Cisco Unified Data Center

Connect Everywhere: Data Center

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Cisco's Holistic Approach: Unified Data Center

The Platform for Delivering IT as a Service

UNIFIED
COMPUTING

Modular, Stateless
Computing Elements

UNIFIED
FABRIC

Highly Scalable,
Secure Network Fabric

UNIFIED
MANAGEMENT

Automated
Resource Management
(Physical and Virtual)

OPEN | RESILIENT | SECURE | SCALABLE

Cisco Unified Fabric

Consistent Networking Across Physical, Virtual, and Cloud-Based Networks

Cisco Unified Fabric

Delivering Architectural Flexibility for All Data Centers

SCALE

Resilient, High Performance

System Scale

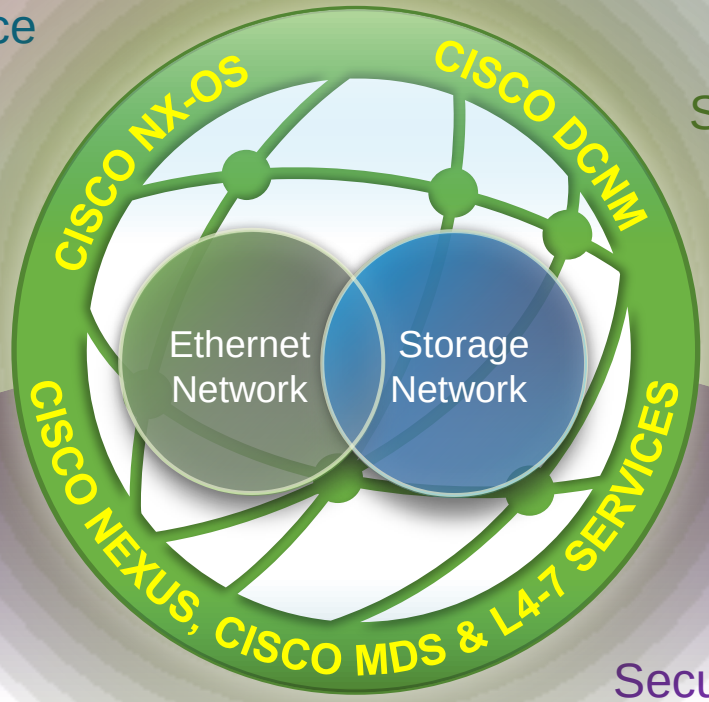
Geographic Span

CONVERGENCE

Wire Once for LAN/SAN

Single Point of Management for LAN/SAN

Device Consolidation



INTELLIGENCE

Seamless VM Networking

Workload Mobility

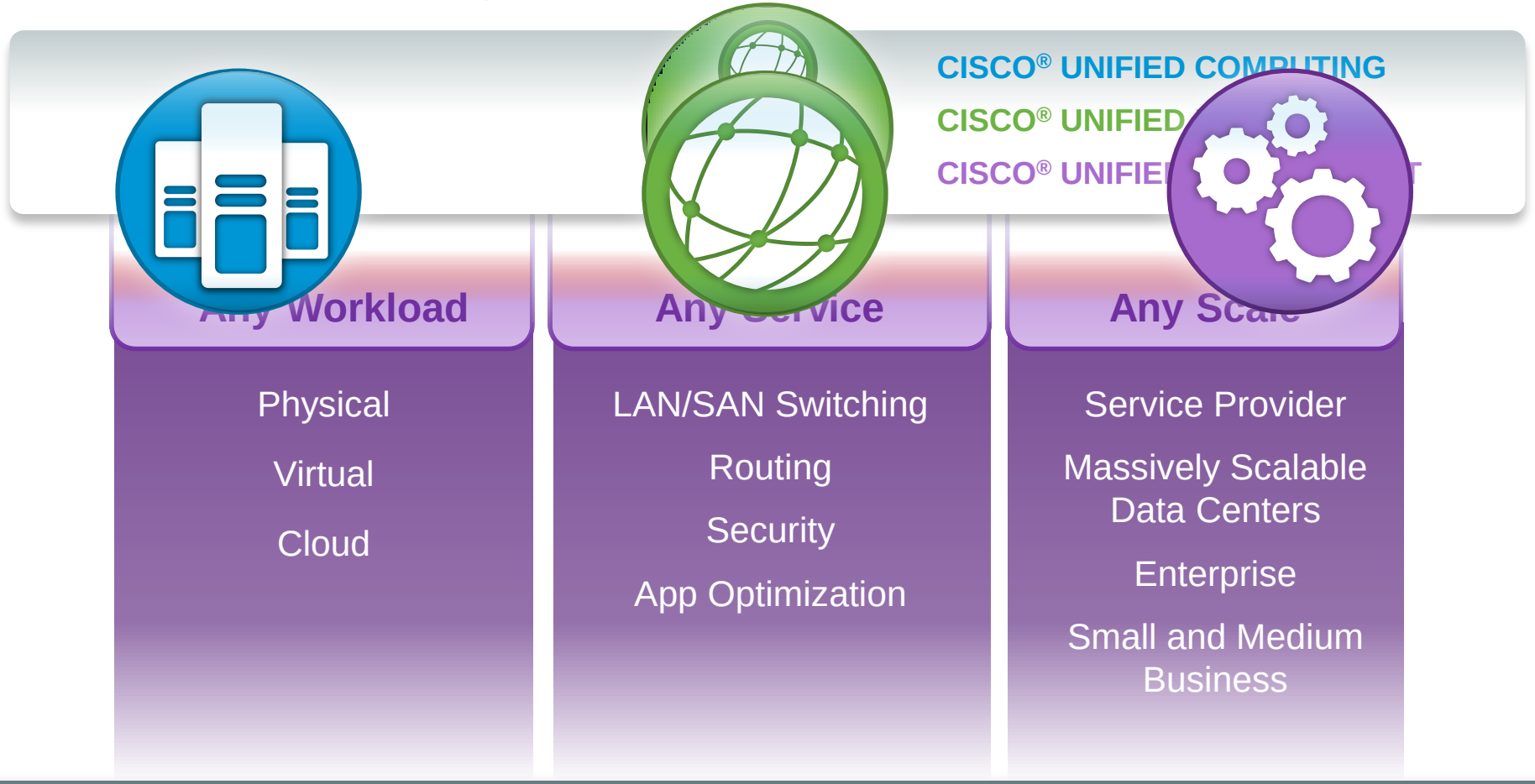
Secure Separation/Multitenancy

Integrated Application Delivery

When the Network Is UNIFIED | You Get **CONSISTENCY** Across **Physical, Virtual,** and **Cloud**

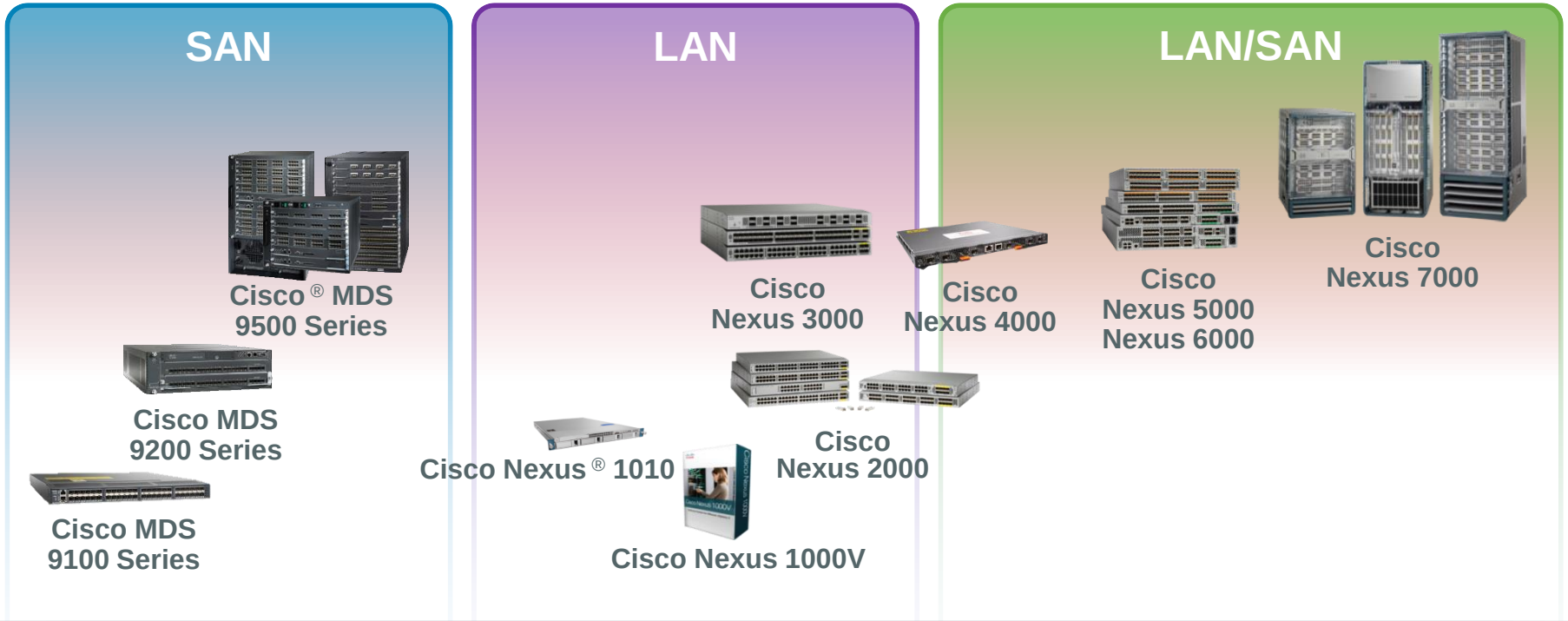
Cisco Unified Fabric Vision

Network is Critical in Delivering IT as a Service



Raising the Bar

Cisco Unified Fabric Switching Innovations



CISCO NX-OS: From Hypervisor to Core **CISCO DCNM:** Single Pane of Management

DELIVERING TO YOUR DATA CENTER NEEDS

Resilient, High Performance, Scalable Fabric	Workload Mobility Within/ Across DCs	Secure Separation/ Multitenancy	LAN+SAN Convergence	Operational Efficiency/ Consistency—P-V-C

Broadest Integrated Services Portfolio

Cisco Unified Fabric L4–7 Services Innovations

Application Delivery Controllers

Enhanced web application performance, availability, and server scalability

Cisco® ACE Application Control Engine Modules and Appliances

WAN Optimization

Reduced branch IT costs and enhanced application performance for the distributed enterprise

Cisco Wide Area Application Services (WAAS) Appliances and Modules

Cisco Virtual WAAS (vWAAS)

Network Analysis and Monitoring

Simplified application performance monitoring

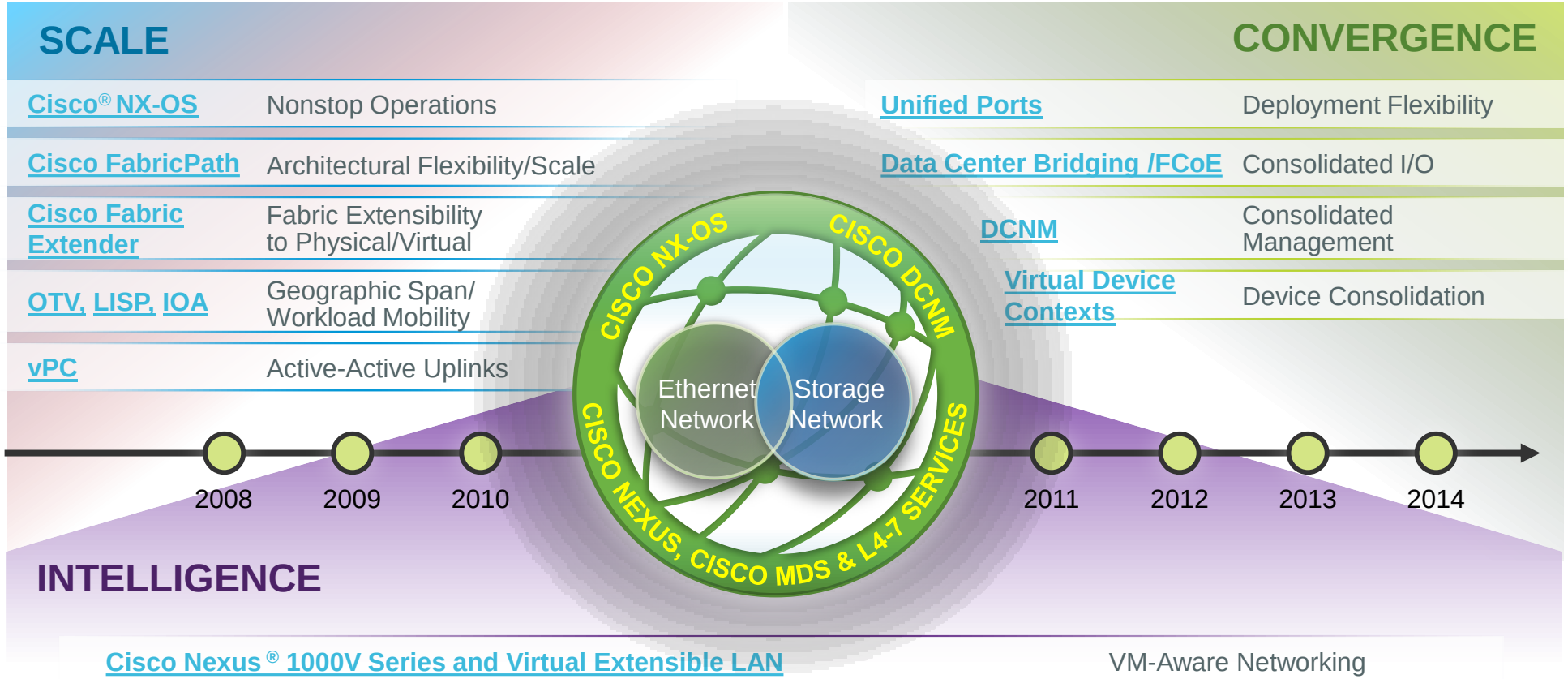
Cisco Network Analysis Module (NAM) appliances and virtual blades

MEETING YOUR DATA CENTER NEEDS

- Application Availability, Acceleration, and Security
- Data Center Agility
- User Productivity with Faster Application Performance
- Optimized Resource Utilization

Cisco Unified Fabric

Continued Architectural Innovation and Leadership



When the Network Is UNIFIED

You Get **SOLUTIONS** **WHEN** YOU **NEED** THEM

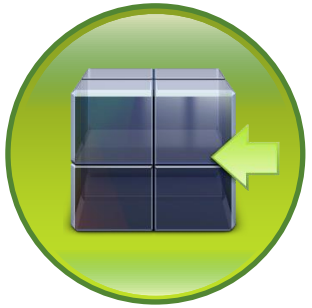
LAN/SAN Convergence

Virtualization/ Private Cloud

High-Performance Computing and High-Frequency Trading

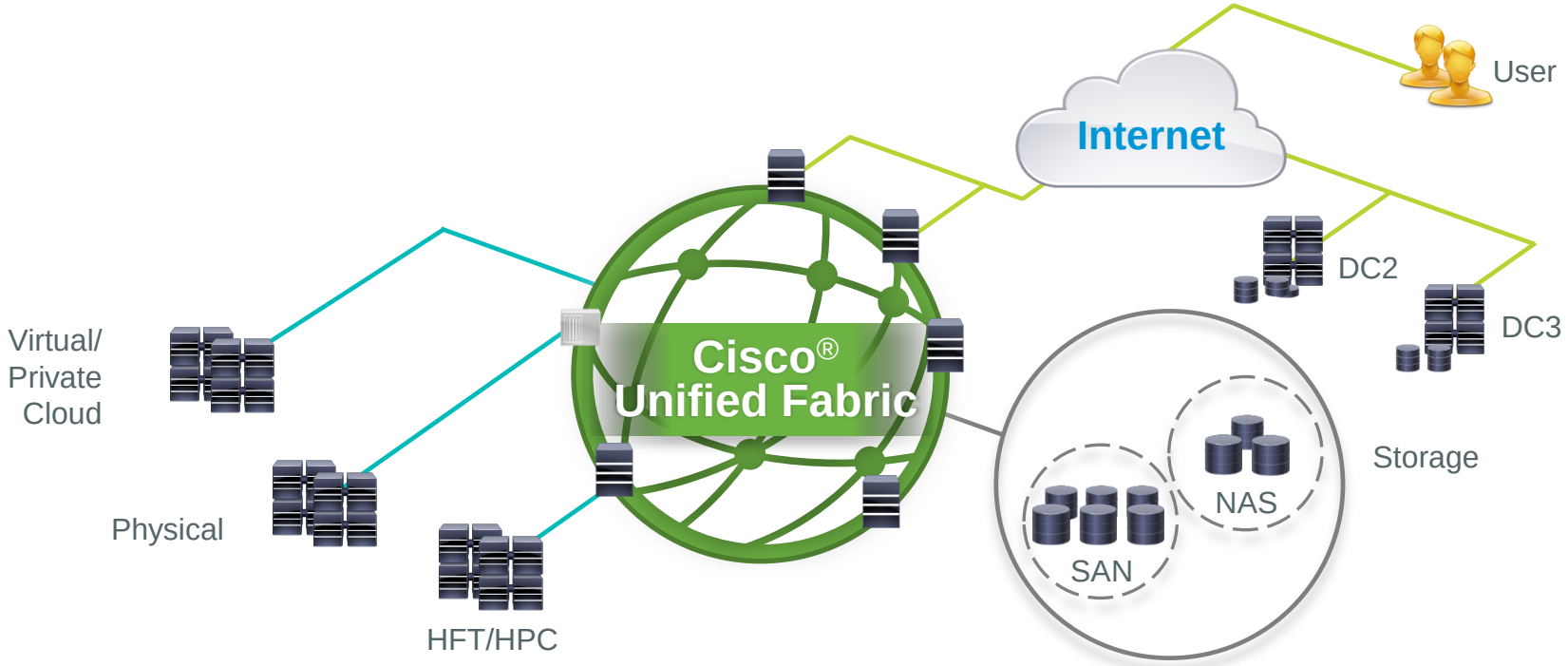
Business Continuity, Disaster Recovery

Desktop Virtualization



Data Center Consolidation

Siloed LAN and SAN Networks



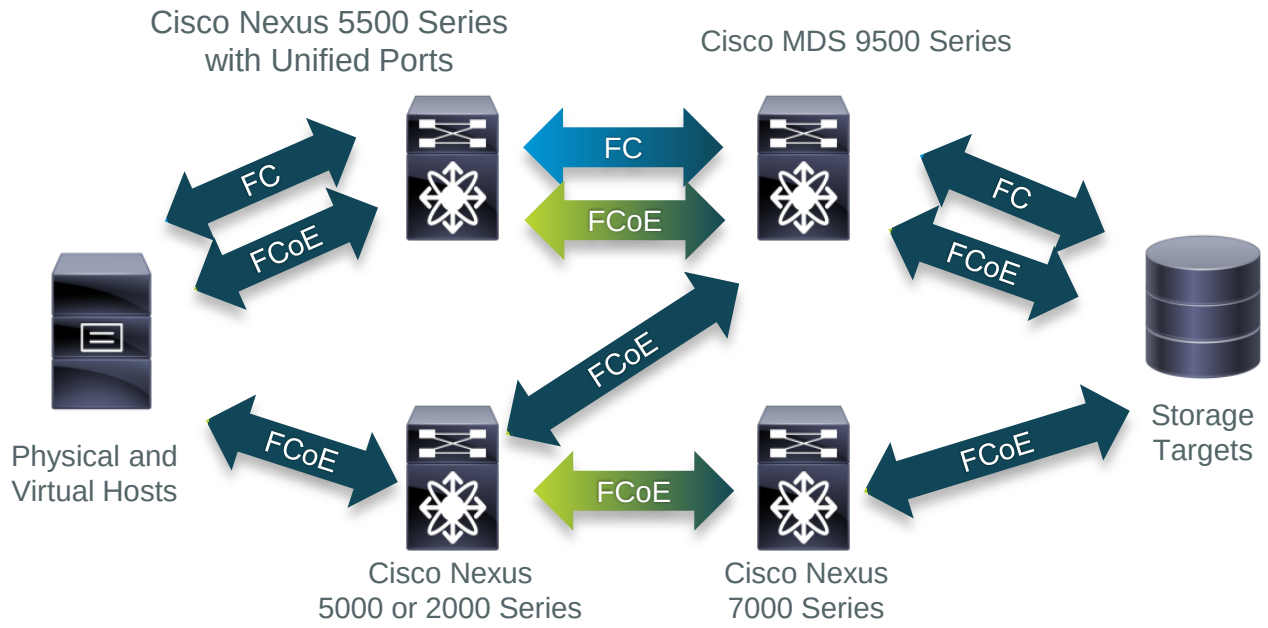
CHALLENGES

- Increased Costs—Doubled Infrastructure, Staff
- Complexity—Server Connectivity, Automation, Disaster Recovery
- Multiple Points of Failure
- Inefficient Management—Multiple Platforms/OS; Failure Diagnosis
- Fractured Automation
- Increased Workload Mobility Complexity

Cisco Unified Fabric Solution

Multiprotocol Support

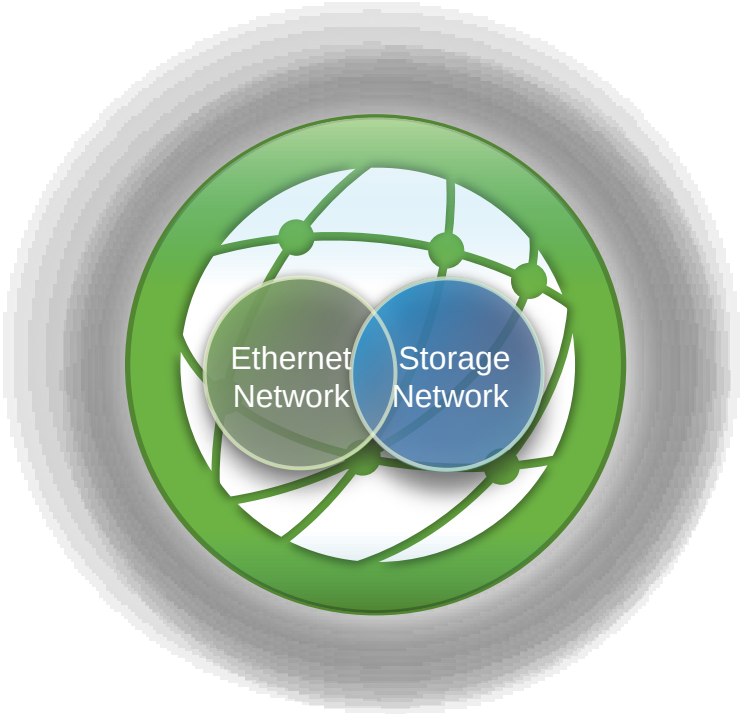
End-to-End Convergence—Cisco Nexus® 7000, Cisco® MDS 9500 Multilayer Director, Cisco Nexus 5500 Series Unified Ports



Cisco DCNM—Single pane of glass visibility across LAN and SAN

FLEXIBILITY and
INVESTMENT **PROTECTION**

The CISCO UNIFIED FABRIC | Delivers FLEXIBILITY and INVESTMENT PROTECTION



CISCO LAN/SAN CONVERGENCE

- Reduced costs, energy, footprint, and network sprawl—network, cables, OS
- Up to 45% access layer CapEx savings; 492% ROI
- Single point of management for LAN/SAN; automation
- Evolutionary—preservation of existing storage investment
- Preservation of staff expertise and structure

When the Network Is UNIFIED

You Get **SOLUTIONS** **WHEN** YOU **NEED** THEM

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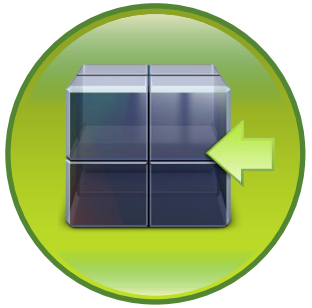
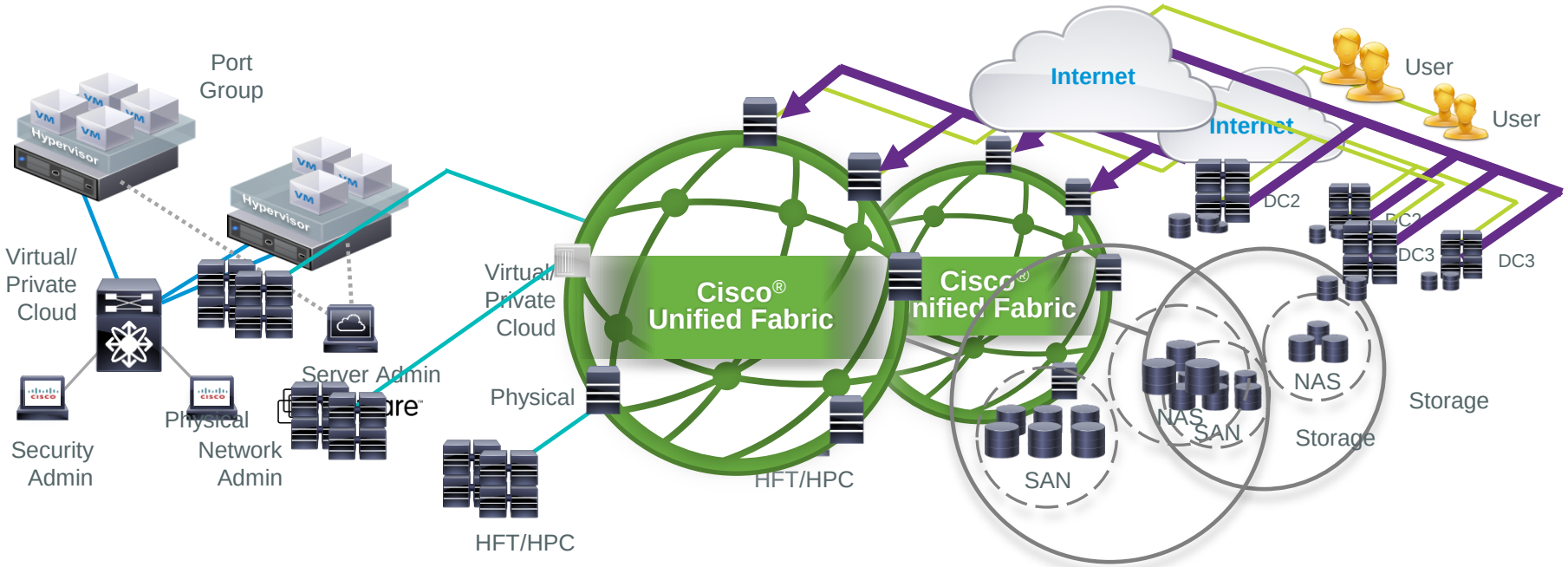
Desktop Virtualization



Data Center Consolidation

Virtualization/Private Cloud



SERVER VIRTUALIZATION CHALLENGES

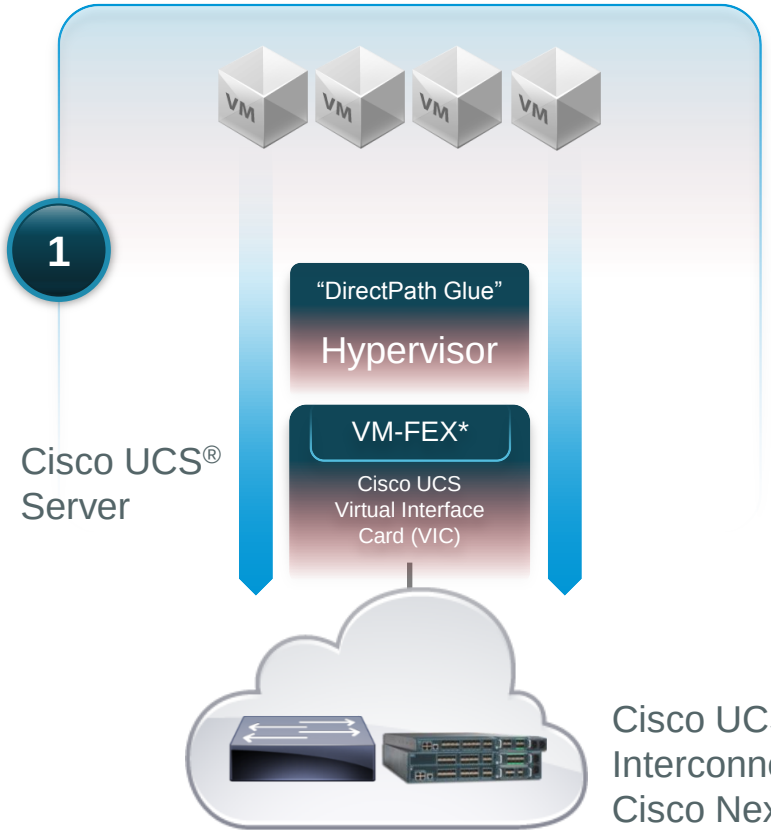
- Lack of network visibility and control
- vMotion moves VMs across physical ports—the network policy must follow vMotion
- Must view or apply network/security policy to locally switched traffic
- Need to maintain segregation of duties without disrupting operations
- Single point of failure for apps/VMs

Enabling Virtualization

Cisco Solutions

Cisco® VM-FEX

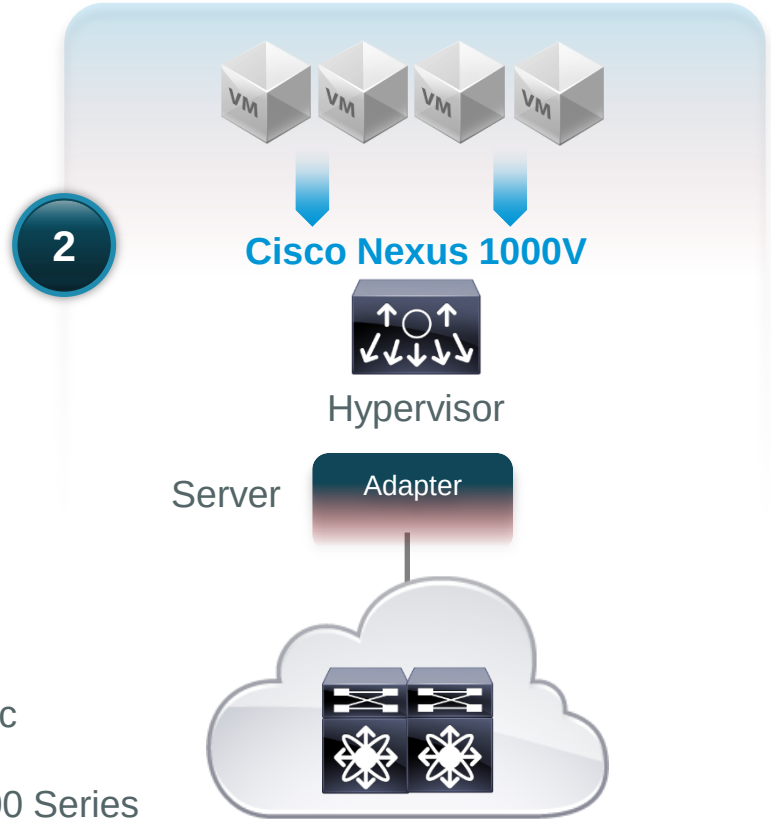
Bringing VM Awareness to Physical Network



*IEEE 802.1BR

Cisco Nexus® 1000V Series Soft Switch

Bringing Network Edge to Hypervisor

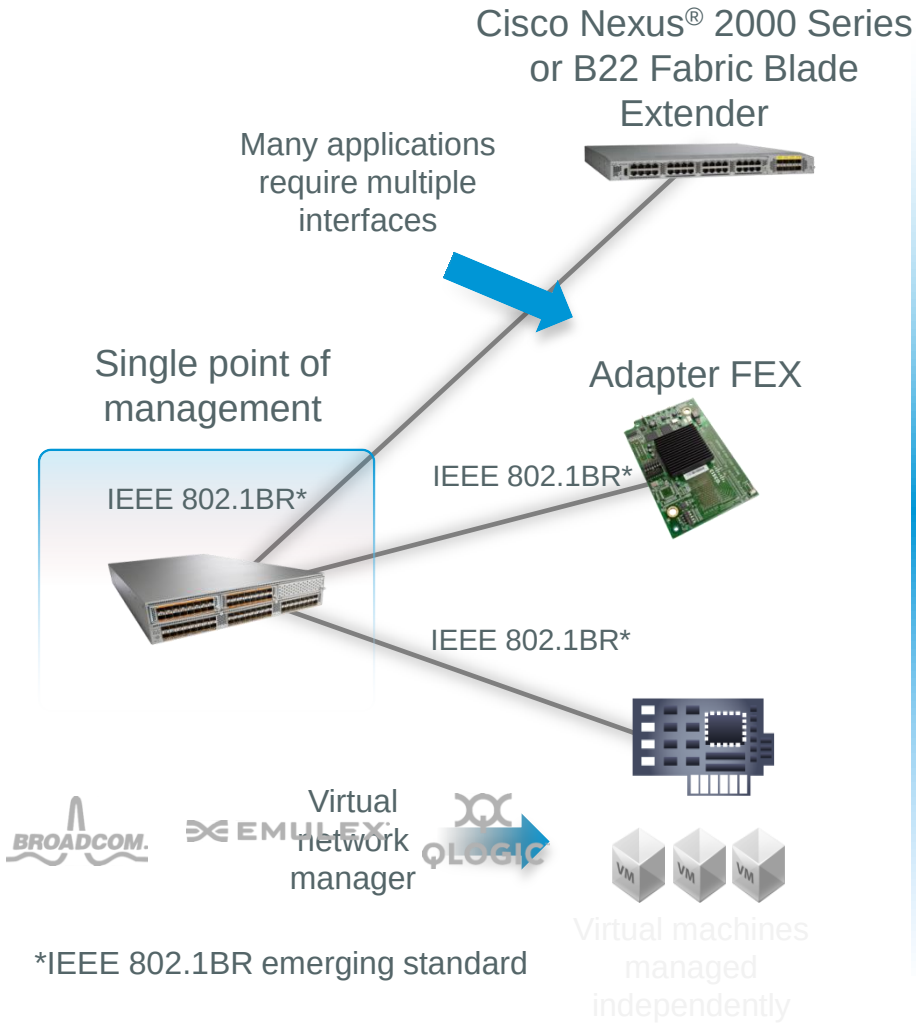


IEEE 802.1Q

Revolutionary Systems Scale—Virtual Network Awareness to Physical Network

Fabric Extender Technology (FEX)

Distributed Modular System for Virtual Machine



*IEEE 802.1BR emerging standard

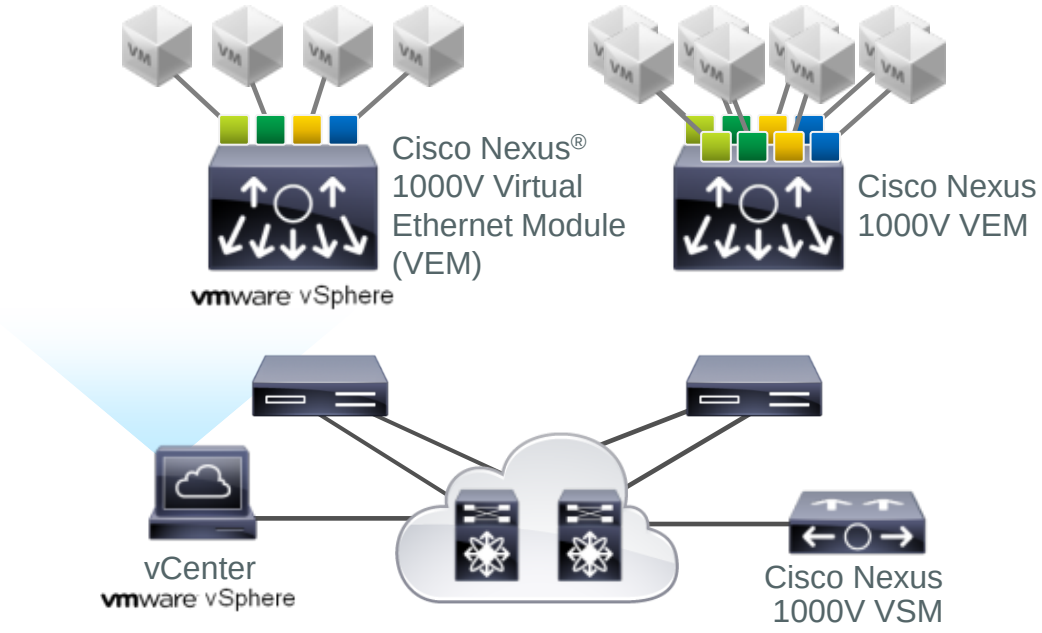
ONE NETWORK

- Single point of policy
- Single point of management
- Reduction in cables
- Consistency across rack and blade servers
- Interoperable—standards-based

Seamless VM Networking

Cisco Nexus 1000V—Bringing Network Edge to Hypervisor

Secure Workload Mobility with Rich Services



VMs Connection Policy

- Defined in the network
- Applied in vCenter
- Linked to VM UID
- Hardware failure

Port Profile Defined Policies

WEB Apps | DB | HR | DMZ

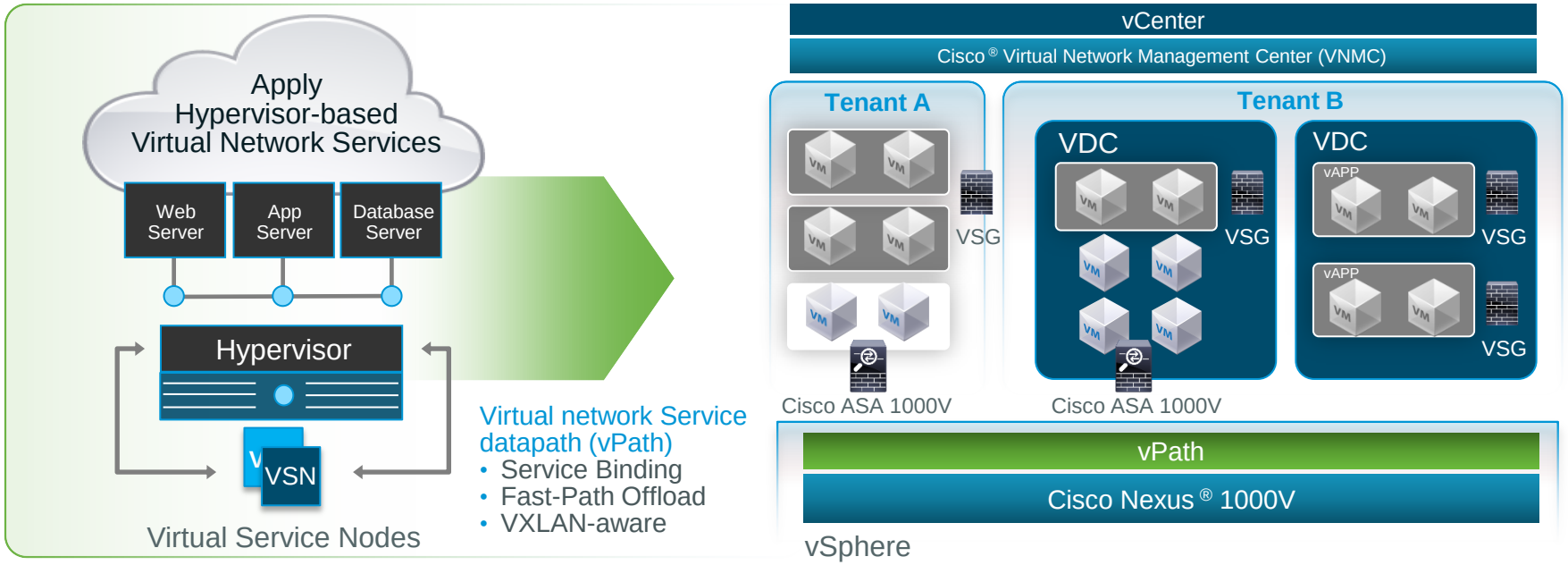
RESULTING IN

- VM policy mobility
- VMotion for the network
- Ensures VM security
- Maintains connection state
- Operational efficiency for VI and network admin

Secure Separation/Multitenancy

Cisco ASA 1000V Cloud Firewall and Cisco Virtual Security Gateway (VSG)

Securing Tenant Edge of Multitenant Cloud Data Center



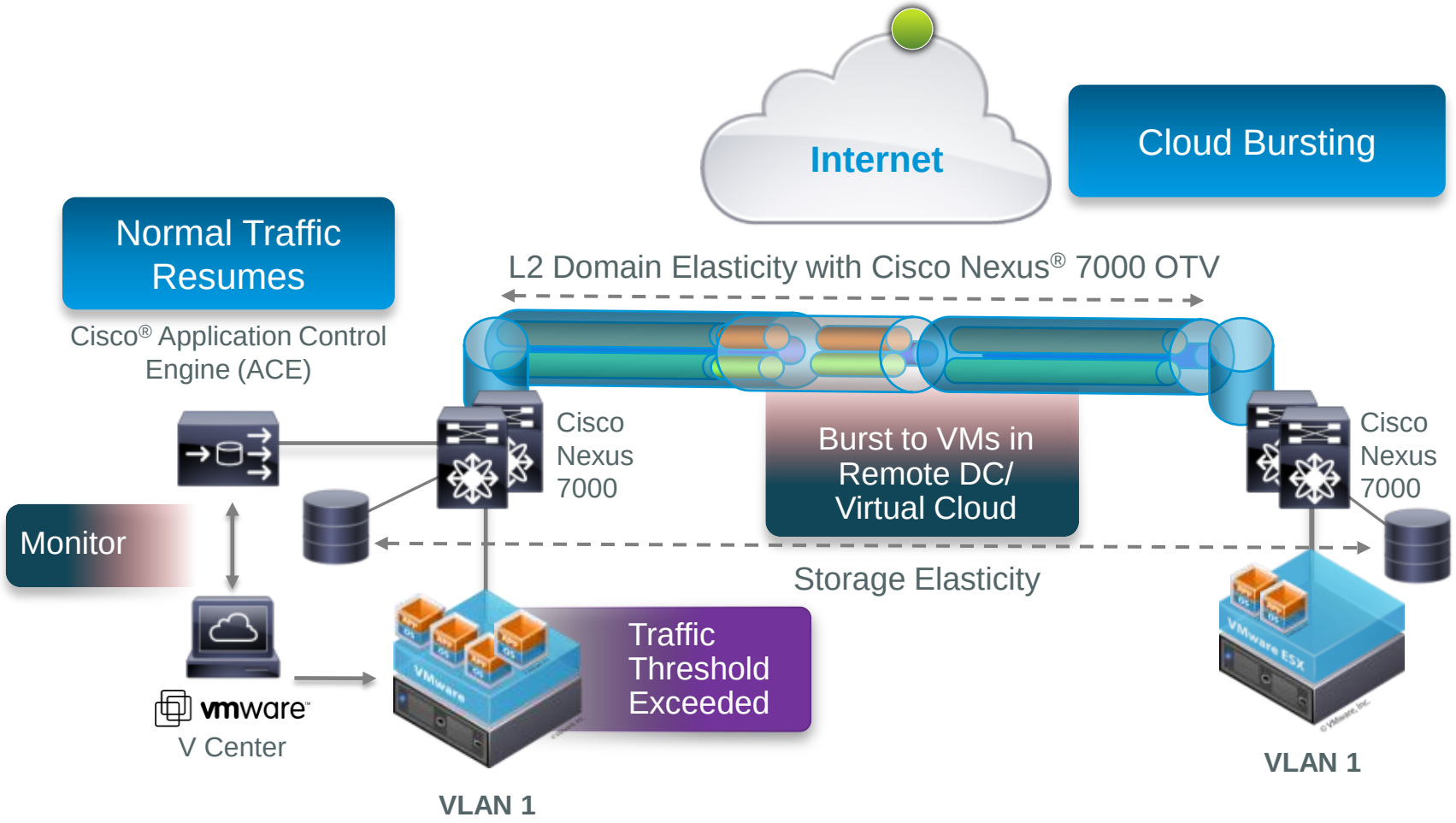
RESULTING IN

- Embedded security model—Cisco **VSG** for intra-tenant secure zones Cisco **ASA 1000V** for tenant edge controls
- Seamless integration with Cisco Nexus 1000V and vPath
- Scales with cloud demand—multiple-instance deployment for horizontal scale-out deployment

Workload Mobility and Elasticity Between Data Centers/Cloud

ACE and OTV—Bursting Traffic to Standby DC and Virtual Private Cloud

OTV—Extending Layer 2 Over Any Network



The CISCO UNIFIED FABRIC | READY FOR CLOUD

CISCO VIRTUALIZATION/CLOUD

- End-to-end network visibility
- Network policy migration with VM mobility
- Reduced risk with VM-aware security services
- Separation of duties between server and network teams
- Dynamic resource elasticity

When the Network Is UNIFIED

You Get **SOLUTIONS** **WHEN** YOU **NEED** THEM

LAN/SAN Convergence

Data Center Consolidation

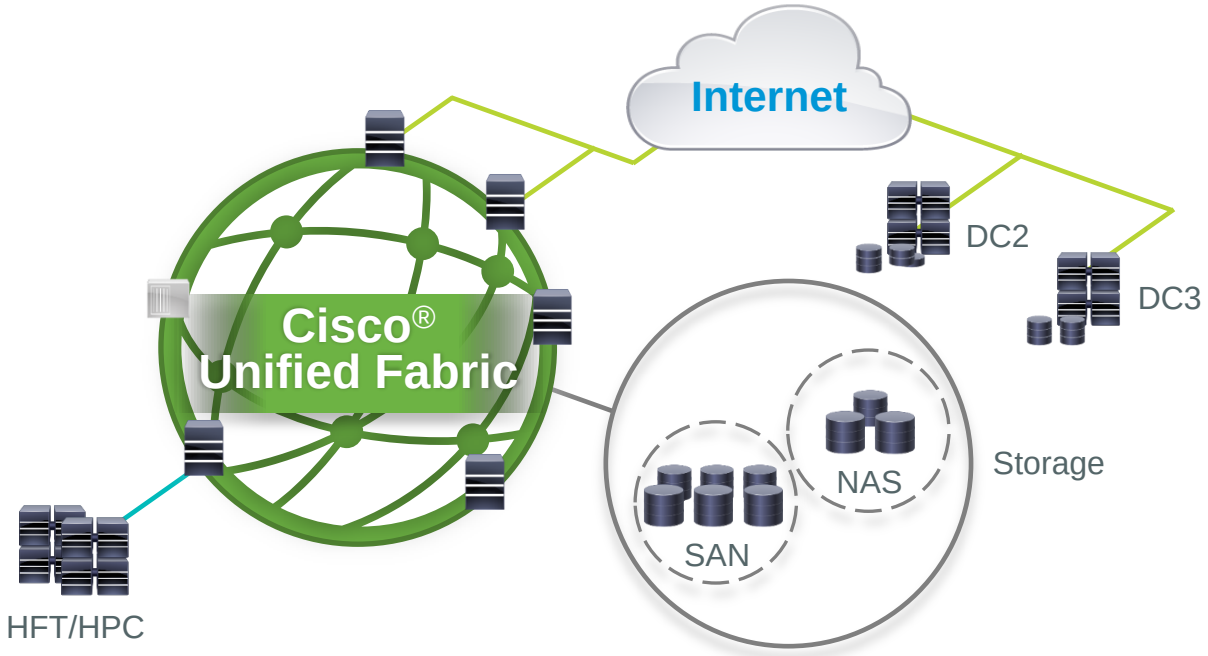
High-Performance Computing and High-Frequency Trading

Business Continuity, Disaster Recovery

Desktop Virtualization

Virtualization/ Private Cloud

High-Frequency Trading/ High-Performance Computing



CHALLENGES

- Sub-millisecond latency
- Network microbursts are increasing and going undetected
- Every network retransmission can result in lost trading revenue due to microbursts
- Enormous amount of data being generated
- Multicast at scale

THE CISCO UNIFIED FABRIC | MAXIMIZES REVENUE

Cisco Nexus® 3000 Series

Robust Cisco® NX-OS with Differentiated Feature Set

Wired-network rate L2/L3 feature set, IPv4/v6

vPC, Precision Time Protocol, Configurable Control Plane Policing

Power-on auto-provisioning, Encapsulated Remote Switched Port Analyzer

User programmable: python scripting, EEM, NETCONF

ULTRA-LOW **LATENCY**

RESULTING IN

- Speed of trading execution
- Ability to sustain peaks of activity
- Precise time stamp synchronization
- User programmability
- Supports regulatory compliance

Cisco Unified Computing

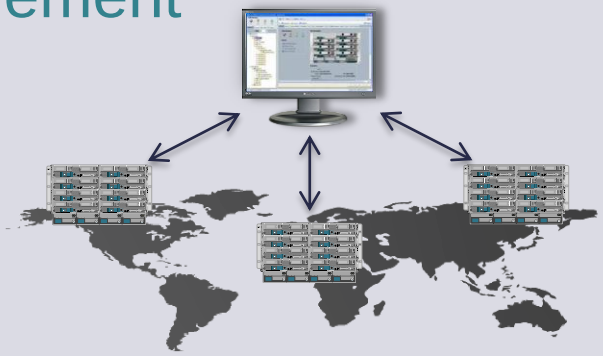
UCS Mini Overview

UCS Target Markets
On Premises Requirements

Converged Infrastructure

Small Footprint

Management



Flexibility

Product Concept

- Based on current chassis design
- Embed Fabric Interconnect Capability in the IOM slot
- Match current UCS Network model
  - Ethernet End Host Mode
- Common Management with UCS
  - UCSM, Service Profiles

End State

UCS 5108 Chassis with new backplane (UCSB-5108-AC2 etc)
Supports existing and future blades

New PSU at 200-240V (UCSB-PSU-2500ACDV)

+

2204XP
2208XP

+

6248 Fabric Interconnect
6296 Fabric Interconnect

=

UCS

UCS 5108 Chassis with new backplane (UCSB-5108-AC2 etc)

+

Dual Voltage PSU (UCSB-PSU-2500ACDV)

+

Mini FI
6324
UCS-FI-M-6324

=

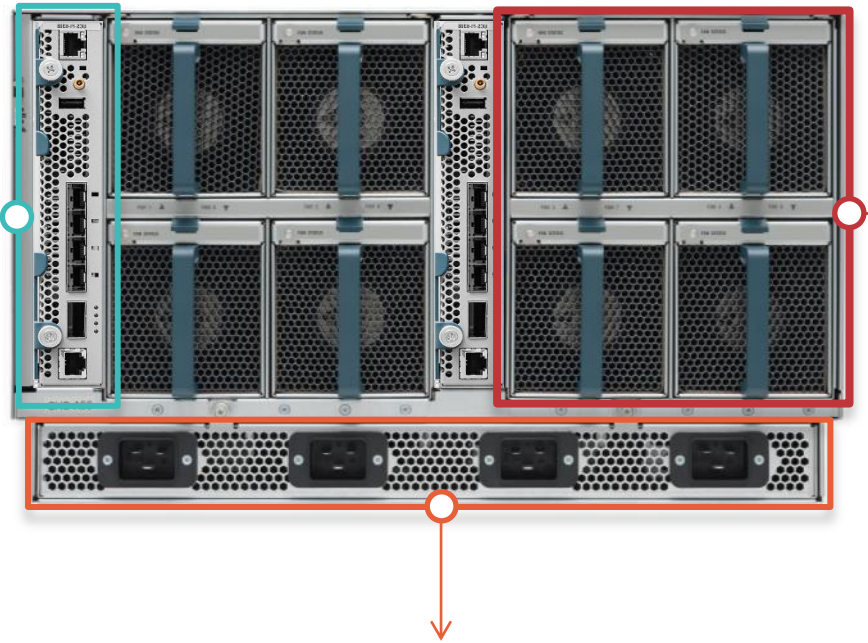
UCS Mini

UCS Mini Chassis

Fan, Power Inlet, and Fabric Interconnect

Fabric Interconnect

- Integrated FI and IOM
- Hot-swappable
- Unified Port
- Up to 1 additional expanded chassis (post-FCS)



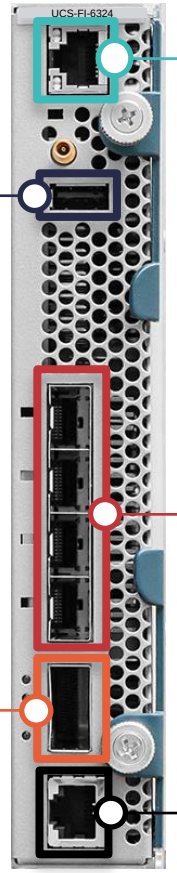
Fan

- Redundant Fans
- Variable speed
- Hot-swappable

Power Inlet

- Support for AC or DC

Fabric Interconnect 6324



Management Port
- 10/100/1000 Mbps

USB Port
- Firmware upgrades

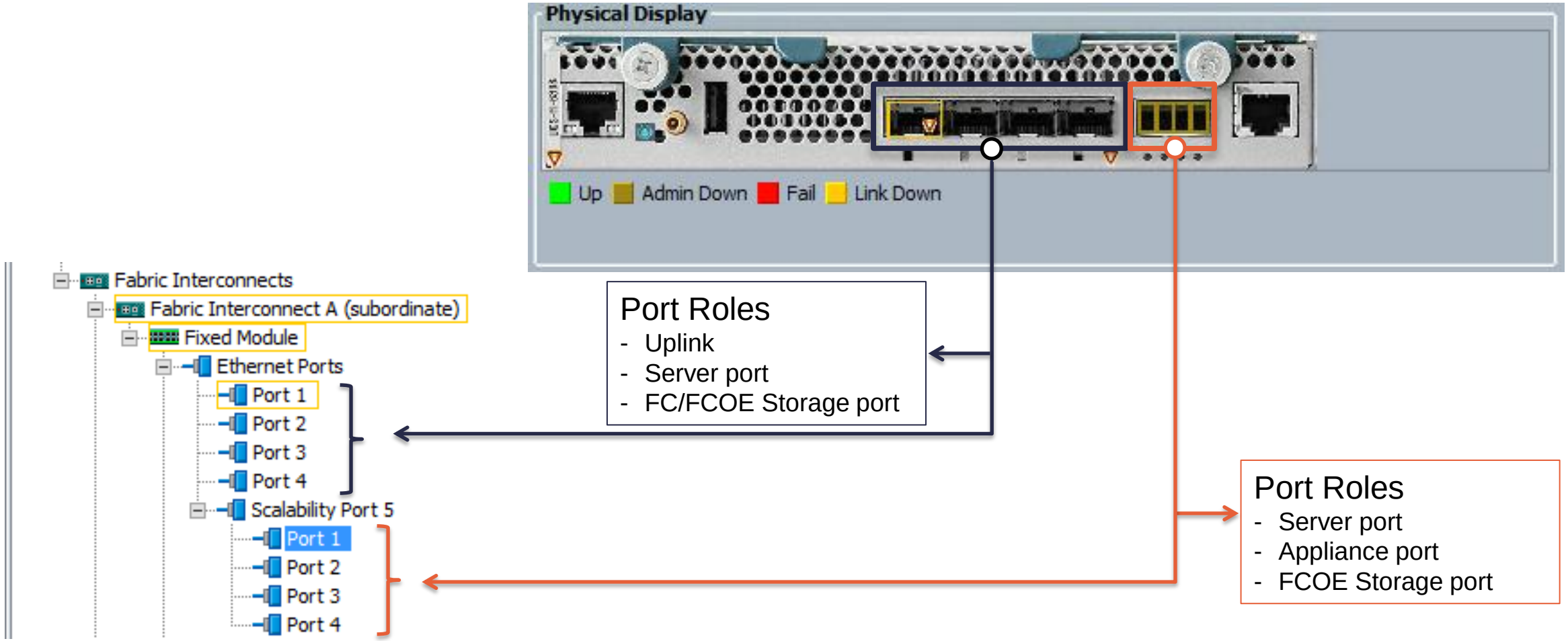
4 x SFP+
- Unified Ports
  - Uplink (Eth/FC/FCOE)
  - Server – Direct-attached only
  - Appliance
- Supports 1G or 10G

QSFP+
- Licensed Server Port
  - Direct-attached C-series
  - 2nd Chassis (post-FCS)
- Appliance Port
- FCoE Storage Port

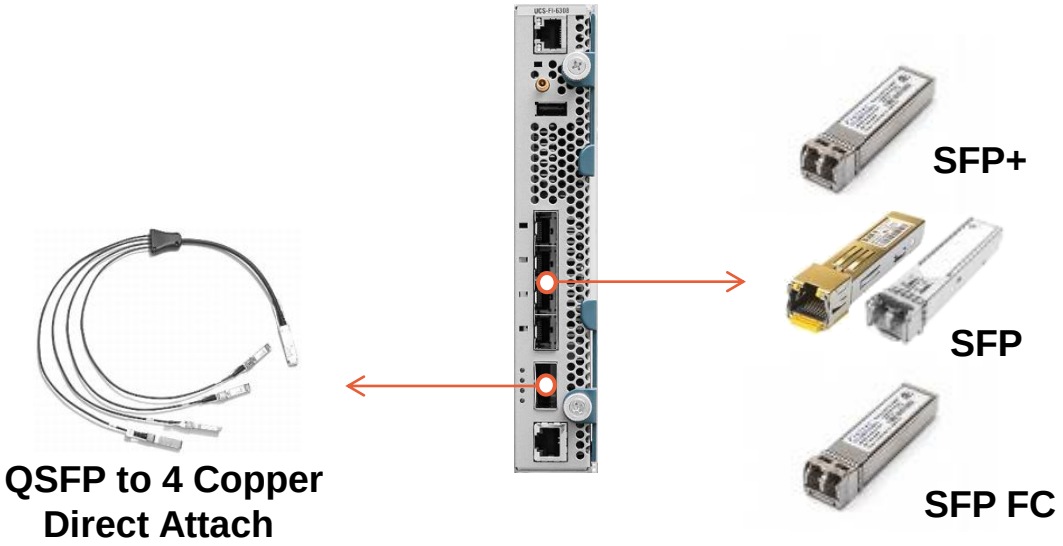
Console Mgmt Port

Product Features and Specs	Scale Numbers
Switch Fabric Throughput	500Gbps
LAN 1 Gigabit Port Density	4
LAN 10 Gigabit Port Density	4
FC Ports	4 (8G/4G)
MAC Address	8K
# of VLANs	200
# of IGMP Multicast Groups	50
Virtual Interface Support	648
P,V count	1K
Max frame size	9K

UCSM
10G/40G Port



FI6324
Optics Support

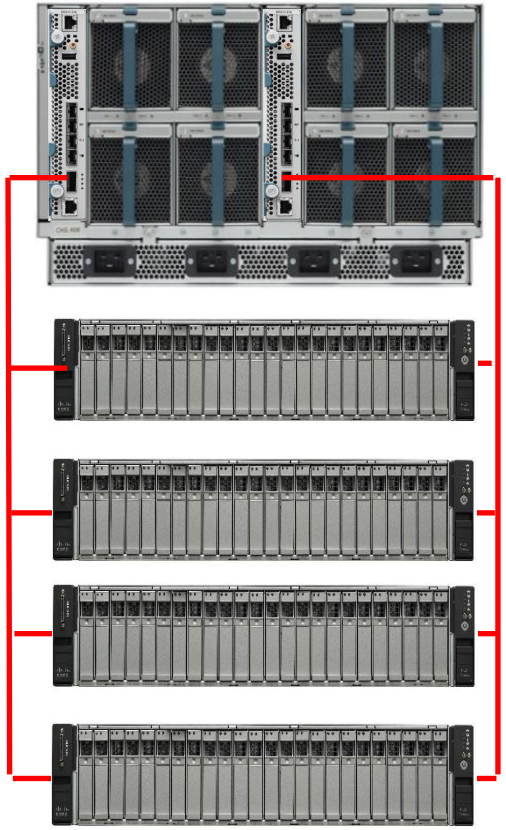


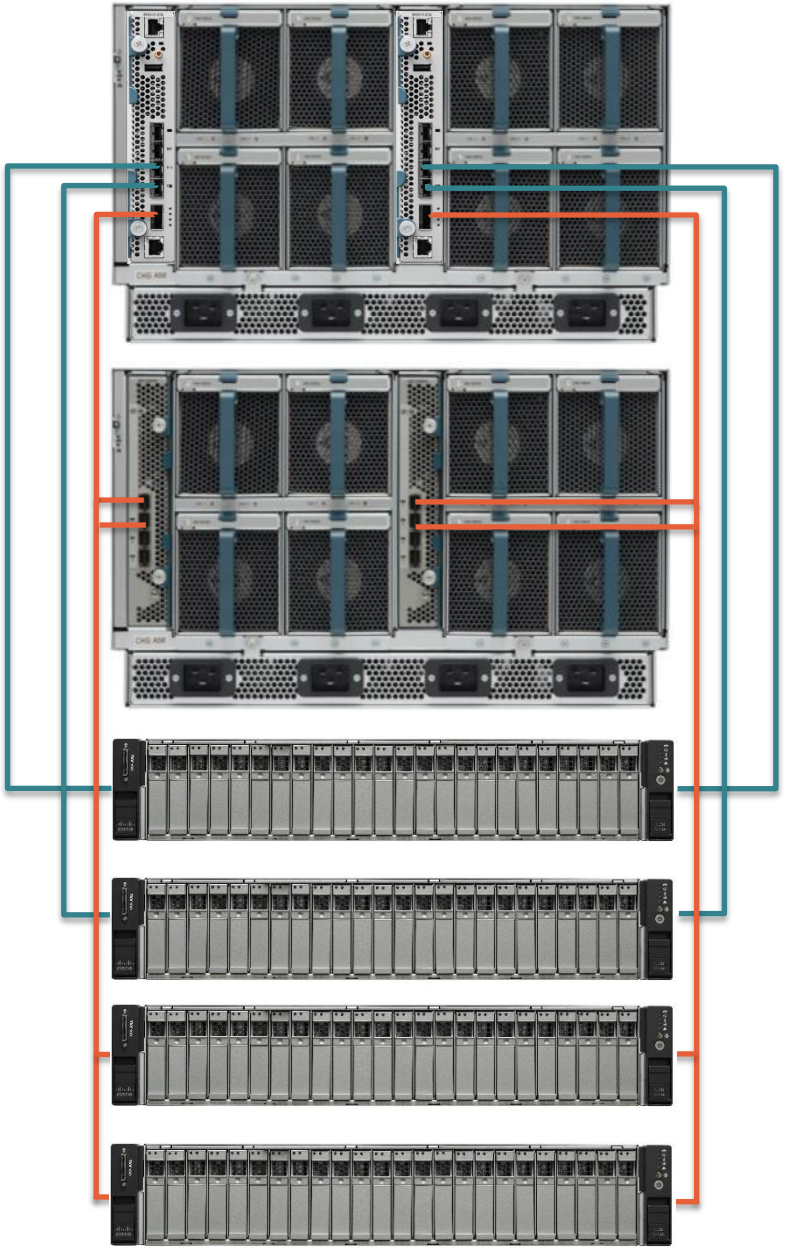
Transceiver Type	Speed	Cable Type	Distance
QSFP-4SFP10G	40G	DAC	1, 3, 5m
QSFP-4X10G-AC	40G	DAC	7, 10m
SFP-10G-SR SFP-10G-SR-X	10G	MMF	300m
SFP-H10GB-CU	10G	DAC	1, 3, 5m
SFP-H10GB-AC	10G	DAC	7, 10m
GLC-T GLC-GE-T	1G	Cat5	100m
GLC-LH-SM	1G	SMF	10Km
GLC-SX-MM	1G	MMF	1Km
DS-SFP-FC	4, 8G	MMF	150m/380m

* FCOE supported distance 100m

UCS Mini
Expansion

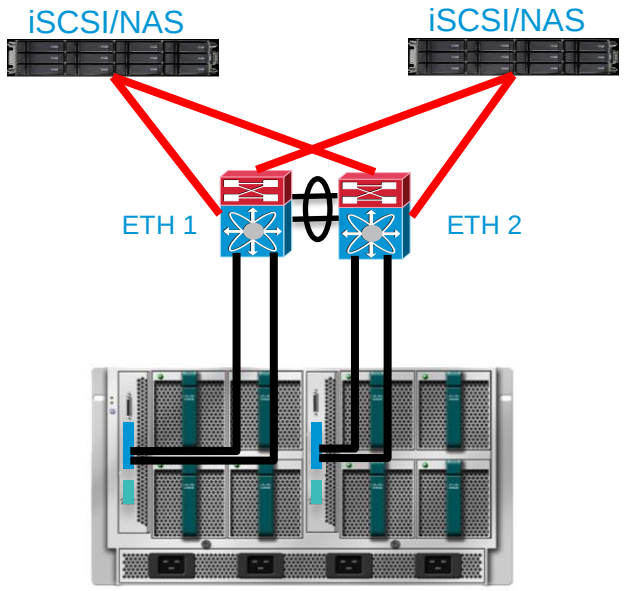
- FCS release
  - 4 rack mount servers
    - C220M3 and C240M3
- Post FCS Release
  - Connect up 2 Chassis
  - 2nd chassis is child (with 2204XP or 2208XP IOM)
  - Licensed 40G scalability port
  - Total 20 Servers
    - 16 Blades
    - 4 Rack Servers

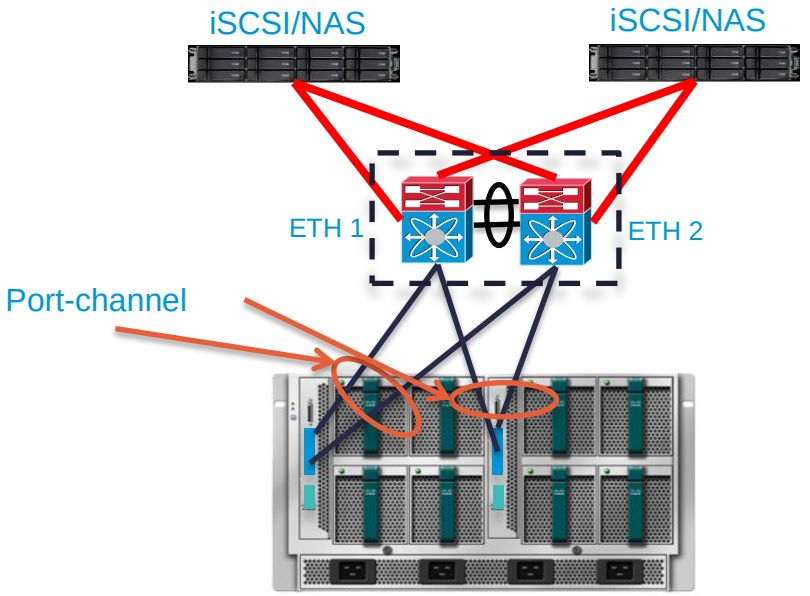




Supported Topologies
IP Based Connectivity

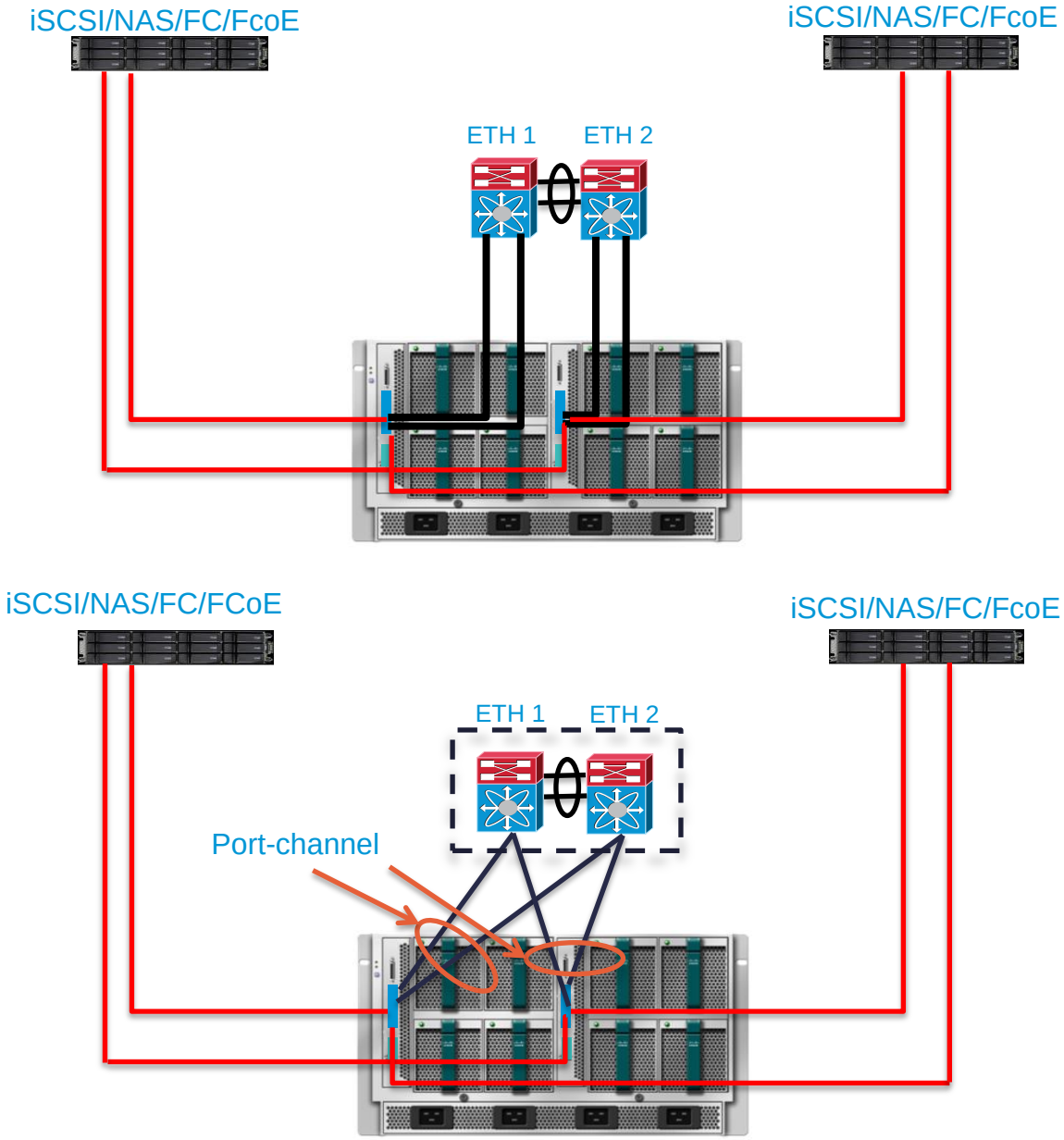
- Ethernet Mode
  - End-host mode
- Storage is connected on the LAN





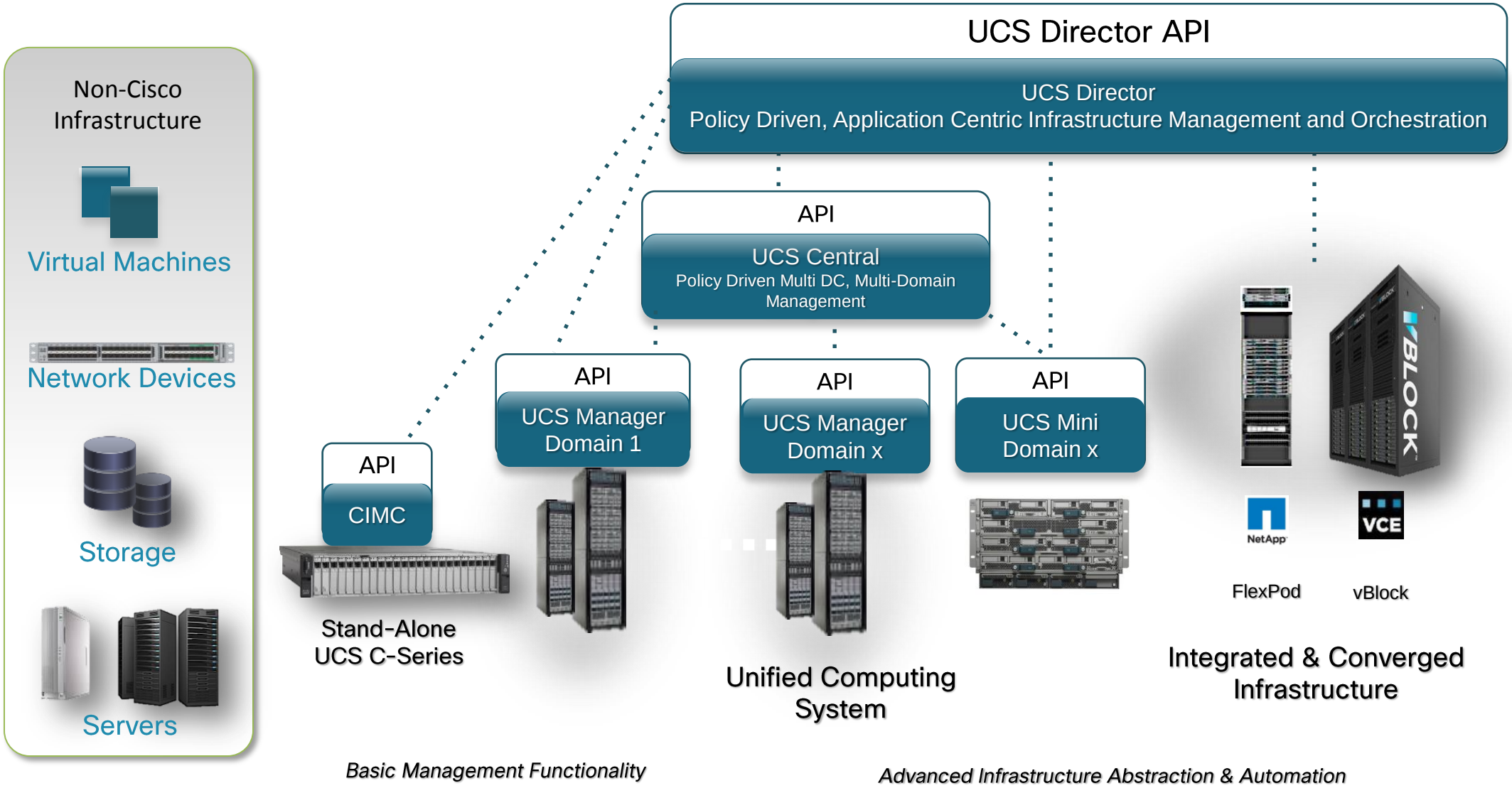
Supported Topologies
Direct Attached Storage

- Ethernet Mode
  - End-host mode
- Storage Support
  - FC/FCOE direct connect
  - NPV (post-FCS)
  - Appliance port



Cisco Unified Management

UCS Management Portfolio



Thank you.