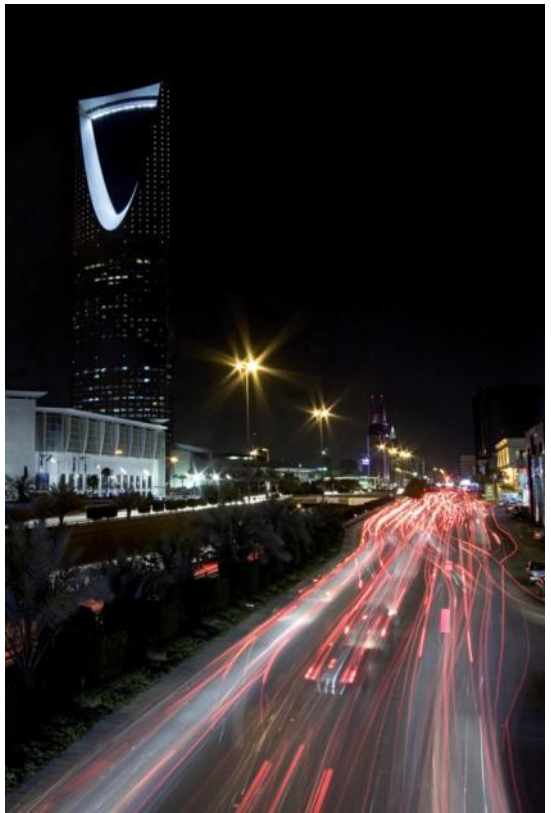
Cisco Connect

Riyadh, KSA
Feb 2013

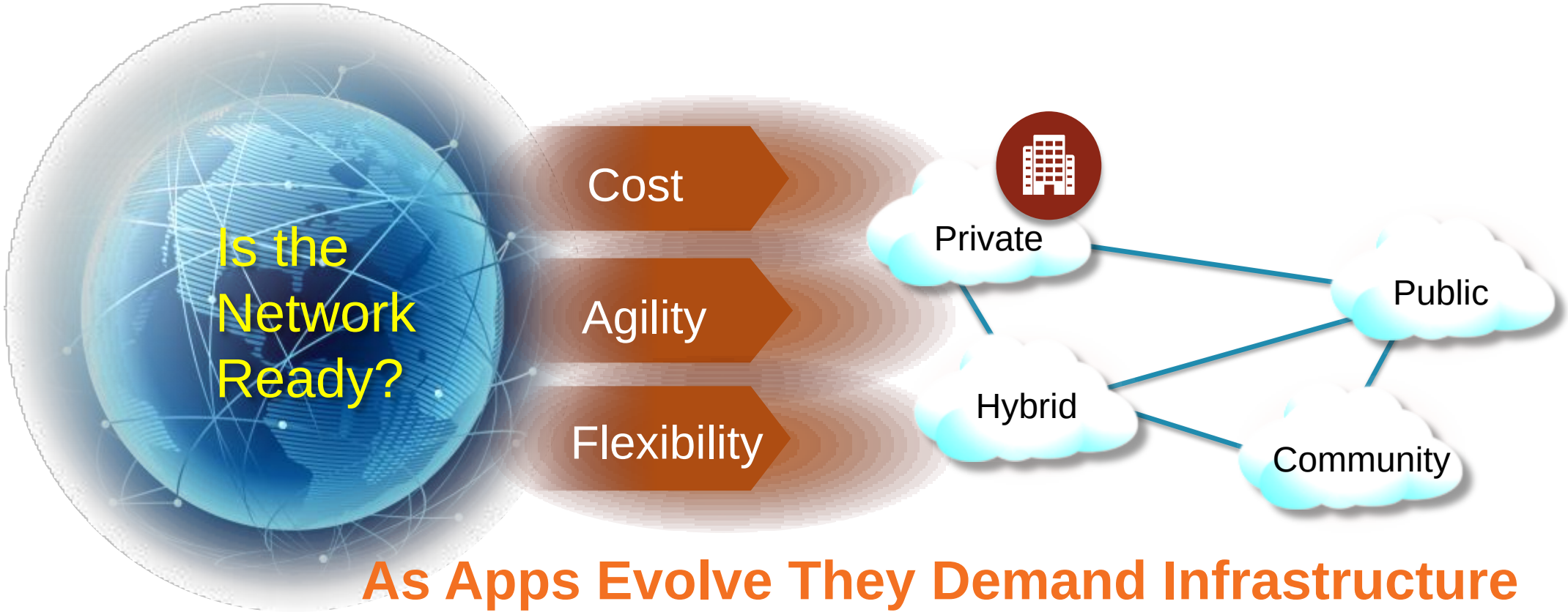
Infrastructure for the Cloud

Marc Gollop
Product Sales Specialist



cisco

IT is Moving Towards a World of Many Clouds



As Apps Evolve They Demand Infrastructure Adapt at an Ever Increasing Rate

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What's Getting in The Way?

Seamless Connectivity	Create a single, easily scalable extended fabric
Maintain Security	Ensure consistent controls and protections
Consistent Environment	Consistent application of policy regardless of location
Span Heterogeneous Infrastructure	Uniform operational consistency across disparate infrastructure
Simplified Management	Programmability and automation to tame complexity

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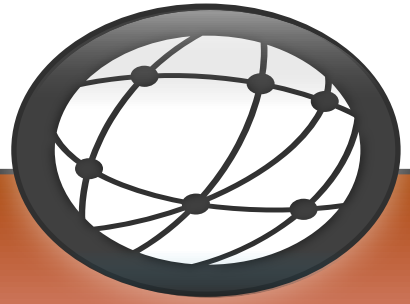
Cisco's Holistic Approach: Unified Data Center

The Platform for Delivering IT as a Service

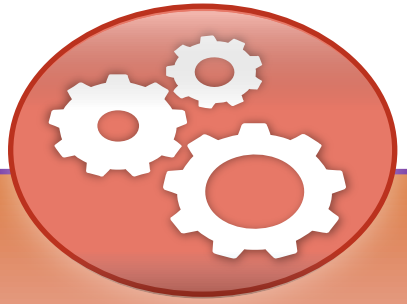
UNIFIED
COMPUTING

Modular, Stateless
Computing Elements



UNIFIED
FABRIC

Highly Scalable,
Secure Network Fabric



UNIFIED
MANAGEMENT

Automated
Resource Management
(Physical and Virtual)

FLEXIBLE | RESILIENT | SECURE | SCALABLE

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The Business Advantage

New Economics of Agility, Efficiency, and Simplicity

15-75%
Less Cost

Infrastructure Costs

Almaviva

St. Joseph Hospital

50-80%
Faster
(Months–Hours)

Deployment Times

HayGroup

The University of Salford

Up to
99.999%
Uptime

Disaster Recovery

Almaviva

Bundeskanzleramt Österreich

43-60%
Savings

Power Cooling

Department of Water Resources, State of California

Salem Health

2x
Network Size
Same Headcount

IT Staffing

Apollo Hospitals

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Unified Fabric: The Industry's Broadest Portfolio for Data Center and Cloud Networking

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

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

SAN

Cisco® MDS 9500 Series

Cisco MDS 9200 Series

Cisco MDS 9100 Series

LAN

Cisco Nexus 3000

Cisco Nexus 4000

Cisco Nexus 5000

Cisco Nexus® 1010

Cisco Nexus 1000V

Cisco Nexus 2000

LAN/SAN

Cisco Nexus 6000

Cisco Nexus 7000

HP/Dell/Fujutsu B22

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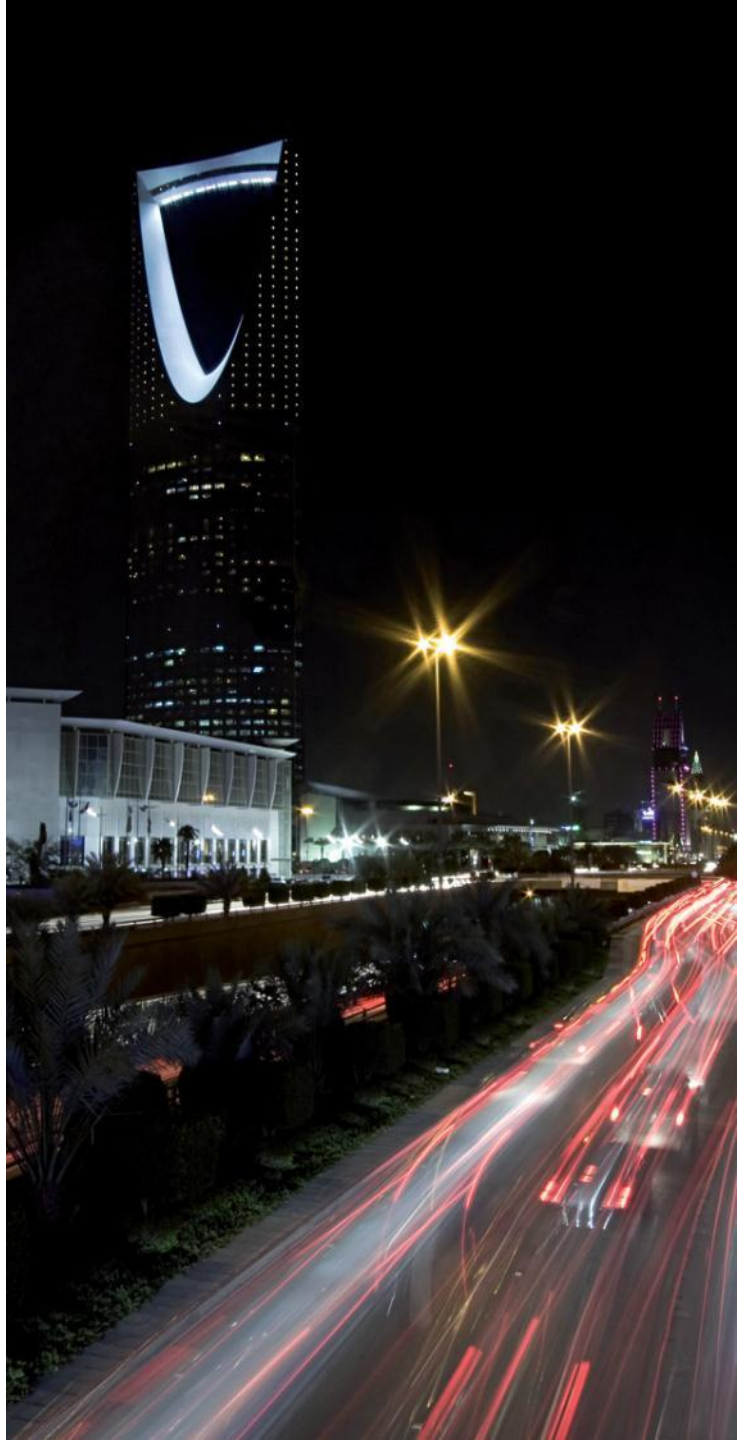
What do you expect from your "Ideal" Datacenter Infrastructure?

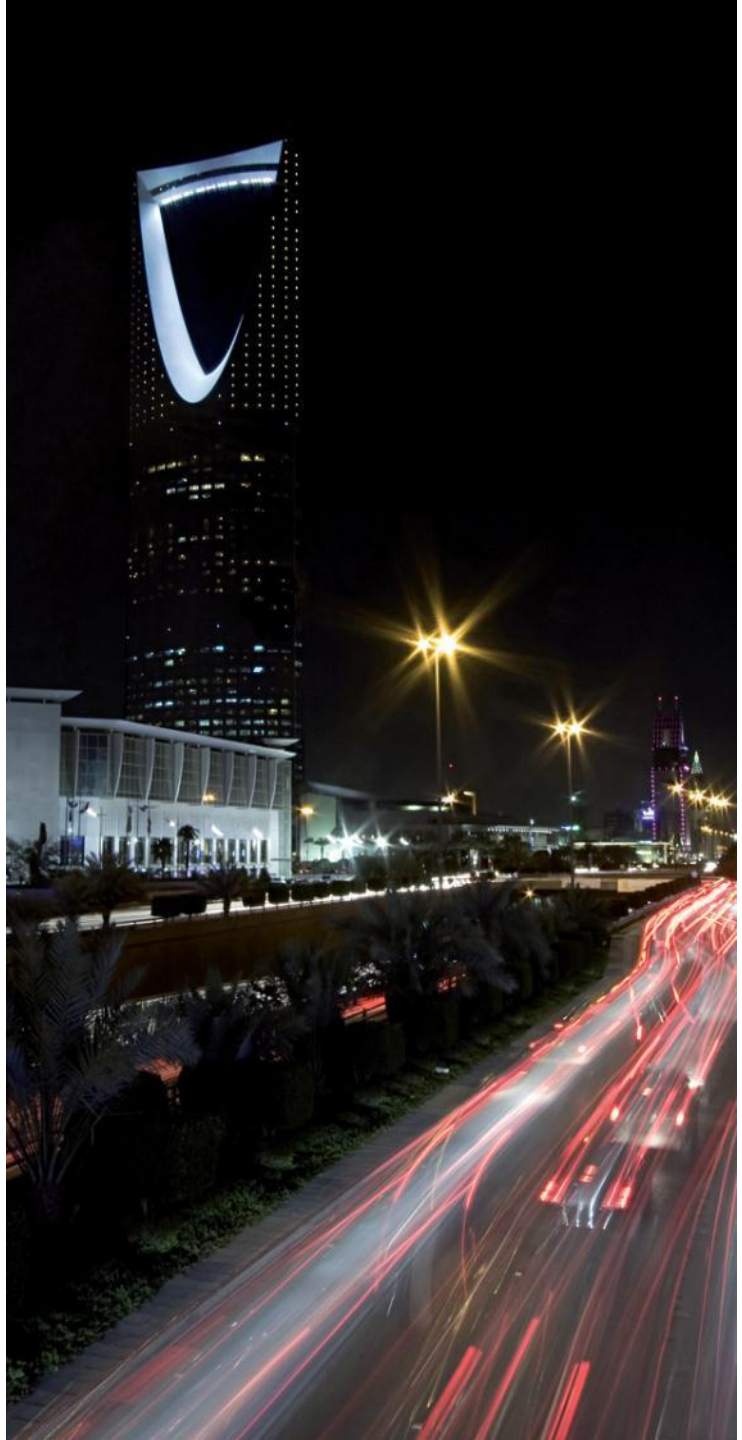


Cloud Infrastructure

Key Attributes

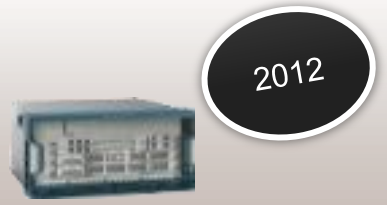
- High-Performance
- Flexible
- Lowest TCO
- Resilient
- Programmable

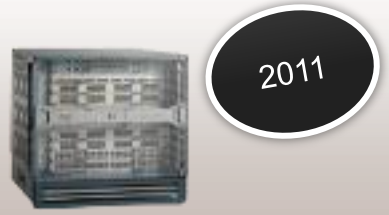
High Performance

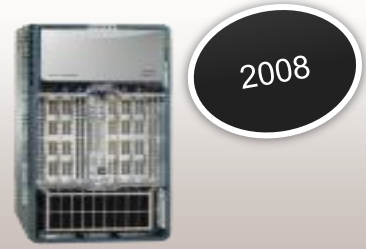


Nexus 7000 Switching Leadership

Highest Switching Scale and Density







	Nexus 7004	Nexus 7009	Nexus 7010	Nexus 7018
Size	7RU	14RU	21RU	25RU
Switching Capacity	2.2Tb	7.7Tb	8.8Tb	17.6Tb
BW per Slot Fab 2/Fab 1	N/A	550 Gig	550/230 Gig	550/230 Gig
Non-Blocking 1/10GbE Density	96 ports	336 ports	384 ports	**768 ports**
Non-Blocking 40G/100GbE Density		42/14	48/16	96/32

BROAD DEPLOYMENT OPTIONS

Introducing Nexus 6000 Series
Density and Performance for Cloud-Scale Fabrics

Now

Nexus 6004

48x40GE Ports w/ 4 Expansion Modules

Up to 96 40GE Ports in 4 Rack Unit

Powered by Custom Silicon

2Q13

Nexus 6001

48x10GE + 4x 40GE Ports

Scale & Performance	Visibility & Insight	Automation & Programmability
384/96 Line Rate L2/3 Ports 1,536 GbE/10GbE Ports via FEX	Traffic Analysis Toolkit	TCL, Python, and onePK (future) Power-On Auto Provisioning

Support 75,000 Virtual Machines on a Single Switch

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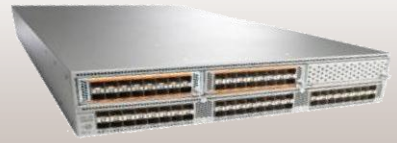
Nexus Fixed Configuration



Q2CY13

Now Available

	Nexus 5548UP	Nexus 5596UP	Nexus 6001	Nexus 6004
Size	1RU	2RU	1RU	4RU
Switching Capacity	**960Gbps**	**1.92Tbps**	**1.28 Tbps**	**7.86 Tbps**
Non-Blocking 1/10GbE Density	**48**	**96**	**64**	**384**
Non-Blocking 40/100GbE Density	96 ports	336 ports	384 ports	**768 ports**
1/10GbE Ports with Single Point of Management	**1152**	**1152**	**1152**	**1536****

BROAD DEPLOYMENT OPTIONS

** Expected to increase with subsequent software releases

Nexus 3000 Series
One architecture for 1G/10G/40G

Industry's leading Ultra Low Latency Platform

2013

Nexus 3064-T
48-Port 10G-BaseT

Nexus 3548
48-Port 1RU Switch
Latency: 250 – 300 ns !!

2012

Nexus 3016Q
16-Port 1RU Switch

Nexus 3064-X
Integrated Phy

2011

Nexus 3048TP
48-Port 1RU Switch

Nexus 3064-E
28-Port 1RU Switch

Robust Cisco® NX-OS with Differentiated Feature Set

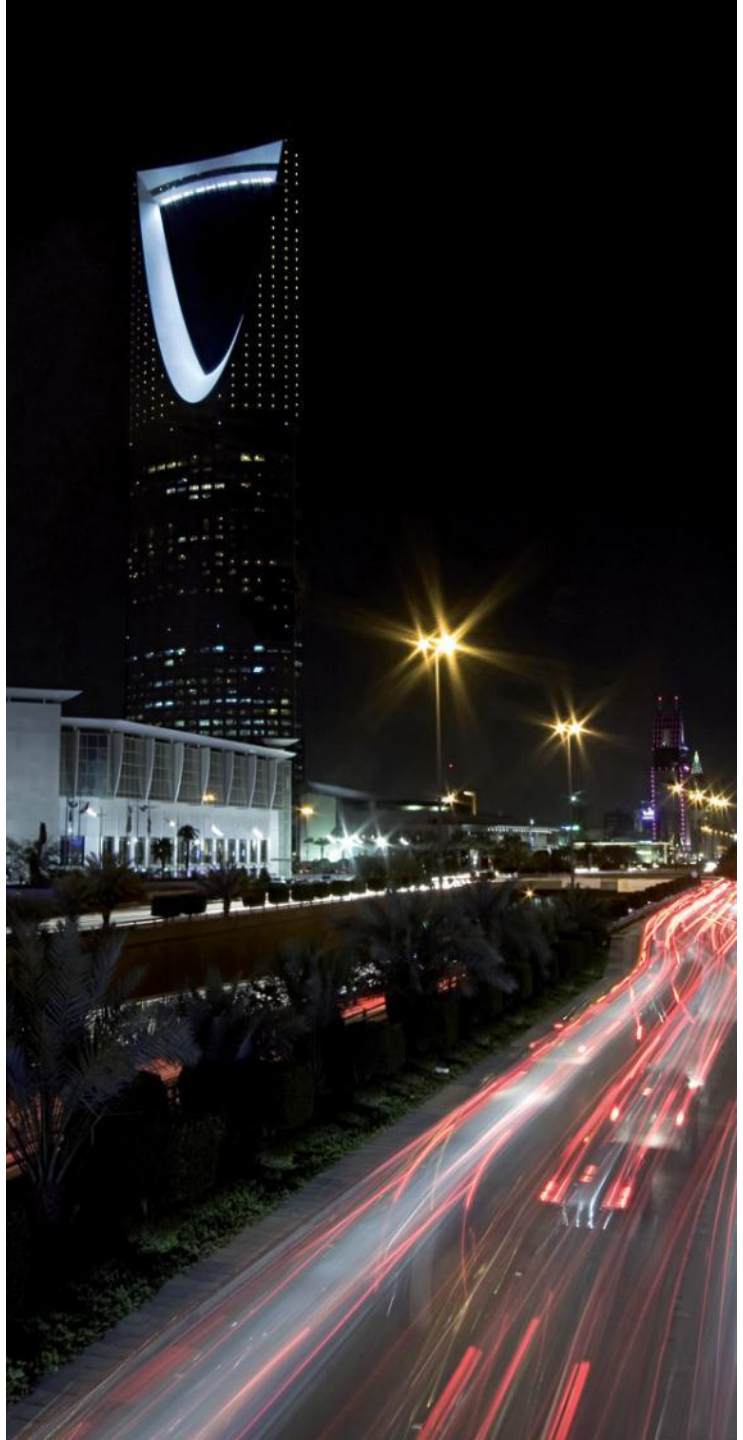
Wired-network rate L2/L3 feature set, IPv4/v6

vPC, Precision Time Protocol, Configurable Control Plane Policing

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

User programmable: python scripting, EEM, NETCONF

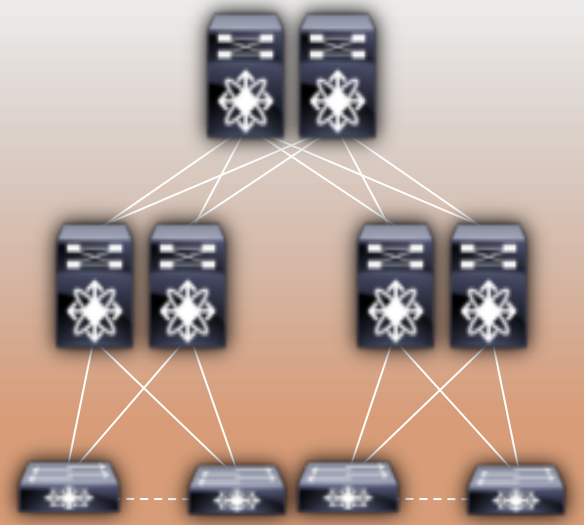
Flexibility



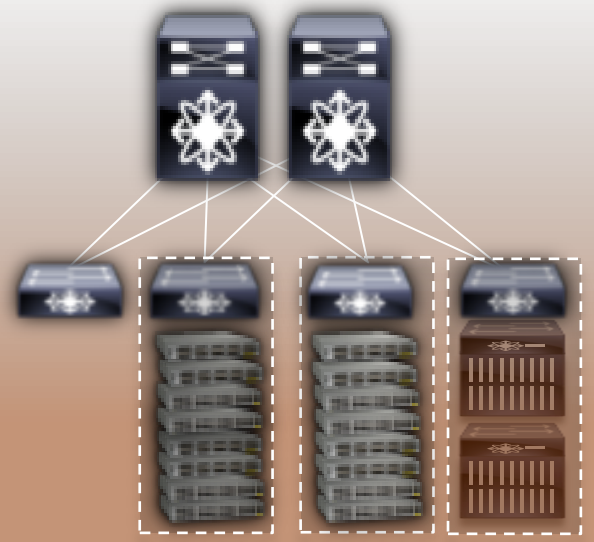
Unified Fabric

Architecture Flexibility Through Nexus Product Range

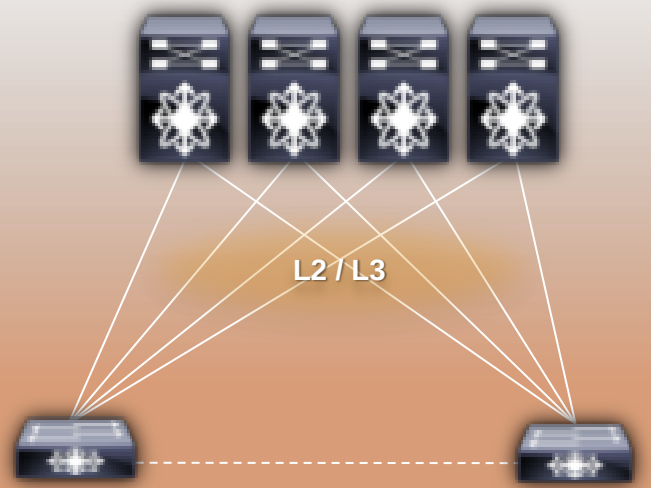
Traditional Approach



FEX and Switch Scaling



Leaf/Spine



Infrastructure Virtualization and Scale

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Cisco Nexus 6/5K & 2K Architecture
Simplified Operations and Lower Cost

Single Point of Management

Modular Switch

Fixed Backplane

=

Single Point of Management

Cross-bar & Supervisor

Nexus 6000/5500 Platform

+

Fabric Extenders

(Remote Line Cards)

Nexus 2000 Platform

Distributed Modular Chassis

10Gb Ethernet for the Backplane

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Fabric Extender Overview
Unified Access Platform For Any POD Designs

across rack, blade, 100M, 1G, 10G, FCoE, copper, Fiber, ToR and EoR architectures, Layer 2/Layer 3 solutions, traditional or virtualized workloads

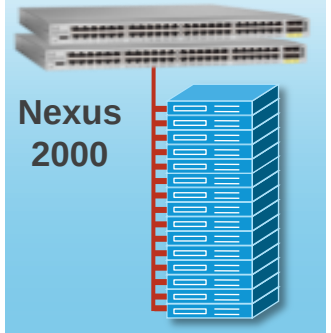
Parent Switch

Unified Access Layer

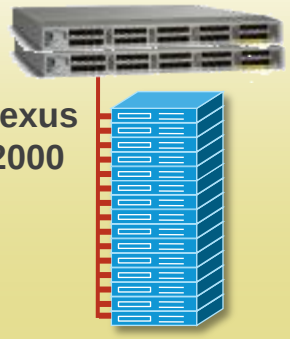
Nexus 5000/5500

Nexus 6000

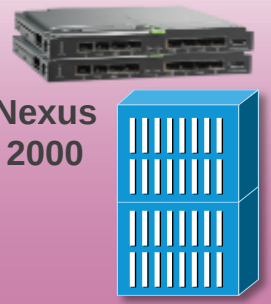
Nexus 7000



100M/1GE Rack Mount Servers



1/10GE/FCoE Rack Mount Servers



1/10GE/FCoE Third Party Blade Servers

UCS

1/10G/FCoE UCS Compute Rack

1/10G/FCoE UCS Compute Blade

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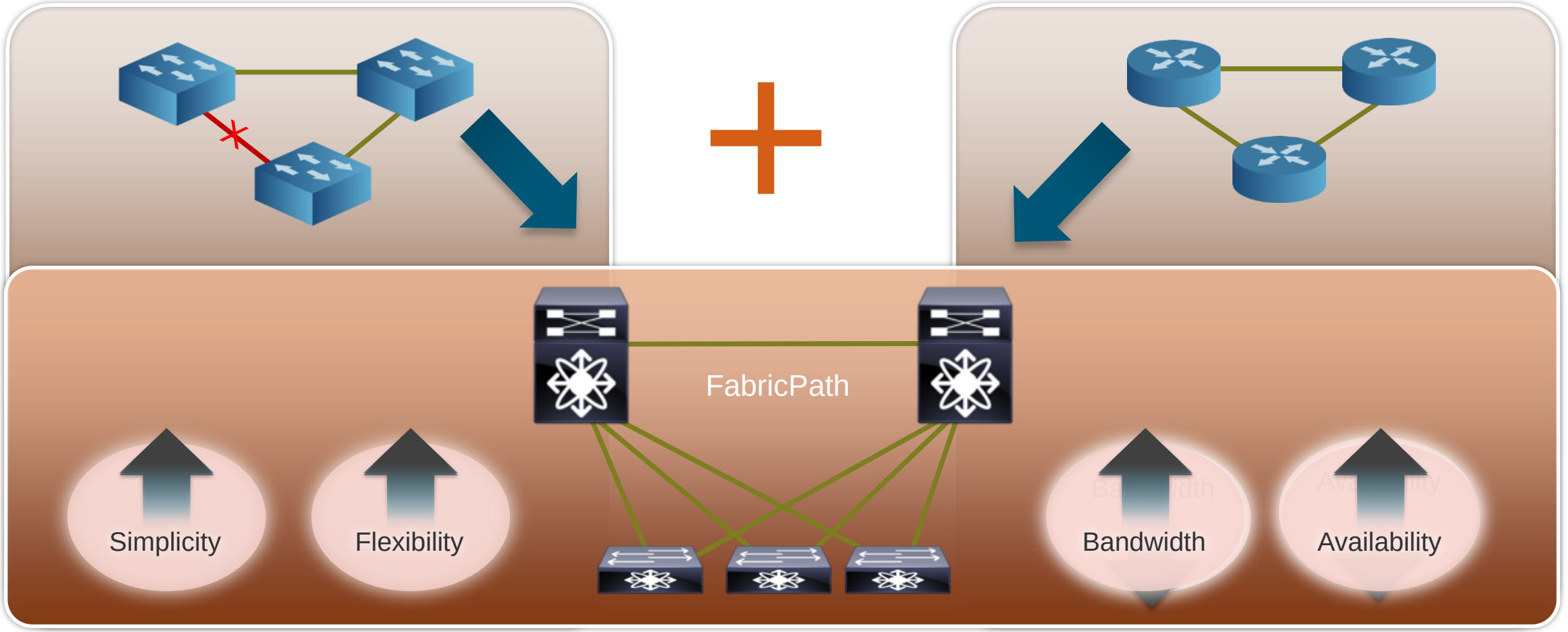
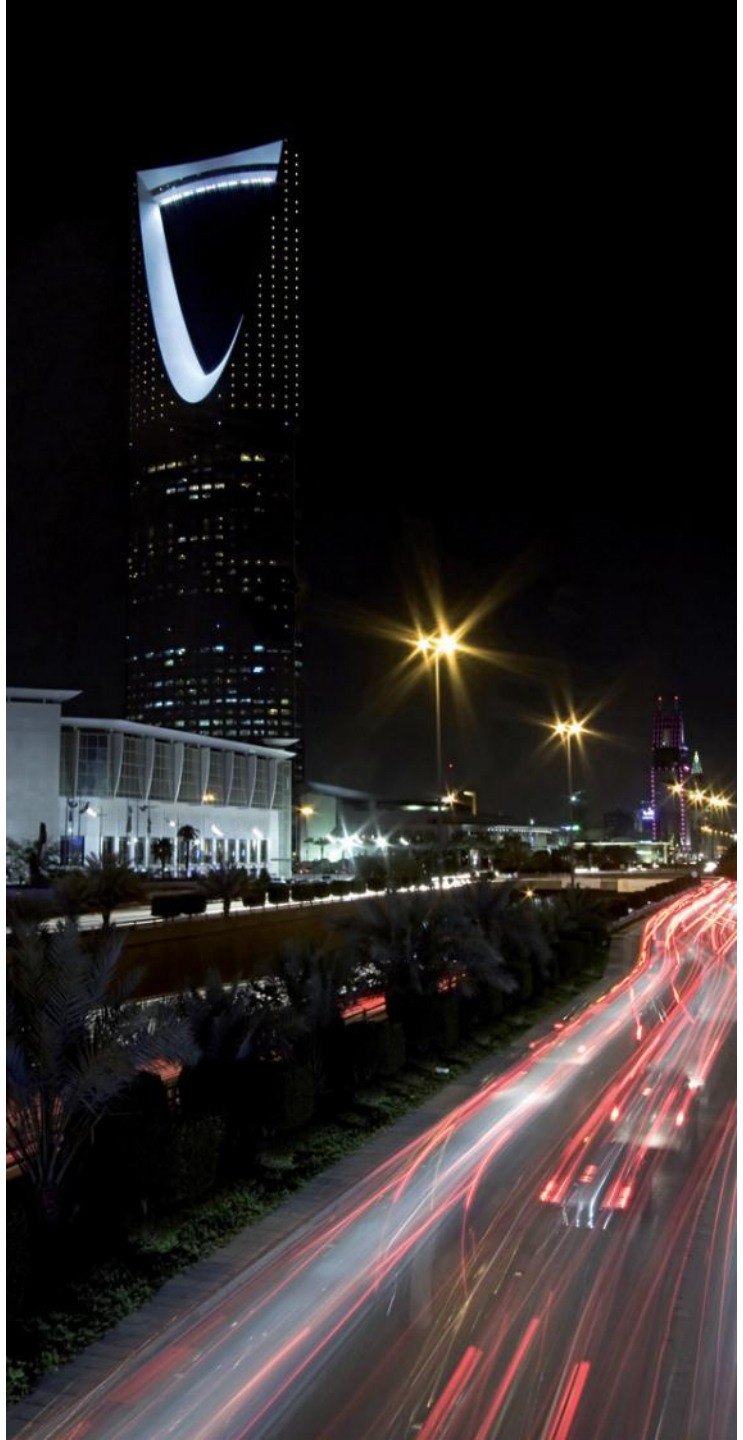
Fabric Path

L2 Connectivity without the Risk of Spanning Tree



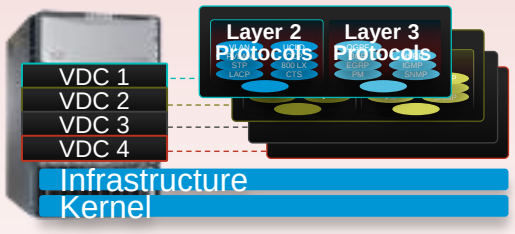
TCO Savings



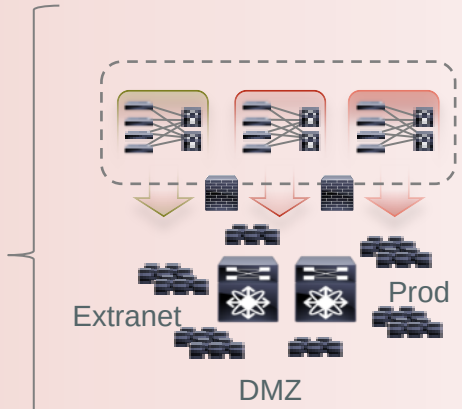
Switch Partitioning
Virtual Device Context—VDC

Separate Logical Entities Within a Switch—Available on Cisco Nexus® 7000

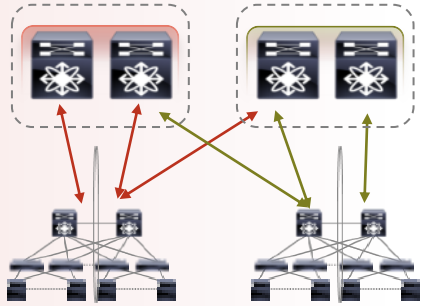
VDC



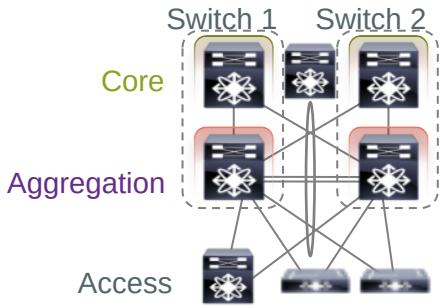
USE CASES



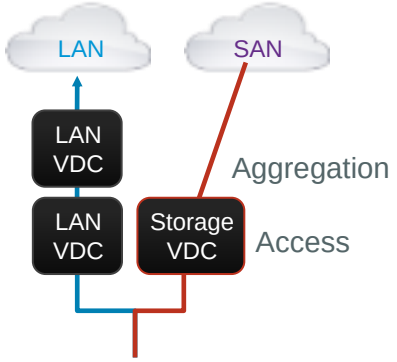
Isolating Security Domains



Separating Networks



Collapsing Architecture Layers



LAN/SAN Isolation

RESULTING IN

- Lower CapEx—Reduced number of physical switches
- Lower OpEx—Reduced power and management requirements
- Flexible separation/distribution of resources
- Hardware and software fault isolation

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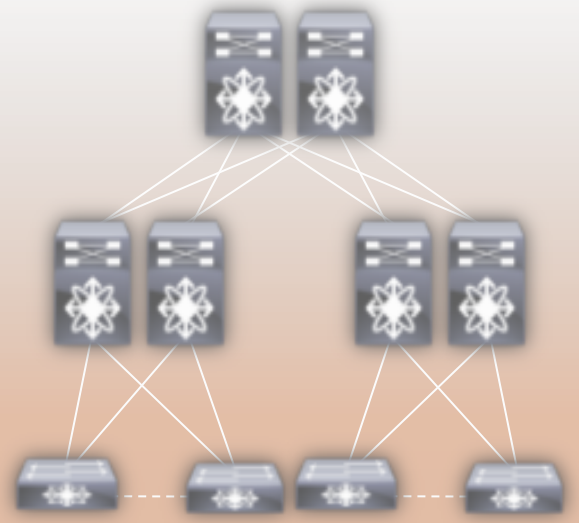
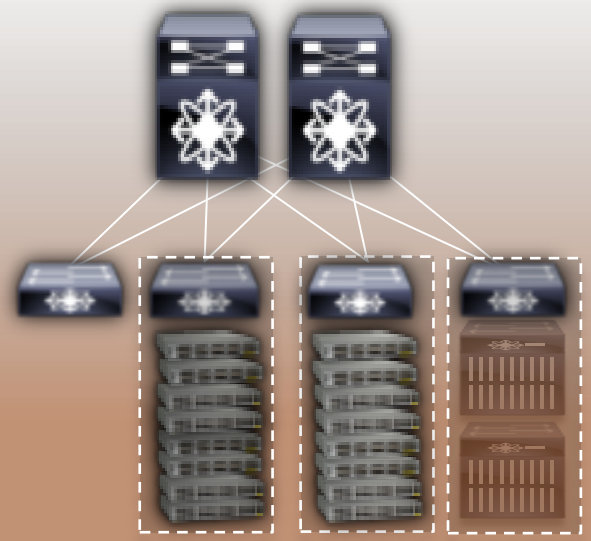
Unified Fabric

Architecture Flexibility Through Nexus Product Range

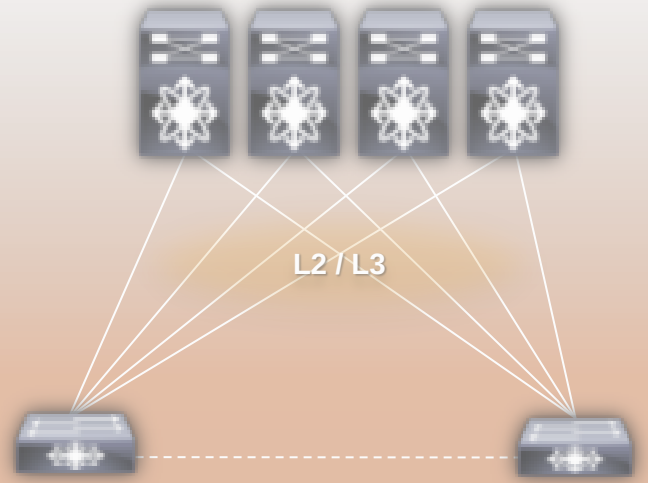
Traditional Approach



FEX and Switch Scaling



Leaf/Spine



Infrastructure Virtualization and Scale

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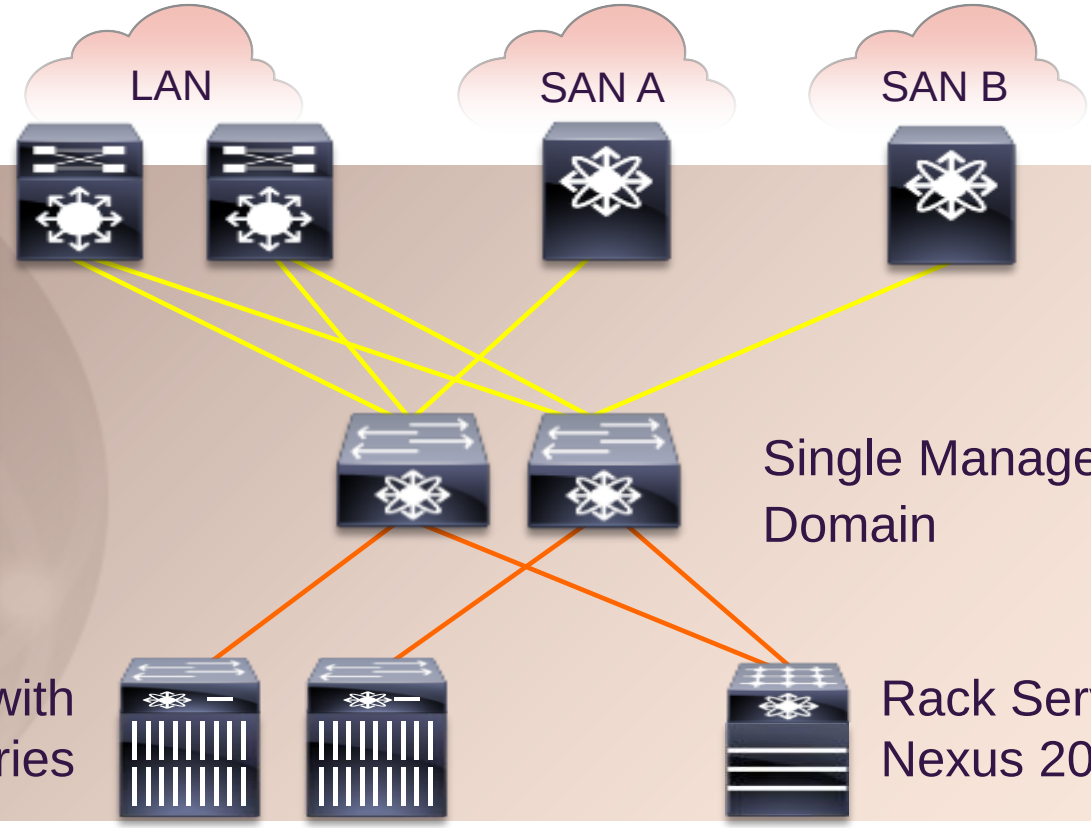
Cisco Nexus B22 Blade Switches

Legacy Blade and Rack Server Footprint

Unified Fabric Value across Vendors

- Consolidation of switch modules and cabling
- Network management point consolidation and consistency with rack servers
- Nexus Fabric Visibility within Blade Chassis
- End-to-end FCoE and/or FabricPath



HP C7000 (657787-B21*) / Dell M1000e (M8024-K*) / Fujitsu BX9/400 (N2K-B22FTS-F)

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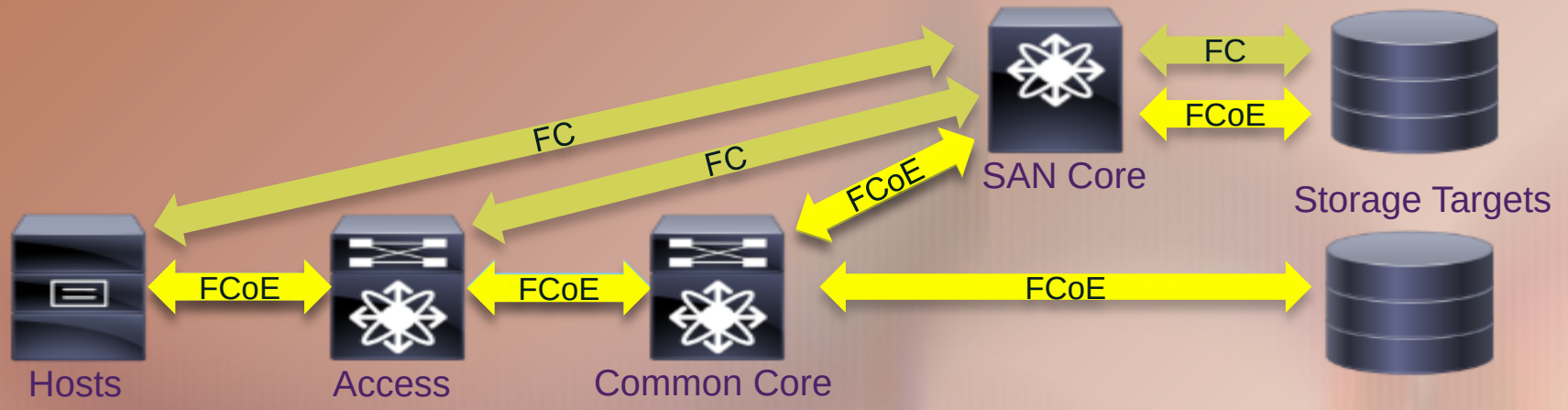
*Orderable from Server Vendor

Convergence Through the Data Center
Industry's Most Successful FCoE Platform



Nexus
and
MDS 9500
High-Performance,
Resilient Switches
for LAN/SAN

Benefits

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

Delivering Highly Scalable End-to-End Convergence

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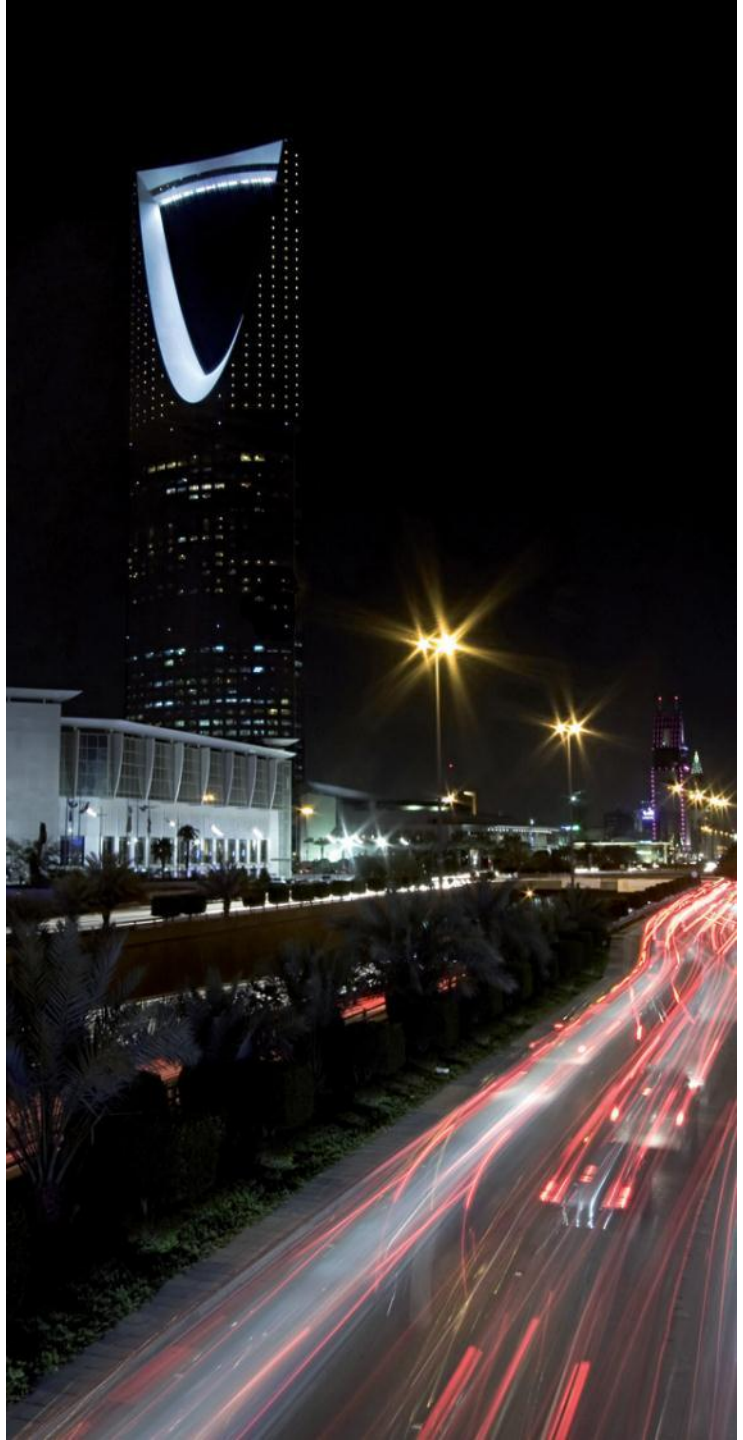
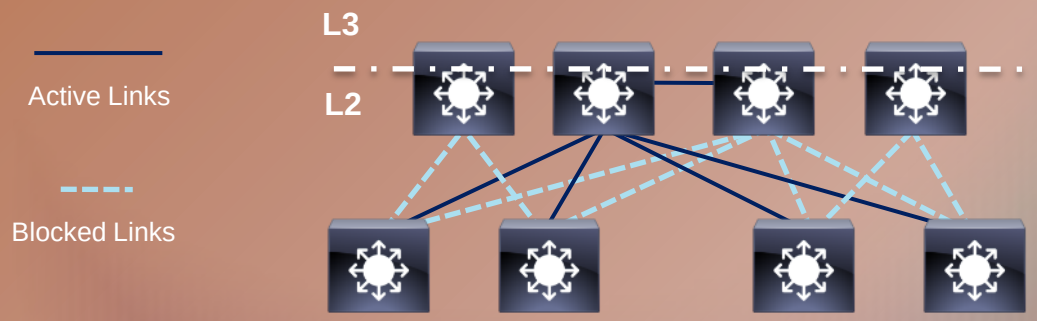
Resilience



Scaling Bandwidth with FabricPath

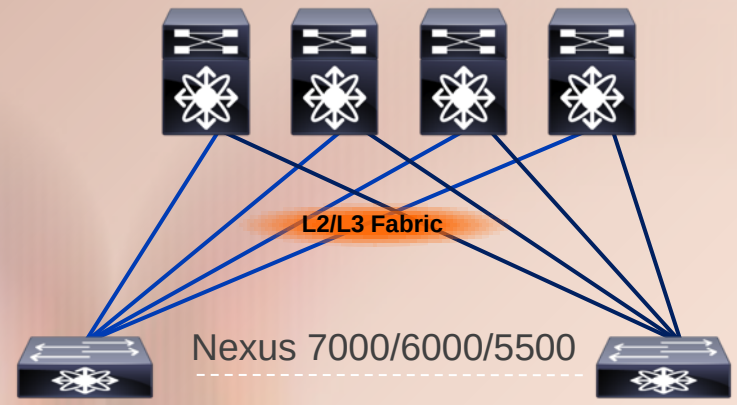
Benefits and Use Cases of FabricPath

Traditional STP Based Network



Less than 30% Links Forwarding

Nexus FabricPath Based Network



100% Links Forwarding

Benefits

- Scalable Network Designs -12,000+ 10GE
- Laye 2 Equal Cost Multi-pathing (ECMP) designs
- Integrated L2 / L3 capabilities
- Seamless inter-operability with Classical

Use-cases

- Scalable DC Pods in HPC
- Layer 2 Interconnect fabric within Data Centers
- L2/L3 Peering environment

Scaling Data Center Fabrics, Enhanced Scalability

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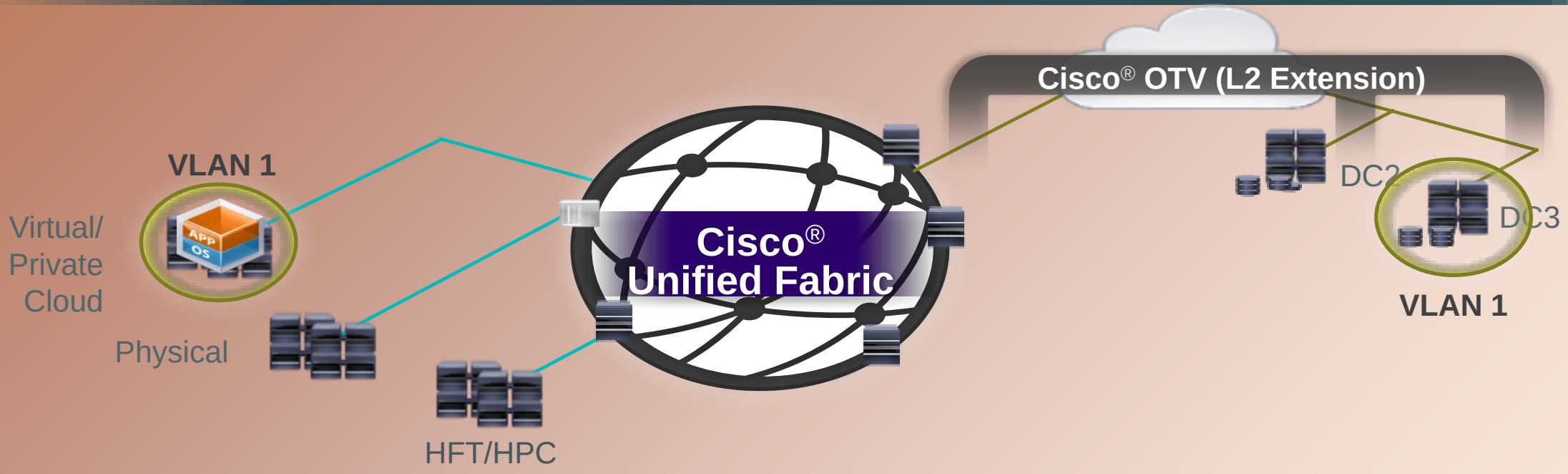
Geographic Span

Cisco Overlay Transport Virtualization—OTV

Workload Mobility Across Data Centers/Cloud—Extending L2 over Any Network



USE CASES

- Inter and intra DC connectivity— across L3
- Use all data center capacity
- Back up data center, rapid recovery
- Data center maintenance outage

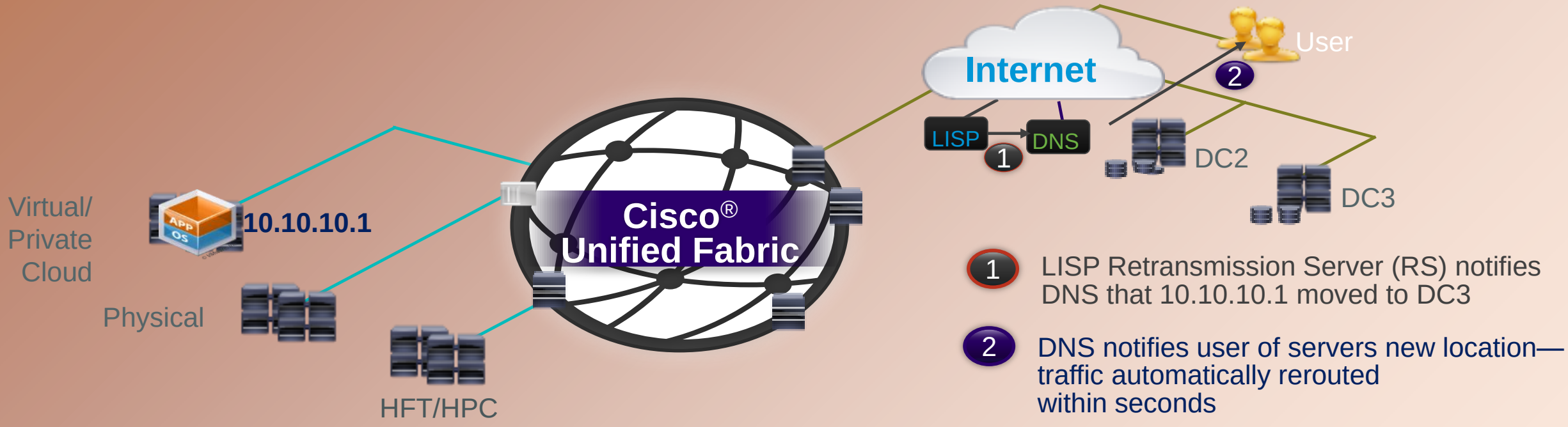
RESULTING IN

- Scalability across multiple data centers
- Seamless overlay—no network redesign required
- Single-touch site configuration
- High resiliency
- Maximized bandwidth

Geographic Span

Cisco Locator ID/Separation Protocol—LISP

Workload Mobility for Cloud—Crossing Layer 3 Boundaries



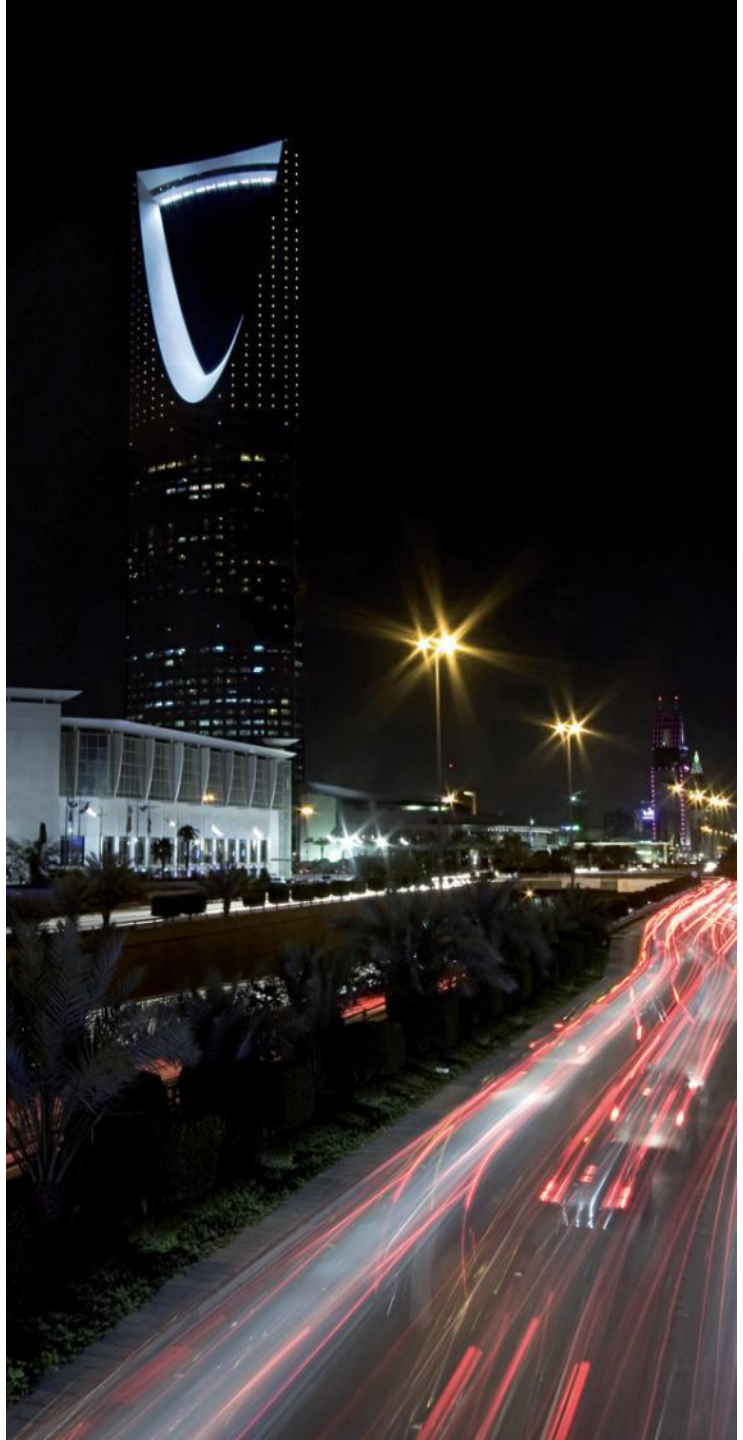
1 LISP Retransmission Server (RS) notifies DNS that 10.10.10.1 moved to DC3

2 DNS notifies user of servers new location—traffic automatically rerouted within seconds

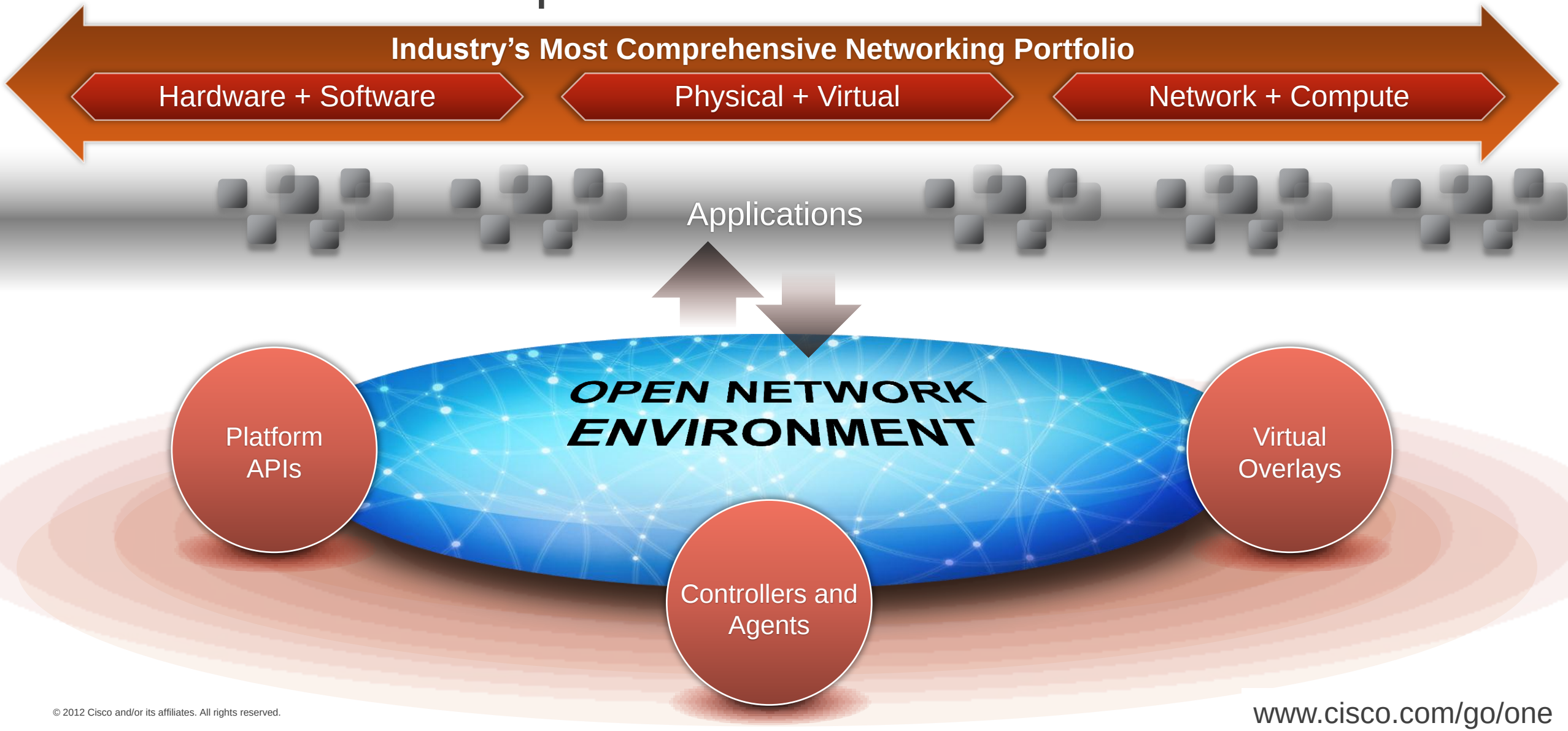
RESULTING IN

- Seamless global workload mobility across cloud
- Inter- and intra-data center IP mobility
- Network scalability, secure multitenancy
- Simplified IPv6 transition

Programmability



Overview: Cisco Open Network Environment



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Industry Reaction

"One of Cisco's primary catalysts for growth is the Cisco Open Network Environment or the Cisco's ONE"

Cisco: Now is the Time to Buy, Seeking Alpha, 19 Dec 2012

"Cisco's onePK network automation solutions give a tantalizing preview of the myriad ways software control can be applied to both virtual and private networks"

Kurt Marko, SDN: From Slideware to Software in 2013

"Our takeaway regarding Cisco's SDN strategy is that it is a practical and flexible approach that responds to different requirements and different customers use cases"

Credit Suisse, December 2012

"Given Cisco's widespread deployments in business and carrier networks, the impact [of Cisco ONE] on operations and performance could be huge."

16 Most Anticipated Tech Products of 2013, CIO.COM, December 2012

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Summary

Cisco's Data Center Portfolio

Leading with Innovation

Nexus 5K

Nexus 2K

Nexus 6K

Nexus 3K

Nexus 1K

Unified Fabric

Nexus 7K

Blade Offerings

MDS 9000

Financial

Low Latency

MSDC/Cloud

Scalability

Service Provider

Agile Service Delivery

Enterprise

Private Cloud Automation

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Delivering
High-Performance
Flexible
Programmable
Resilient
Lowest TCO
Cisco
Unified Fabric

Thank you.