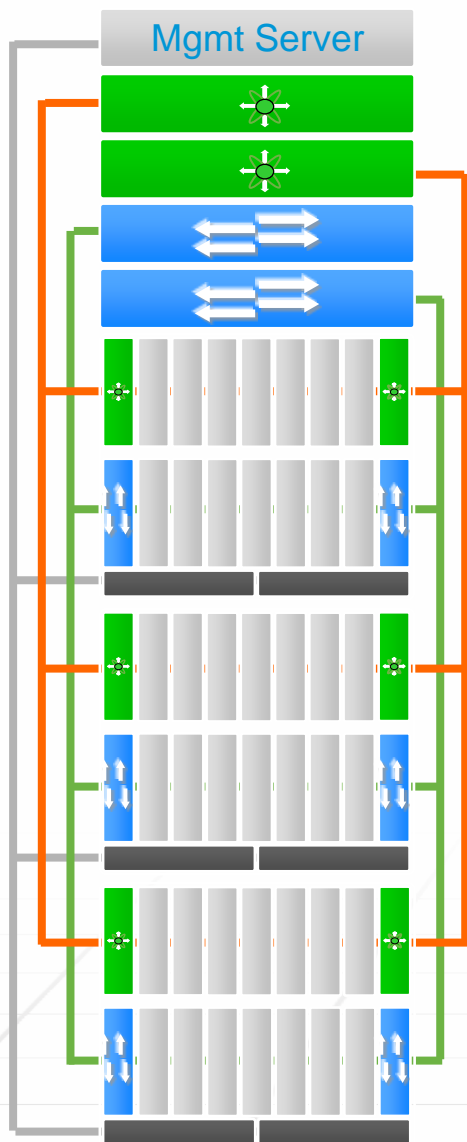




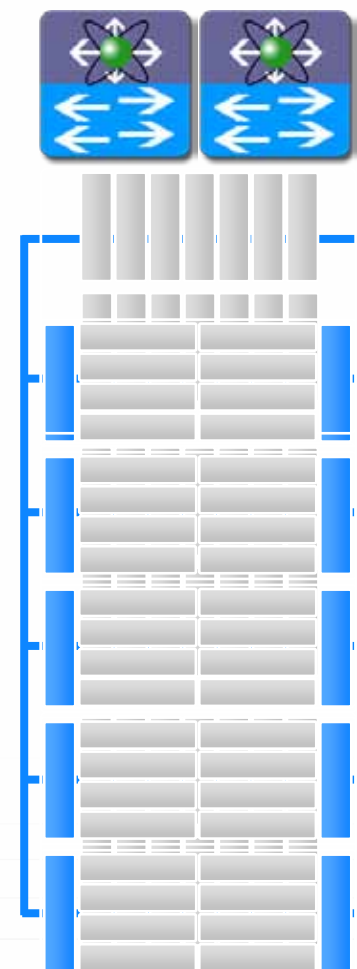
Cisco
Networkers 2011
May 19, Toronto, Canada

Our Solution: Unified Computing System

Knowledge
Is Power.
Learn. Share. Collaborate.

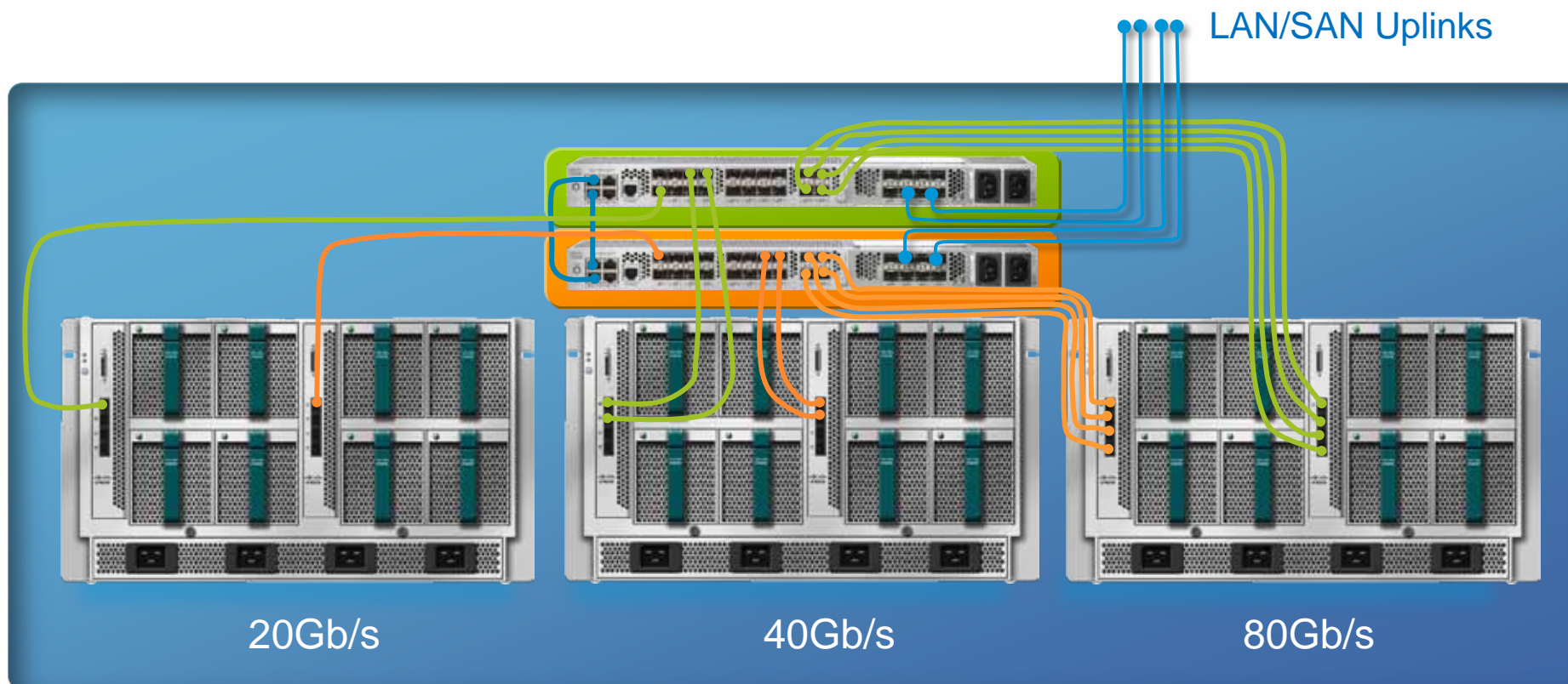


- A single system that encompasses:
 - **Network:** Unified fabric
 - **Compute:** Industry standard x86 components
 - **VNlink:** Distributed Virtual Switch
- **Efficient Scale**
 - Fewer servers with more memory
- **Lower cost**
 - Fewer servers, switches, adapters, cables
 - Lower power consumption
 - Fewer points of management
- **Unified management model**





Distributed Architecture



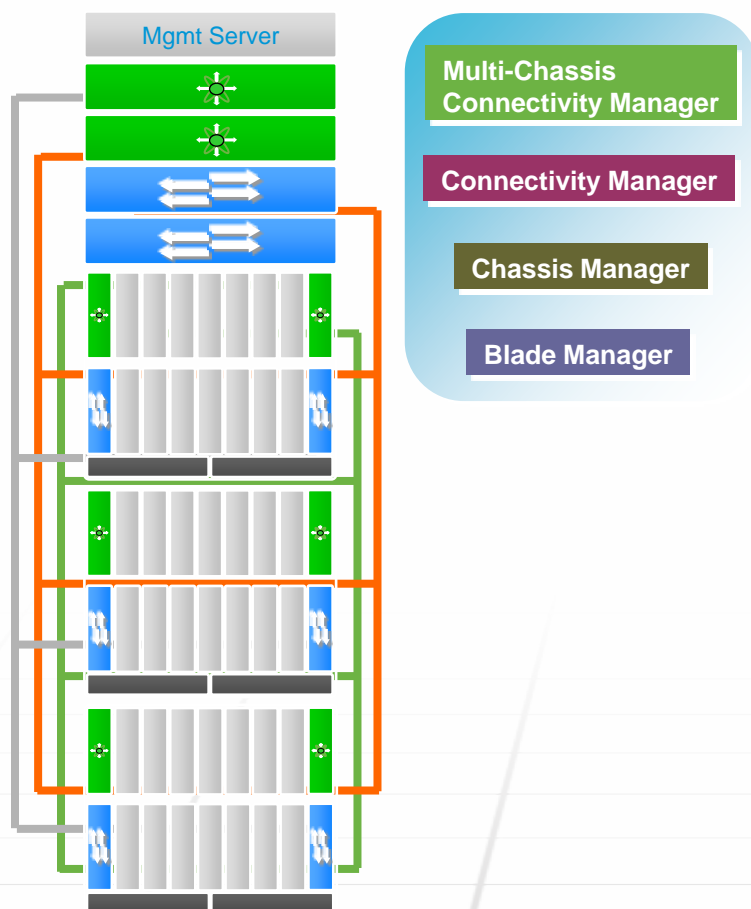
- Wire **once** for bandwidth, not connectivity
- Policy-driven bandwidth allocation
- All links can be active all the time
- Integrates as a single system into your data center



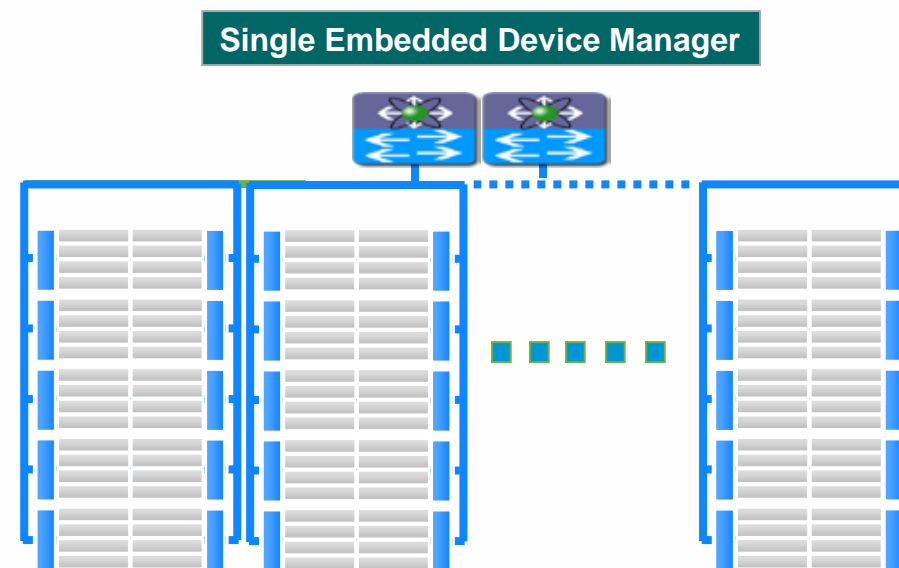
Consolidated Management, Single Tool



Today



Cisco Solution



- § Reduced management costs
- § Easier to integrate with existing frameworks
- § Single consistent API for all managed objects



UCS Manager



Cisco Unified Computing System Manager - phx2-dc-ucs

Fault Summary
2 15 21 8

Equipment Servers LAN SAN VM Admin

Filter: All

- Equipment
 - Chassis
 - Chassis 1
 - Fans
 - IO Modules
 - PSUs
 - Servers
 - Chassis 2
 - Fans
 - IO Modules
 - PSUs
 - Servers
 - Fabric Interconnects
 - Fabric Interconnect A
 - Fixed Module
 - Expansion Module 2
 - Fans
 - PSUs
 - Fabric Interconnect B
 - Fixed Module
 - Expansion Module 2
 - Fans
 - PSUs

New Options Exit

Equipment > Chassis > Chassis 1

Chassis 1

Slots	Installed Firmware	Management Logs	Faults	Events	FSM	Statistics	Temperatures	Power
General	Servers	Service Profiles	IO Modules	Fans	PSUs	Hybrid Display		

Fault Summary
0 1 0 1

Status
Overall Status: ↑ operable
Status Details

Actions
Acknowledge Chassis
Remove Chassis
Turn on Locator LED
View POST Results

Physical Display

Properties
ID: 1
Product Name: Cisco UCS 5108
Vendor: Cisco Systems Inc
Revision: 0
Locator LED:
PID: N20-C6508
Serial Number (SN): FOX1331GRWN

Part Details
Power State Details
Connection Details

Save Changes Reset Values

Logged in as karlv@phx2-dc-ucs System Time: 2010-02-09T16:08



Embedded Unified Management



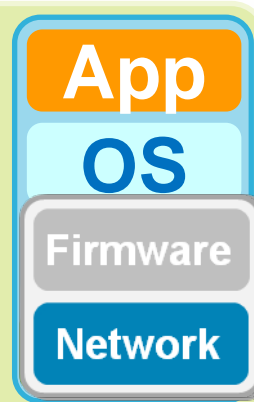
Tightly Coupled Partner Mgmt Tools

Existing Customer Mgmt Tools



- Unified Management Domain
 - Automatic discovery
 - Dynamic Provisioning
- Building Block for Dynamic Data Center
 - Simplify management of infrastructure for ESX clusters and datacenters
- One-click configuration of LAN, SAN and firmware parameters

Service Profile: HR-App1
Network: HR-VLAN
Network QoS: High
MAC: 08:00:69:02:01:FC-E
WWN: 5080020000075740-3
BIOS: Version 1.03
Boot Order: SAN, LAN





Zero Touch Integration

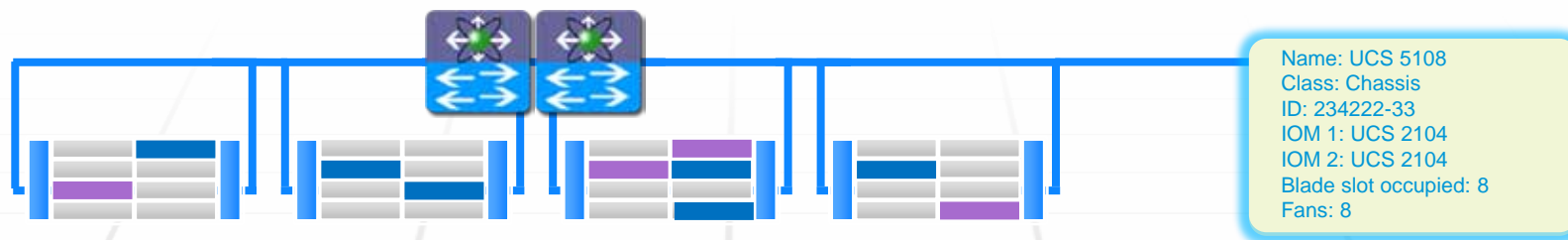
Decouple Complexity & Scale



Physical Inventory

Name: UCS 12
Class: System
ID: 77449-32
Chassis: 1
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 2
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 3
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 4
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 5
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8

- Increase capacity, not complexity
- New equipment self integrates





Zero Touch Integration


Decouple Complexity & Scale



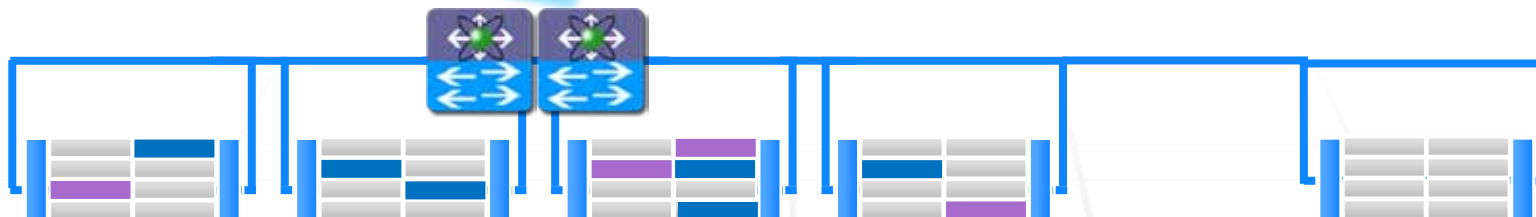
Physical Inventory

Name: UCS 12
Class: System
ID: 77449-32
Chassis: 1
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 2
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 3
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 4
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 5
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8

Policy Inventory

Service Profile: Default 1 
Service Profile: HR-App1 

- Increase capacity, not complexity
- New equipment self integrates
- Inventory & status updated
- Immediately apply existing policies





Cisco
Networkers 2011
May 19, Toronto, Canada

Programmatic Infrastructure

Develop *With* The Infrastructure, Not Just *On*
The Infrastructure

Knowledge
Is Power.
Learn. Share. Collaborate.





Cisco
 Networkers 2011
 May 19, Toronto, Canada

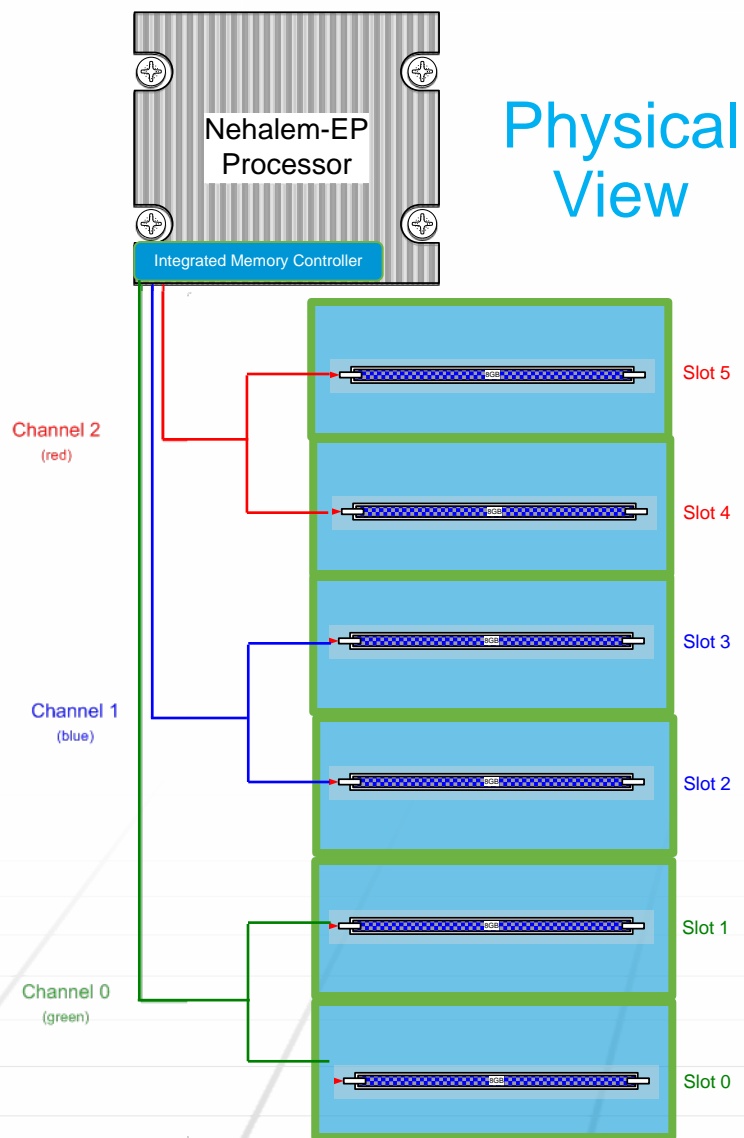
Cisco Server Portfolio

Knowledge
 Is Power.
Learn. Share. Collaborate.





Expanded Memory Architecture

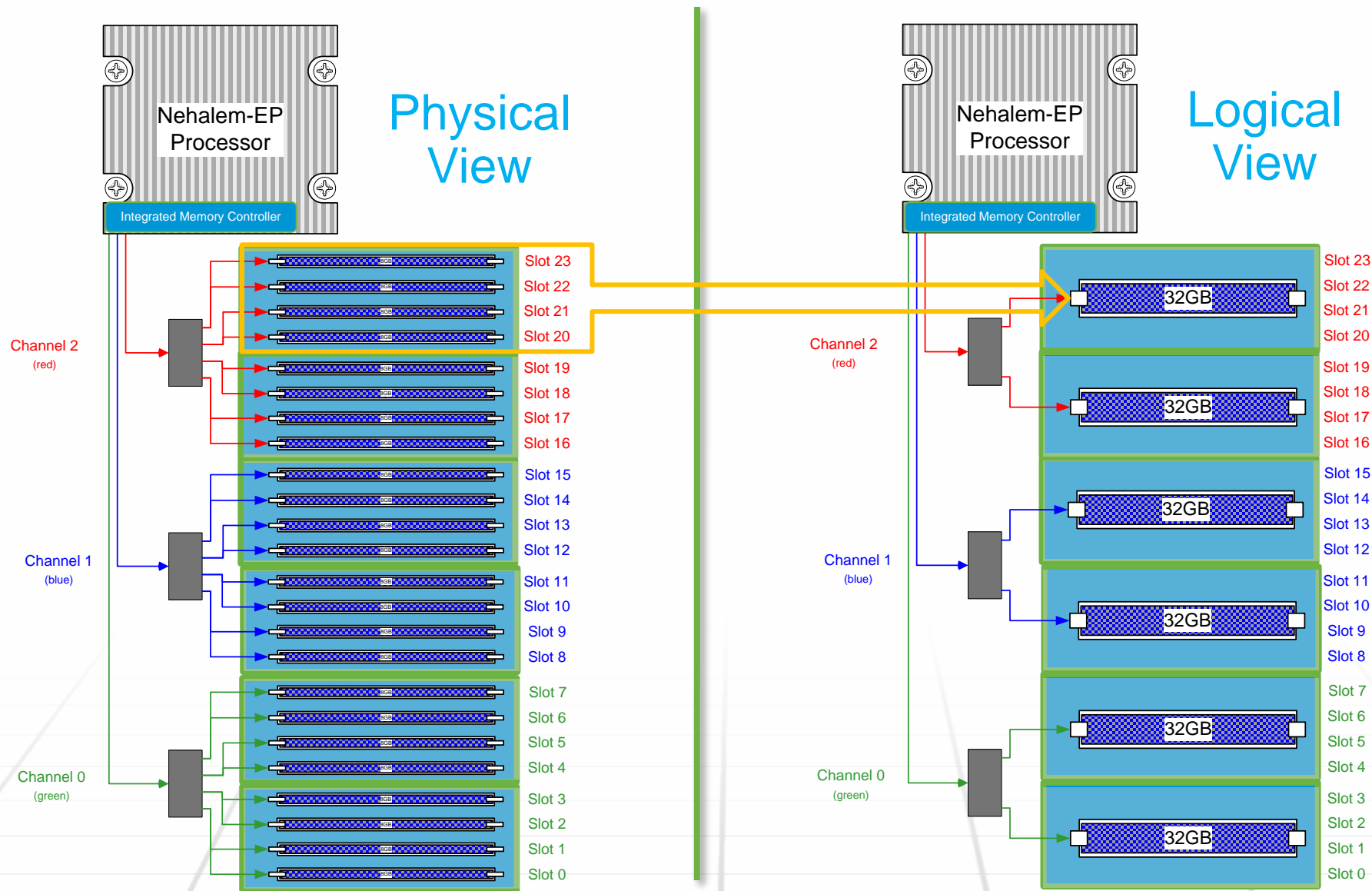


§ Nehalem Memory Architecture

- 3 Channels
- 3 Banks per Channel
- All Channel Banks should be populated equally for optimum performance. Populating Channel Banks differently is possible, however, results in unbalanced memory performance.
- Different Memory bus speeds dependant on how many DIMMs are populated.
 - 1333MHz
 - 1066MHz
 - 800MHz



Expanded Memory Architecture





Cisco
Networkers 2011
May 19, Toronto, Canada

New: Cisco UCS C260 M2

Bringing Cisco Extended Memory Technology to Mission Critical Class Systems

Knowledge
Is Power.
Learn. Share. Collaborate.



Ideal for local OLTP and Data Warehouse applications:

- Designed for core and memory-intensive apps requiring massive local storage and I/O scaling
- Greater savings on per-socket/core application and hypervisor licensing
- Silicon and system-level RAS features for mission-critical applications
- Industry unique: double the memory of any other server in this class

Compute:

- 2S Intel Westmere EX

Memory:

- 64 DIMM Slots
- 1TB of memory using 16GB DIMMs

Local Storage:

- 16 SSD or HDD
- Up to 9.6 TB

I/O:

- 6 x PCIe
- 2 x 10GbE SFP+ LOMs,
4 x 1GbE LOMs



UCSM C-Series Integration

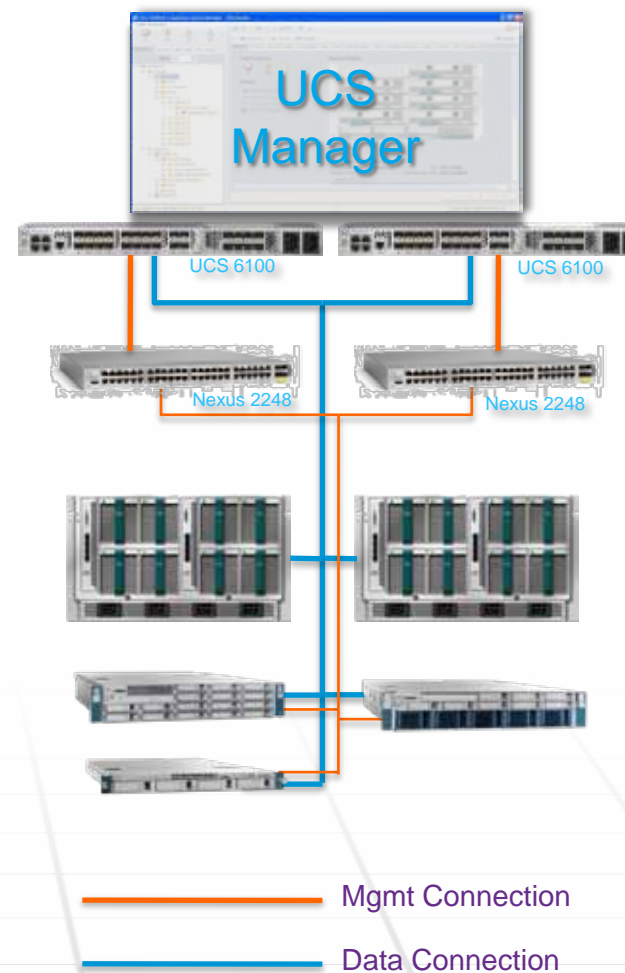


Customer benefits

- § Unified Management across entire UCS portfolio
- § Advanced capabilities extended to rack servers

Feature details

- C-Series servers connectivity
 - Management connectivity through FEX to FI
 - Data connectivity directly to Fabric Interconnect
- Stateless computing
 - Service profiles extended to C-series
 - Migration among compatible B & C series servers
- All UCSM management services
 - Automated discovery
 - Fault and monitoring
 - Firmware updates



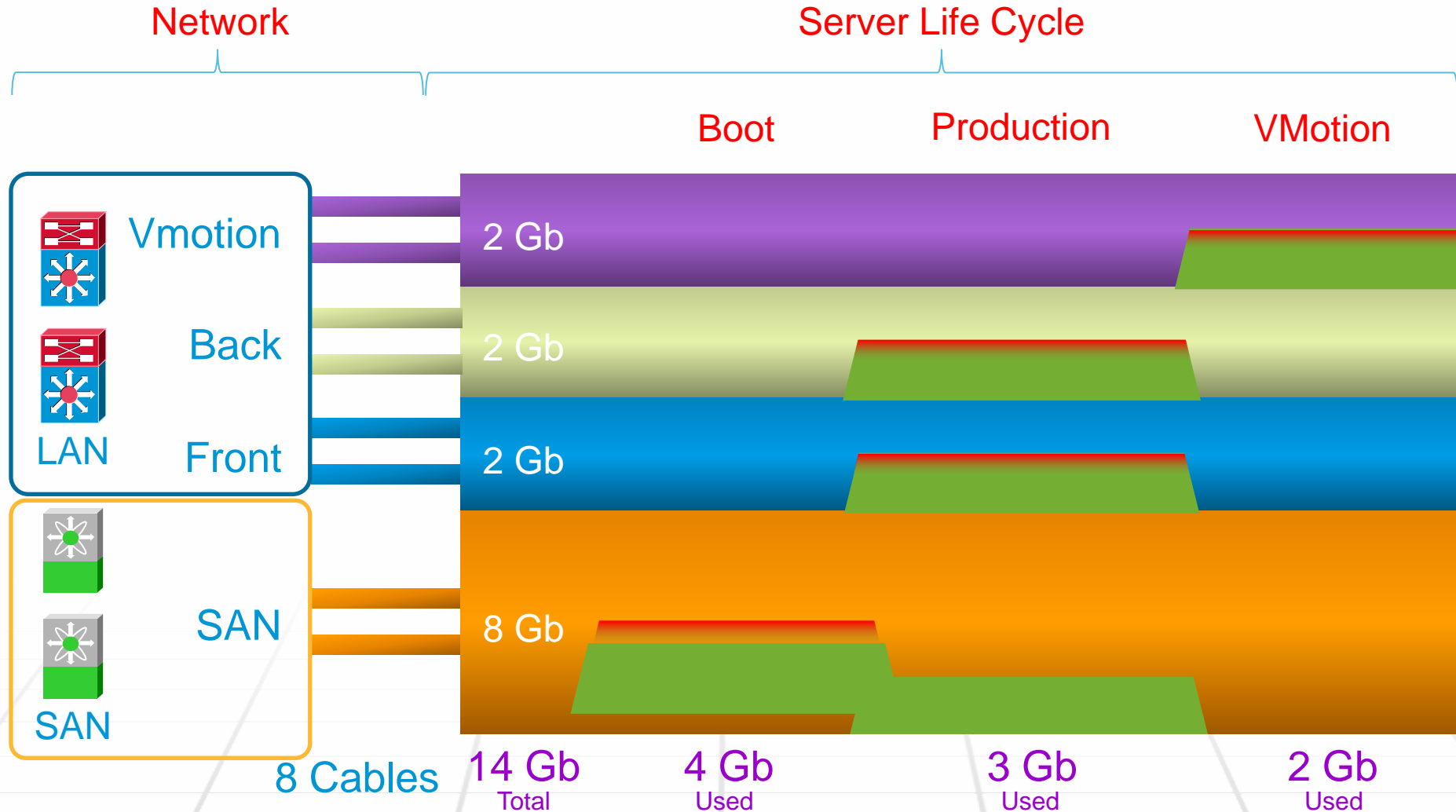


Cisco
Networkers 2011
May 19, Toronto, Canada

Legacy Fabric

Underutilized Resources, Stranded Bandwidth

Knowledge
Is Power.
Learn. Share. Collaborate.



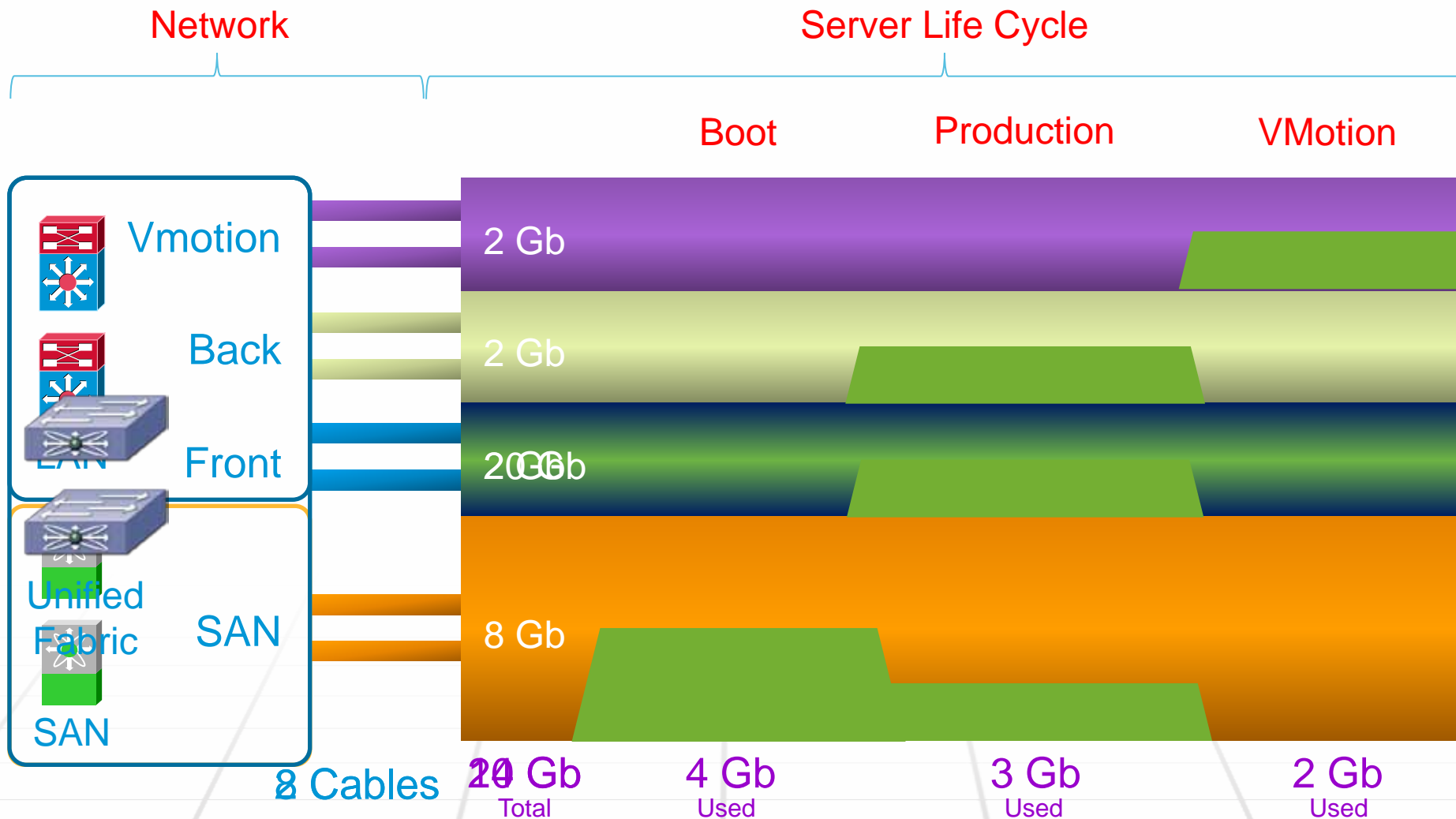


Cisco
 Networkers 2011
 May 19, Toronto, Canada

Unified Fabric

Lower cost: Half the switches, 1/4 the adapters
 Higher Capacity, Performance & Flexibility

Knowledge
 Is Power.
 Learn. Share. Collaborate.



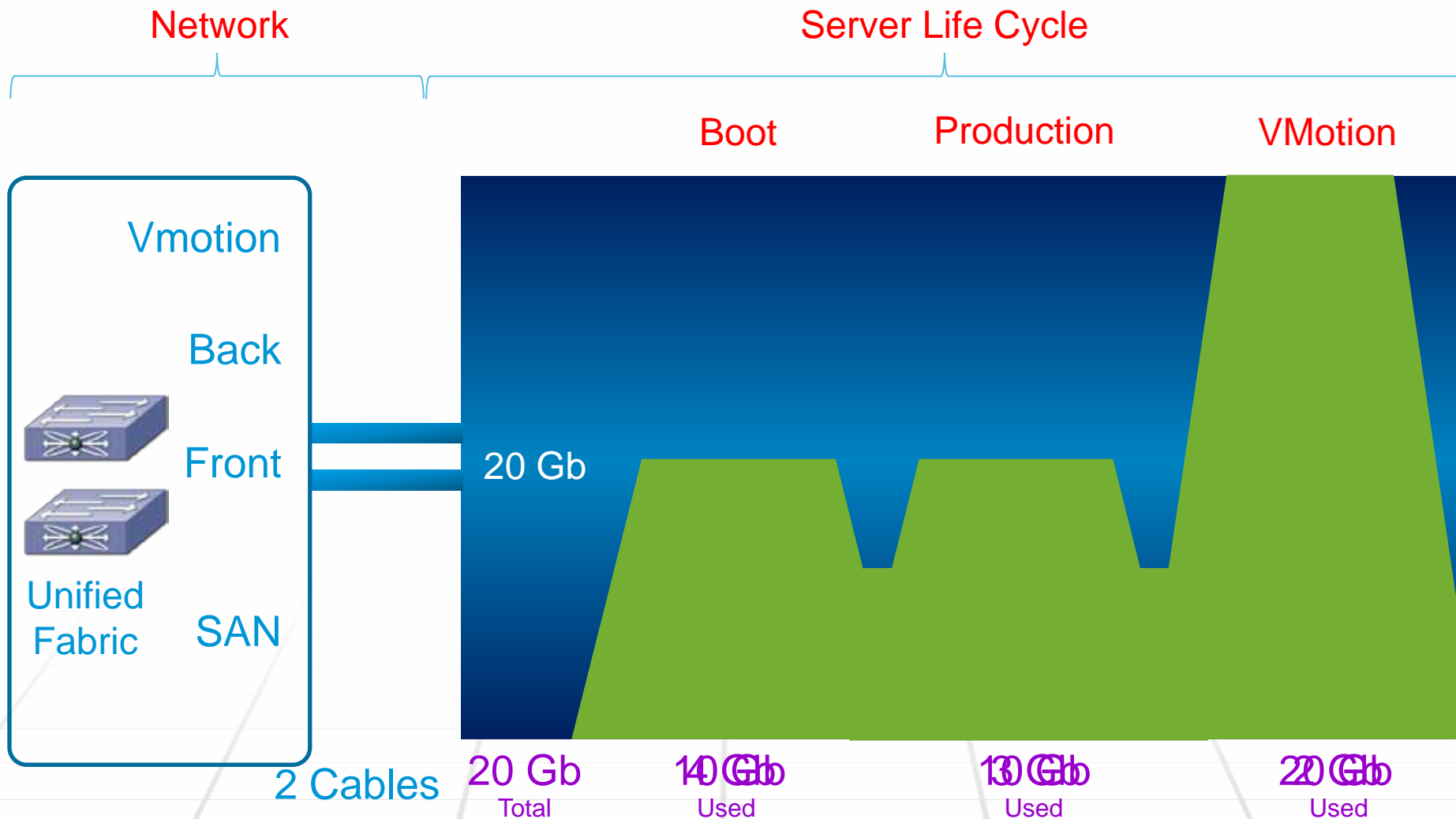


Cisco
 Networkers 2011
 May 19, Toronto, Canada

Unified Fabric

Lower cost: Half the switches, 1/4 the adapters
 Higher Capacity, Performance & Flexibility

Knowledge
 Is Power.
 Learn. Share. Collaborate.



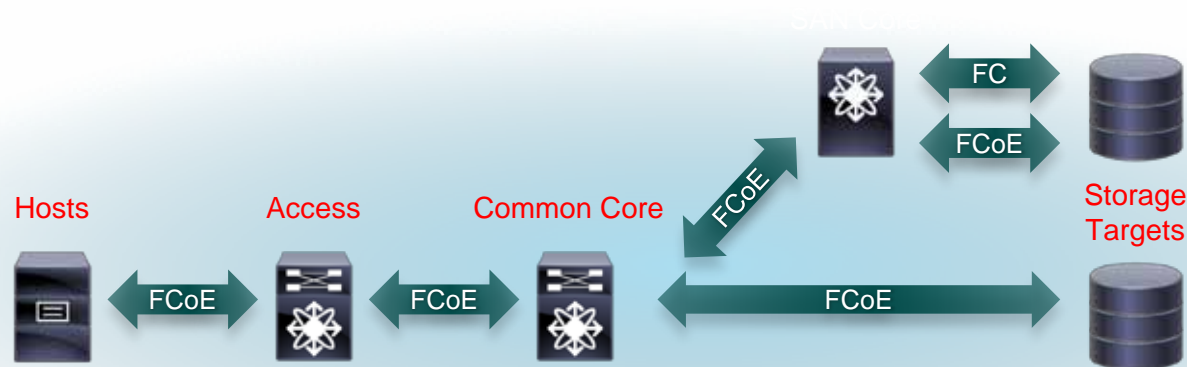


Cisco
Networkers 2011
May 19, Toronto, Canada

Extending Convergence Beyond Access Layer

Industry's First Director-Class Multi-hop FCoE

Knowledge
Is Power.
Learn. Share. Collaborate.



**Nexus 7K
and MDS 9500:**
High-Performance,
Resilient Switches
for LAN/SAN

Features

- Nexus 7000 FCoE:: Industry's highest performance Director-Class SAN platform
- MDS 9500 FCoE support: Preserves investments in Fibre Channel SANs
- Multi-hop FCoE support: Spans Nexus 5000, Nexus 7000, and MDS 9500.



Benefits

- Wire once flexibility
- Up to 45% access layer CapEx savings*
- 492% ROI for converged networks*
- Seamlessly integrate converged networks with existing MDS FC SANs

Delivering Highly Scalable End-to-End Convergence

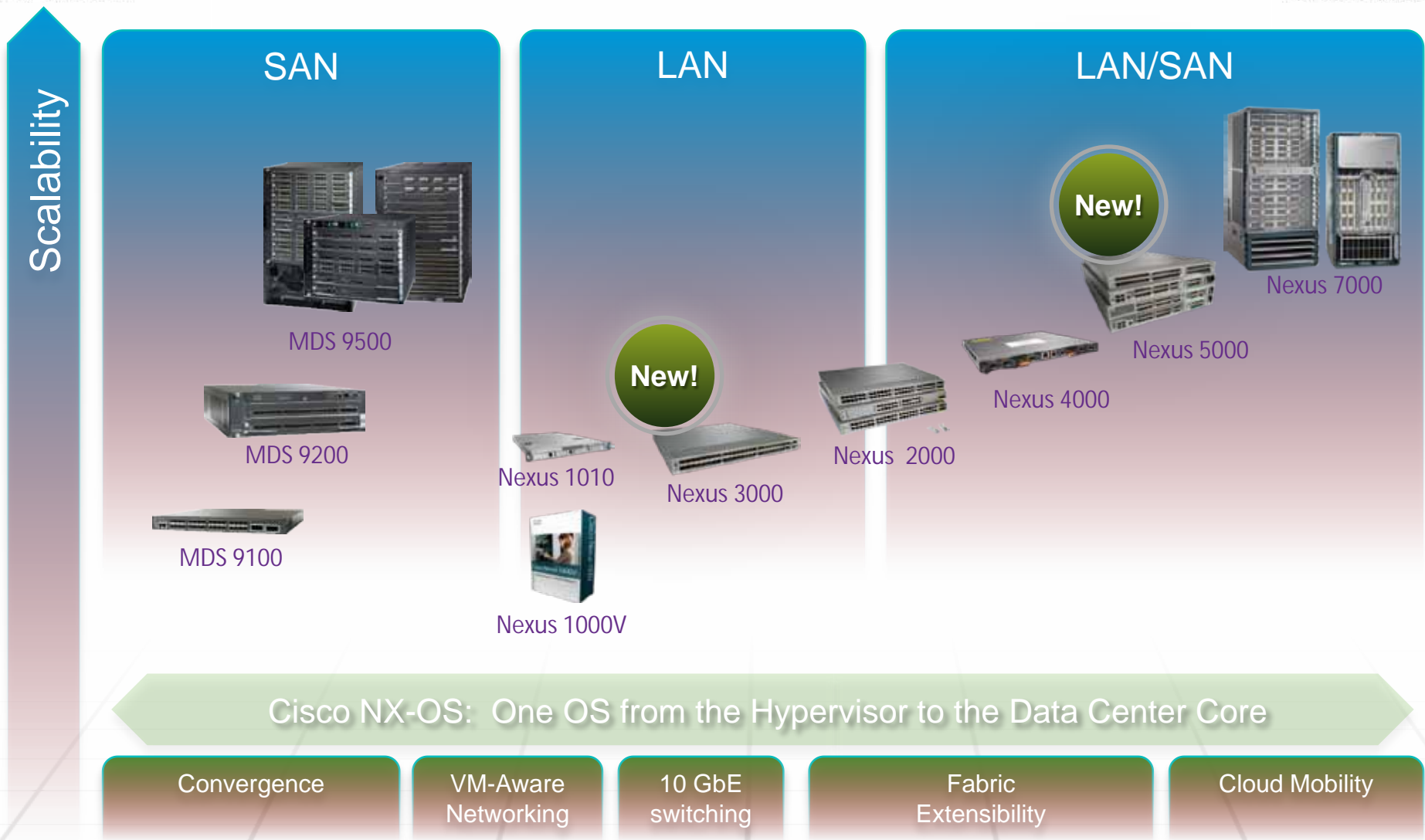
* Based on IDC's UF Beyond the Access Layer White Paper



Cisco
 Networkers 2011
 May 19, Toronto, Canada

Cisco Unified Fabric Switching Portfolio

Knowledge
 Is Power.
Learn. Share. Collaborate.





New Nexus 3000 and 5500 Switches



Available
Q2CY11

Nexus 3000:

Purpose-build for High-Frequency Trading

- High density 1RU 10GbE/1GbE/
(40 GbE Ready)



- Ultra-low latency (~1usec port to port)
- L2/L3 – Unicast & Multicast
- Wire-rate, non-blocking

Shipping
now!

Nexus 5548UP and 5596UP:

Unified Ports and L3 Option

- High density 1RU/2RU ToR Switches
- All ports 10GE/1GE/FCoE/8G FC



- Increased FEX scale (upto 24)
- IEEE 802.1Qbh support
- Cisco FabricPath (coming soon)

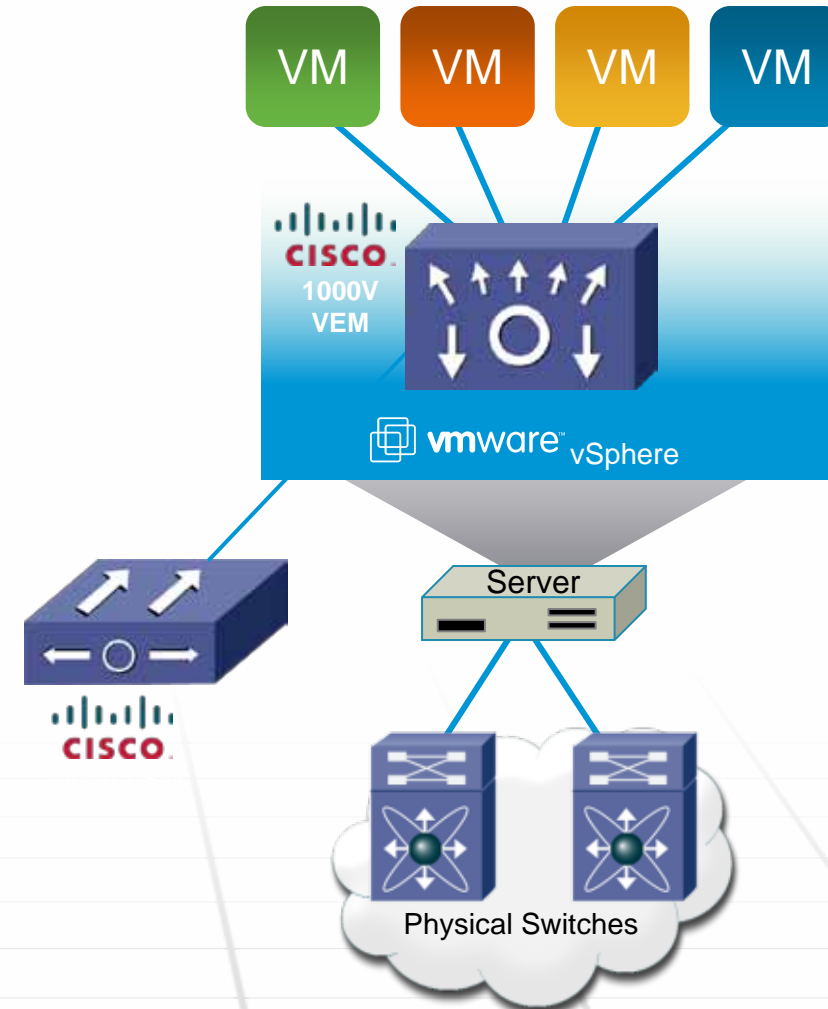
Proven NX-OS with Full-Featured L3
Wire-Rate High Density and Low Latency



Cisco Nexus 1000V



- Industry's most advanced software switch for VMware vSphere
- Built on Cisco NX-OS
- Compatible with all switches
- Compatible with all servers on the VMware Hardware Compatibility List
- Winner of VMWorld Best in Show 2008 and Cisco Most Innovative Product of 2009





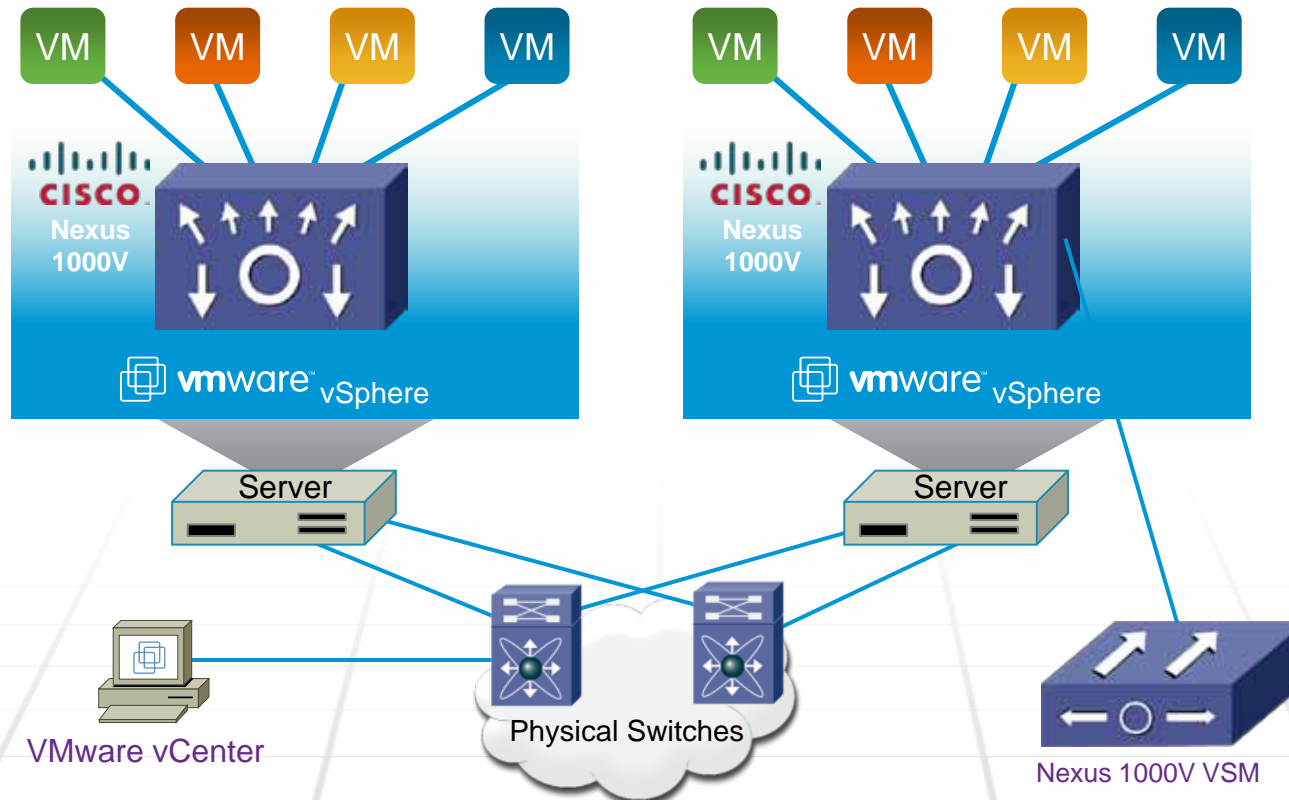
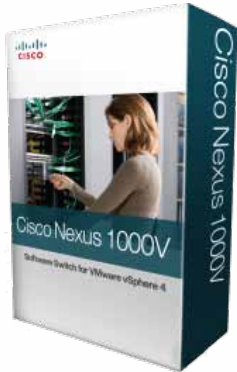
Cisco Nexus 1000V



Policy-Based
VM Connectivity

Mobility of Network and
Security Properties

Non-Disruptive
Operational Model

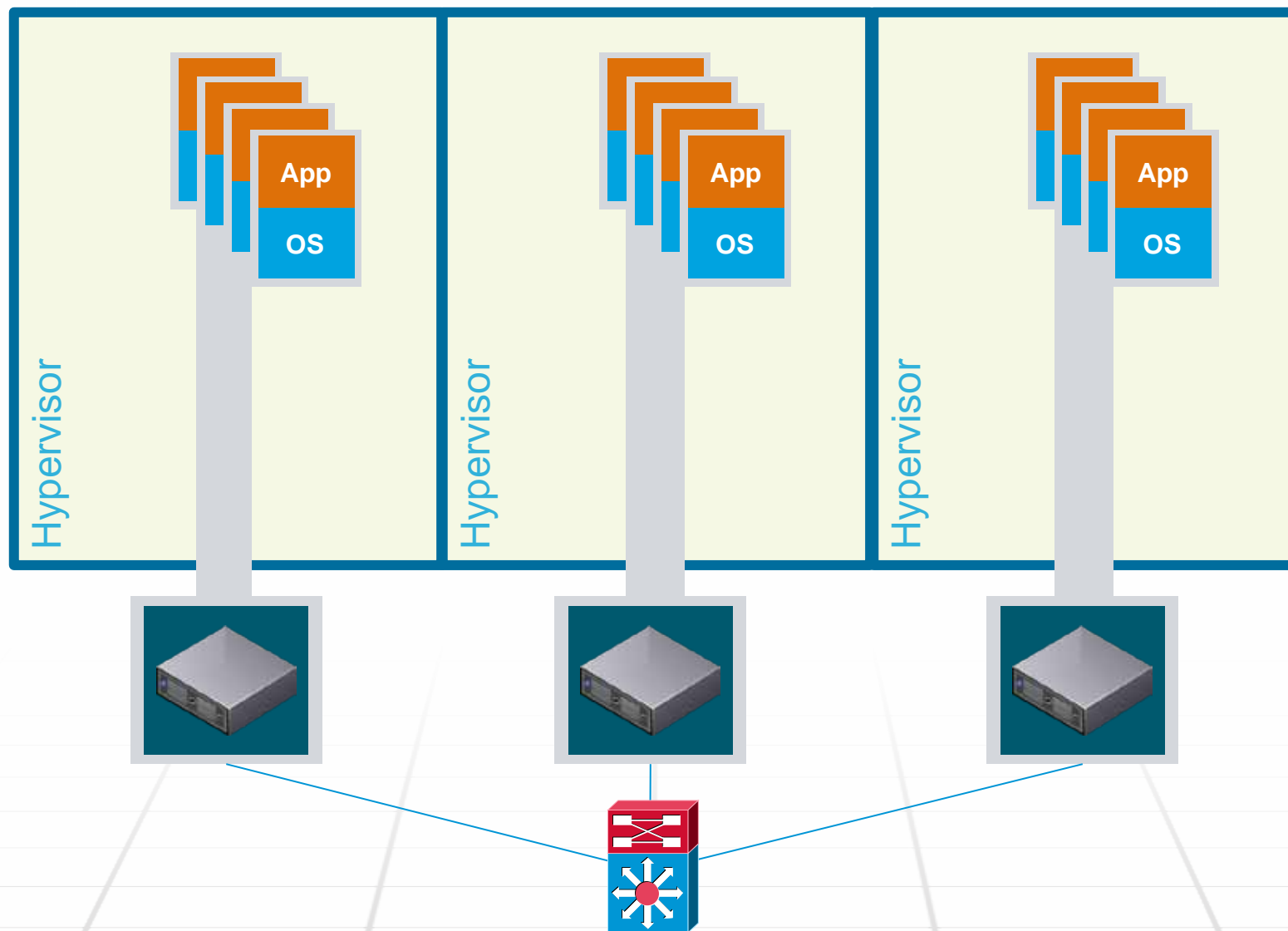




Cisco
Networkers 2011
May 19, Toronto, Canada

Phase 1 Virtualization Consolidated Environment

Knowledge
Is Power.
Learn. Share. Collaborate.



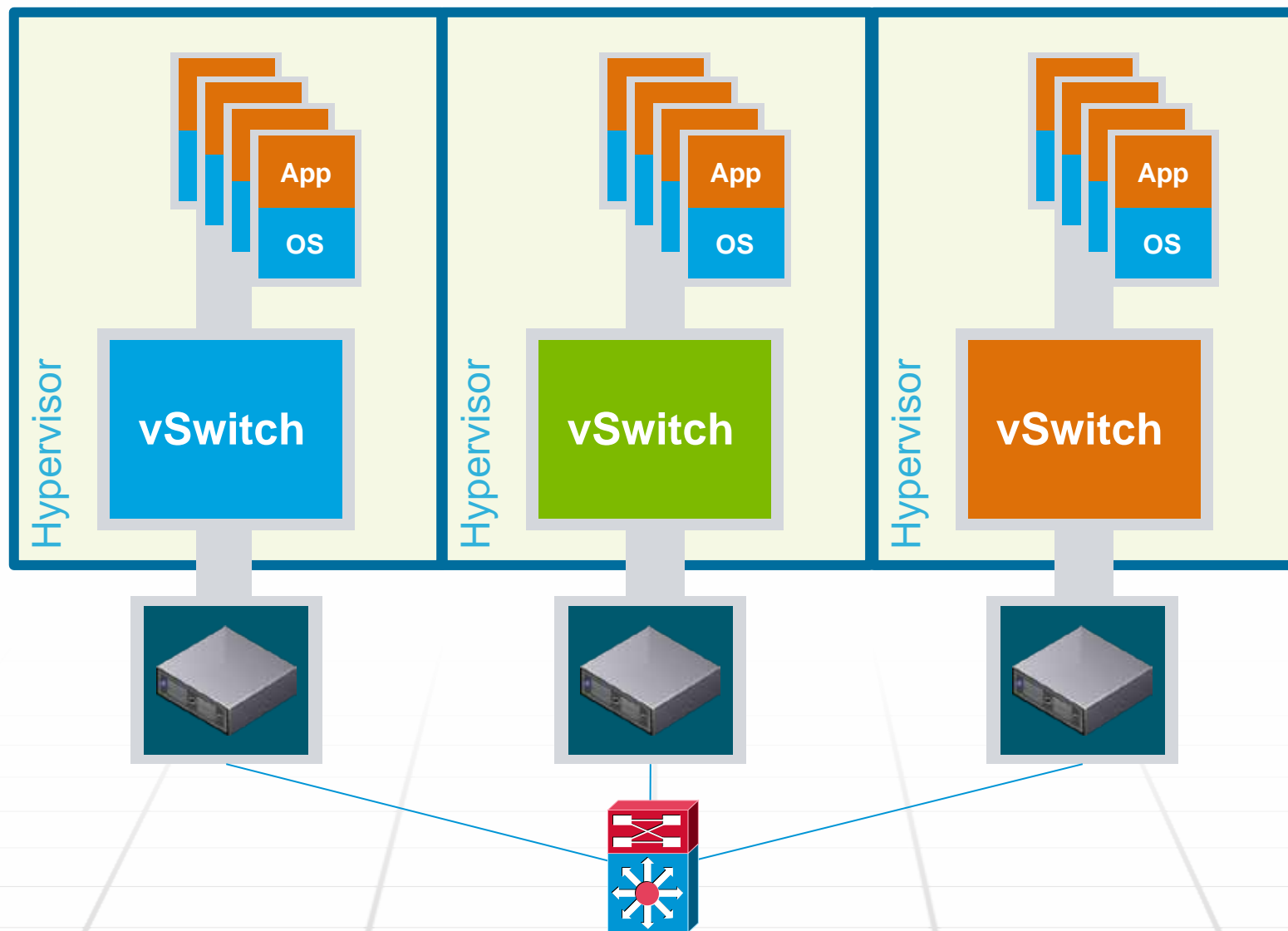


Cisco
Networkers 2011
May 19, Toronto, Canada

Phase 1 Virtualization

More Virtual Infrastructure Needed

Knowledge
Is Power.
Learn. Share. Collaborate.



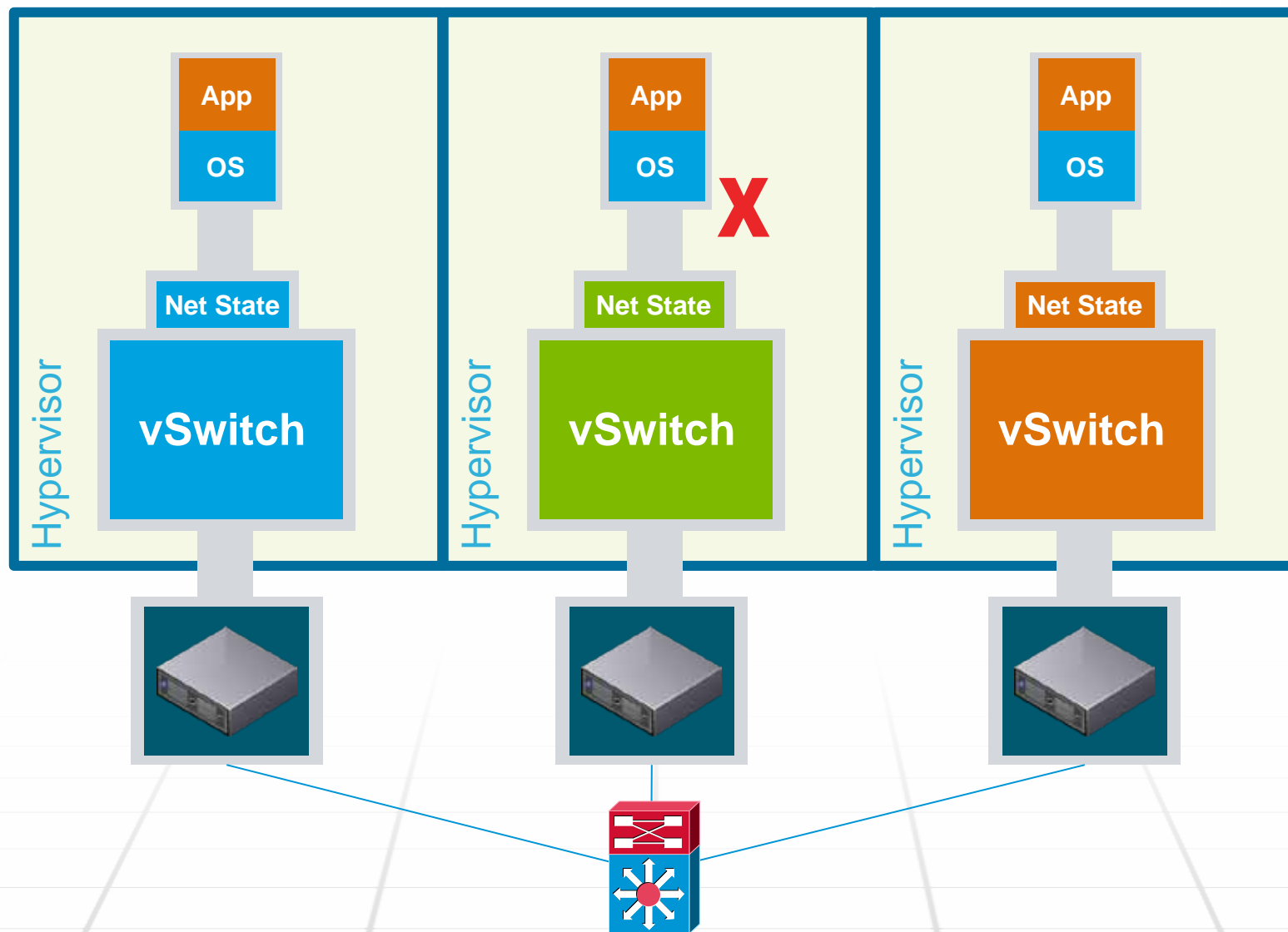


Cisco
Networkers 2011
May 19, Toronto, Canada

Phase 2 Virtualization: Mobility

Network Policies Tied to vSwitch – Not Mobile

Knowledge
Is Power.
Learn. Share. Collaborate.



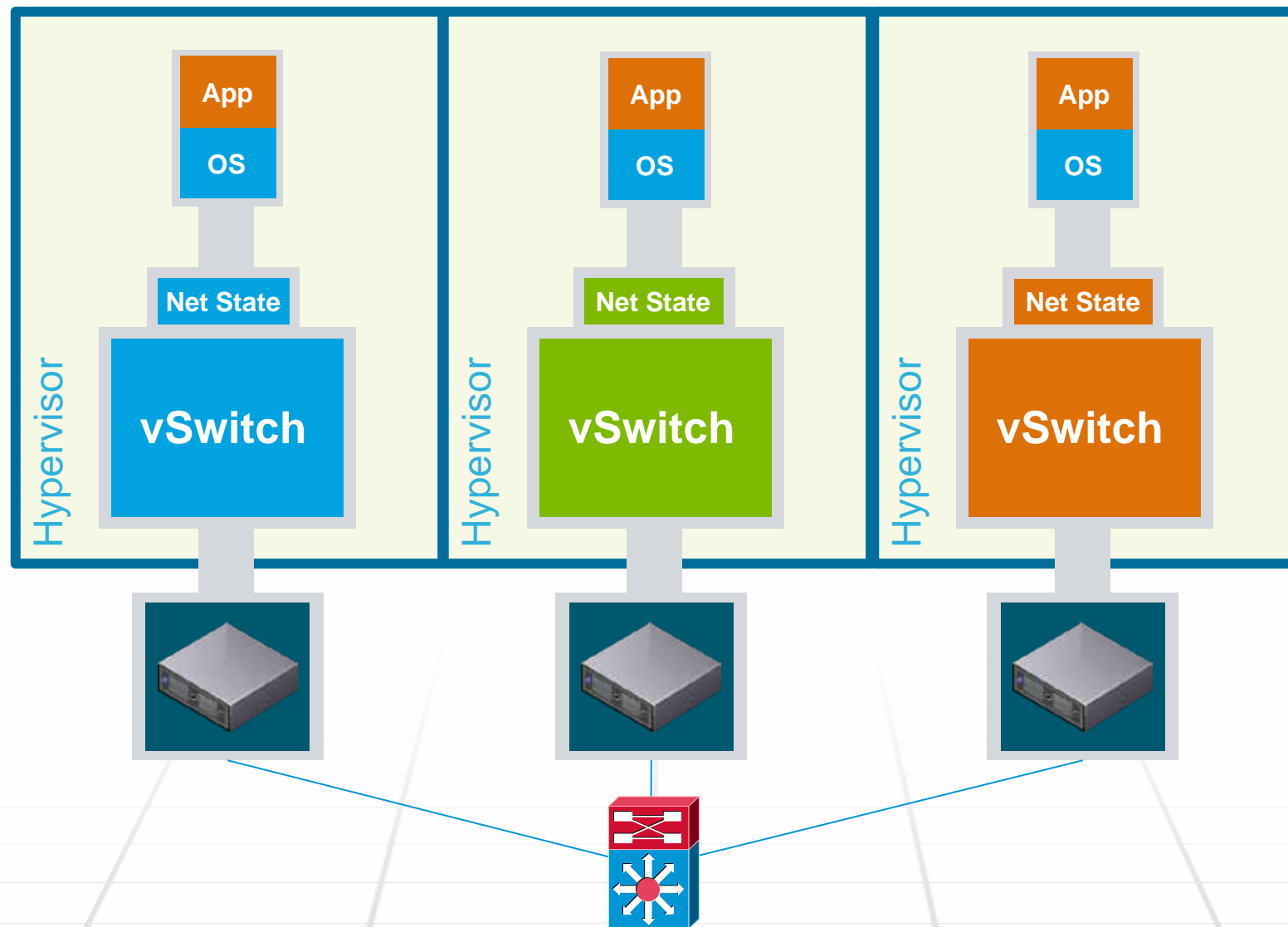


Cisco
Networkers 2011
May 19, Toronto, Canada

Cisco VN-Link

Network Policies Tied to Virtual Machine

Knowledge
Is Power.
Learn. Share. Collaborate.



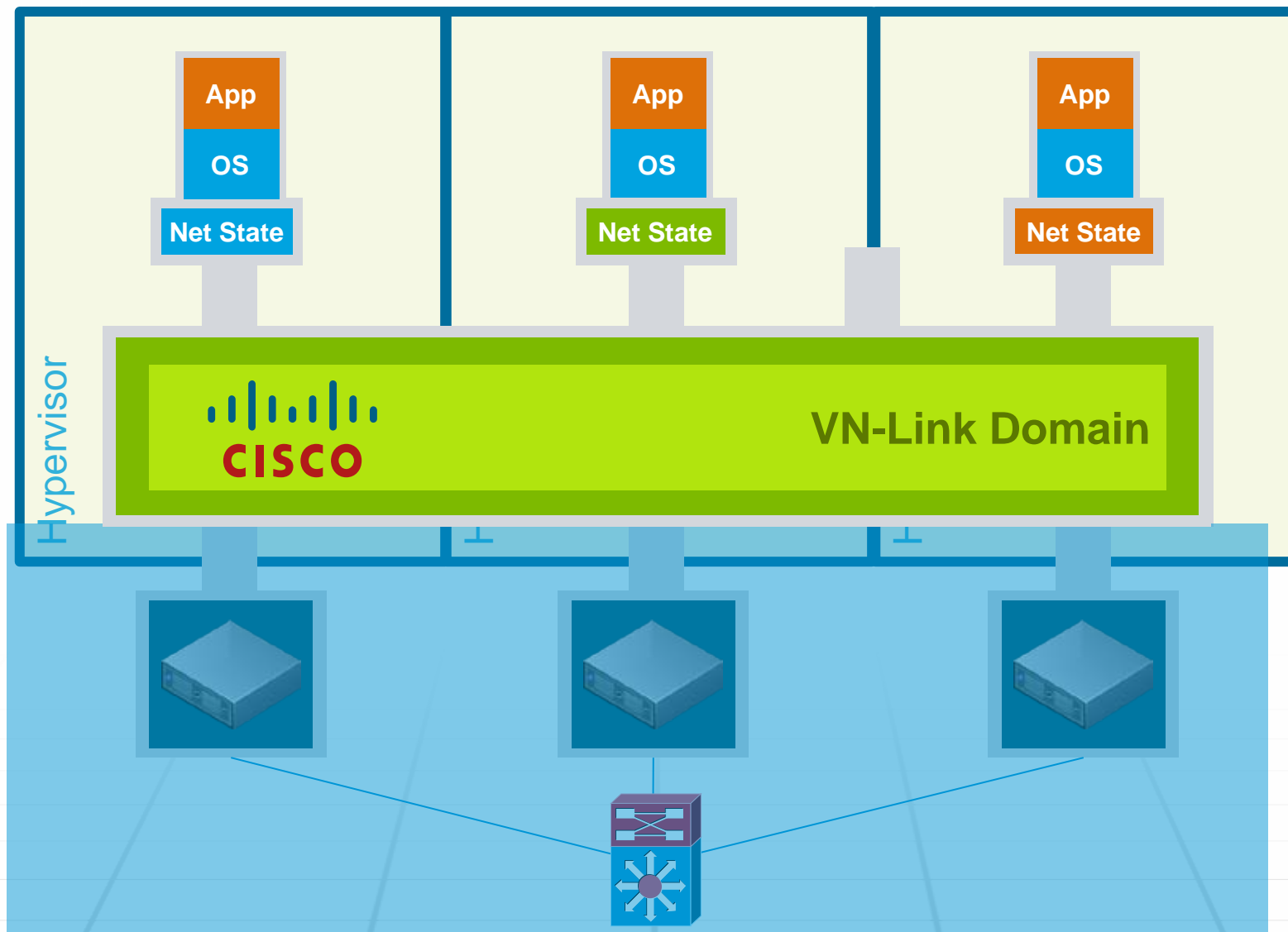


Cisco
Networkers 2011
May 19, Toronto, Canada

Cisco VN-Link

Network Policies Tied to Virtual Machine

Knowledge
Is Power.
Learn. Share. Collaborate.





Adapter FEX and VM-FEX

Expanding Cisco Fabric Extender Offerings



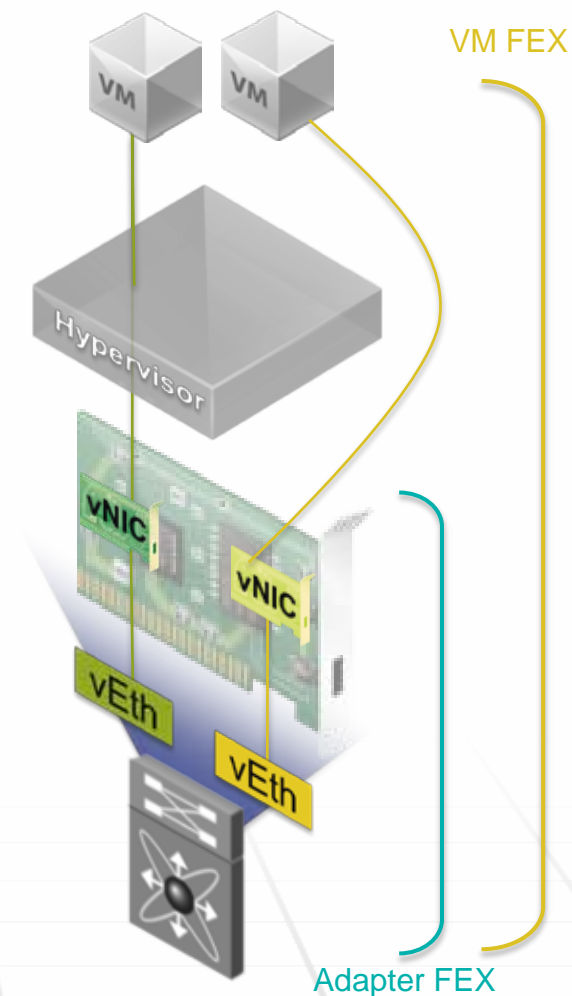
Features:

- Adapter FEX split a physical NIC into multiple logical NICs
- VM-FEX extends Adapter FEX technology to virtual machine

Benefits:

- Single point of management
- Increased 10 G bandwidth utilization – less power, cabling adaptors with adapter FEX
- Dynamic network & security policy mobility during VM migration with VM-FEX

IEEE 802.1Qbh
Ecosystem of
multiple NIC
vendors



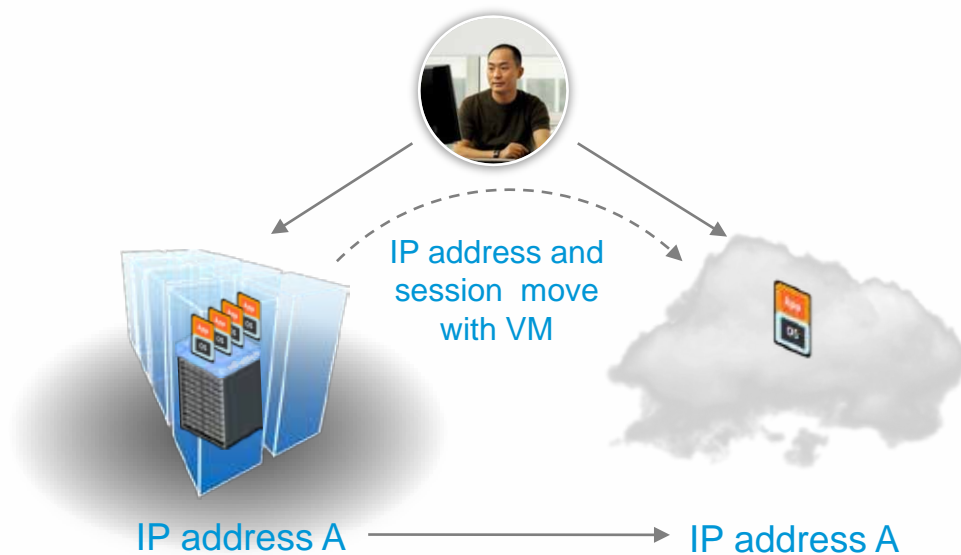


Cisco
Networkers 2011
May 19, Toronto, Canada

Location ID/Separation Protocol (LISP)

Enabling Global Workload Mobility

Knowledge
Is Power.
Learn. Share. Collaborate.



LISP decouples host IP identity from host location enabling global IP address portability

Available
Q2 CY11

Feature:

- IP address Portability
- On-Demand Route lookup
- IPv4/ IPv6 encapsulation

Benefits:

- Seamless Global Workload Mobility across cloud
- Network scalability, secure Multi-tenancy
- Simplified IPv6 transition

Cisco NX-OS: Delivering Location Independence with OTV and LISP



The Cisco Advantage

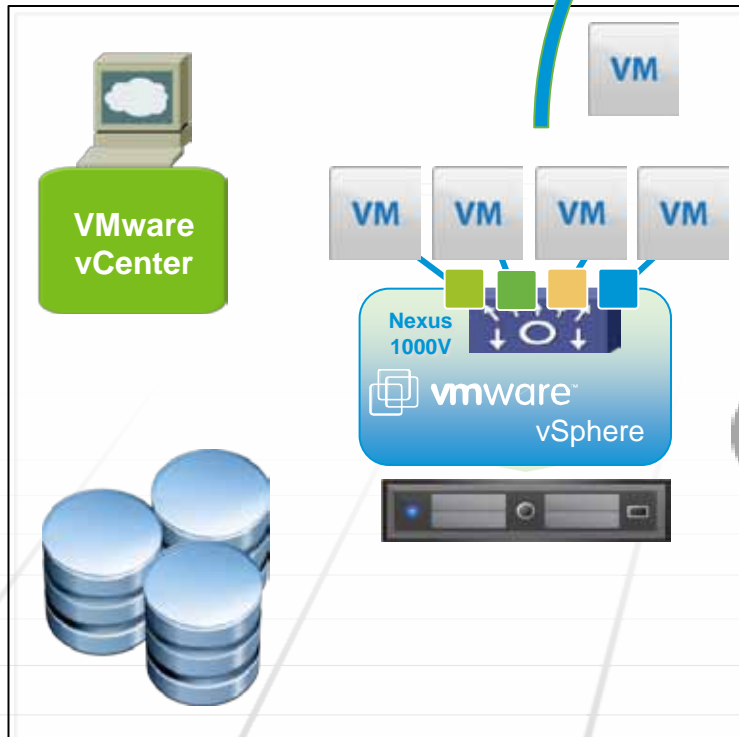
Workload Mobility between data centers



Layer-2 extension using OTV,

- § Work Load migration
- § Disaster recovery

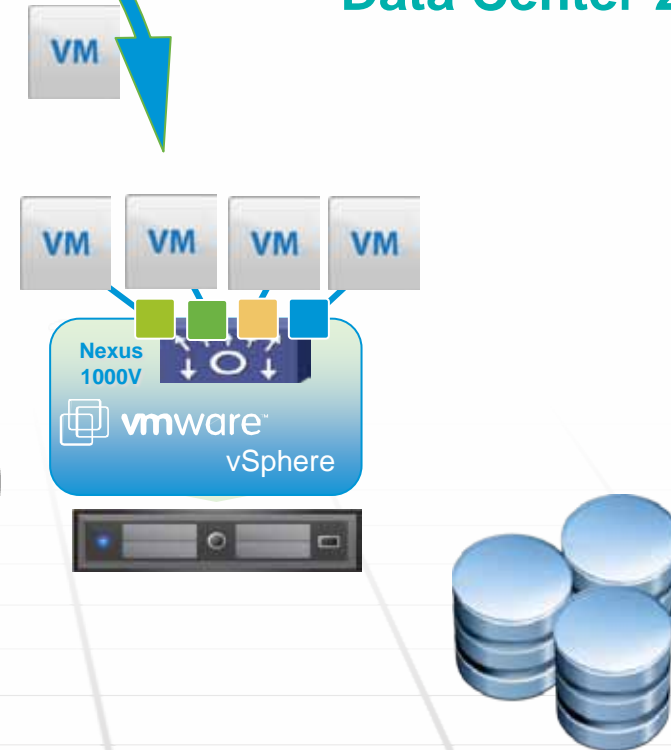
Data Center 1



Data Center
Interconnect



Data Center 2



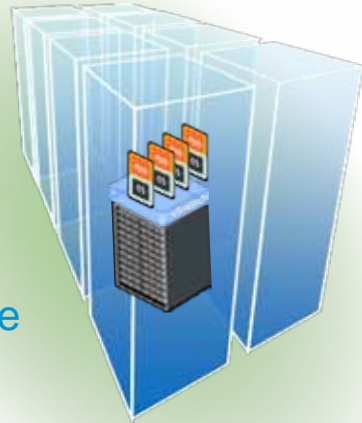


Bringing it all together: Any Application. Any Location. Any Scale.



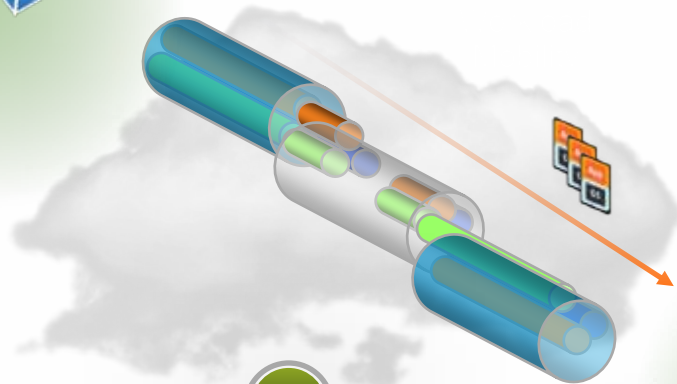
1

Fabric
 Compute,
 Convergence
 and Scale



- UCS
- MIP Link
- FabricPath/TRILL, VPC
- QoS Profiles
- OTV LAN Extensions
- VM-FEX
- FCIP, I/O Acceleration
- VDC, VRFS
- FCoE, Unified Ports

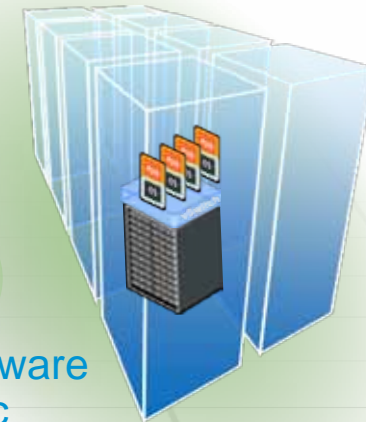
2



New York

3

VM-Aware
 Fabric





Cisco's Architectural Differentiators



- § **Unified Fabric**
By using FCoE and VN-Link to dramatically reduce network adapters, switches, and cabling, uncompromised I/O performance and flexibility are utilized to provide a platform that can truly meet the connectivity demands of virtualizing any compute environment .
- § **Leading Industry Performance, Scale and Mobility**
UCS provides the latest in technologies enabling customers to realize the full benefits of virtualization regardless of location, application or scale.
- § **Feature-rich Service Profiles**
UCS Manager implements role and policy-based service profiles and templates that provide substantially more features for managing server identities and controlling server deployment.
- § **Enterprise-class Management Architecture**
UCS management architecture provides an enterprise-class foundation for system management
- § **Virtualization Optimizations**
Extended memory, Virtual Interface Cards and network integration with hypervisors are three major virtualization optimizations offered with UCS.





Cisco
Networkers 2011

May 19, Toronto, Canada

Knowledge
Is Power.
Learn. Share. Collaborate.



Q & A



Cisco
Networkers 2011
May 19, Toronto, Canada

Knowledge
Is Power.
Learn. Share. Collaborate.



For conference presentations visit:
www.networkerssolutionsforum.com

Please take a moment to complete the
Networkers Conference Event Evaluation Form

Thank you.

