



Analyst Relations  
Speaker Series -  
Data Center 3.0:  
Virtual Machine  
Aware Networking



# The Expanding Role of Server Virtualization

Server Consolidation And Virtualization Are #1 And #2 IT Spending Priorities

Source: Goldman Sachs CIO Survey

10% of server workloads virtualized in 2008; forecast to be 50%-60% in next 5 years

Source: Cisco Market Intelligence

Increasing Use of VMotion and DRS Resulting in Multiplicative Increase in Complexity

Source: Cisco

Desktop Virtualization Gaining Traction as Tool to Address Desktop Manageability, Security, and Cost

Source: Goldman Sachs IT Spending Survey

# Networking Challenges to Scaling Server Virtualization



## Security and Policy Enforcement

Applied at physical server—not the individual VM

Impossible to enforce policy for VMs in motion



## Operations and Management

Lack of VM visibility, accountability, and consistency

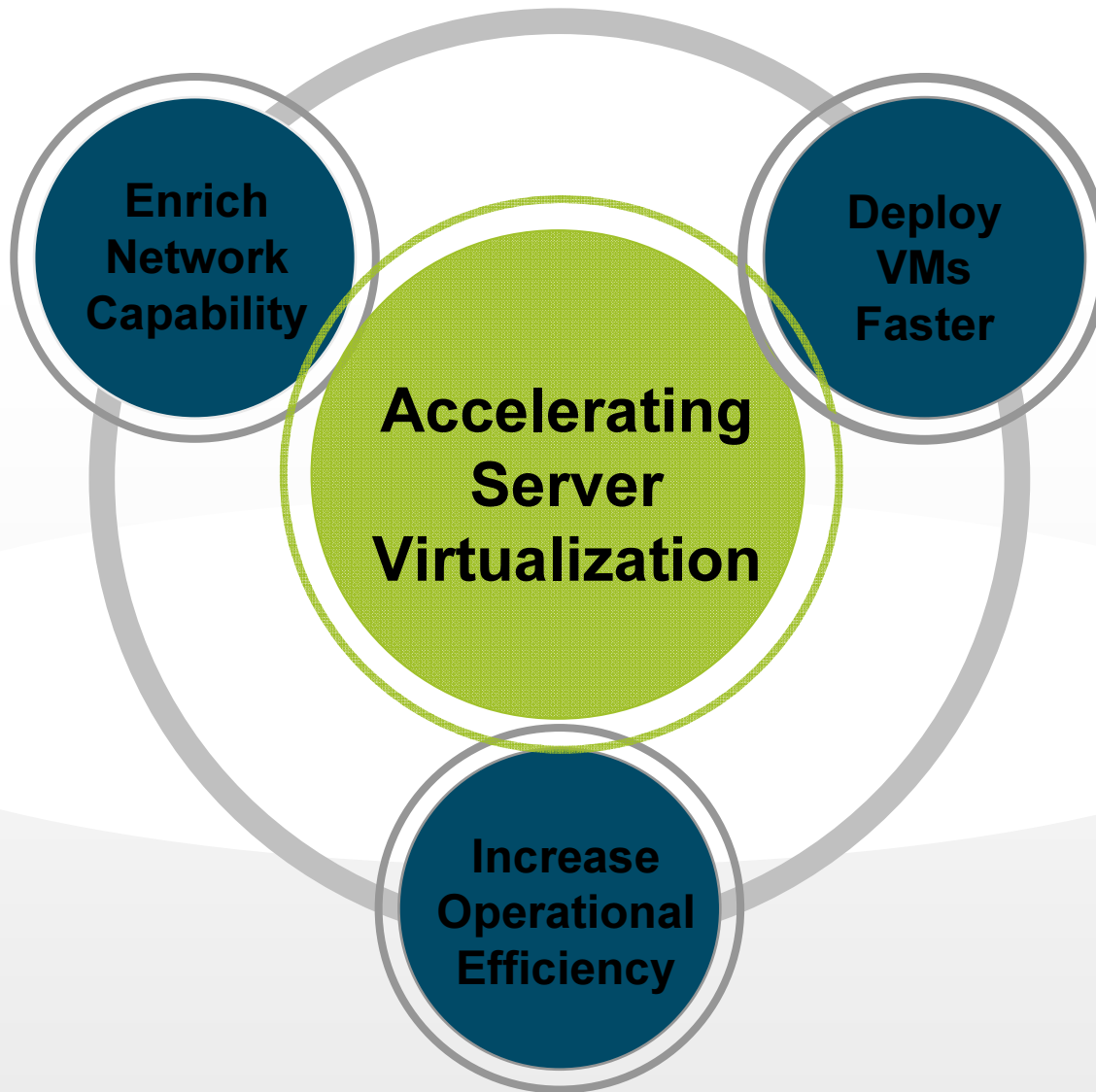
Inefficient management model and inability to effectively troubleshoot



## Organizational Structure

Blurs ownership as server admin must configure virtual network

Organizational redundancy creates compliance challenges



**VN-Link**

Secure 8Gb FC

Single DC OS

VDI Acceleration &  
WAAS WAVE

FCoE Support in  
ESX 3.5



**Technology**

**Services**

Virtualization  
Assessment Service

Planning & Design  
Service

Published Best  
Practices



**Accelerating  
Server  
Virtualization**

**Education**

DCNI Virtualization Updates  
Enhanced Partner Training  
Virtualization Career Certification

# VN-Link: Virtualizing the Network Domain

Virtual machine aware  
network and storage services

Abstract physical and logical  
infrastructure

Virtual machines are the new  
data center building block

# Introducing Cisco VN-Link Network Services

## Virtualizing the Network Domain

Policy-Based  
VM Connectivity

Mobility of Network  
and Security Properties

Non-Disruptive  
Operational Model

### Cisco Nexus 1000V Software Based

- Cisco software switch for VMW ESX
- Compatible with switching platforms
- Maintain VirtualCenter for server admin and CLI for network admin

### Nexus 5000 with VN-Link Hardware Based

- Scalable, hardware based, high performance solution
- Standards driven approach to delivering hardware-based VM networking
- Combines VM and physical network operations into one managed node

**Two Complementary Models to Address Evolving Customer Requirements**

# Introducing Cisco VN-Link Network Services

## Virtualizing the Network Domain

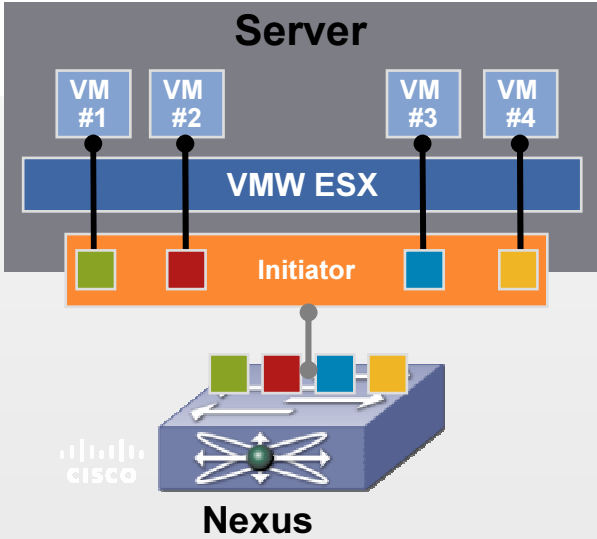
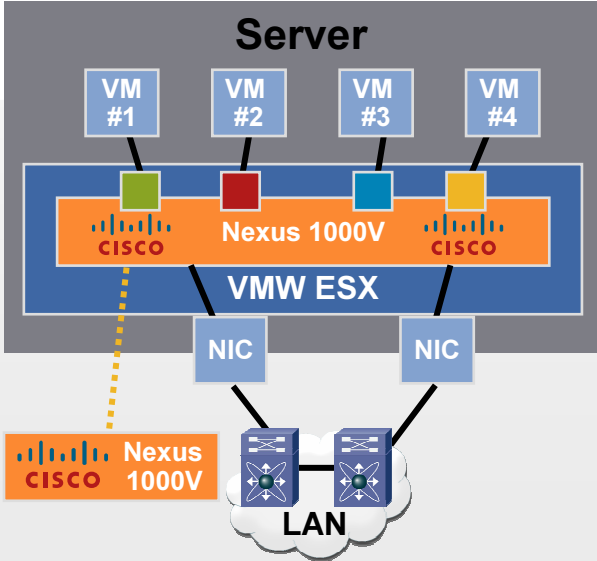
Policy-Based VM Connectivity

Mobility of Network and Security Properties

Non-Disruptive Operational Model

Cisco Nexus 1000V Software Based

Nexus with VN-Link Hardware Based

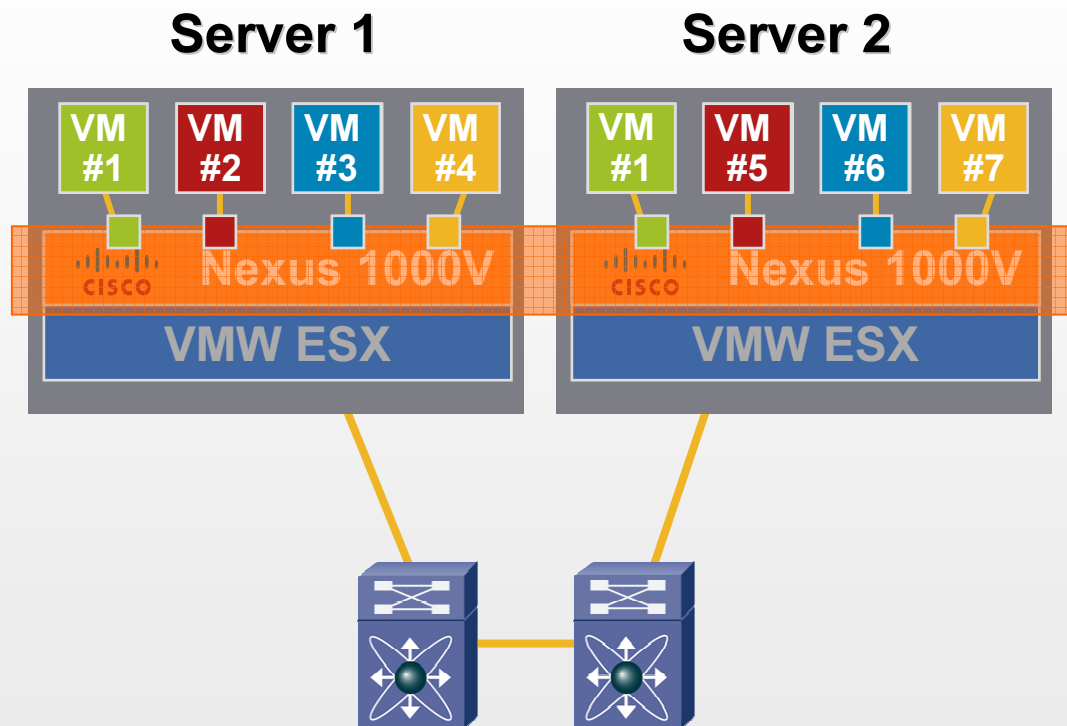


Two Complementary Models to Address Evolving Customer Requirements

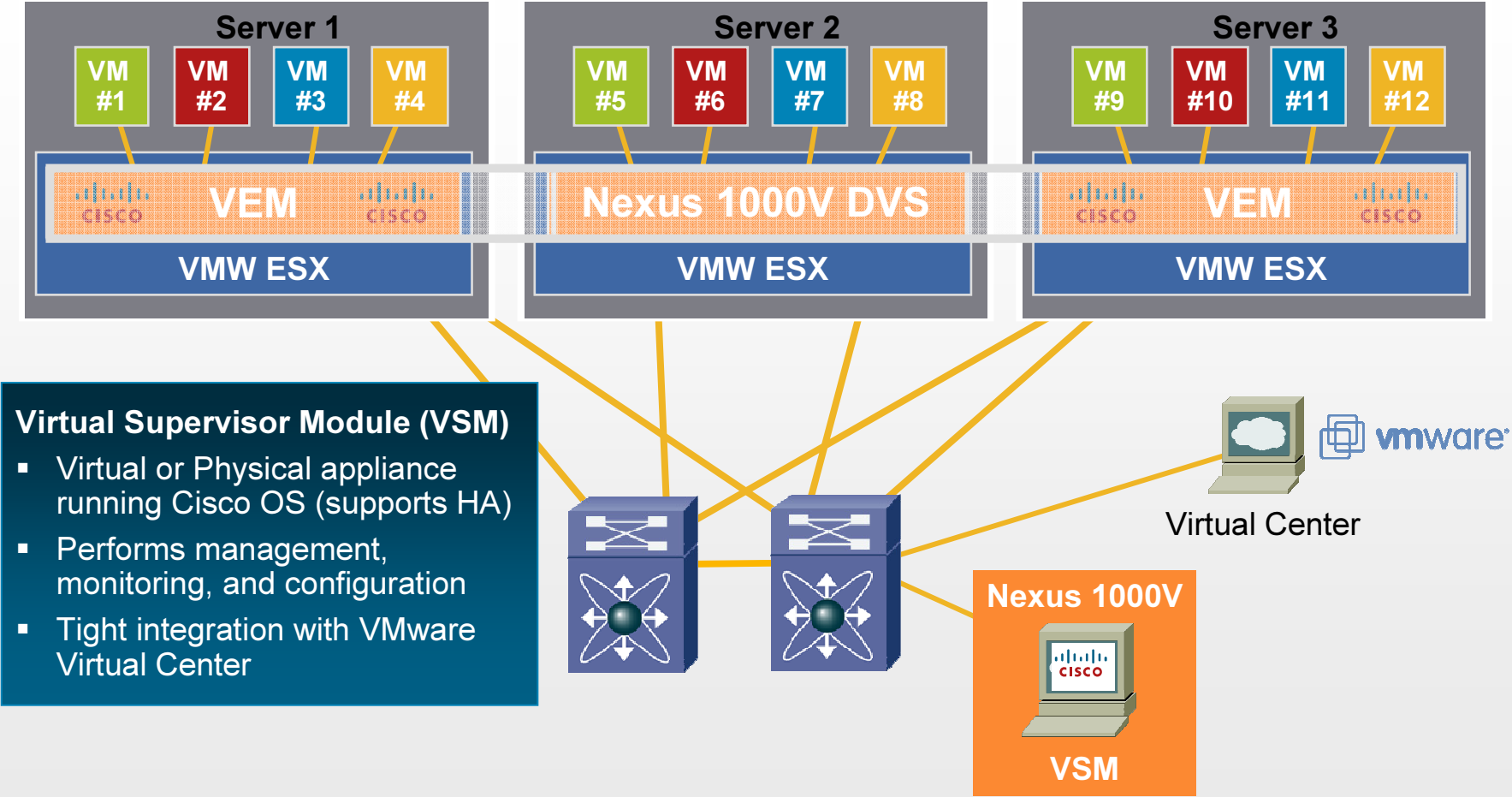
# Cisco Nexus 1000V

## Industry First Third-Party Distributed Virtual Switch

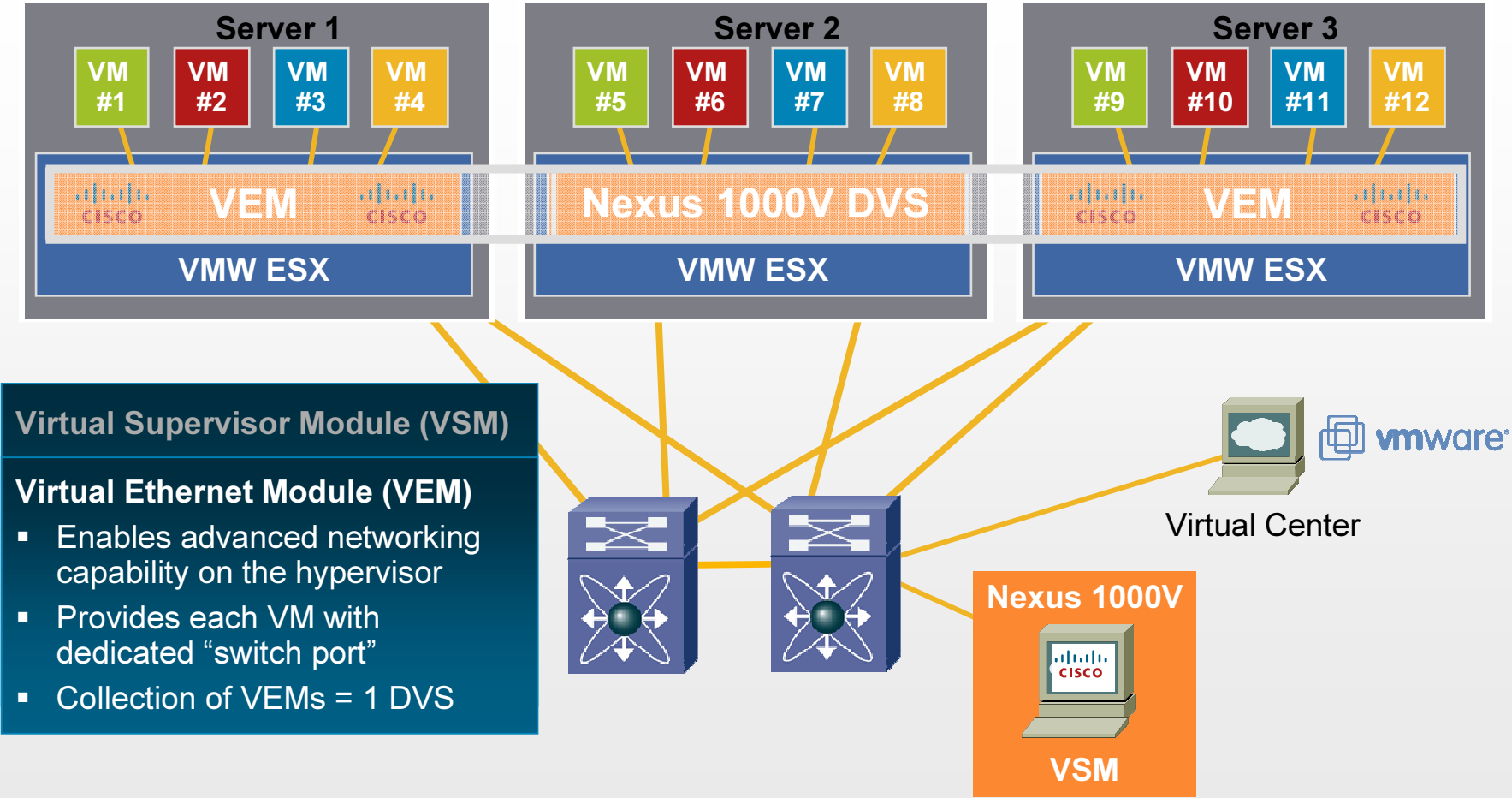
- Nexus 1000V provides enhanced VM switching for VMW ESX environments
- Features **VN-Link** capabilities:
  - Policy-based VM connectivity
  - Mobility of network and security properties
  - Non-disruptive operational model
- Ensures visibility and continued connectivity during VMotion



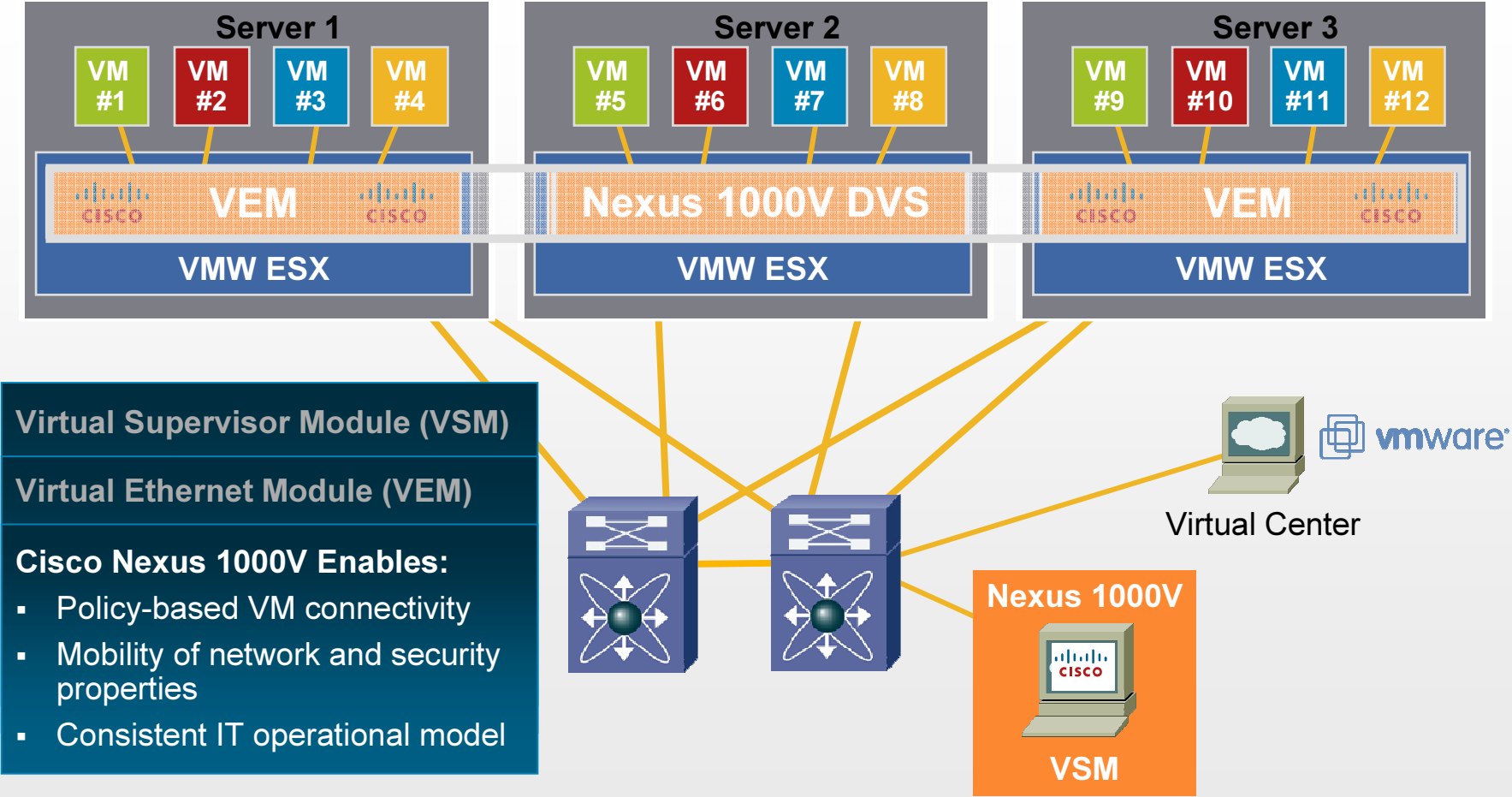
# Cisco Nexus 1000V Architecture



# Cisco Nexus 1000V Architecture

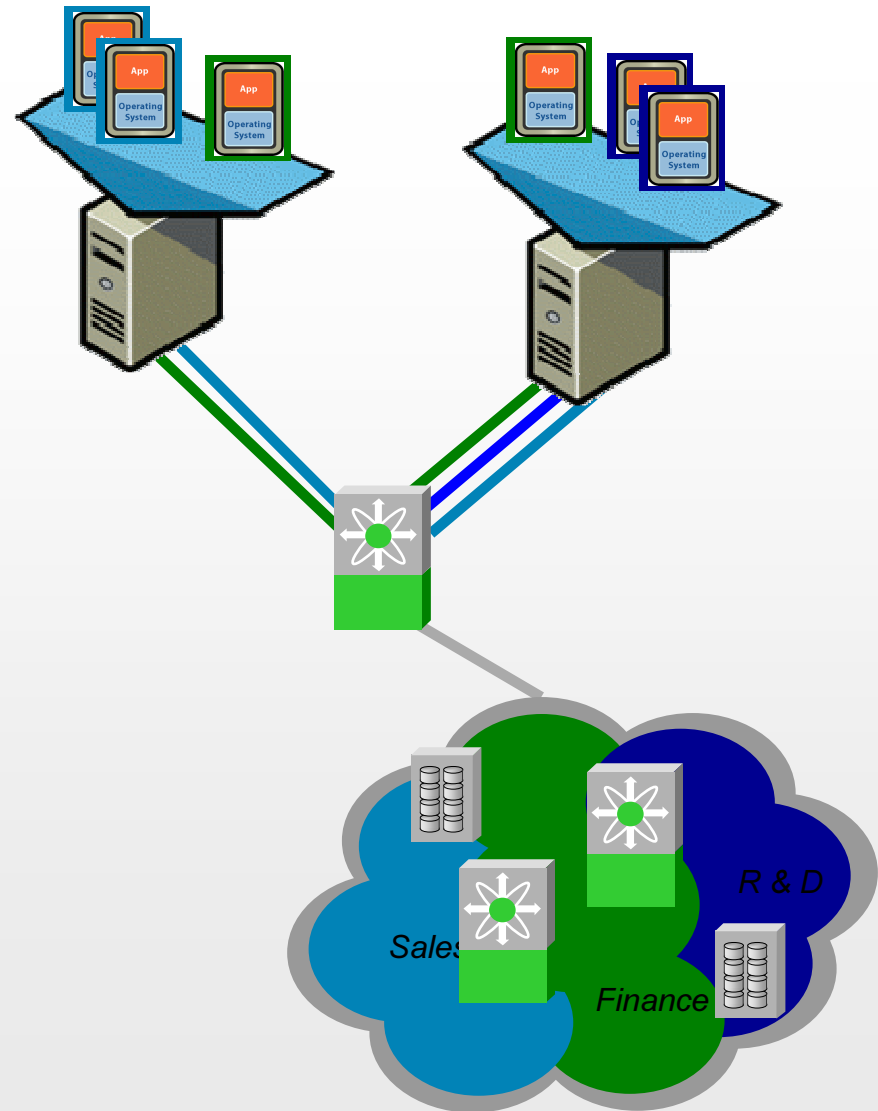


# Cisco Nexus 1000V Architecture



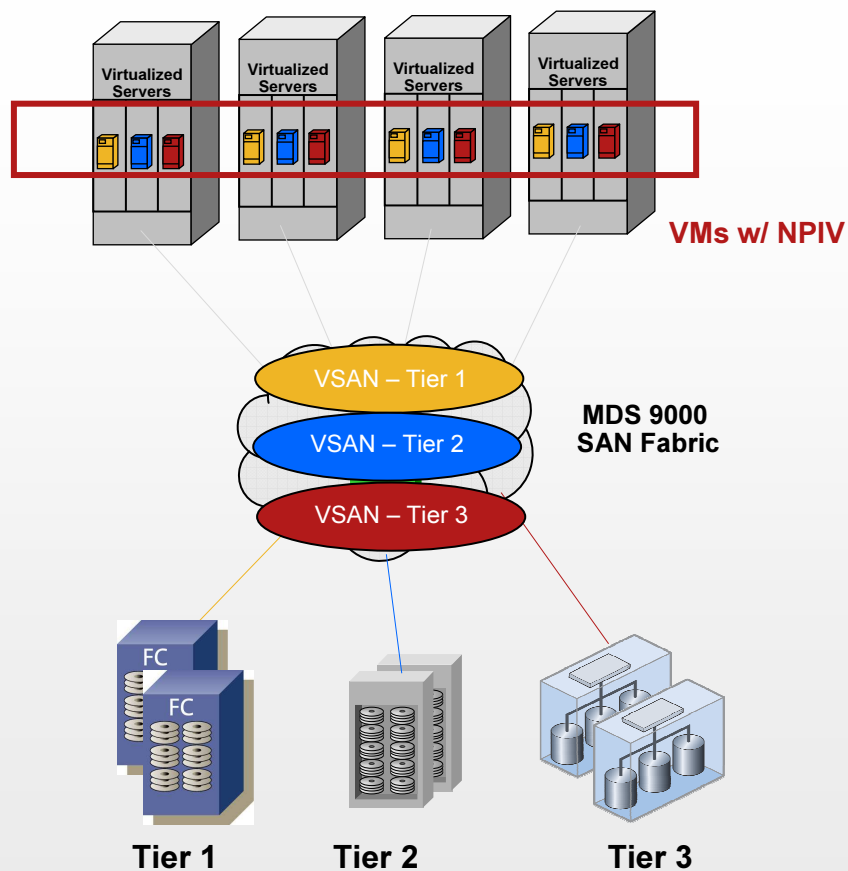
# VN-Link Storage Services

- Enabling large scale server deployments
- Autonomy and flexibility for server adds, moves & changes
- NPV technologies avoid the need for reconfiguration with server changes
- F-Port Channel Trunking extends VSAN benefits and increases resilience



# VN-Link for Storage Networks

## MDS Delivers Virtual Machine Aware SANs



### Fabric Scalability and Performance

Resilient, high performance fabric to support large, dense VM environments

### Performance Monitoring and Trending

VM-granular management and troubleshooting

### Quality of Service (QoS)

VM-granular policy provisioning

### VSANs Isolate Fault Domains

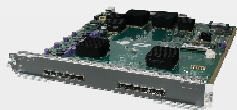
Increase availability, simplify troubleshooting, improve security & compliance

### Mobility with Security

Wire-speed encryption protects data in transit and VMs during migration

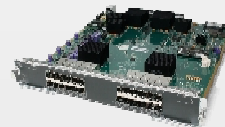
# Secure 8-Gbps FC Modules Bring VM Scalability

- **Tiered connectivity:** optimize cost, performance and density
- **Investment Protection:** compatibility with all MDS 9500 Series ever shipped
- **Reduced TCO:** simplified infrastructure reduces space, power, and cooling requirements
- **Cisco TrustSec-Fibre Channel Link Encryption**



## 24-Port 8-Gbps Module

High end storage subsystems and Inter-Switch Links (ISLs).



## 48-Port 8-Gbps Module

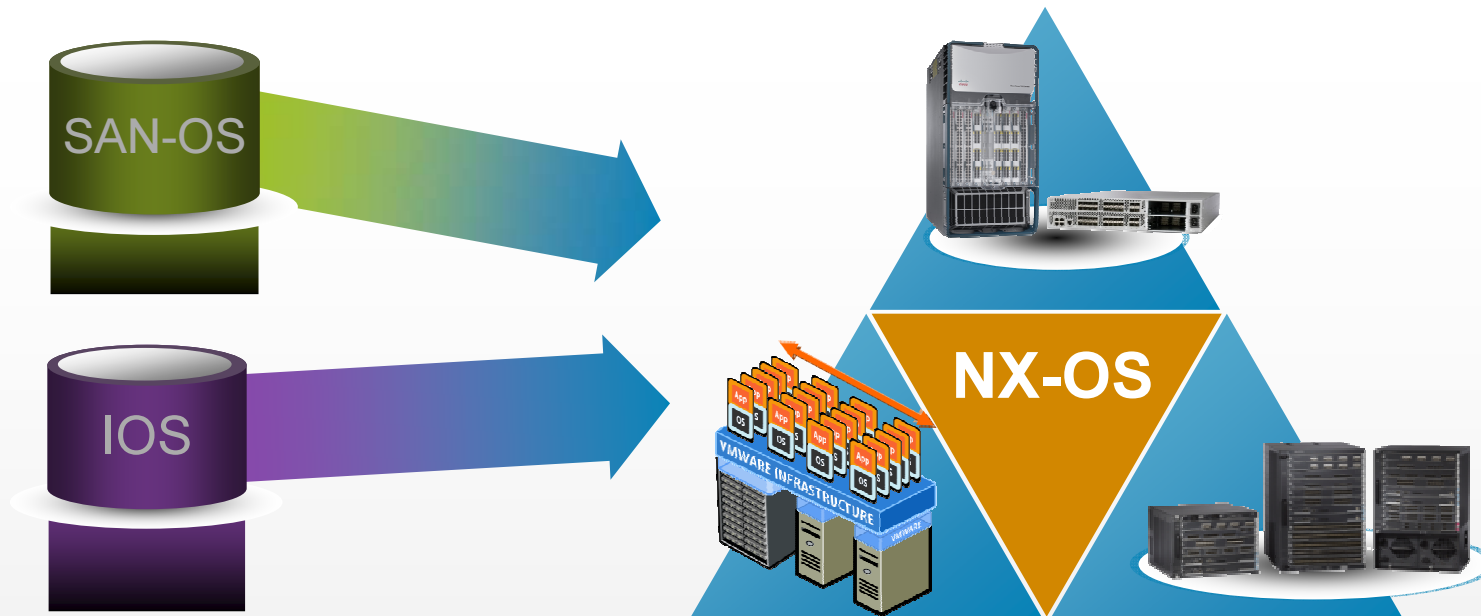
Optimal performance and density for virtualized servers.



## 4/44-Port 8-Gbps Host-Optimized Module

Cost-effective solution for standard servers

# NX-OS is the Data Center Operating System



- Simplifies the data center environment
- Brings server, storage and network closer than ever
- Lays the foundation for unified fabric
- Re-Branding SAN-OS in recognition of common codebase

# Collaborative Professional Services from Cisco and VMware

## Relationship Delivers

- Holistic offering, no more silos
- Server and network virtualization
- Best of breed solutions
- Single point of contact
- Joint team with best in class expertise and experience



**Cisco and VMware: Joint Virtualization Assessment, Planning and Design**

# Enhanced Partner Capability

- Enhanced channel partner certification with emphasis on virtualization
- Expanded training for DCNI qualified partners
  - Focus on areas such as DCE, FCoE, server virtualization

# Accelerate Server Virtualization

## Enable, Simplify, Scale



### Security and Policy Enforcement

**Enable** VM-aware security and policy

**Scale** the use of VMotion and DRS



### Operation and Management

**Simplify** management and troubleshooting with VM-level connection visibility

**Scale** with automated server & network provisioning



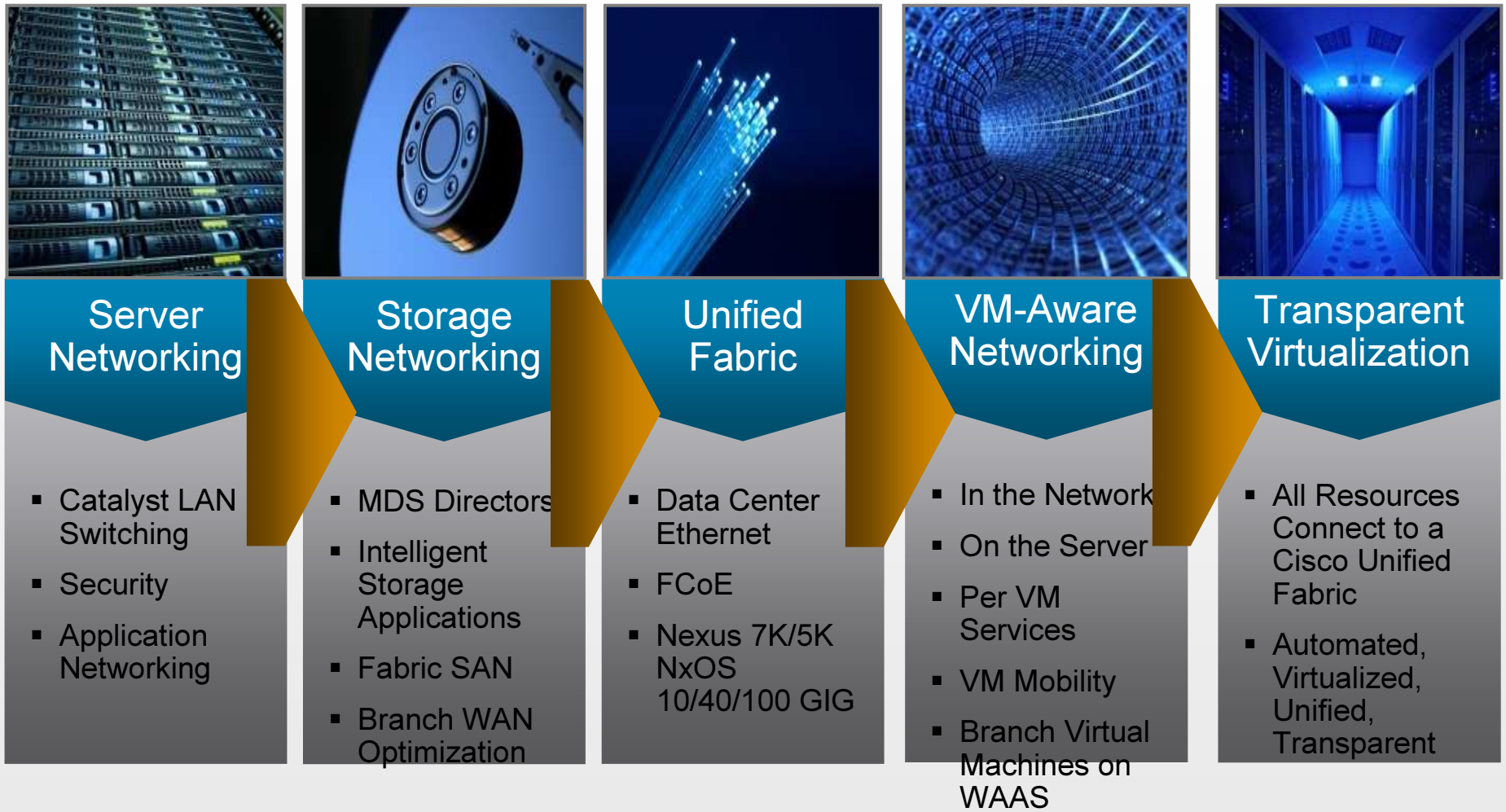
### Organizational Structure

**Enable** flexible collaboration with individual team autonomy

**Simplify** and maintain existing VM mgmt model

# Data Center 3.0

## Virtualization Roadmap – Today's Focus





# **Thanks for your time today.**

If you have follow up questions, please contact  
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