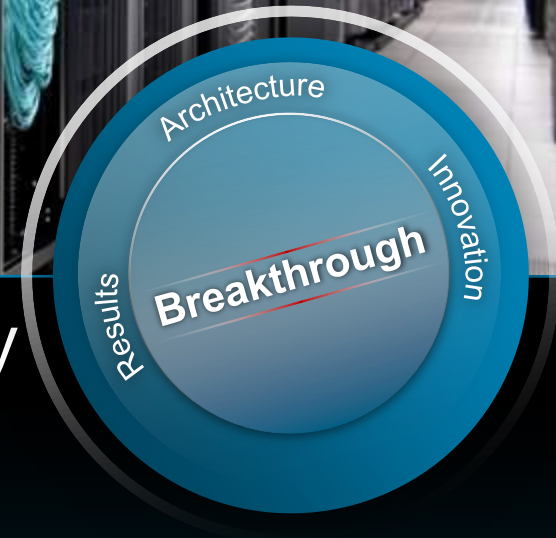




Cisco DataCenter Vision and Strategy



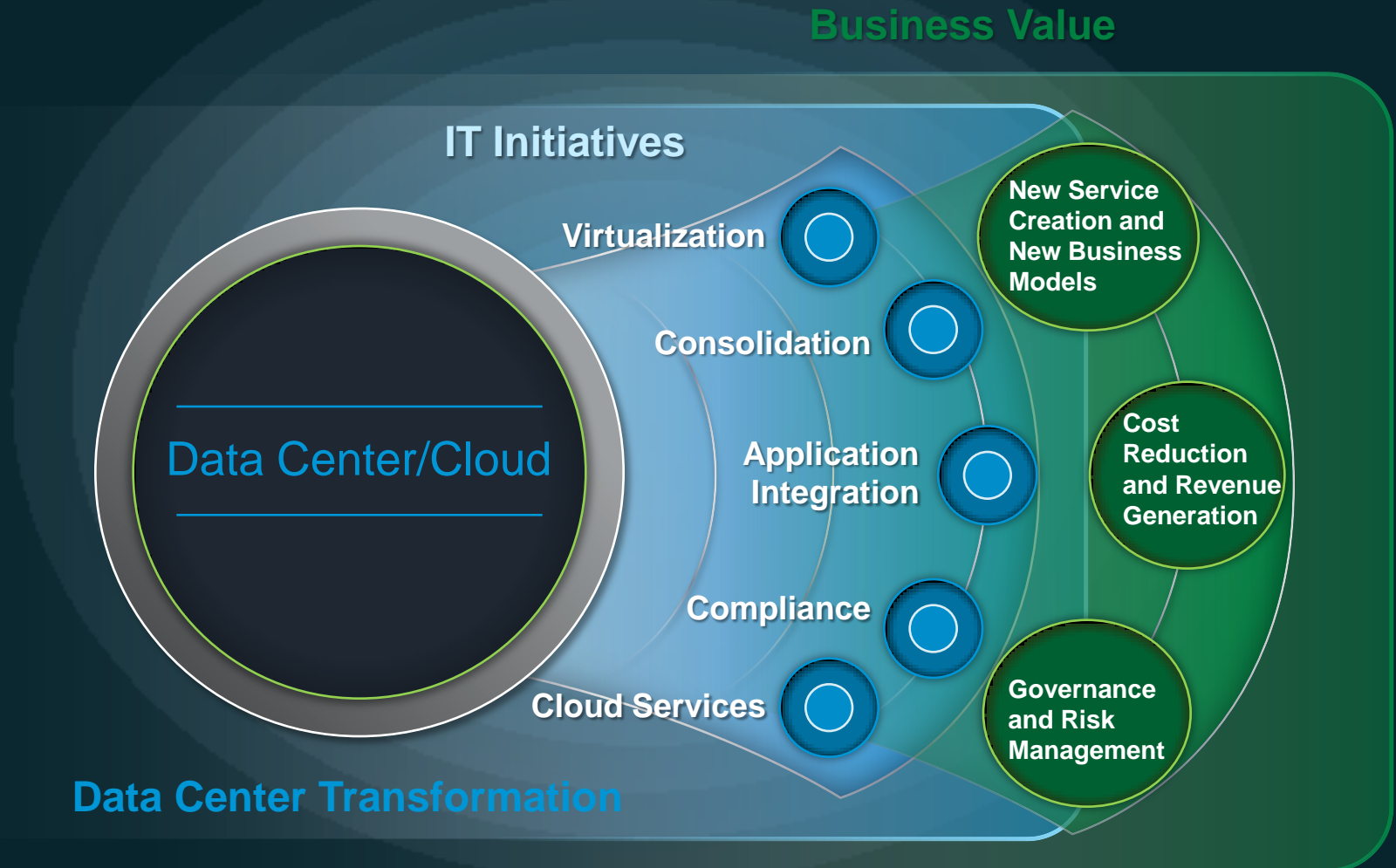
Ed Bugnion

VP/CTO, Cisco Server, Access and Virtualization Technology Group

VMware Partner Exchange Conference. Feb 2011

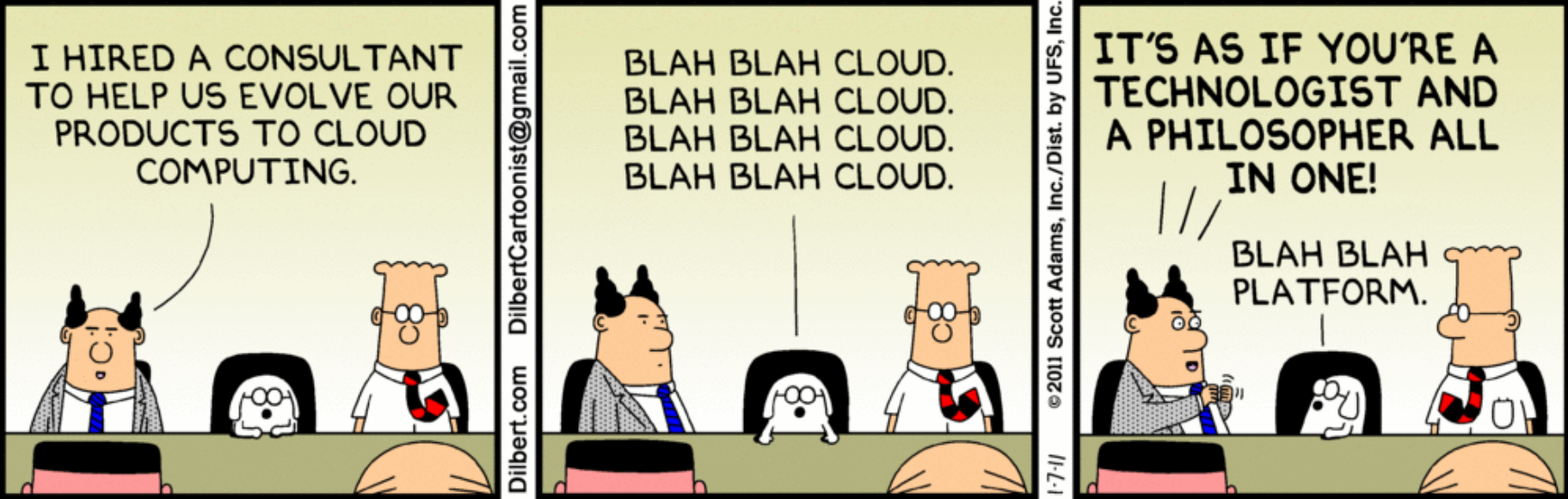
The Data Center

At the Heart of Business Innovation



Source: IT initiatives from Goldman Sachs CIO Study

Cloud in the Dilbert hype cycle



Licensed – PPT only

Axioms

“I Fought the Law, and the Law Won” – Sonny Curtis and the Crickets



Moore's Law (Semiconductors)

Move from more GHz to many-cores



Volume drives sustainable innovation (Economics)

x86 and Ethernet win because scale drives innovation
Incorporate new volume use cases (e.g. virtualization)



Economies of scale in delivery (Economics)

Cloud Computing and “The Big Switch” (see N. Carr)



Laws and Regulations (Politics)

Privacy and confidentiality laws
EU ICT Carbon targets (-20% by 2015)

Cisco's Cloud Strategy

Essential Infrastructure for Building Clouds



For customers to build and operate public or private clouds

Solutions for Deploying Cloud Services



For customers to deploy fully-tested, best-of-breed cloud services

Innovation to Accelerate Use of Clouds

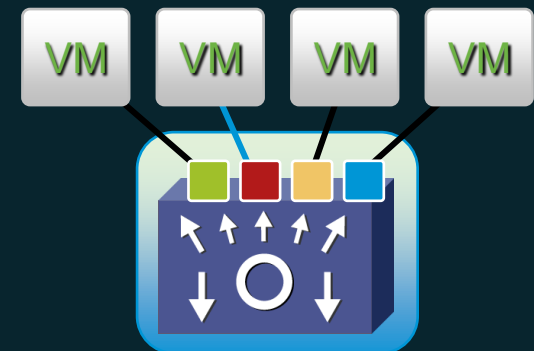
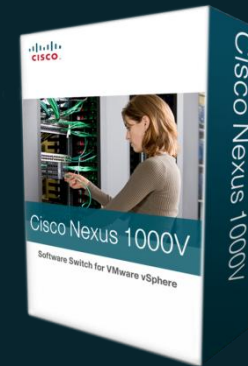


For users to access and collaborate using secure cloud services

Cisco Nexus 1000V

Market Momentum

- Introduced at VMworld 2008: Best of VMworld
- Shipped with VMware vSphere 4.0 in May 2009
- Licensed to over **3,000** customers
- Licensed over **1 Million** Virtual Ethernet Ports



Cisco Unified Computing System Market Momentum



Over 2,800 UCS Customers

40+ ISVs Developing to UCS via API

Over 250 B-Series Certified Partners

10 World Record Benchmarks

*As of October 2010
(1QFY11)*

Architectural support for virtualization

10 year transition from obliviousness to awareness



- 2001 – ESX 1.0
- 2004 Intel VT-x: VM-aware instructions
- 2005 – Multicore CPUs
- 2006 – NPIV: vPort -aware Fibre Channel Storage
- 2008 – Multi-queue NICs: VM-optimized I/O
- 2009 – VT-x2 and VT-d: VM-aware MMU and chipsets
- 2010 – IEEE 802.1Qbg/Qbh: VM-aware Ethernet Bridging



Cisco Strategy



Nexus 1000V update



UCS update

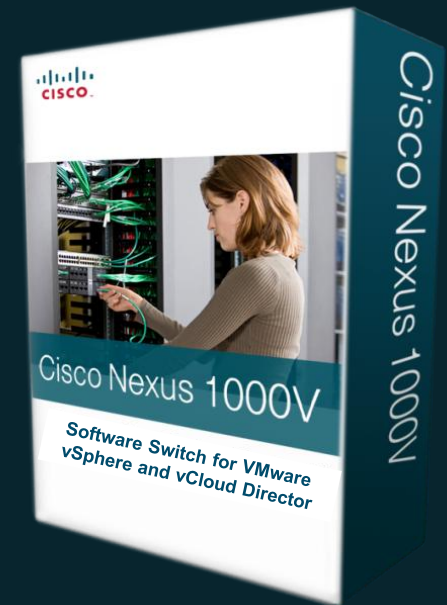


Call to action

Why 1000V?

Nexus 1000V Differentiators

- **Feature & operational consistency**
 - NX-OS across physical and virtual networks (Nexus 7K/5K/2K/1KV)
 - Cisco CLI experience
- **Advanced NX-OS switching features**
 - Security, QoS, Monitoring, Management
- **Non-disruptive administration**
 - Network team manages virtual network, creates port profiles
 - Server team assigns port profiles to VMs
- **Intelligent integration with virtual services (vPath)**
 - Transparent insertion (topology agnostic)
 - Efficient deployment – no need to deploy on every host
 - Dynamic policy-based operation
 - Performance acceleration



Advanced Features of the Nexus 1000V

Switching

- L2 Switching, 802.1Q Tagging, VLAN Segmentation, Rate Limiting (TX)
- IGMP Snooping, QoS Marking (COS & DSCP), Class-based WFQ

Security

- Policy Mobility, Private VLANs w/ local PVLAN Enforcement
- Access Control Lists (L2–4 w/ Redirect), Port Security
- Dynamic ARP inspection, IP Source Guard, DHCP Snooping

Network Services

- Virtual Services Datapath (vPath) support for traffic steering & fast-path off-load [leveraged by Virtual Security Gateway (VSG) and vWAAS]

Provisioning

- Automated vSwitch Config, Port Profiles, Virtual Center Integration
- Optimized NIC Teaming with Virtual Port Channel – Host Mode

Visibility

- VMotion Tracking, NetFlow v.9 w/ NDE, CDP v.2
- VM-Level Interface Statistics
- SPAN & ERSPAN (policy-based)

Management

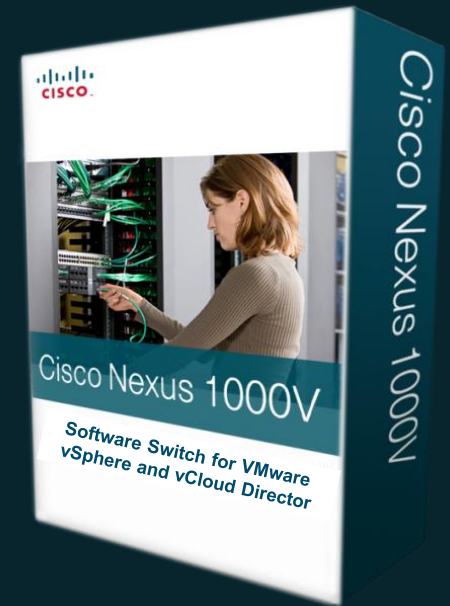
- Virtual Center VM Provisioning, Cisco Network Provisioning, CiscoWorks
- Cisco CLI, Radius, TACACs, Syslog, SNMP (v.1, 2, 3)
- Hitless upgrade, SW Installer



Denton County, Texas

“As a Cisco shop, we wanted the ability to manage both the virtual and physical networks with the same Cisco interface with which we are familiar. The Cisco Nexus 1000V virtual switch, in conjunction with vSphere, provides that capability while also reducing the amount of time required to manage the virtual switches.”

Kevin Carr, Director of IS for Denton County

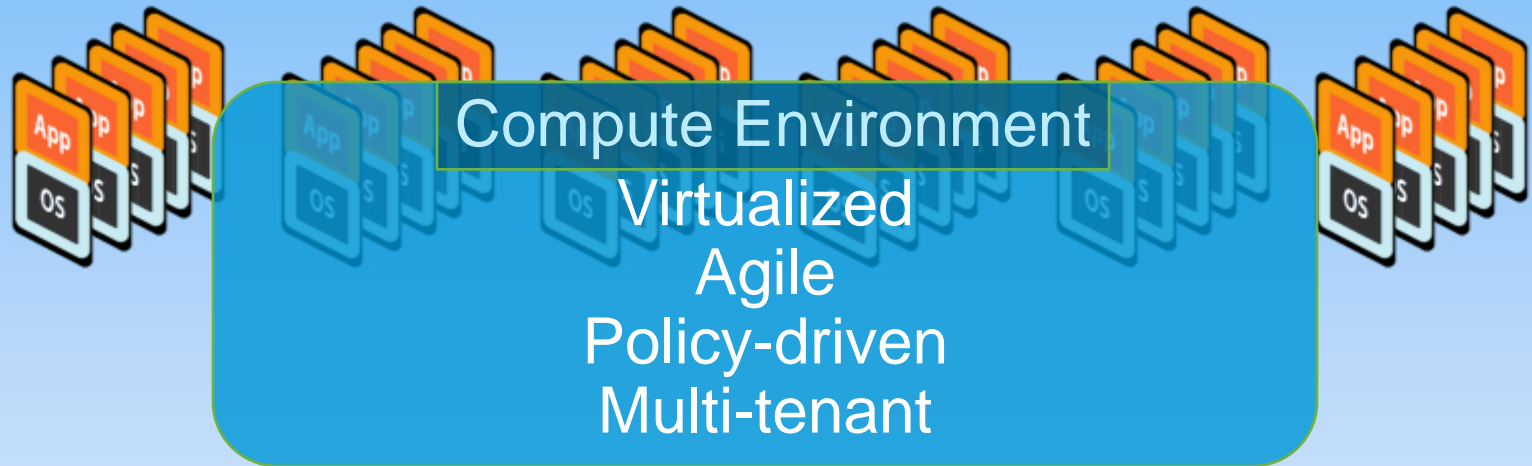


Nexus 1000V Architecture



Cisco's Virtual Networking Vision

Accelerate Data Center Virtualization



Virtual Network Link (VN-Link)

Extend networking to virtualized environments

- Hypervisor Switch (SW): **Nexus 1000V**
 - 802.1Q standards based, Feature rich
- External Switch (HW): **UCS6100 + VIC**
(Pre-standard, IEEE 802.1Qbh)

Virtual Network Services

Extend network services to virtualized environments

- Virtual Security Gateway for Nexus 1000V
- Virtual WAAS
- NAM virtual service blade on Nexus 1010

Virtual Network Management (UCSM, VNMC)

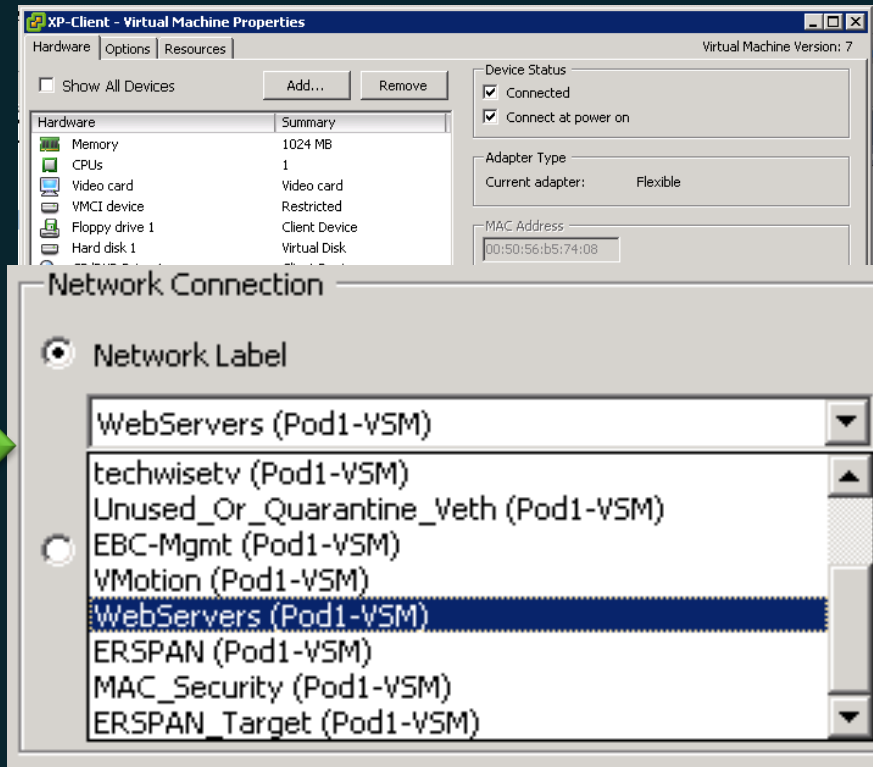
- Policy-driven, Programmatic, Multi-device, Multi-tenant

Use Case: Segregation of Duties

Network Team Configures
Port Profile on Nexus 1000V

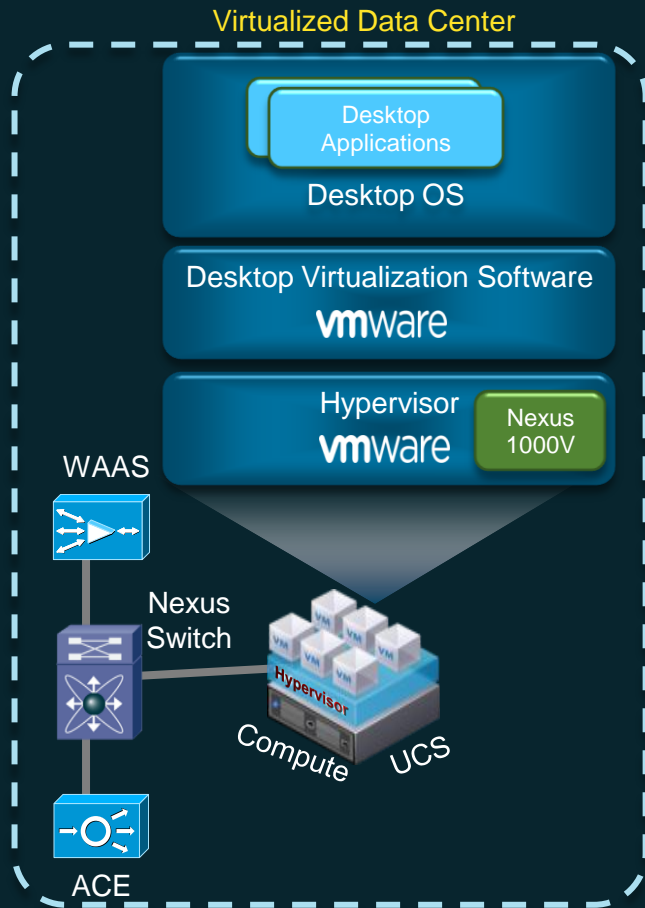
```
n1000v# show port-profile name
WebServers
port-profile WebServer-PP
description:
status: enabled
    system vlans:
port-group: WebServers
config attributes:
switchport mode access
switchport access vlan 110
no shutdown
evaluated config attributes:
switchport mode access
switchport access vlan 110
no shutdown
assigned interfaces:
Veth10
```

Server Team Applies Port Profiles
(Port Groups) in vCenter



- Port profiles published in vCenter
- Non-disruptive to server team

Use Case: Securing VMware View

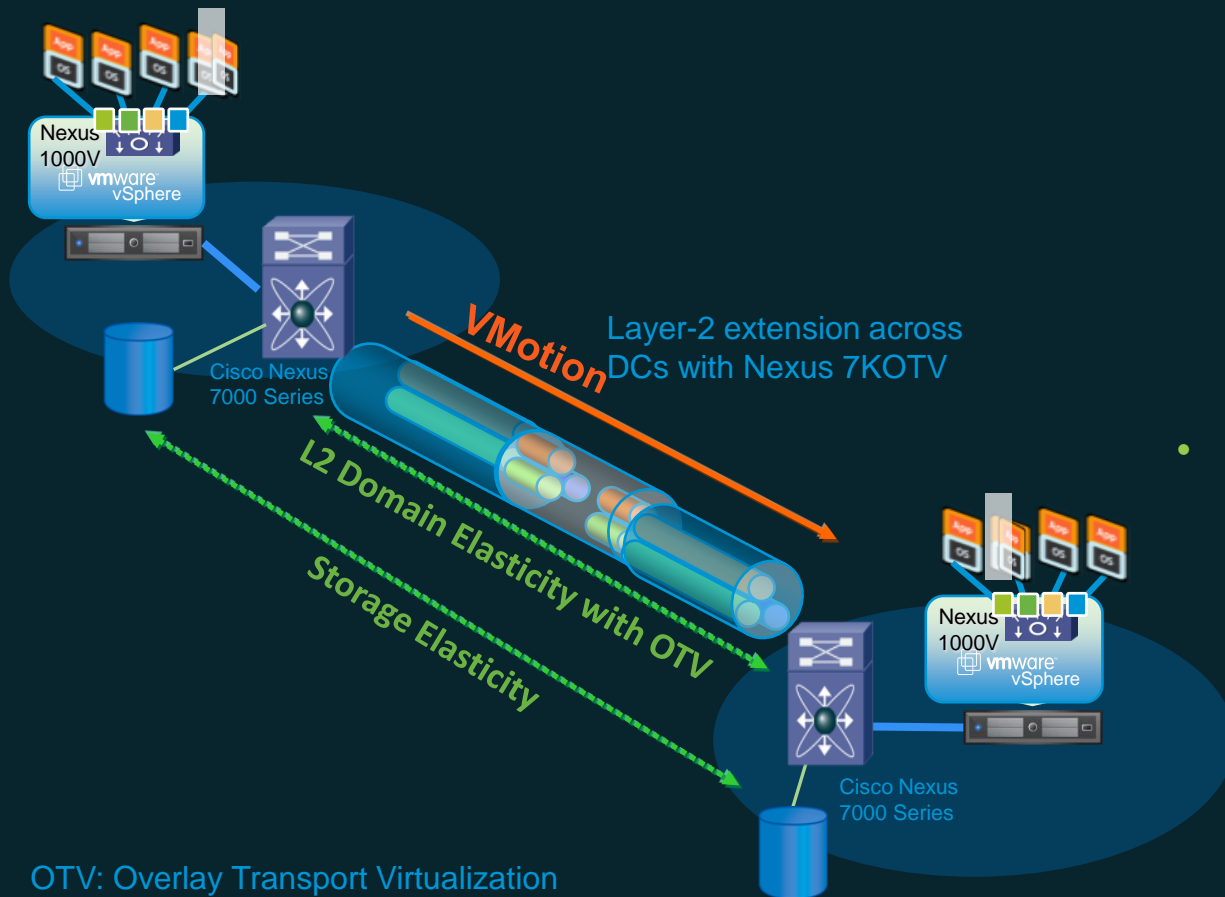


1000V Security Features for VDI

- Access Control List
- Port Security
- Private VLAN
- DHCP Snooping
- Dynamic ARP Inspection
- IP Source Guard

WAAS: Wide Area Application Service
ACE: Application Control Engine

Use case: LD vMotion with DCI



- Network integrity is critical to long distance vMotion
 - Security
 - Quality of Service
 - Network Monitoring
 - Troubleshooting
- Nexus 1000V provides these critical network functions across data centers

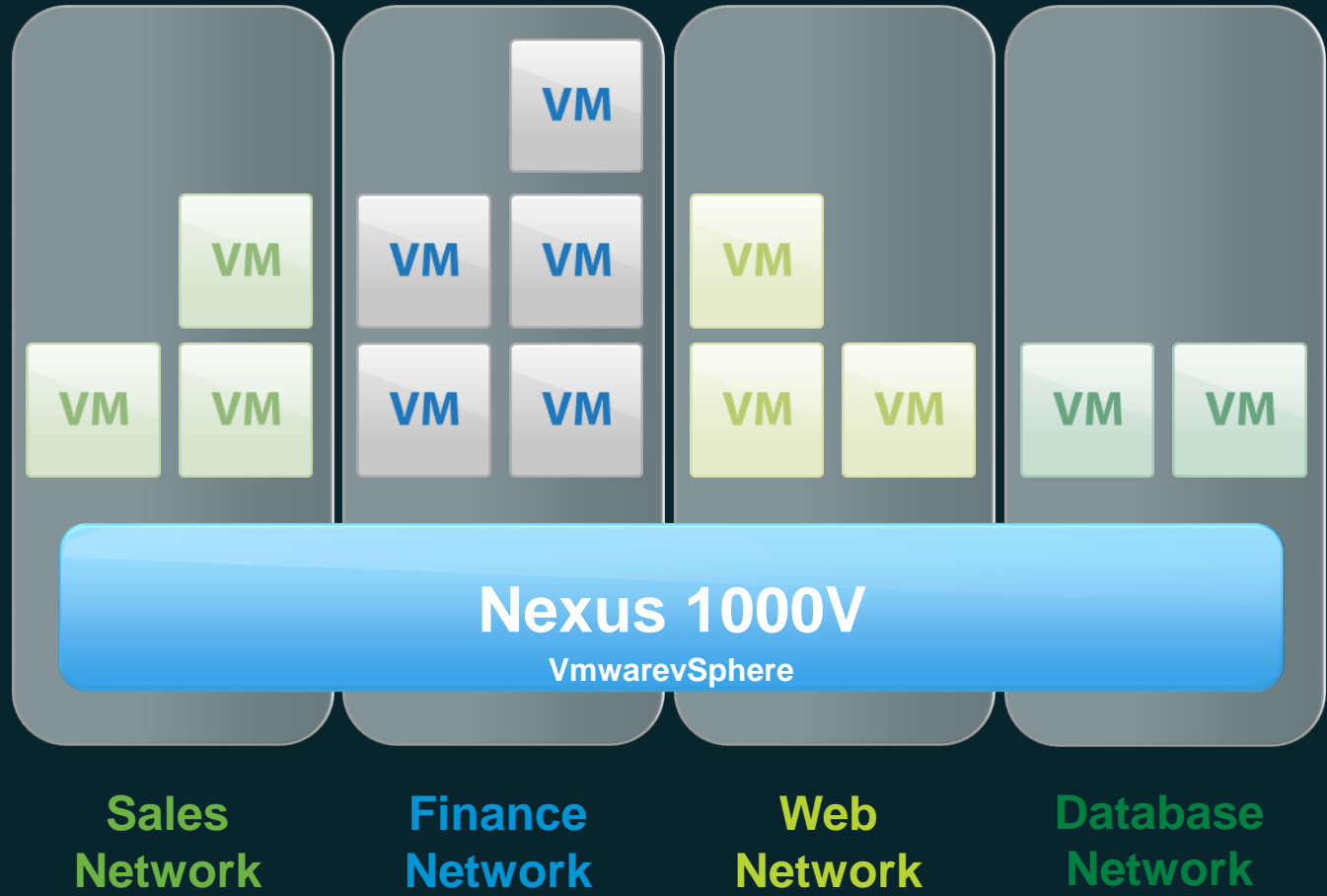
Nexus 1000V v1.4 (“Baselard”)

Availability: shipping

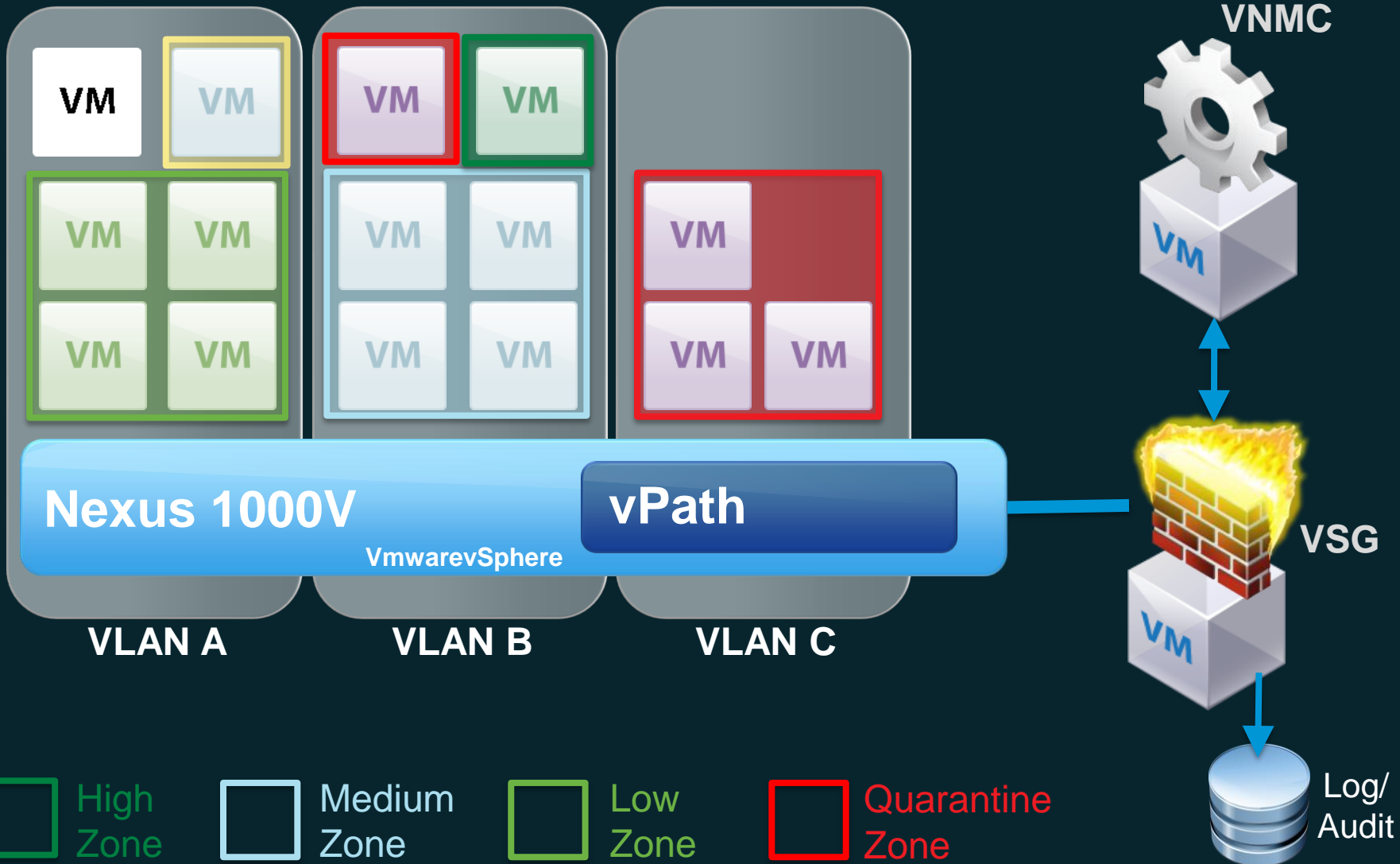
- vPath for Virtual Services
 - Traffic steering, fast-path off-load
- Quality of Service: Class-based Weighted Fair Queuing
 - Differentiated SLA via 8 pre-defined traffic classes
 - Queuing configured via Cisco modular QoS CLI (MQC)
- Enhanced Scalability – 2K VLANs, 2K port profiles
- SPAN/ER-SPAN enhancements – now on a per port profile basis
- Simpler Installation, Upgrade procedures
- Enhancements for robustness, interoperability

vPath: Virtual Service Datapath

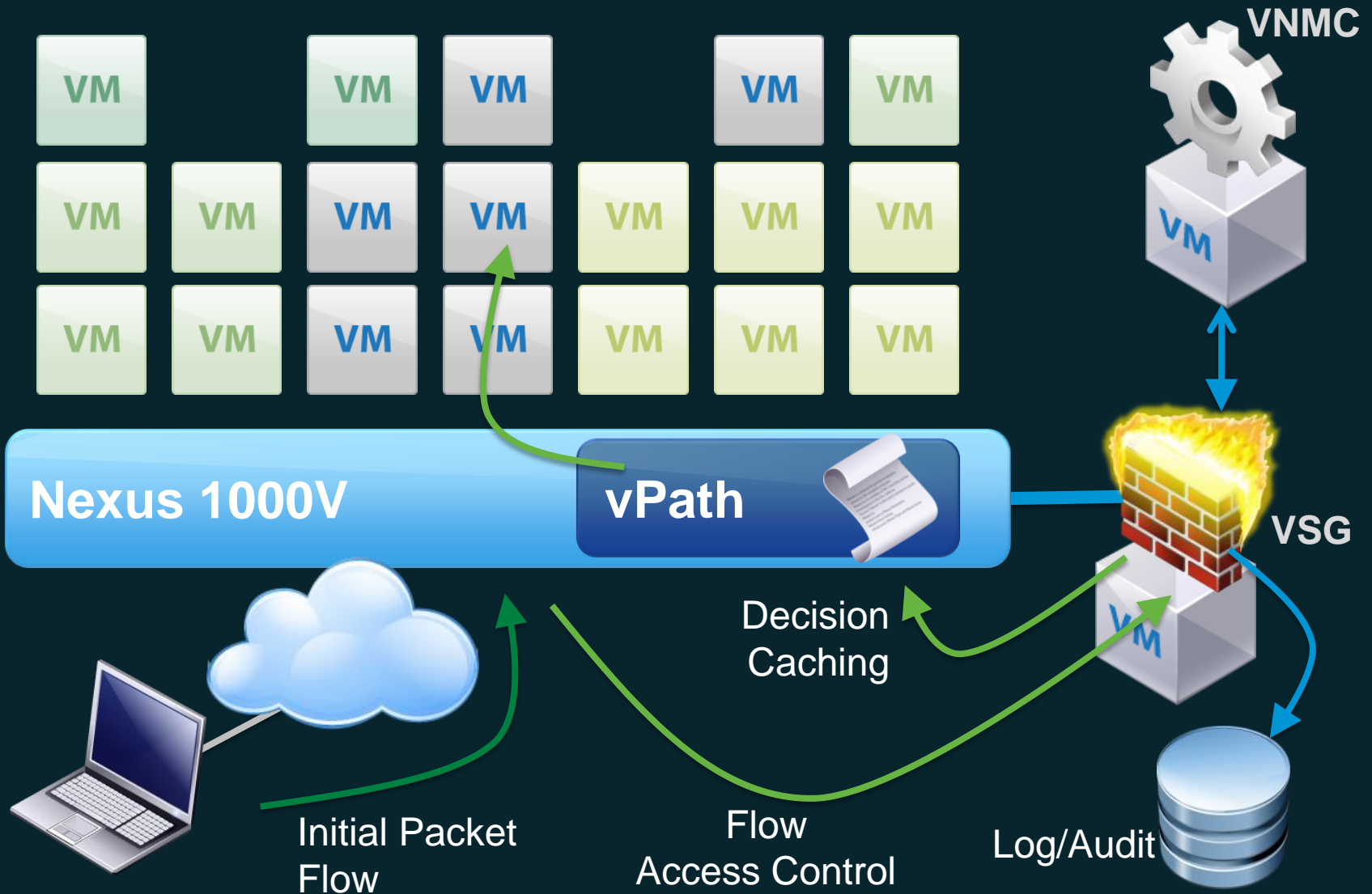
Today: Policy based on VLAN



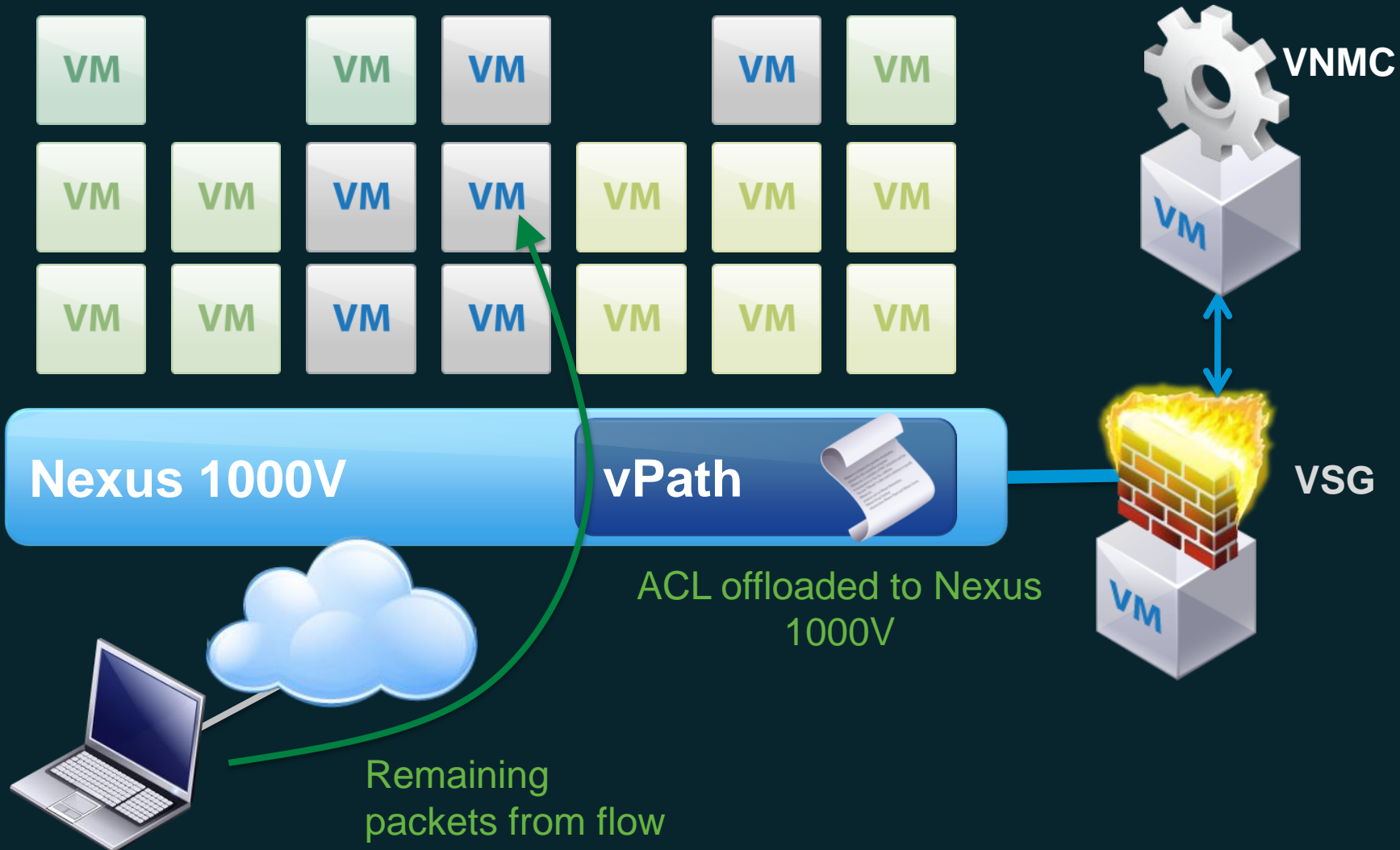
Flexible, Adaptable Zoning for Virtualized Infrastructure



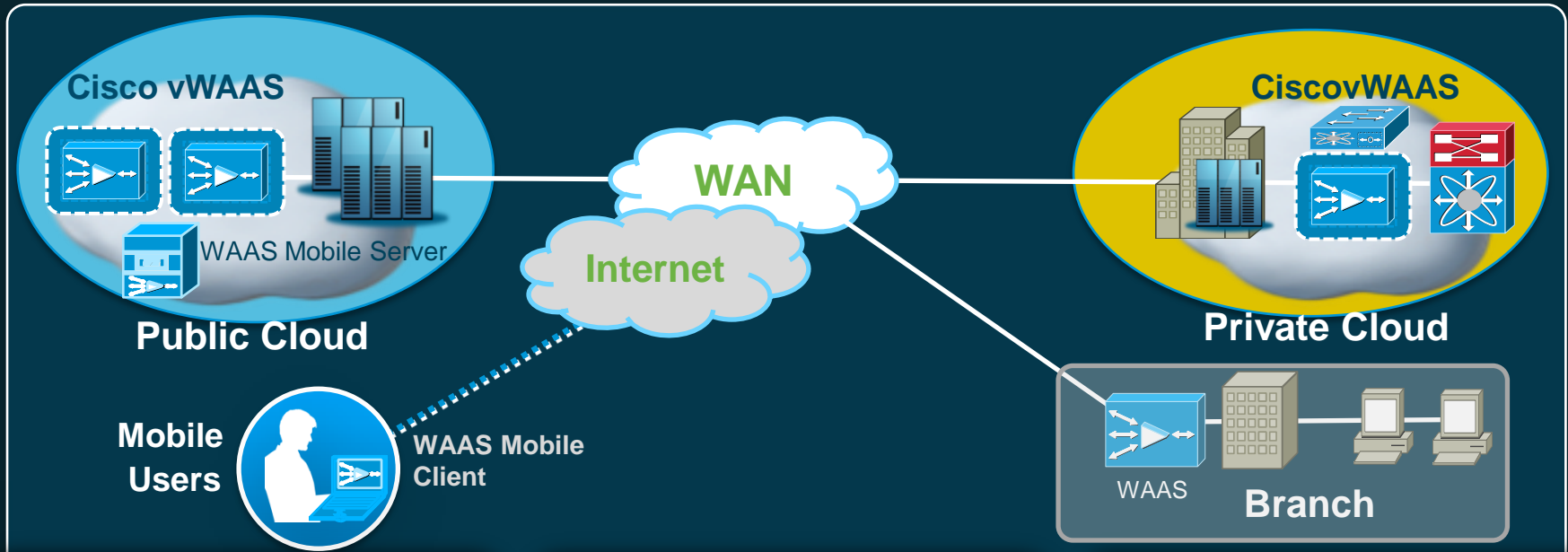
Intelligent Traffic Steering with vPath



Performance Acceleration with vPath



Cisco vWAAS: Cloud Ready WAN Optimization



Key Requirements

- On demand deployment with elastic scalability
- Minimal network configuration
- VM mobility awareness
- Multi-tenant deployment

Benefits

- On-demand orchestration of WAN optimization
- Fault tolerance with VM mobility awareness
- Lower OPEX for Cloud Migration

Simplification

- **Integrated with Nexus 1000V vPath**
- Rapid creation of WAN Optimization Service
- Consistent networking across deployments

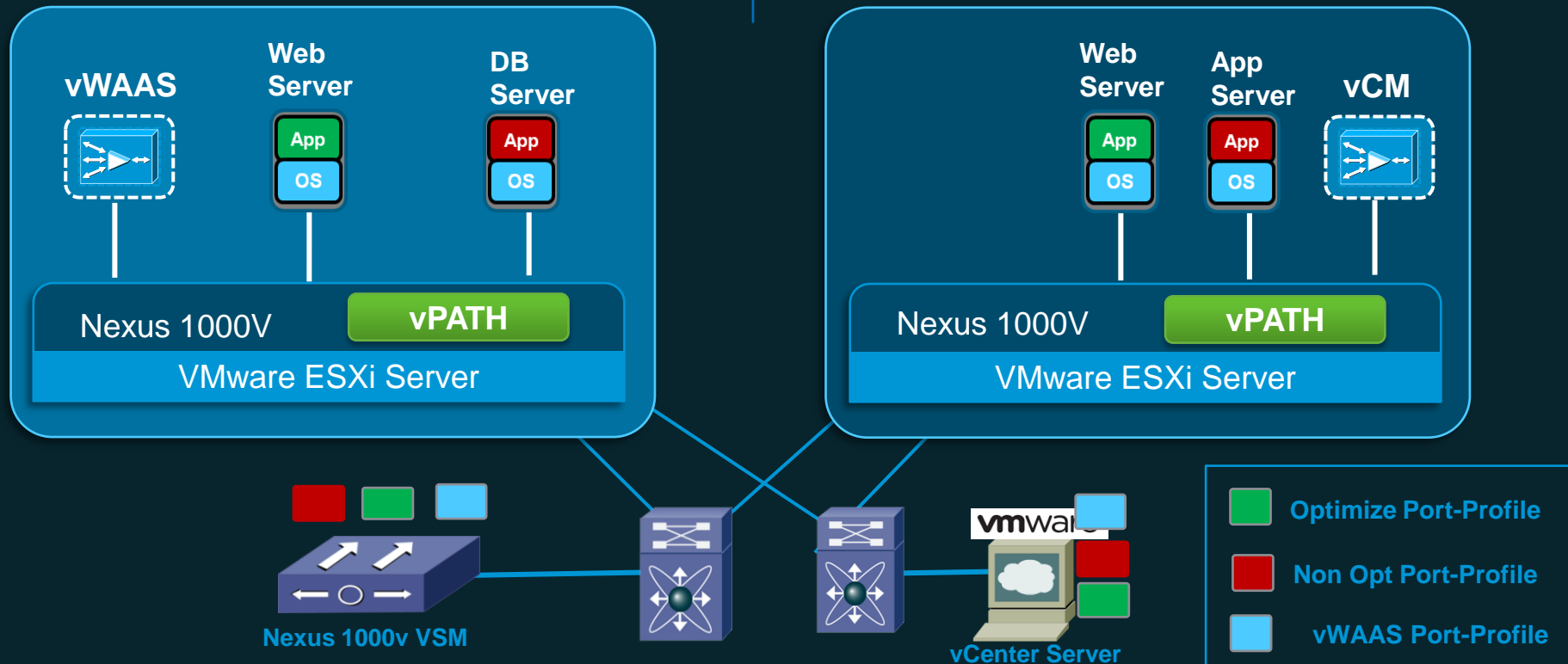
Dynamic Workload Optimization with Cisco vWAAS & 1000V vPath

Feature

1. Optimization based on the port-profile policy configured in Nexus 1000V
2. Policy gets propagated to vCenter automatically

Benefit

1. Provide on-demand service orchestration in the cloud without network disruption



Integration with vCloud Director

Joint Cisco/VMware position

- *Nexus 1000V*

Currently integrated in vCloud Director

- *Provides VLAN isolation with Portgroup-backed network pools*

Cisco and VMWare consider Cisco Nexus 1000V an integral component of VMware's vSphere and vCloud product lines and are committed to delivering interoperable solutions for current and future versions of these products, including scalable network segmentation technologies.

- *Virtual Security Gateway*

Cisco and VMware are partnering to integrate Cisco Virtual Security Gateway into VMware vCloud Director, leveraging the points of integration that vShield Manager provides.

Selling Nexus 1000V

- Free 60-day trial license
- Can be included in the VMware ELA
- List Price: \$695*/CPU
- vSphere Enterprise Plus & Nexus 1000V bundle: \$3,895*/CPU
- **40% off Promotion:**
Enterprise-to-EnterprisePlus upgrade & Nexus 1000V
\$795*/CPU
- Nexus 1000V is an integral component of VCE Vblock

*Excludes support



Cisco Strategy



Nexus 1000V update



UCS update



Call to action

Cisco Unified Computing System Market Momentum



Over 2,800 UCS Customers

40+ ISVs Developing to UCS via API

Over 250 B-Series Certified Partners

10 World Record Benchmarks

*As of October 2010
(1QFY11)*

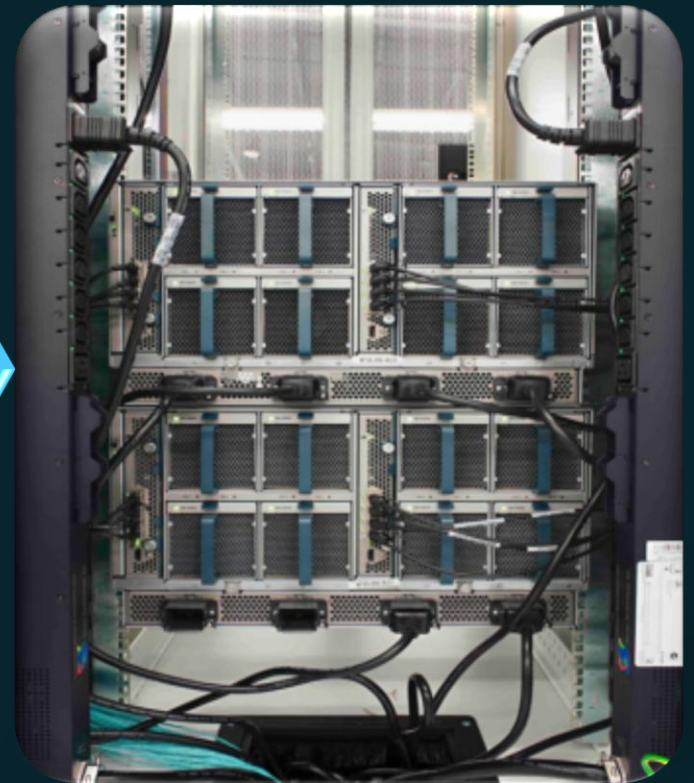
Cisco Unified Computing System (UCS)

A New Approach to Server Infrastructure

**Traditional
Blade Server**

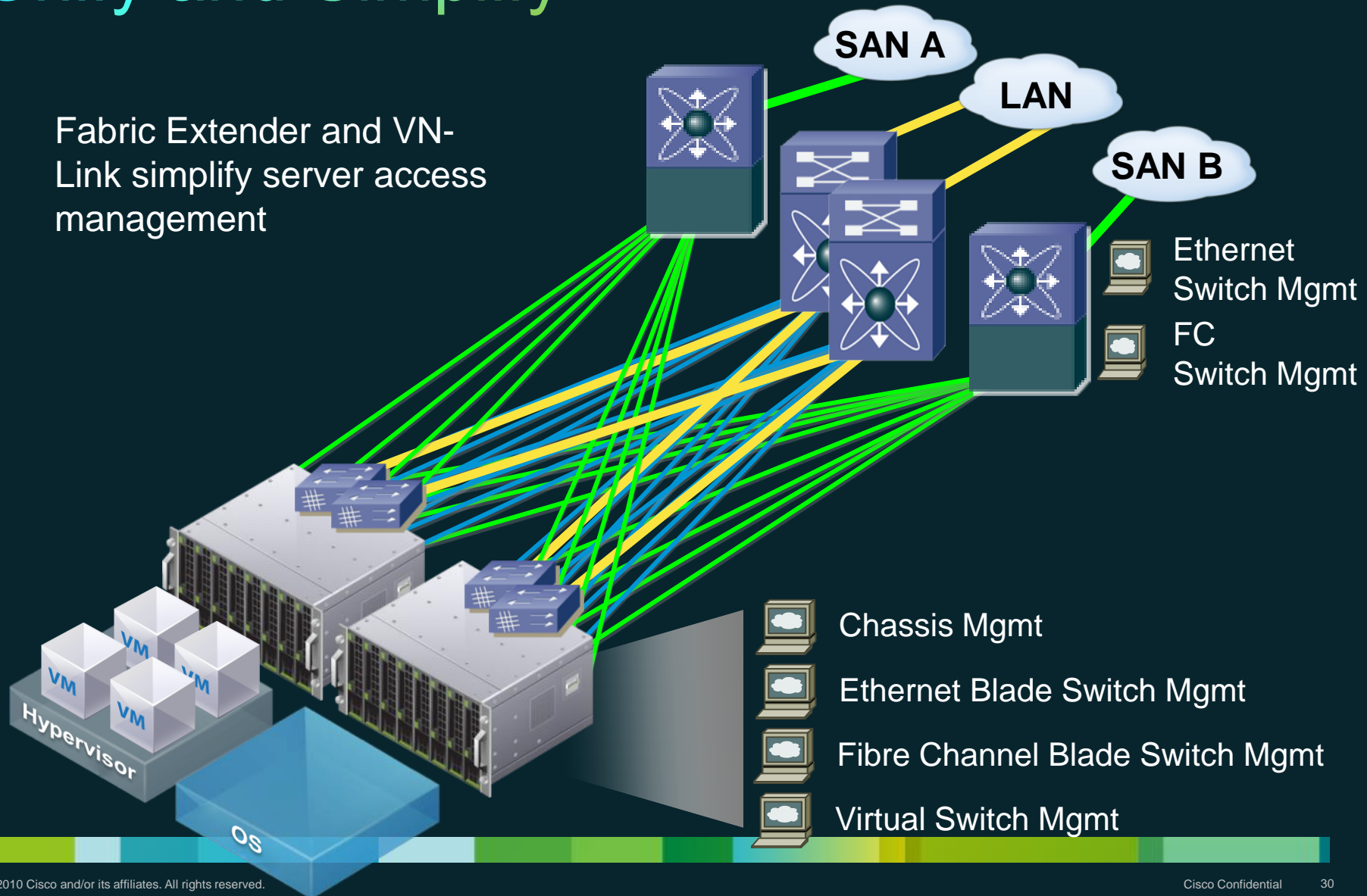


**Cisco Unified
Computing System**



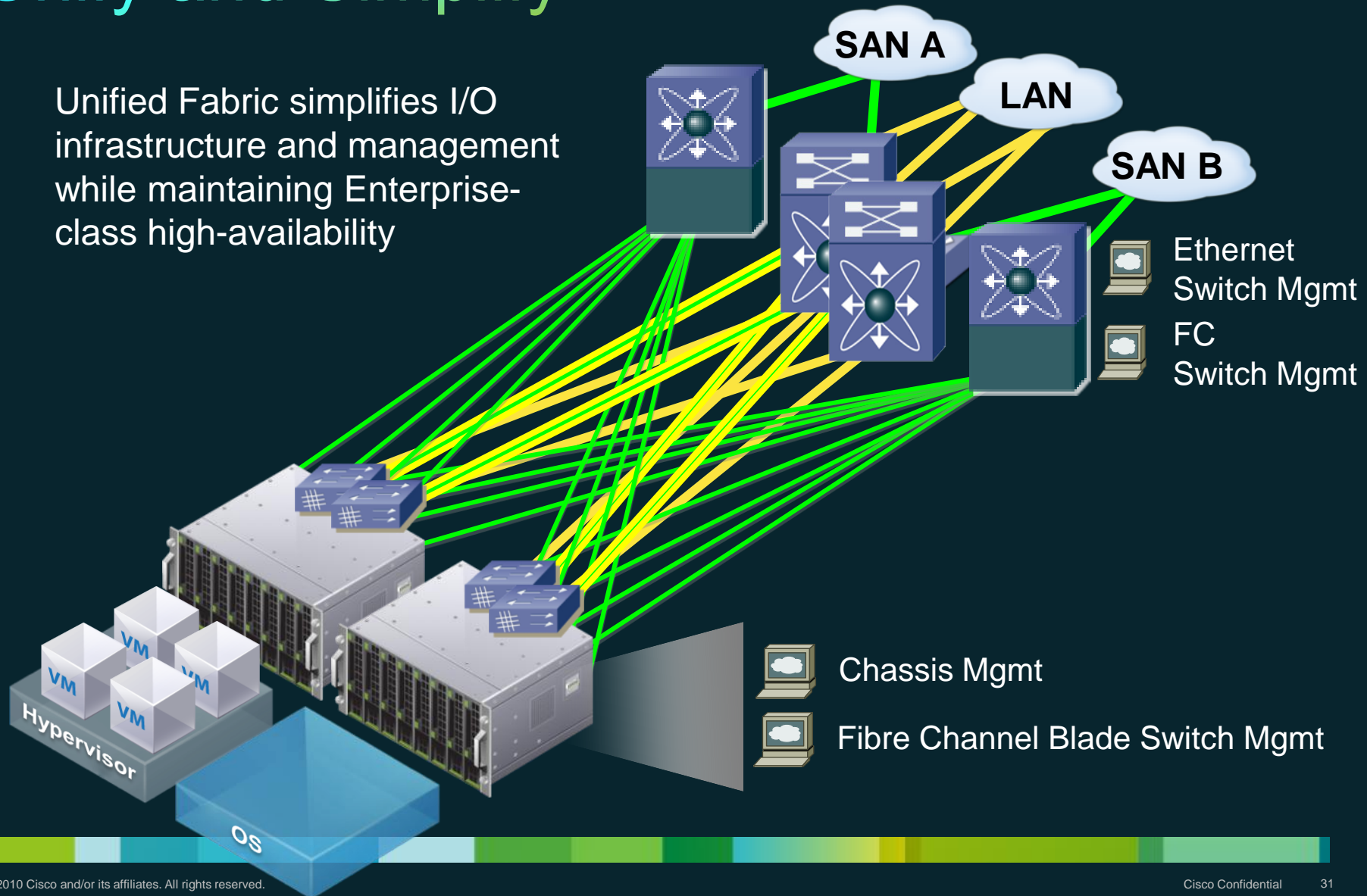
Unify and Simplify

Fabric Extender and VN-Link simplify server access management



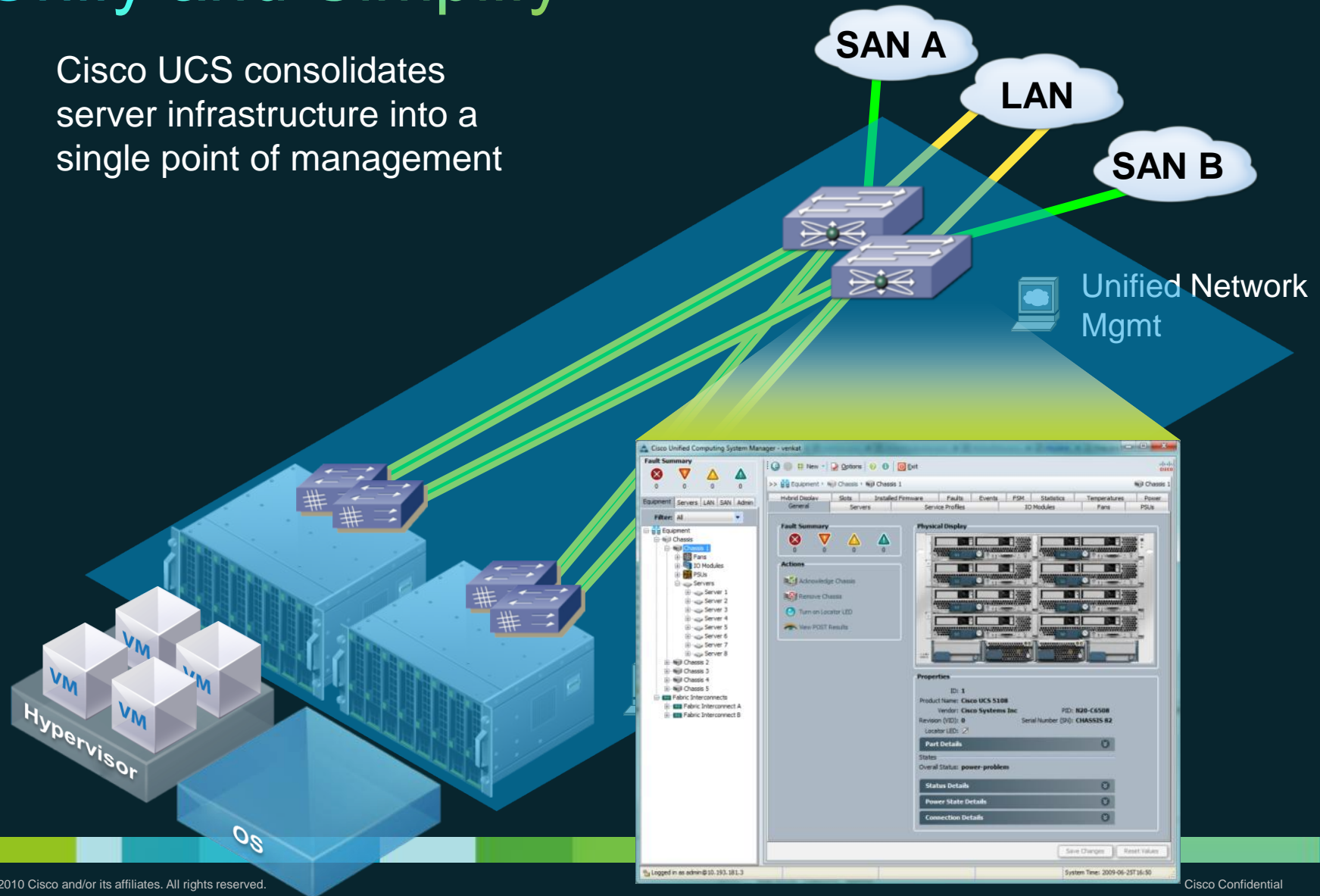
Unify and Simplify

Unified Fabric simplifies I/O infrastructure and management while maintaining Enterprise-class high-availability



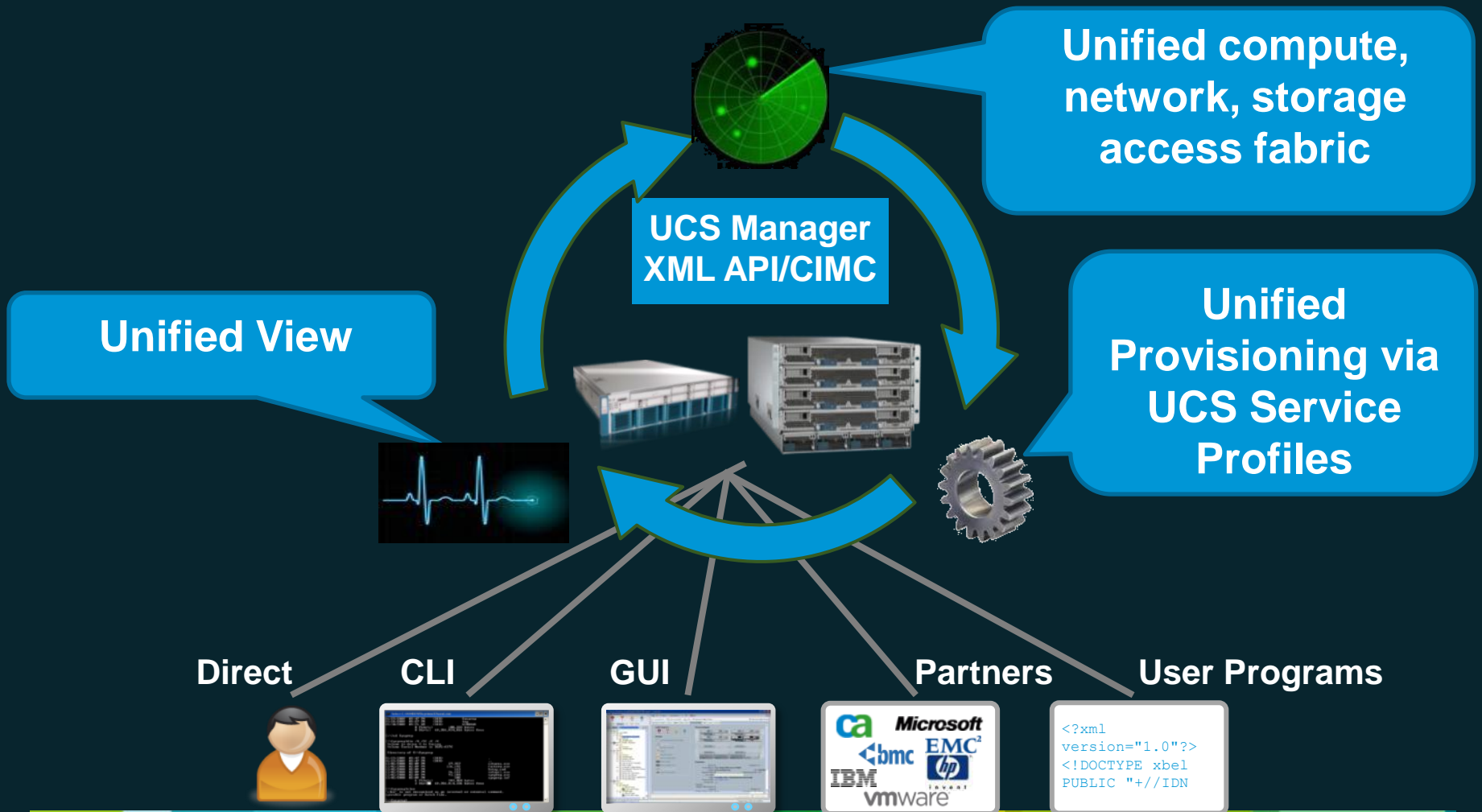
Unify and Simplify

Cisco UCS consolidates server infrastructure into a single point of management



UCS enables a Programmatic Infrastructure

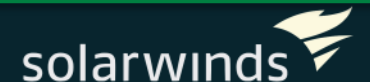
Develop with the Infrastructure, not just on the Infrastructure



Complete Solutions with UCS Partners

Over 40 ISVs Writing to the API

- Wide Range of Use Cases
 - Map partner's service catalog onto UCS policies
 - Configure UCS via service profile mechanisms
 - Monitor UCS physically and logically
- Multiple live demos at Vmworld 2010



Building Blocks of Cisco UCS

An Integrated System Optimizes Data Center Efficiency

UCS Manager

Embedded management
Open API

UCS Fabric Interconnect

10GE unified fabric switch

UCS Fabric Extender

Remote line card

UCS Blade Server Chassis

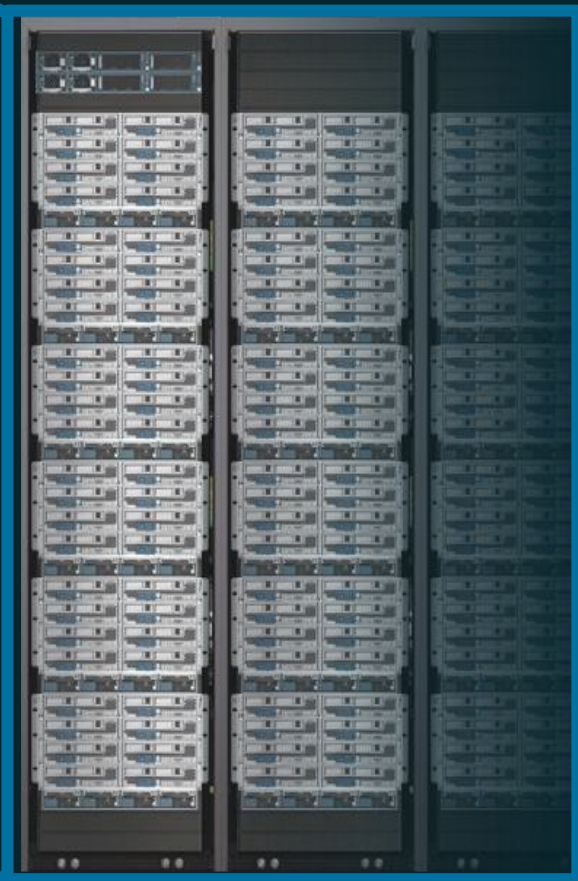
Flexible bay configurations

UCS Blade and Rack Servers

x86 industry standard
Patented extended memory

UCS I/O Adapters

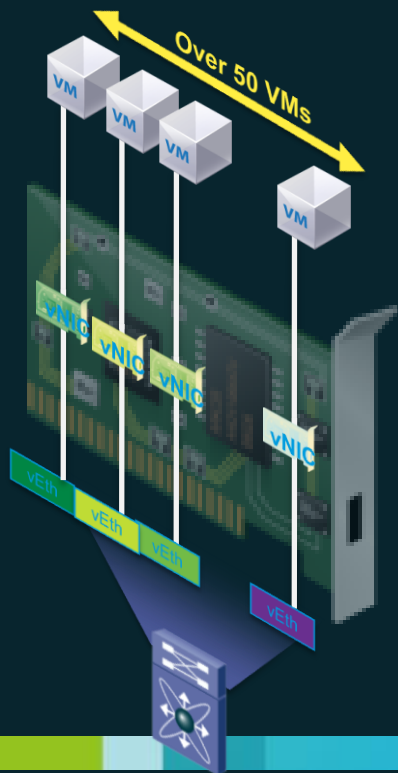
Choice of multiple adapters



Cisco Virtual Interface Card

“EMC IT [is] deploying a stateless infrastructure based on the Cisco UCS and VIC, EMC Symmetrix VMAX and VMware vSphere. The scalability, performance and flexibility of this architecture helps accelerate...migrations of mission critical applications and...the faster rollout of applications, such as VDI.”

*Paul DiVittorio, Director
Application Hosting Architecture, EMC IT*



- Driver in box since vSphere 4.0 U1
Standard PCIe Device
VN-Link in Hardware
- Broad certification as an FCOE Converged Network Adapter



UCS Manager 1.4(1) Summary

Availability: Shipping

Compute

- New High Density 2 Socket Nehalem-EX blade server
- UCS Manager support for UCS C-Series
- Chassis and multi-chassis power capping

Ethernet and Fibre Channel

- Direct connect NAS Filer
- Direct Connect FC Storage
- Fabric Failover for all virtual environments

Authentication & Security

- Simpler integration with MSFT Active Directory
- Multiple simultaneous authentication systems
- Multi-user KVM enhancements

Stateless Computing

- Migration Validation for Service Profiles
- Impact analysis of Service Profile changes
- Scheduling of service profile changes

UCS Delivers Business Value

Customer Case Studies

Reduce Costs



Increase Business Agility

- Reduced number of blade servers by 50%
- Lowered per chassis cabling requirements by a factor of five
- Decreased server provisioning time to 15-20 minutes
- Saved \$900,000 in up front capital costs
- Reduced annual energy costs by \$37,000
- Introduced new business service (Evidence.com) in record time – 98 days from initial planning to installation
- Improved application performance by up to 30 percent
- Reduced footprint – achieved four times the number of processing cores per rack
- Reduced new server provisioning to just a few clicks

Improve Operational Efficiency

UCS Delivers Business Value

Customer Case Studies

Reduce Costs



- Reduced cost by 74% compared to previous solution
- Provisioned 28 logical servers in 3 days
- Reduced management costs per server from \$1,574 to \$80
- Freed up 10 hours / week / person to focus on strategic projects



- Saved over \$200,00 in annual IT costs
- Avoided \$333,000 in costs for new desktop computers
- Reduced IT support per employee ratio from 1:50 to 1:250



- Reduced cabling connections to each server from 40 to 6
- Increased operational efficiency - VMs restored in 5 -60 minutes, compared to 8 -12 hours with legacy servers
- Increased staff productivity by 20 fold; provides time for more proactive, strategic focus

Strong Joint Solutions with vmware



Efficiency

EMC²

Salem Hospital
A part of Salem Health

DEAKIN
UNIVERSITY AUSTRALIA

TSF

slumberland
FURNITURE

WestconGroup

Tutor Perini
CORPORATION

Lesscher

ECKD
IT.Menschlich

MOLINA[®]
HEALTHCARE

ExamWorks

NIGHTHAWK
RADIOLOGY SERVICES

Parentix
Bring up your business

SUNGARD[®]
Availability Services

Winterflood
SECURITIES

NaviSite

PACIFIC COAST
building products
family of companies

TASER
INTERNATIONAL

QUALCOMM

terremark
NAP of the Americas

SAVVIS

SEATTLE
UNIVERSITY

alphawest.

AVAGO
TECHNOLOGIES

Transformative



Cisco Strategy



Nexus 1000v update



UCS update



Call to action

Call to Action – Nexus 1000V

- Highlight Nexus 1000V benefits to server teams and also network teams
- Know your Cisco Account Teams to connect with network teams
- Request NFR licenses for your lab environments
- Evaluate Nexus 1000V with your customers

Call to Action - UCS

- Visit the Cisco booth or attend the UCS and vSphere bootcamp session to learn more.
- Go to cisco.com/go/ucs to view compelling customer case studies of deploying VMware on UCS
- Go to cisco.com/web/partners/sell/technology/datacenter/ to view partner specific content on UCS
- Schedule time for your SE's to give a demo of UCS Manager to your customers to highlight the UCS differentiation
- Work with your Cisco account teams to find projects where UCS can be inserted into your customers deployments
- Get UCS into your customer's hands via Demo Loan, Try and Buy, or Starter Kits.

Thank you.

