

The Unified Data Center for Cloud

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SVP and GM Data Center Group



Data Center Demands



**Business
Process Agility**



**Regulatory
Compliance**



Security Threats



**Budget
Constraints**

Business Challenges



Technology Trends

Cloud



Data Deluge



**Energy
Efficiency**

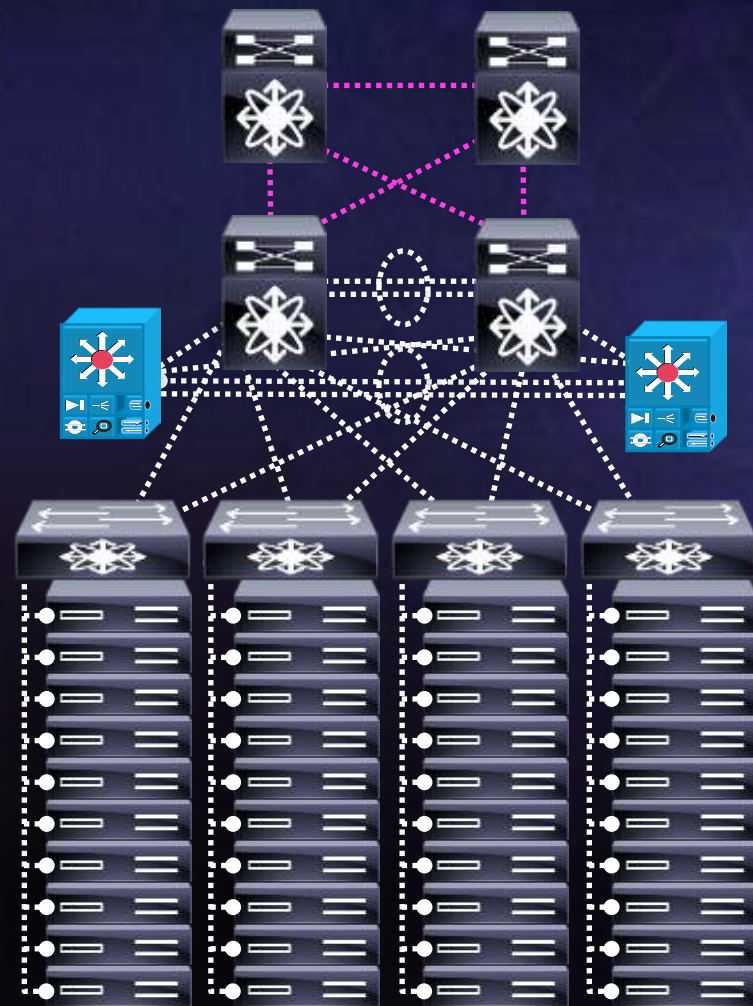


**Proliferation
of Devices**



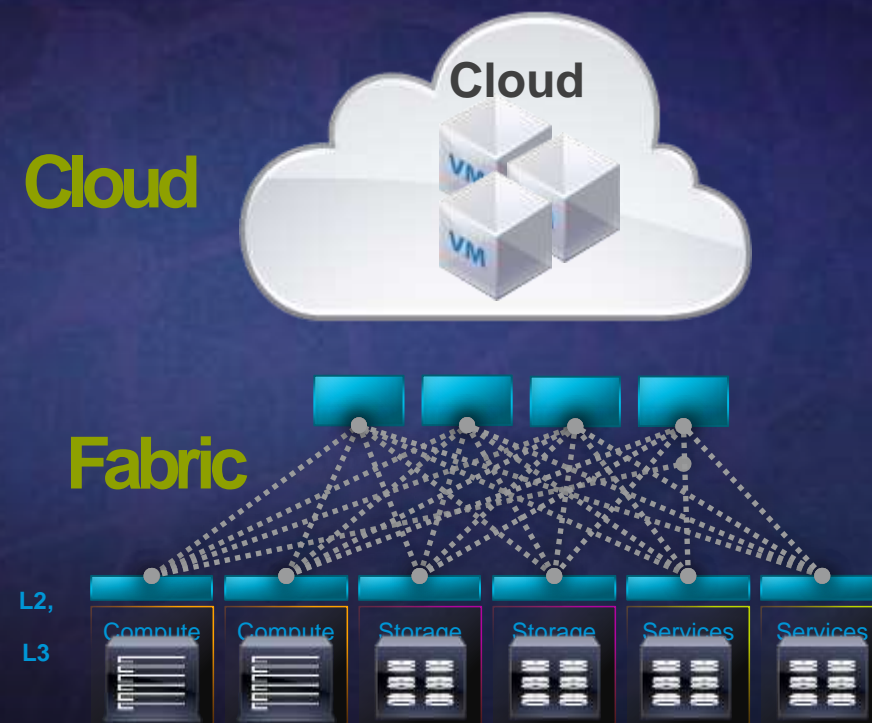
And Data Centers Need to Evolve

Distributed



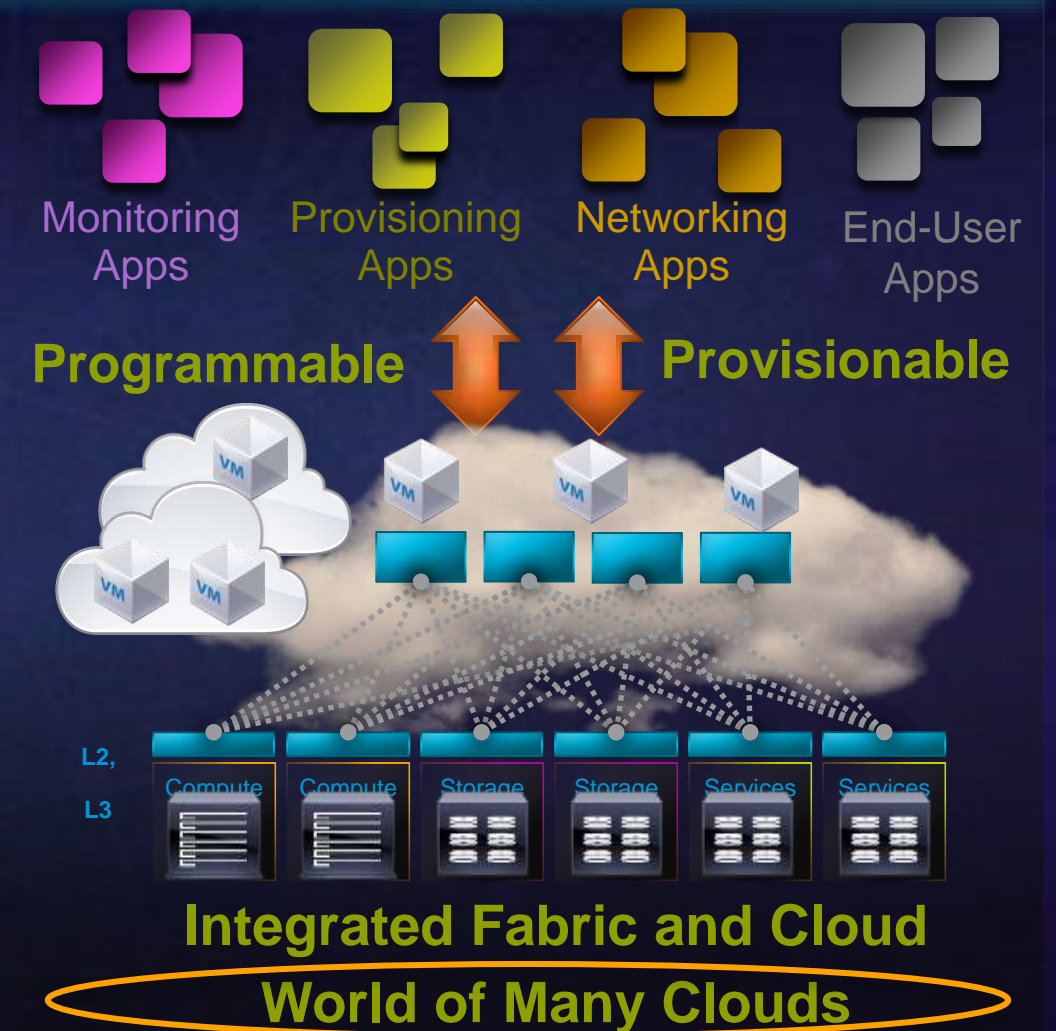
- Manual Provisioning
- Limited scaling
- Rack-wide VM mobility

Fabric Based



- Policy-based Provisioning
- Scale Physical and Virtual/Cloud
- DC-wide/Cross-DC VM Mobility

Application Driven



- Service-centric Provisioning
- Flexible – Anywhere, Anytime
- Cross-cloud VM Mobility

The World Is Changing

50B
Connected
Devices by
2020

More data in
2012 created
than the past
5000 years

2/3rds of
mobile traffic
will be video
by 2017

71% of server
workloads will
be virtualized
by 2016

80% of
enterprise apps
were deployed
in the Cloud in
2012



Mobile



Cloud



**New
Breed
of Apps**



**Internet
of
Things**

APPLICATION-CENTRIC INTELLIGENT NETWORK

Harness Network Value

Drive Business Agility

Create Operational Simplicity

Unified Computing System (UCS)

Cisco UCS Architecture



**Industry
Standard APIs**

UCS Manager



**FABRIC
INTERCONNECTS**



Cisco UCS 6296 XP

Fabric Extenders
(I/O modules)



COMPUTE
Blade Form Factor

Rack Form Factor

UCS: Bare Metal Abstraction



Programmable Infrastructure

- Abstraction of bare-metal configuration
- Encapsulated in Cisco service profiles
- Available through an intuitive GUI, CLI or XML API
- Over 9000 objects in system management model

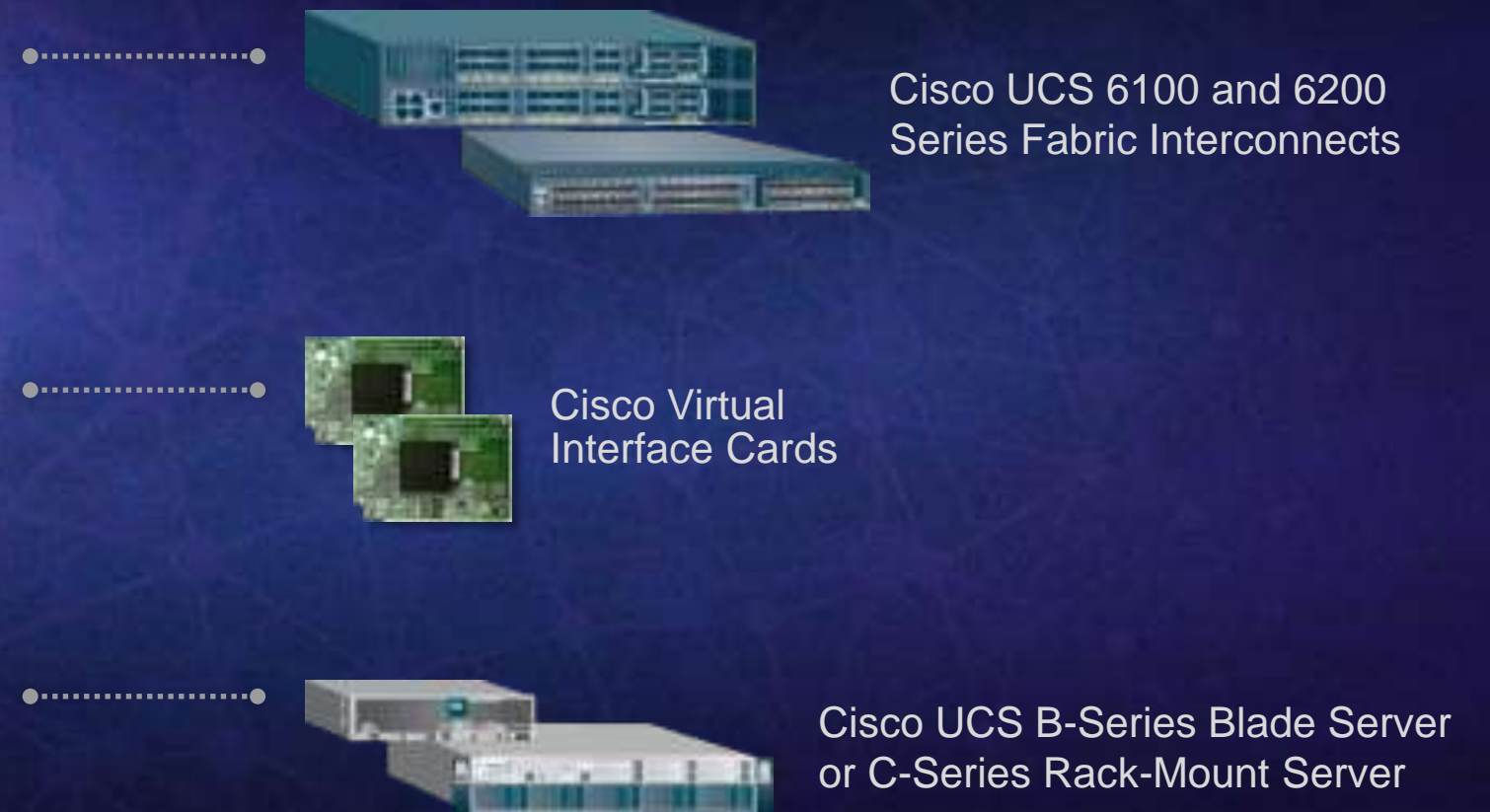
Network interface card (NIC) configuration:

MAC address, VLAN, and QoS settings; host bus adapter

HBA configuration: worldwide names (WWNs), VSANs, and bandwidth constraints; and firmware revisions

Cisco Service Profile

Automated, Policy-Based Configuration of Entire Hardware Stack



UCS: Embedded Automation

Integrated, Policy-Based Infrastructure Management



Storage SME



Server SME



Network SME

Uplink port configuration, VLAN, VSAN, QoS, and EtherChannels

Server port configuration including LAN and SAN settings

Network interface card (NIC) configuration: MAC address, VLAN, and QoS settings; host bus adapter HBA configuration: worldwide names (WWNs), VSANs, and bandwidth constraints; and firmware revisions

Unique user ID (UUID), firmware revisions, and RAID controller settings

Service profile assigned to server, chassis slot, or pool

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1

Subject matter expert define policies

2

Policies used to create service profile templates

3

Service profile templates create service profiles

4

Associating service profiles with hardware configures servers automatically

Cisco UCS Fabric-Based Computing



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Standard APIs**

UCS Manager



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Integrated Solutions

Innovations With Industry Leaders

Vertical Solution Focus	Healthcare	Financial Services	Manufacturing	Retail
<p>Applications</p>	<p>Enterprise Apps</p>	<p>Databases</p>	<p>Business Analytics / Big Data</p>	<p>Virtual Desktop</p>
<p>Management</p>				
<p>Operating System and Hypervisor</p>				

Smart Solutions

Vblock

FLEXPOD

VXI

RISC Migration

Cisco Unified Computing System

Fastest Growing Product in the Market

- Greater than **20,000** unique UCS Customers
- **#3 market share** in x86 blades (#2 in the US)
- Greater than **3,000** UCS channel partners
- **44 ISVs** writing to UCS API (and growing)
- **Ten of thousands** of supported applications
- **73 world record** performance benchmarks to date
- **Numerous industry awards** and certifications

Unified Fabric

Cisco's Data Center Nexus OS

Leading with Innovation



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

Cisco Unified Fabric Switching Innovations

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

- 10GbE Access Scale/Compact 40GbE Agg
- Low Latency Spine/Leaf
- 10GbE/40GbE Converged Fabric

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

Evolving Unified Fabric

Vinci Architecture — Leading the Data Center Scalability and Innovation with Nexus

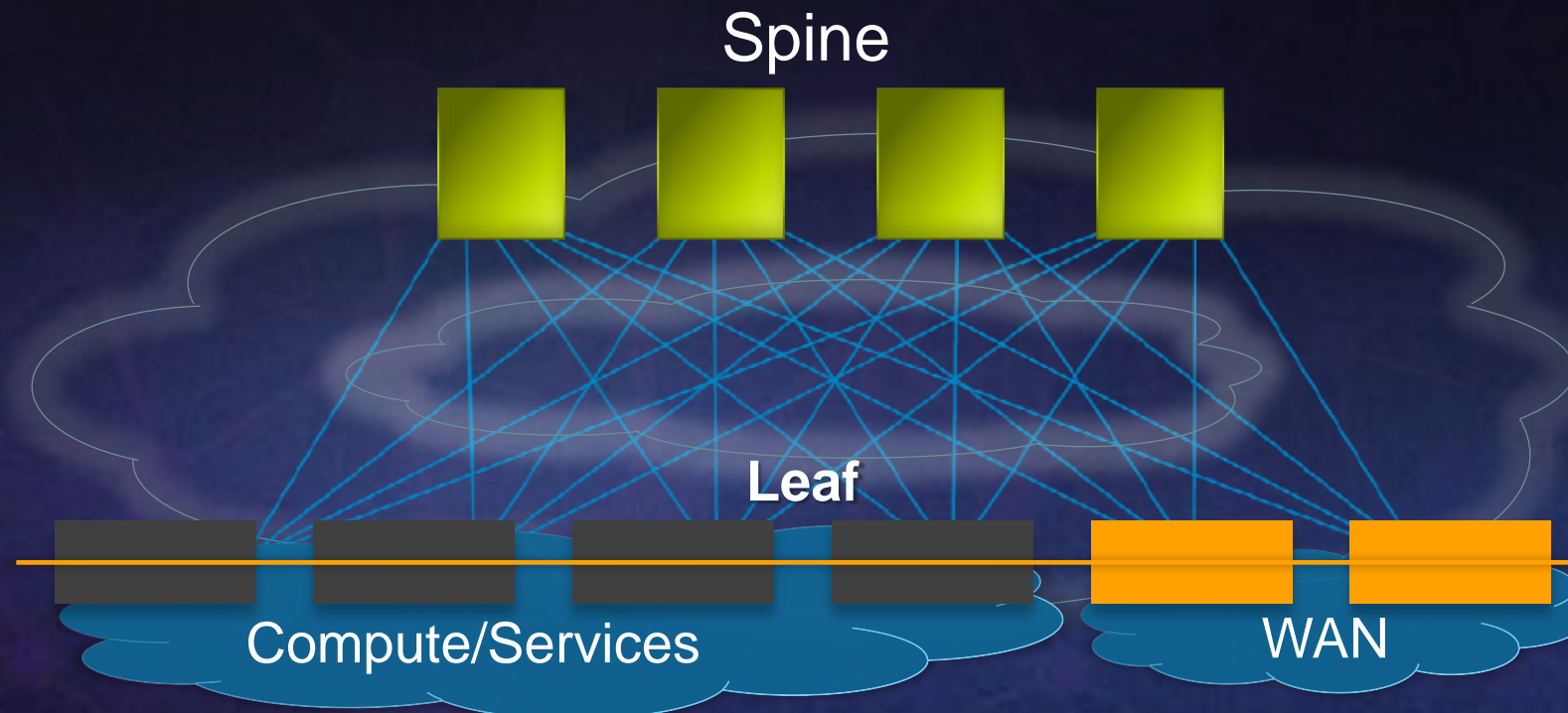
Extensible Network Topologies

Simplified Management

Enhanced Forwarding

Distributed Control Plane

Integrated L2/3 Across All Nodes



Massive Scale
On Demand

Secure
Multi-Tenancy

Automation and
Simplicity

■ Spine node
■ Border leaf
■ Leaf node

NETWORK-BASED NEXT-GENERATION CLOUD FABRIC

Combined with Investment Protection

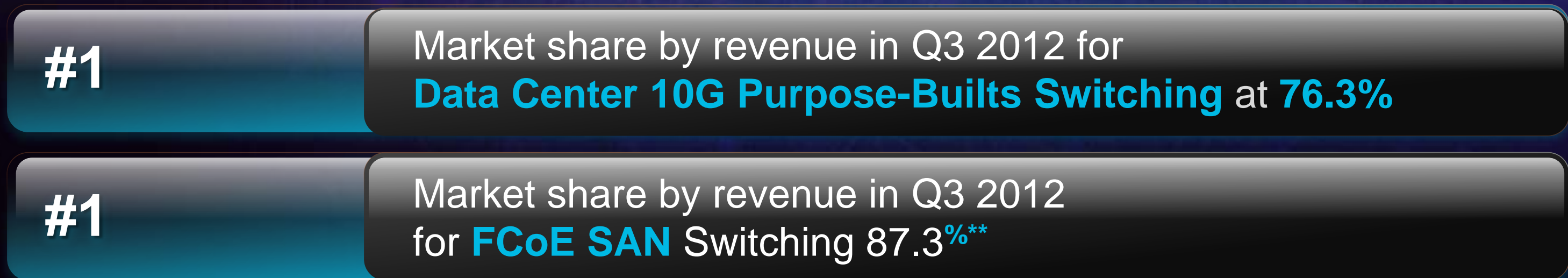
Cisco Unified Fabric

Continuous Market Leadership

DATA CENTER TECHNOLOGY LEADER



DATA CENTER SWITCHING LEADER

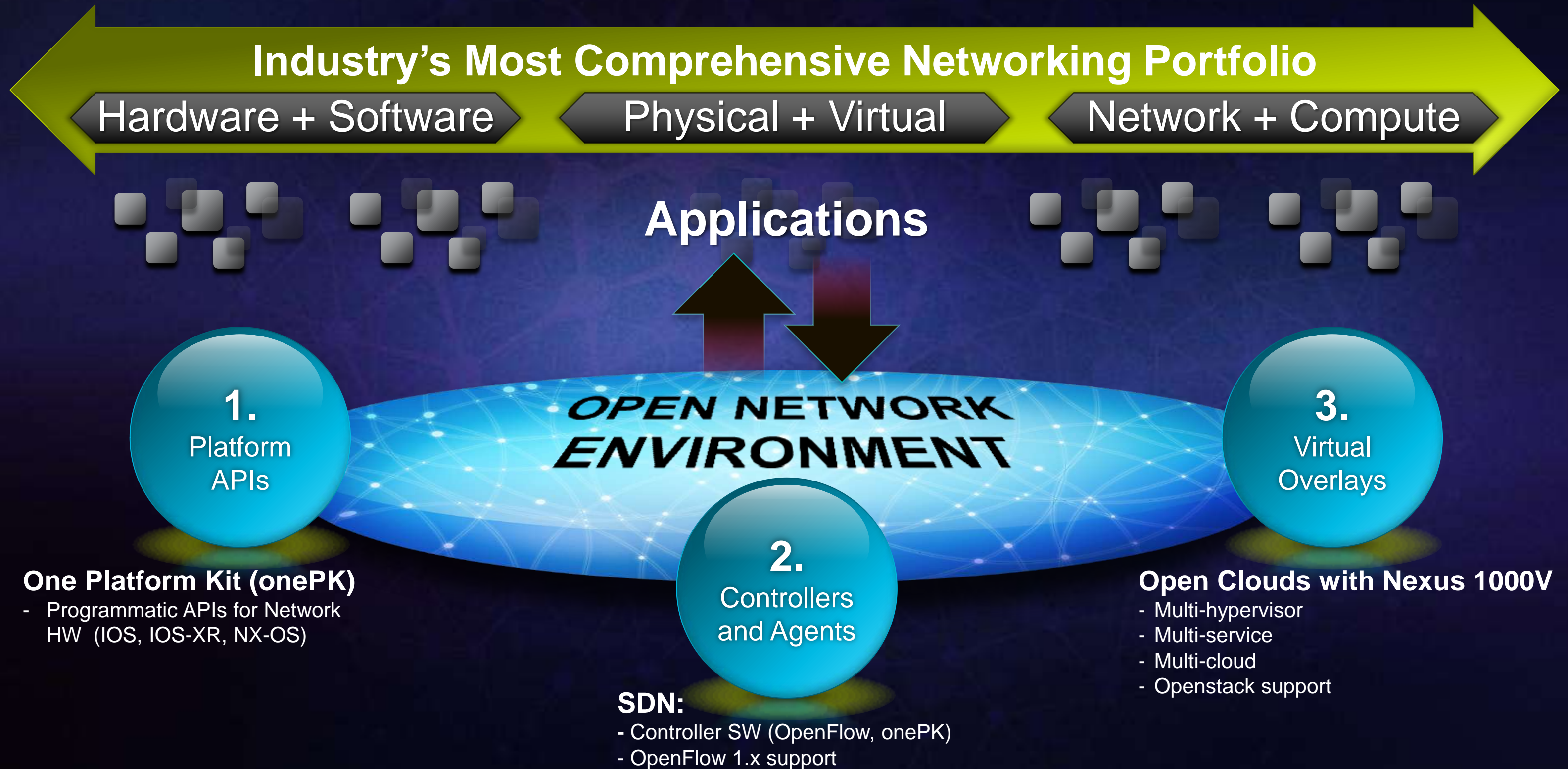




Leading the Way:
Cisco **O**pen **N**etwork**E**nvironment

Flexible. Programmable. Application-aware.

Cisco Open Network Environment



Cisco ONE – 1H13 Execution Plan

Platform APIs

onePK Platforms

- ISR G2 
- ASR 1000 
- ASR 9000*
- Nexus 3000 
- Nexus 7000*

Controller/Agents

ONE Controller



OpenFlow Agents

- Catalyst 3000*
- Catalyst 6500*
- Nexus 3000 
- Nexus 7000*
- ASR 9000*

Overlay Networks

CSR 1000V

Nexus 1000V Updates

- N1KV Hyper-V 
- N1KV KVM*
- VXLAN Gateway 
- Service Chaining (w/ vPath) *Shipping (3Q12)*

Cisco Edition of OpenStack *Shipping (4Q12)*

N1KV InterCloud 

Virtual NAM (vNAM)*

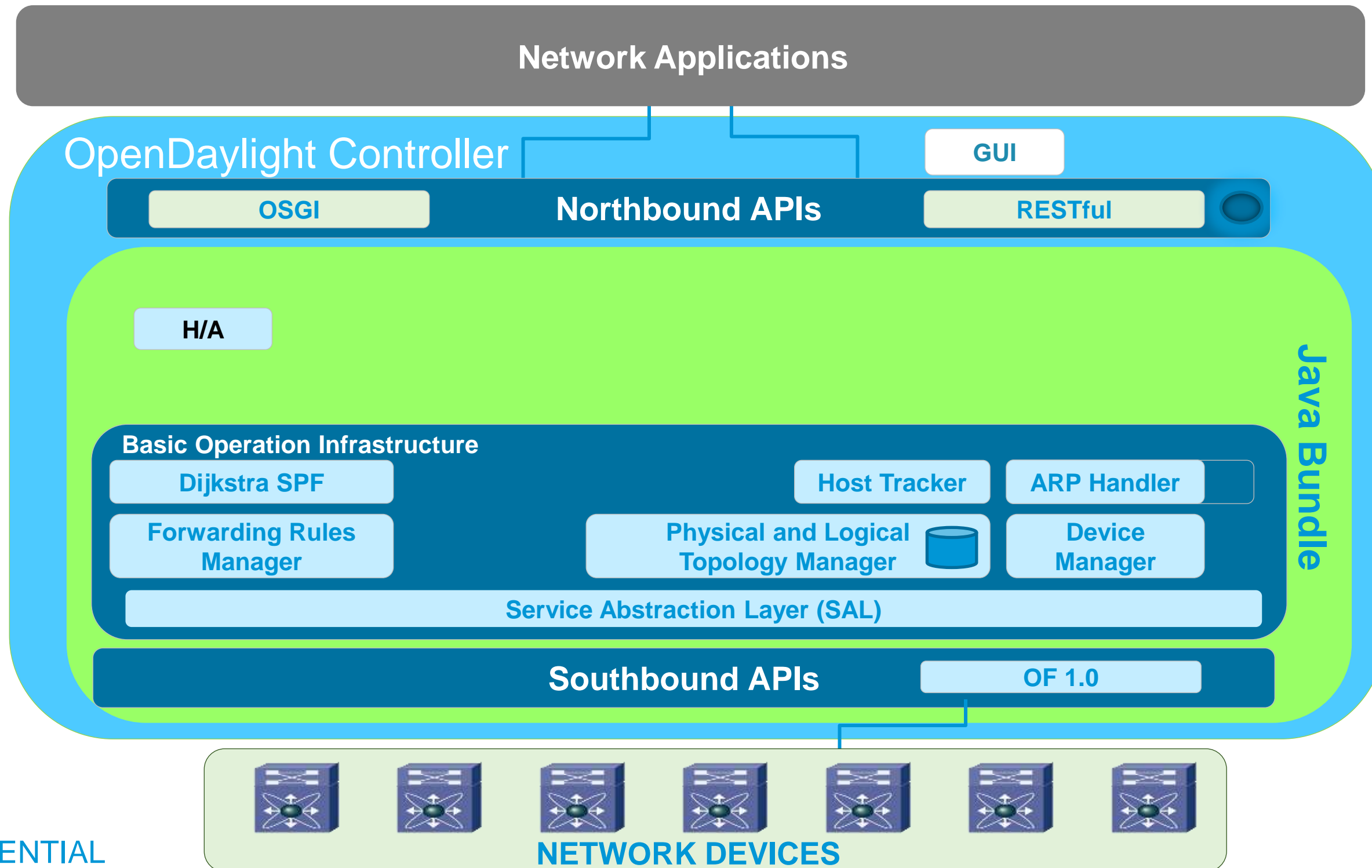
What is Project Daylight?

Daylight is an open source project formed by industry leaders and others under the [Linux Foundation](#) with the mutual goal of furthering the adoption and innovation of Software Defined Networking (SDN) through the creation of a common vendor supported framework.



CONFIDENTIAL

OpenDaylight Controller: A Basic OF 1.0 Offering



CONFIDENTIAL

New Controller Applications

Extending and Customizing with Cisco ONE Portfolio

**Previously
Announced**

Network Slicing

Dynamic network partitioning of the network using logical associations provided by ONE Controller's centralized view

Phase 2 Apps

Network Tapping

Ability to monitor, analyze, and debug network flows using conventional network switches

Custom Forwarding

Using unique parameters such as low latency to program specific forwarding rules across the network

**Improved economics
and more flexibility**

**Tie network behavior to
business rules**

All Controller Apps are in Customer PoC

OpenStack Quantum and Cisco's Open Network Environment

Logical Containers for Each Application in a Multi-tenant Cloud



API-driven Open Cloud Platform



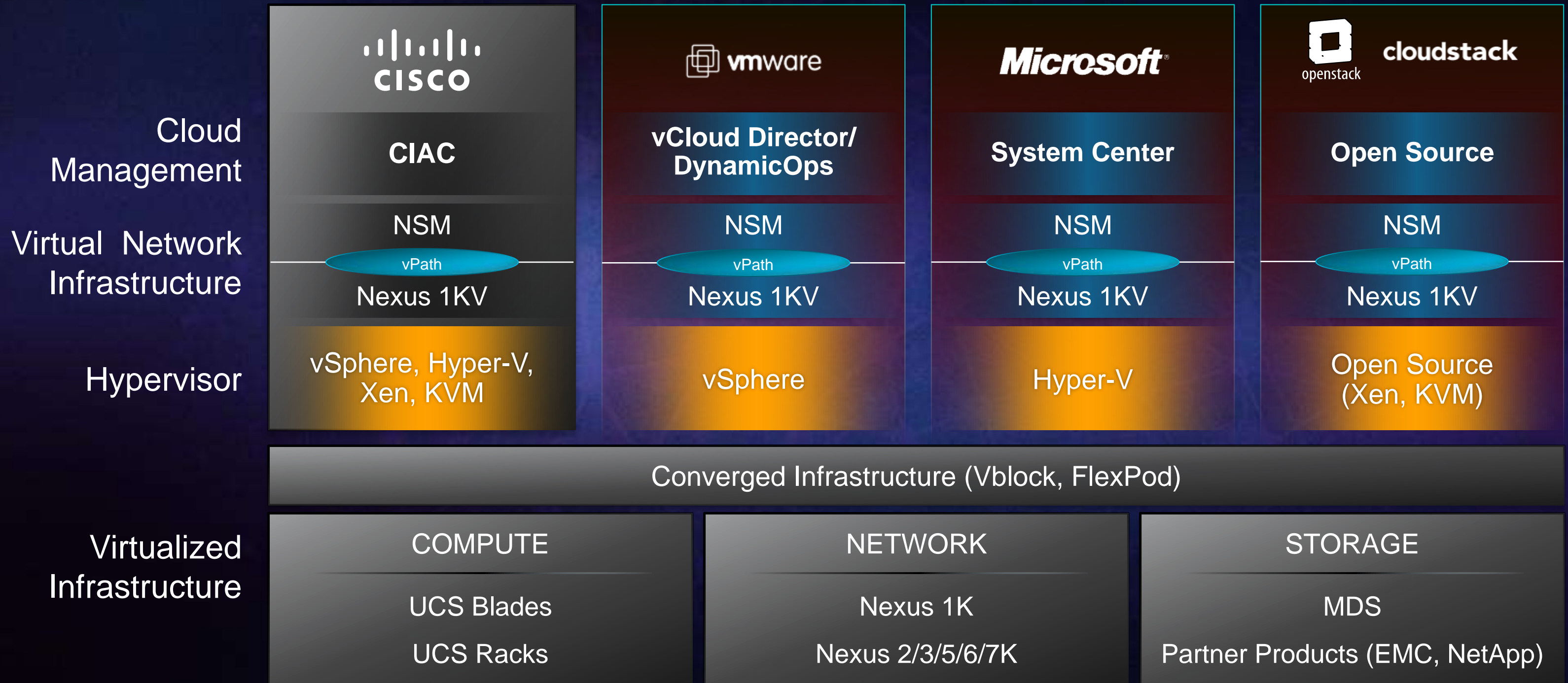
Programmable Infrastructure



Unified Management Software

Cisco Multi-Hypervisor and Multi-Orchestrator Strategy

Cloud Infrastructure Stacks Supported:



Bridging to the World of Many Clouds

Cisco's Vision for Hybrid Cloud

Enterprise Data Center

Public Cloud



Benefits

Network consistency
Security consistency
Policy consistency

Operating Model

Enterprise Managed
Provider-managed
service

Use Cases

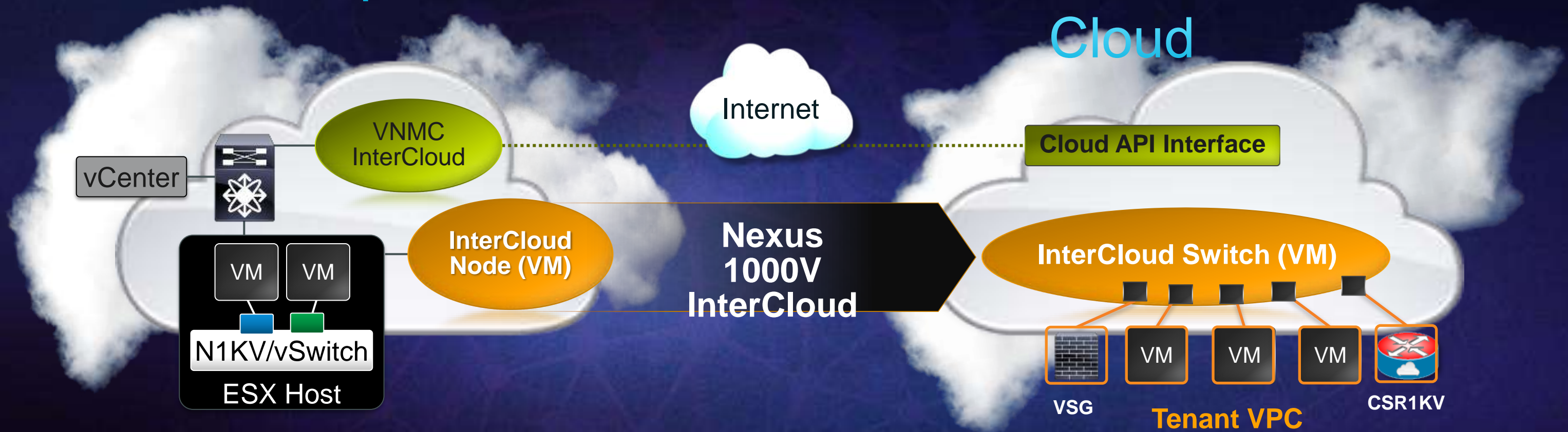
Bursting
DR
Training
Upgrade/Migration

Bringing it all together: Hybrid Cloud

A Simplified, Seamless Extension of the Data Center to Public Cloud

Enterprise Cloud

Provider Cloud



Nexus 1000V InterCloud – Virtual Switch for Hybrid Cloud

VNMC InterCloud – Automated Management

Cloud Network Services – L3 to L7 Virtual Services

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COMPUTE

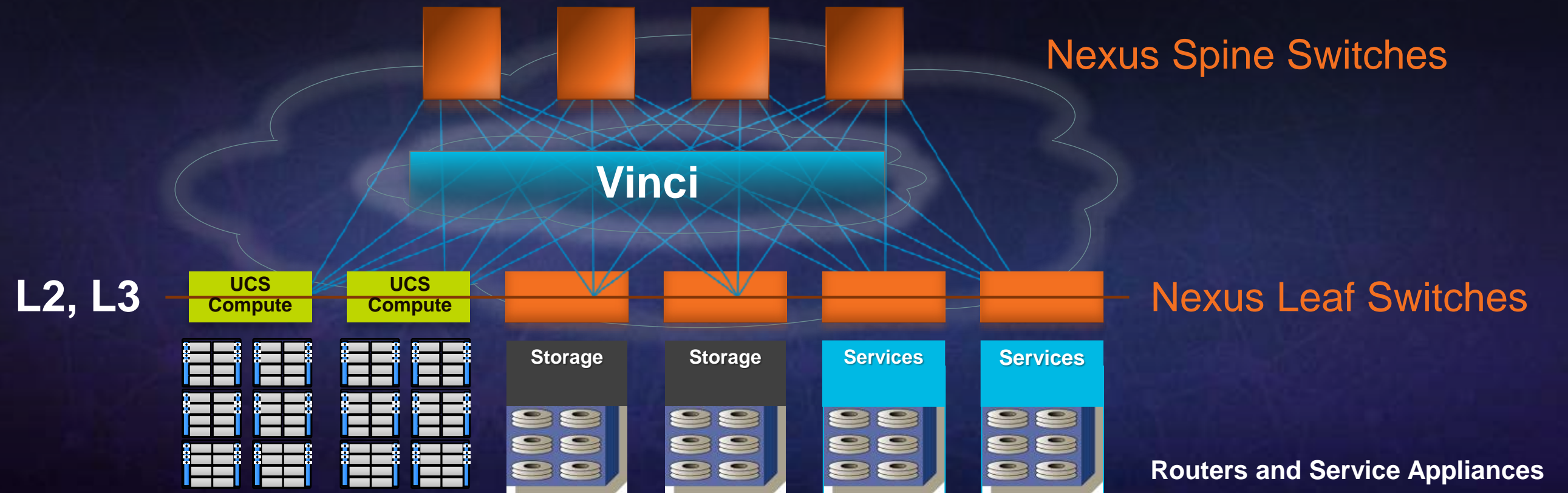
Blade Form Factor



Rack Form Factor

Cisco Fabric-Computing Data Center Architecture

Unified Management SW and APIs



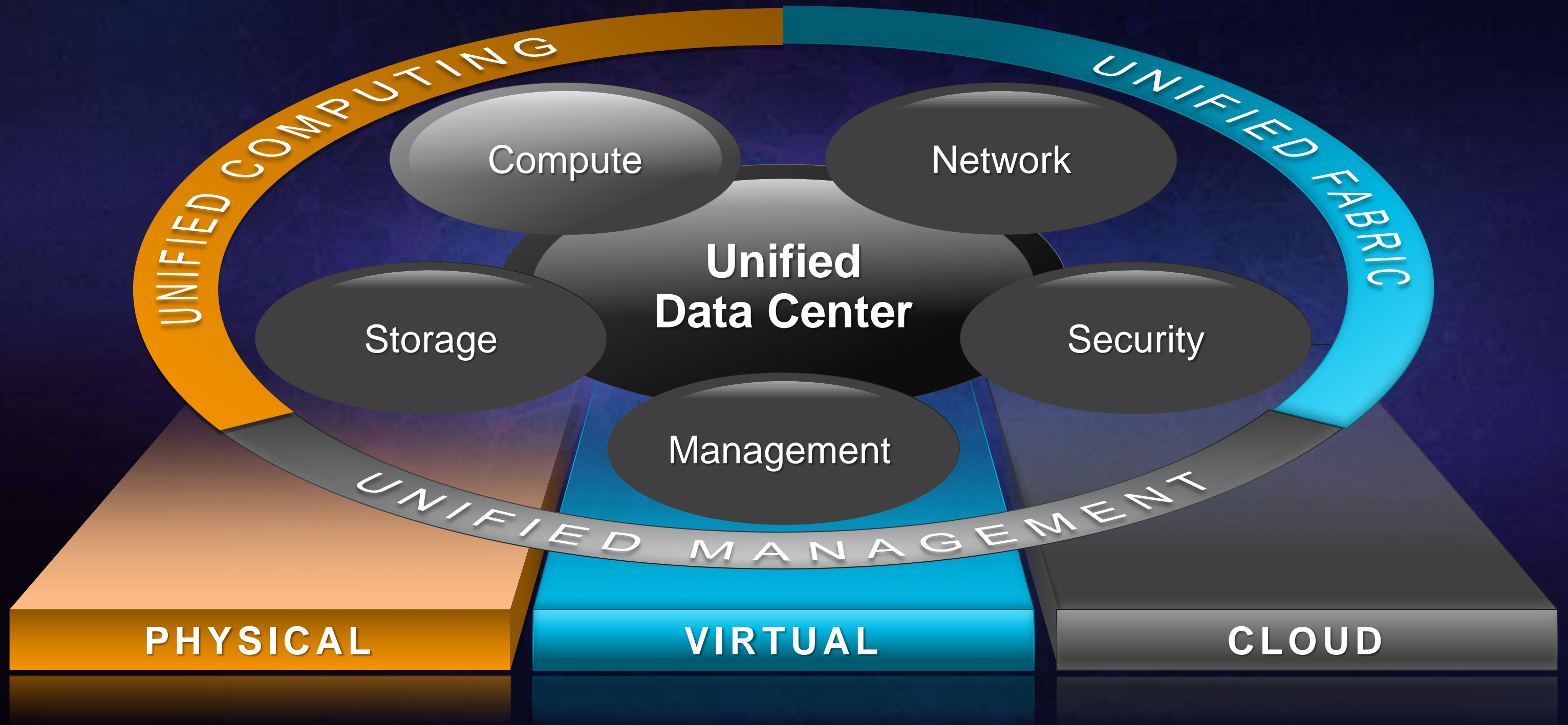
Any Service
Any Where

Scalable and
Multi-Tenant Fabric

Physical and
Virtual

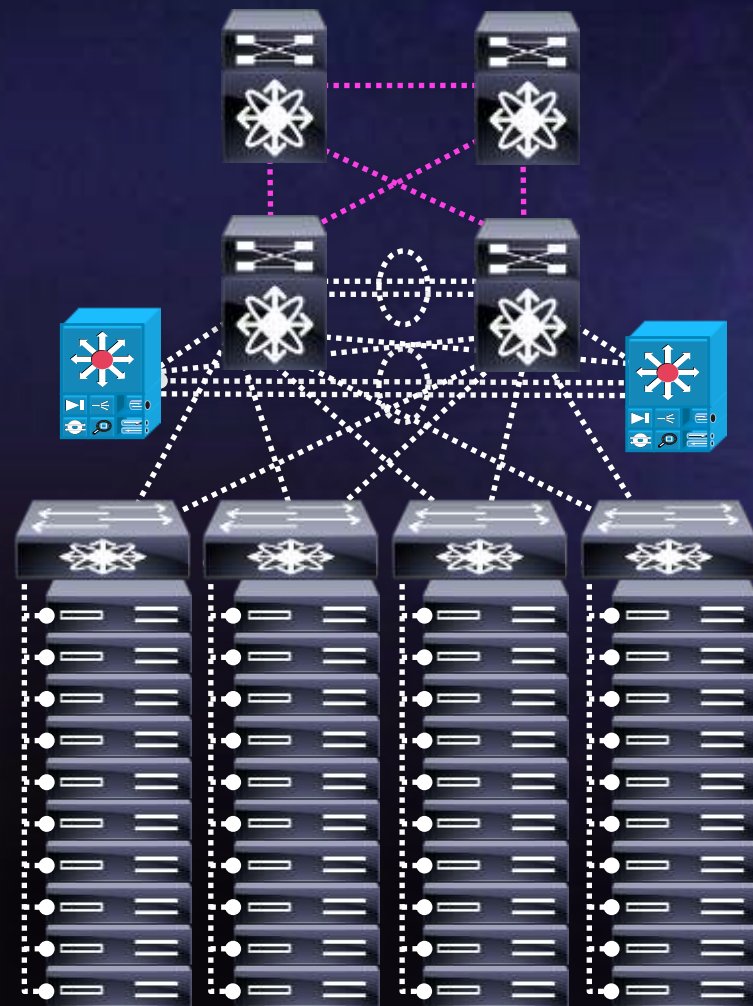
Simplified
management

Cisco's Holistic Solution



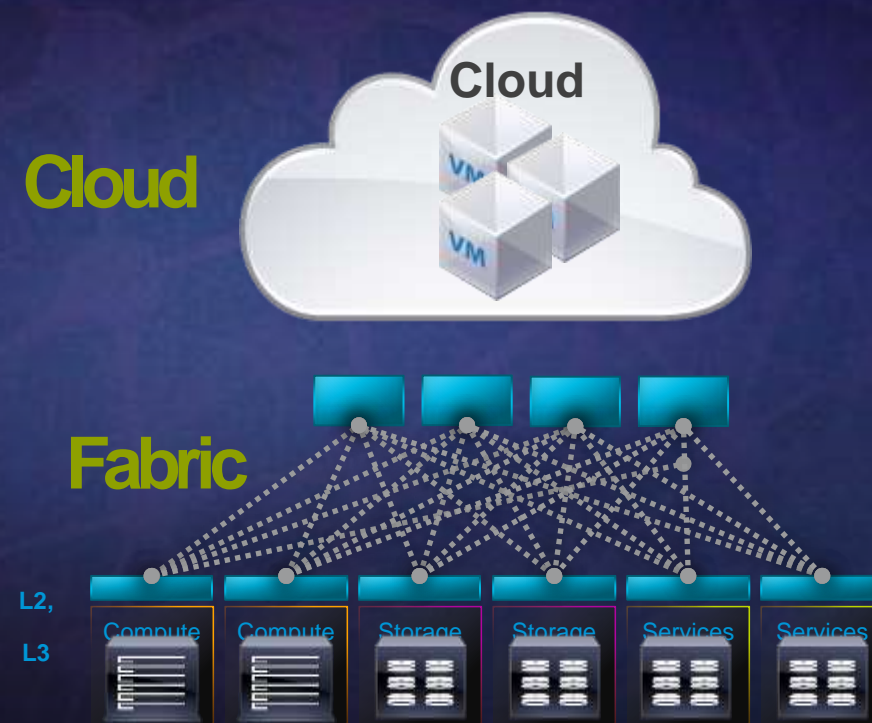
Delivering Business Value through DC Innovation

Distributed



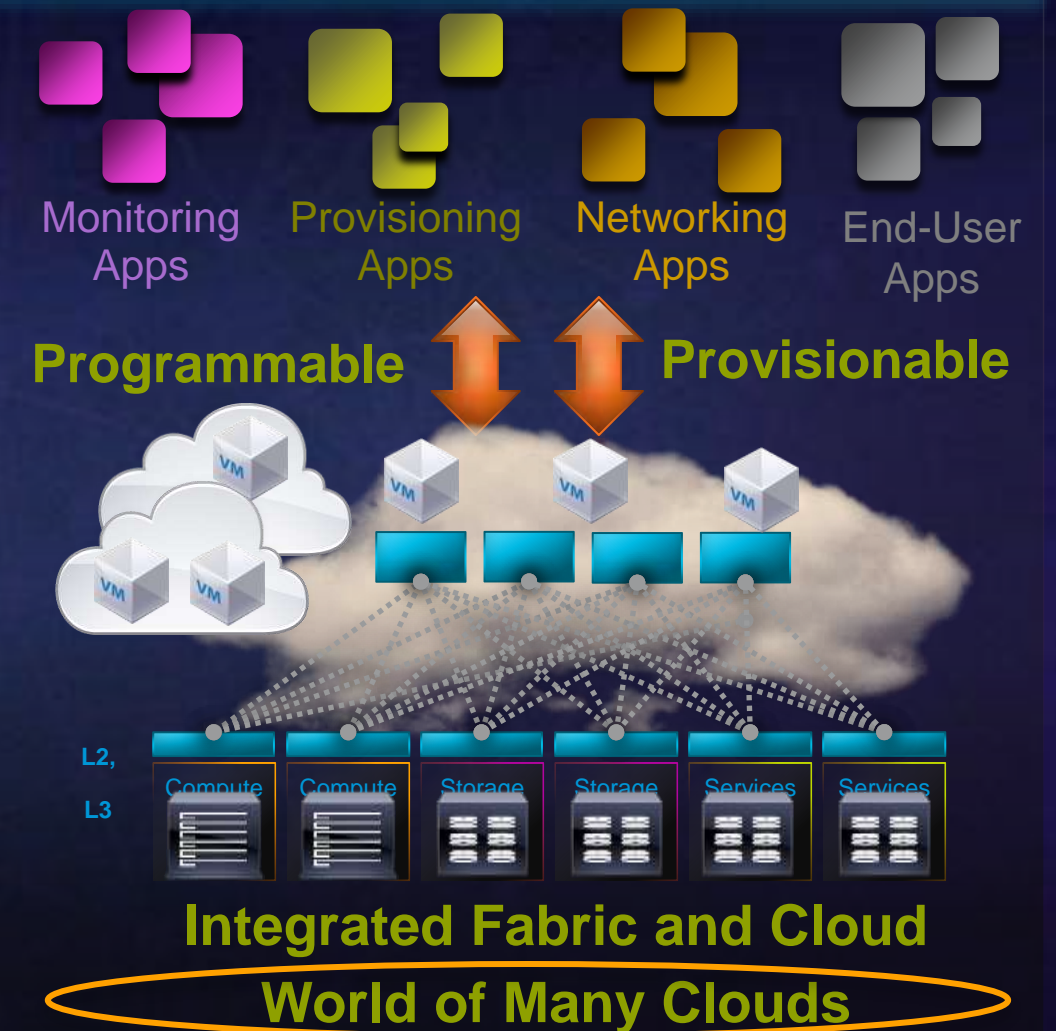
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Cisco Unified Data Center

Changing the Economics of the Data Center

Cisco Unified Data Center

Changing the Economics of the Data Center

Efficiency

Enterprise
IT

Productivity

Service
Provider

Portability

Cloud
Interoperability

Scalability

Massive-Scale
Data Center

Security

Cloud
Integrity

Thank you.