



## Nexus 1010 v1.3 What's New?

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Server Access Virtualization Technology Group (SAVTG)



# Nexus 1000V Fall Webinar Series

([www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity))

Date	Technical Track Topic	Webinar	Preso	Q&A
10/05	Nexus 1000V, VXLAN, and vCloud Director	<a href="#">Play</a>	PDF	PDF
10/12	Virtualized Multi-Tenant Data Center (VMDC)	<a href="#">Play</a>	PDF	
10/19	Nexus 1010 v1.3 - What's New?	<a href="#">Register</a>		
10/26	Virtualized Workload Mobility - Latest Design Guidance	<a href="#">Register</a>		
11/02	UCS and Nexus 1000V - Best Practices	<a href="#">Register</a>		
11/09	Virtual Security Gateway (VSG) v1.2 - What's New?	<a href="#">Register</a>		



## Nexus 1000V Public Webinar Series

([www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity))

### Date Business Sessions

Date	Business Sessions
22-Mar	Nexus 1000V Family Overview and Update
5-Apr	Virtual Network Services (vPath, NAM, vWAAS)
19-Apr	Virtual Security Gateway Introduction
3-May	Journey to the Cloud w/ N1KV: vCloud Director & Long Distance vMotion
17-May	Secure VDI with Nexus1000V & VSG

### Date Technical Sessions

Date	Technical Sessions
29-Mar	Nexus 1000V New Features and Installation Overview
12-Apr	Nexus 1010 Installation & Upgrade
26-Apr	Virtual Security Gateway Overview
10-May	Nexus 1000V Key Features
24-May	Nexus 1000V Troubleshooting

27-Jul	Long Distance vMotion with Nexus 1000V and Virtual Security Gateway (VSG)
10-Aug	PCI 2.0 Reference Architecture with Nexus 1000V and Virtual Security Gateway (VSG)

# Reference Solutions

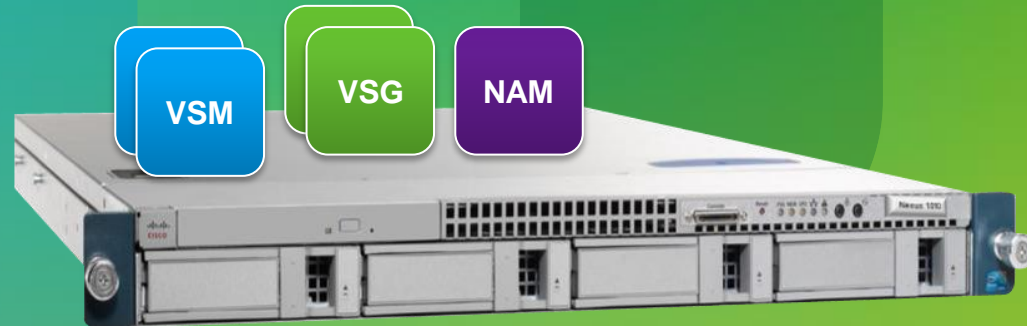
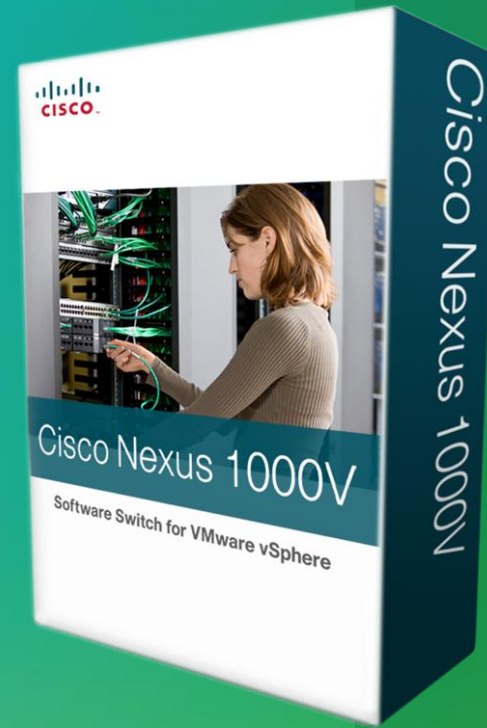
Solution	Nexus 1000V	Nexus 1010	Virtual Security Gateway
vBlock	✓		
FlexPOD	✓	✓	
Virtual Desktop	✓	Implicit Support	✓
Virtualized Multi-tenant DC (VMDC)	✓	Implicit support	Target Nov '11
Long-distance vMotion (Virtualized Workload Mobility)	✓	Implicit support	✓
PCI 2.0	✓	Implicit support	✓

# Agenda

- Nexus 1000V/1010 overview
- v1.3 Features
- v1.3 Technical Deep Dive
- Network Best Practices
- Resources
- Q&A as we go...

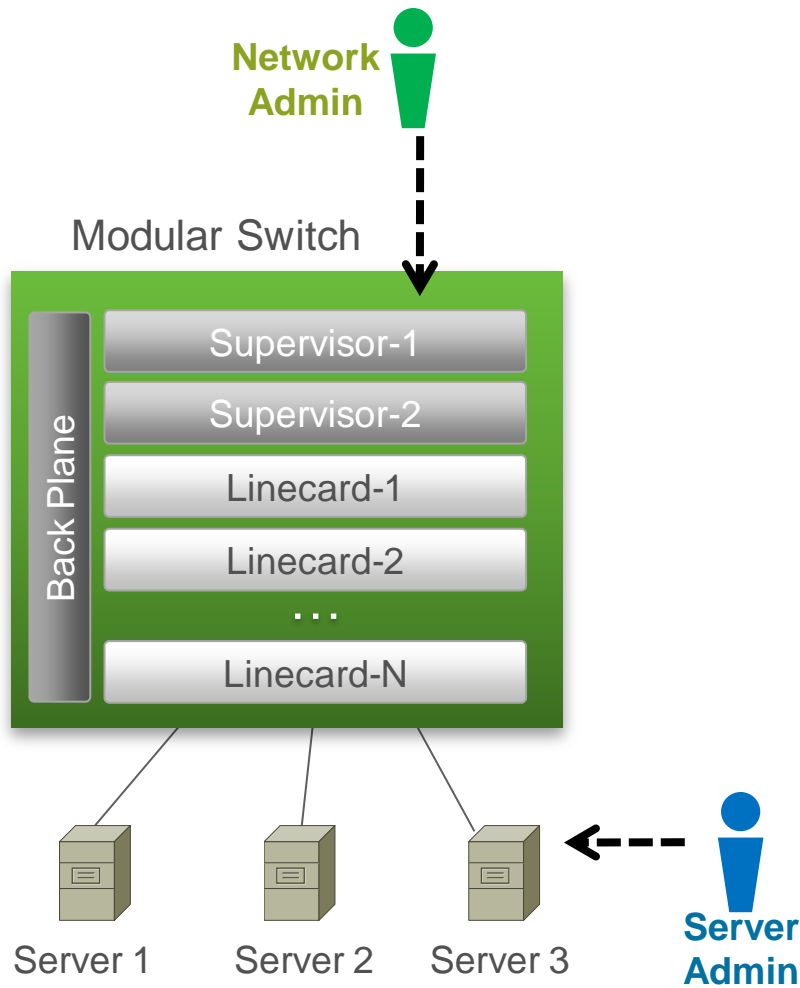


# Nexus 1000V and Nexus 1010



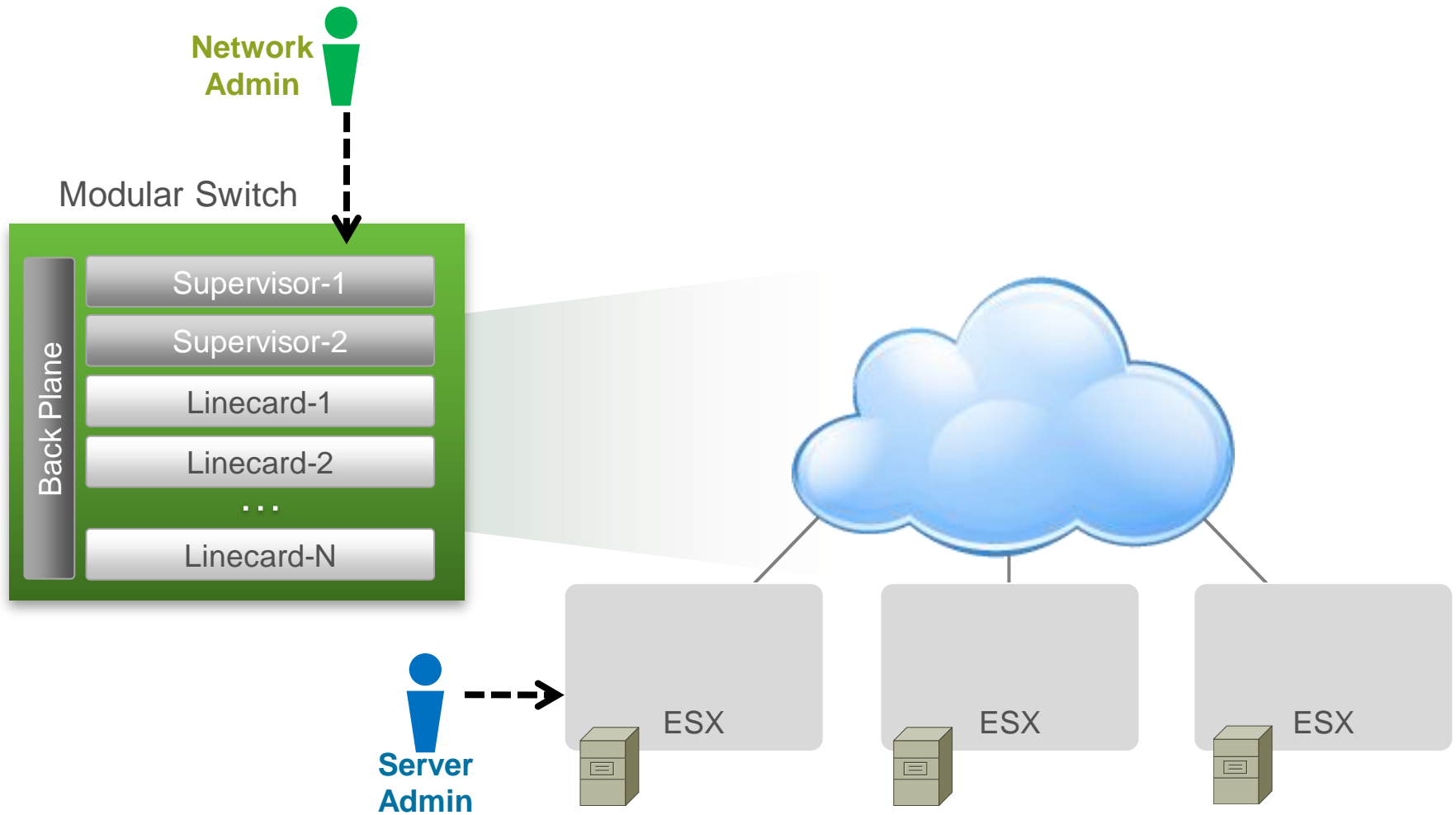
# Nexus 1000V Architecture

## Comparison to a Physical Switch



# Nexus 1000V Architecture

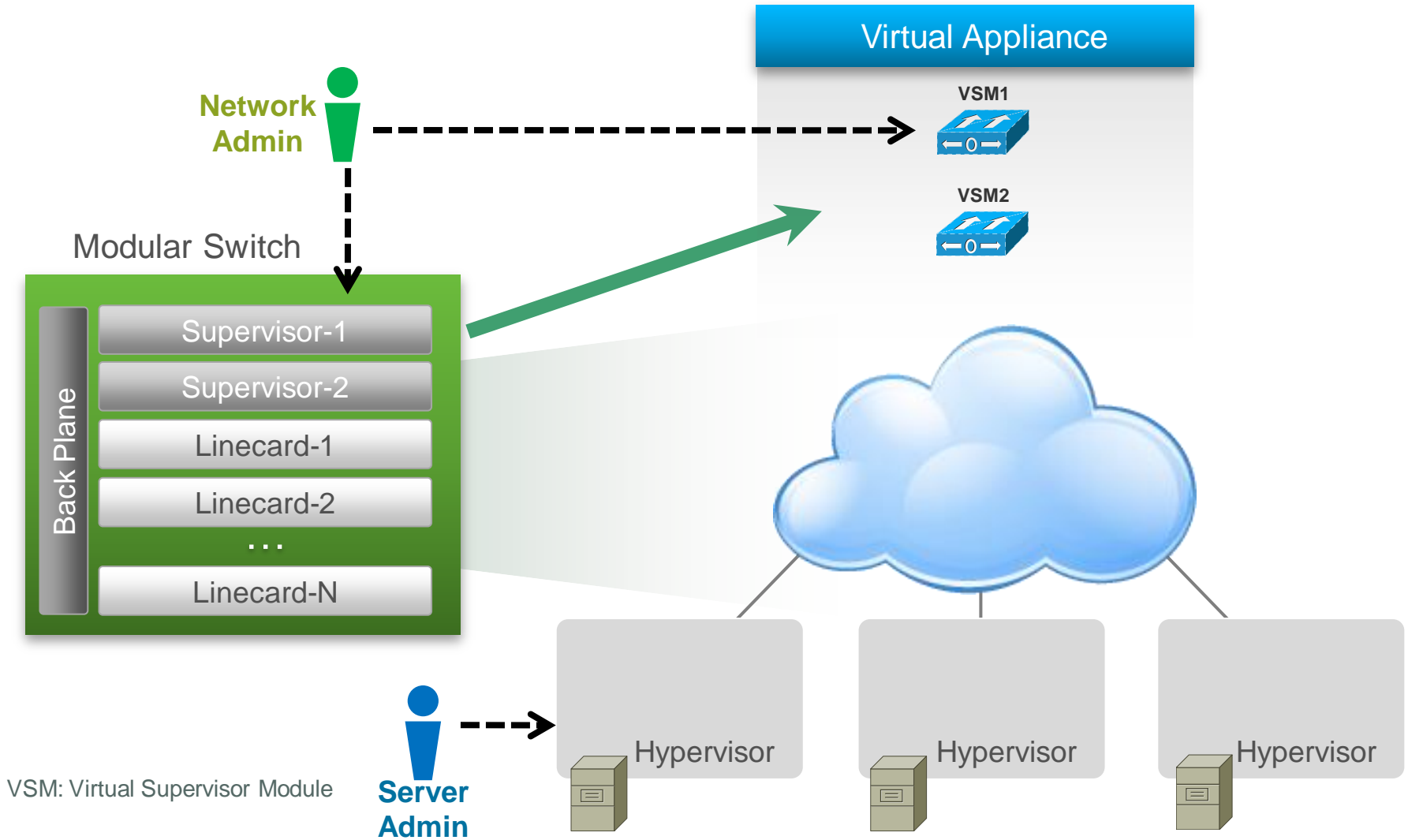
## Moving to a Virtual Environment





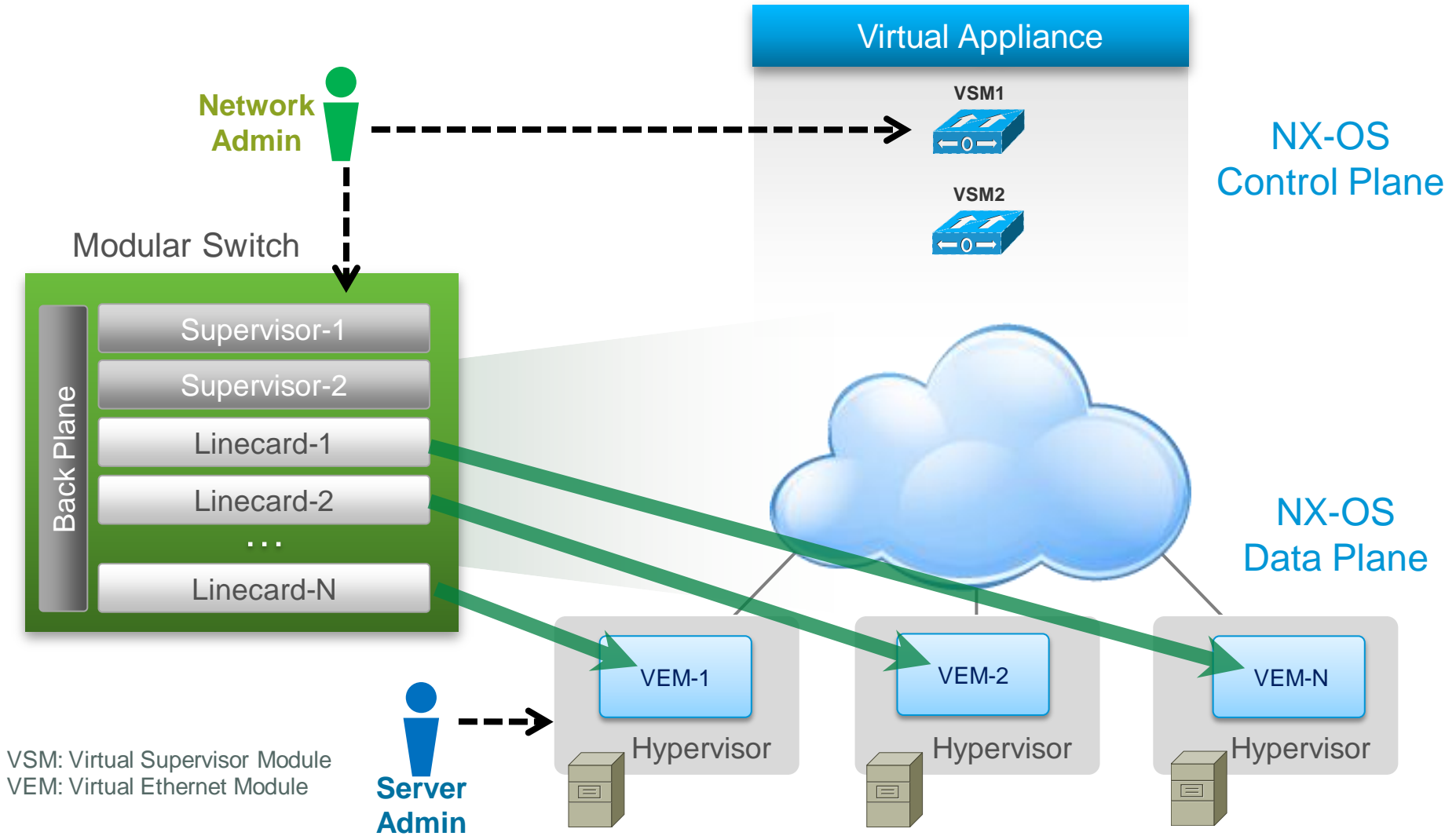
# Nexus 1000 Architecture

Supervisors → Virtual Supervisor Modules (VSMs)



# Nexus 1000 Architecture

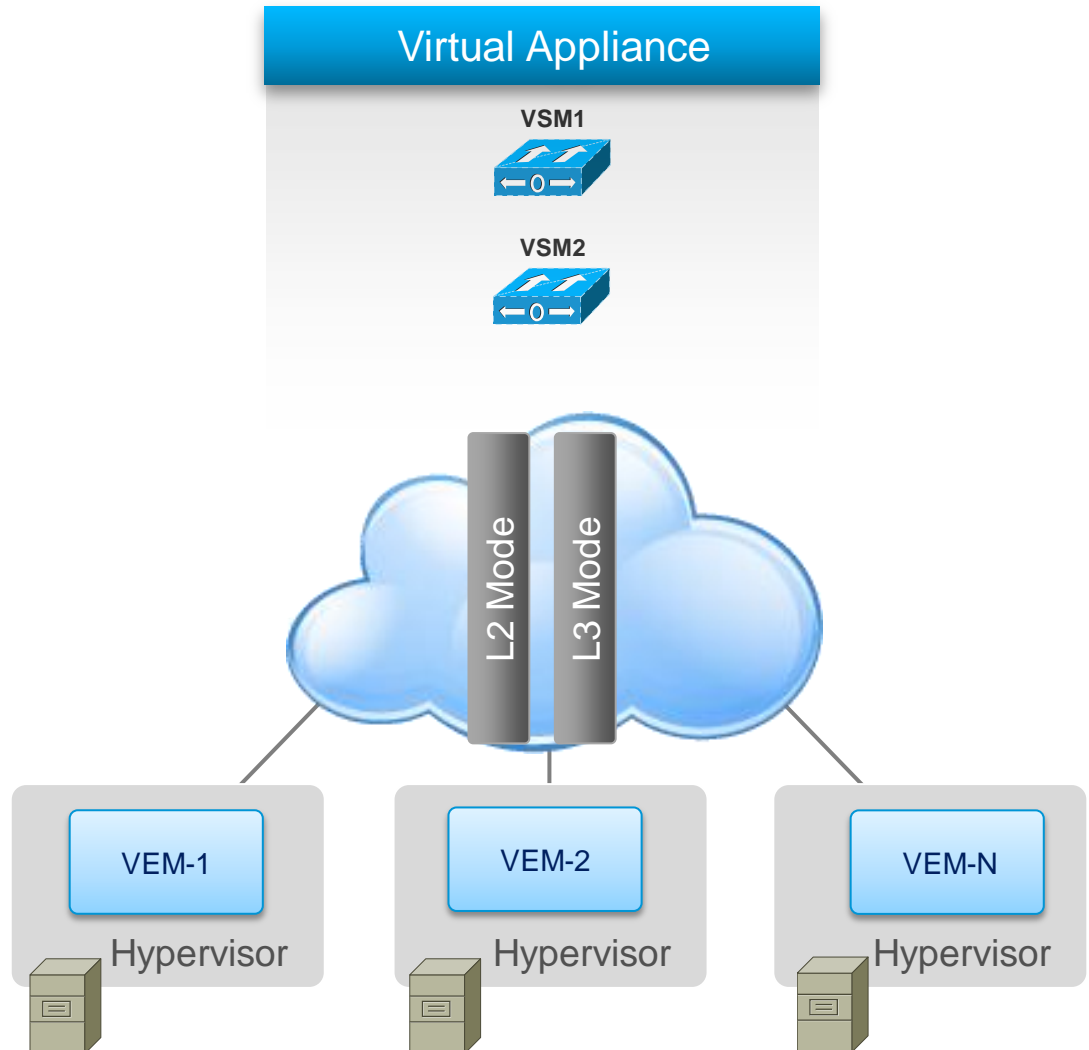
Linecards → Virtual Ethernet Modules (VEMs)



# Nexus 1000 Architecture

VSM + VEMs = Nexus 1000 Virtual Chassis

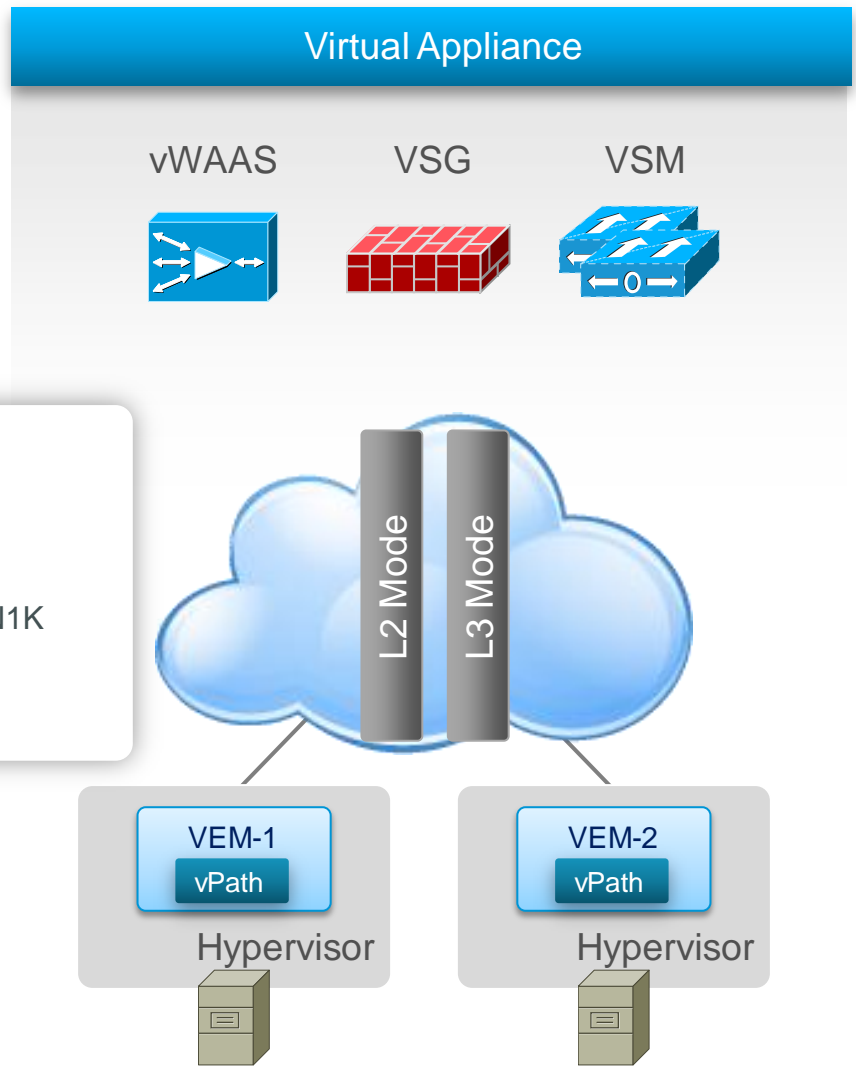
- 200+ vEth ports per VEM
- 2K vEths per N1K
- 64 VEMs per N1K (connected by L2 or L3)
- Multiple N1Ks can be created (under single hypervisor management center)



VSM: Virtual Supervisor Module  
VEM: Virtual Ethernet Module

# Embedding Intelligence for Virtual Services

## vPath – Virtual Service Datapath

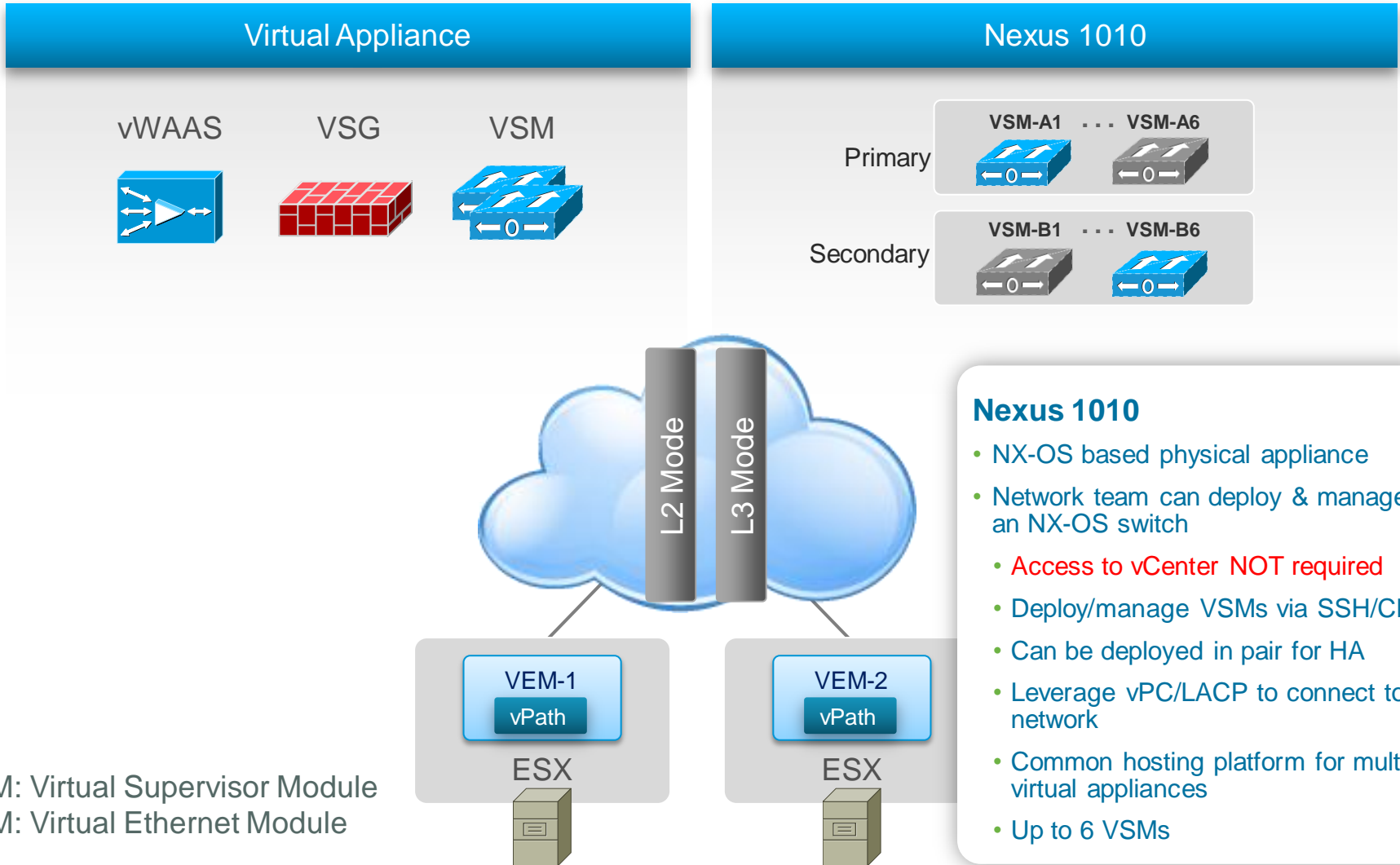


- vPath**
  - Virtual Service Datapath
- VSG**
  - Virtual Security Gateway for N1K
- vWAAS**
  - Virtual WAAS

### vPath

- Service Binding (Traffic Steering)
- Fast-Path Offload

# Nexus 1010 – Hosting Platform for VSM

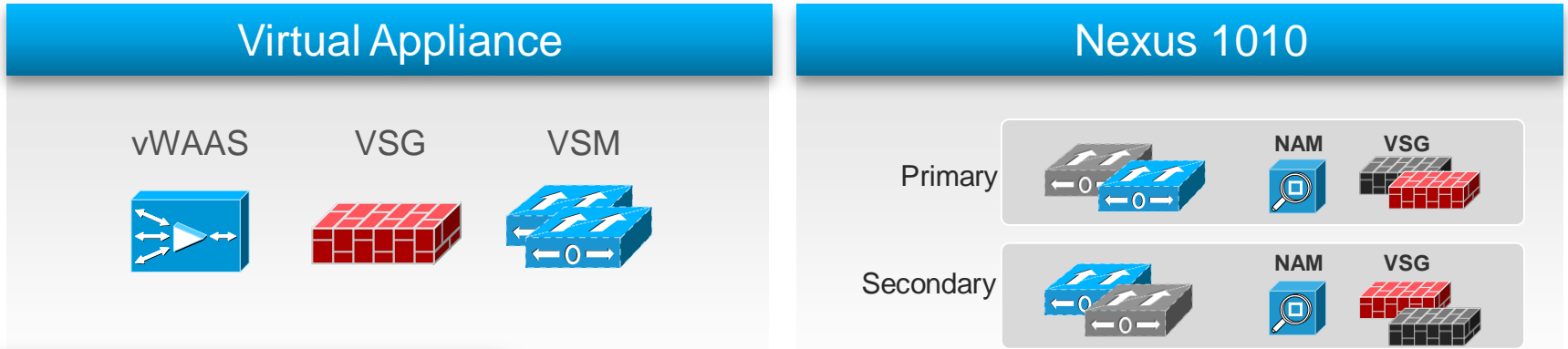


VSM: Virtual Supervisor Module  
VEM: Virtual Ethernet Module

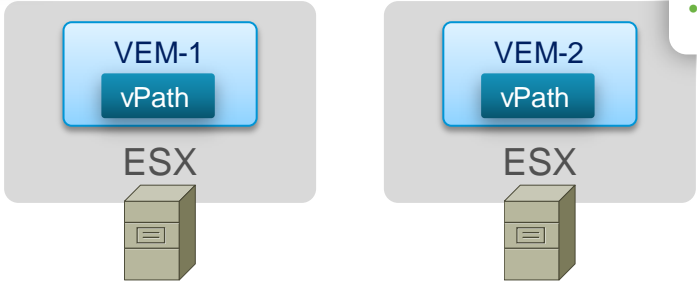
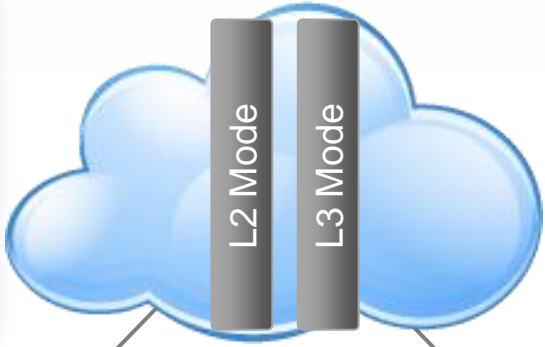
## Nexus 1010

- NX-OS based physical appliance
- Network team can deploy & manage like an NX-OS switch
  - Access to vCenter NOT required
- Deploy/manage VSMs via SSH/CLI
- Can be deployed in pair for HA
- Leverage vPC/LACP to connect to network
- Common hosting platform for multiple virtual appliances
- Up to 6 VSMs

# Nexus 1010 – Hosting Platform for Services



**VSM:** Virtual Supervisor Module  
**VEM:** Virtual Ethernet Module (N1KV)  
**vPath:** Virtual Service Datapath  
**VSG:** Virtual Security Gateway  
**vWAAS:** Virtual WAAS



**Network Analysis Module (NAM)**

- Available today

**Virtual Security Gateway**

- Available today

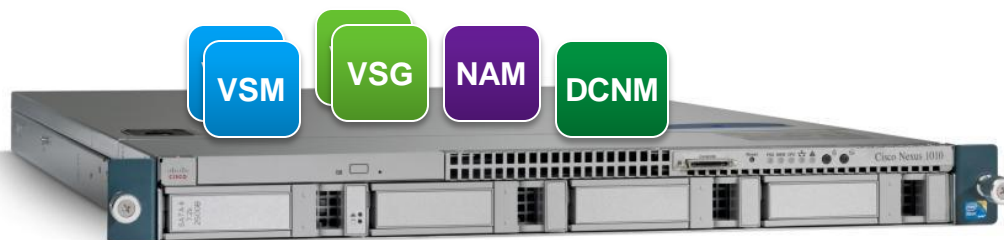
**Data Center Network Mgr (DCNM)**

- Available Q4CY11

VSM: Virtual Supervisor Module  
 VEM: Virtual Ethernet Module

# Nexus 1010: Virtual Services Appliance

- Dedicated appliance hosting
  - Nexus 1000V Virtual Supervisor Modules (VSM)
  - Virtual Service Blades (VSB)
- Network Analysis Module (NAM) Virtual Service Blade (VSB)
- Additional VSBs\*: VSG, DCNM (*Available Q4CY11*)



## UCS C200M2 Physical Appliance:

- 2 \* Intel X5650- 2.66GHz, 6 core
- 4 \* 4 GB RDIMMs RAM
- 2 \* 500GB SATA-II HDD
- RAID 1 Mezz card
- 1 \* Broadcom Quadport GbE 5709 NIC Card
- 2 \* LOM GbE ports
- 1 \* Serial Port
- 1 \* Rail-Kit

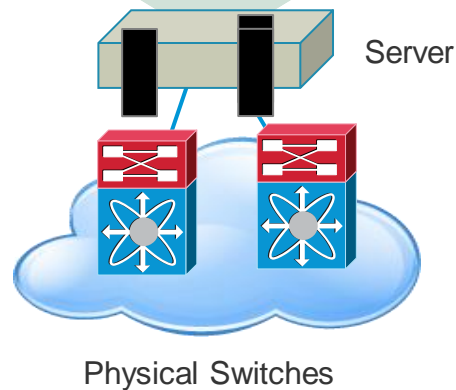
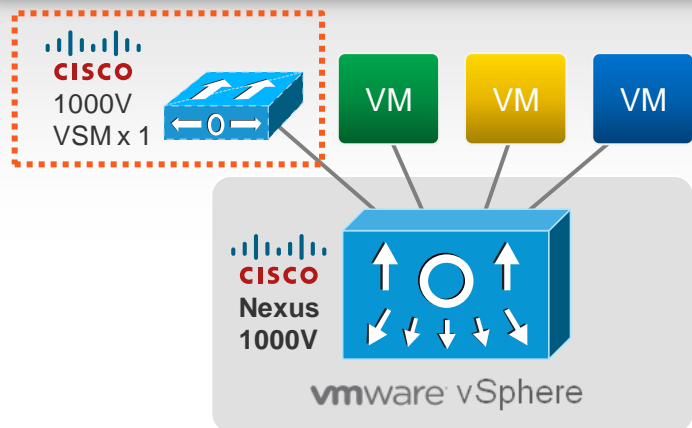
# Virtual Service Blades (VSB)

<b>VSB</b>	<b>Memory Requirements</b>	<b>vCPU</b>
Nexus1000V-VSM	2 GB	1
NAM	2 GB	2
VSG	2 GB	1

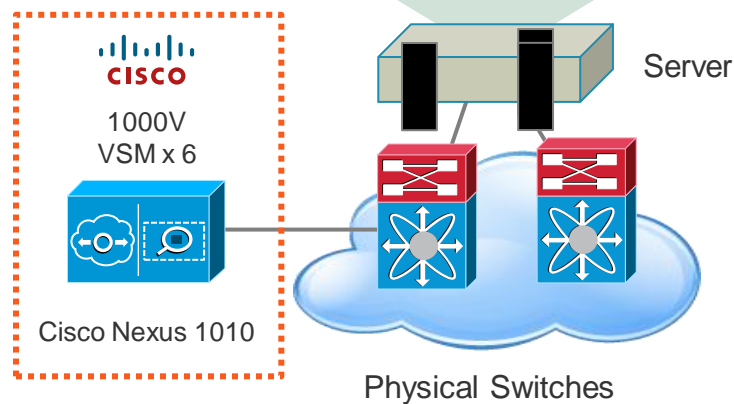
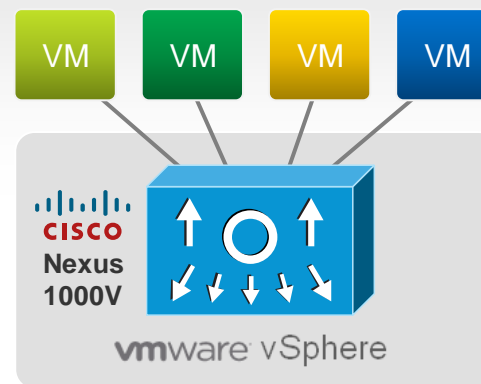


# Architectural Comparison

## VSM on Virtual Machine



## VSM on Nexus 1010



# Feature Comparison

VSM as VM



VSM on Nexus 1010



Nexus 1000V features and scalability	✓	✓
VEM running on vSphere Enterprise Plus	✓	✓
NX-OS high availability of VSM	✓	✓
Software-only deployment	✓	
Installation like a standard Cisco switch		✓
Network Team owns/manages the VSM		✓

# Nexus 1010 v1.3



# CCO Links

## Software, Documentation & Screencasts

Product	Latest Releases (August 2011)	CCO Links
Nexus 1000V <a href="http://www.cisco.com/go/1000v">www.cisco.com/go/1000v</a>	1.4a 4.2(1)SV1(4a)	<ul style="list-style-type: none"> <li>• <a href="#">SW Download</a></li> <li>• <a href="#">Documentation</a></li> <li>• <a href="#">Screencasts</a></li> </ul>
Nexus 1010 <a href="http://www.cisco.com/go/1010">www.cisco.com/go/1010</a>	1.3 4.2(1)SP1(3)	<ul style="list-style-type: none"> <li>• <a href="#">SW Download</a></li> <li>• <a href="#">Documentation</a></li> </ul>
Virtual Security Gateway (VSG) <a href="http://www.cisco.com/go/vsg">www.cisco.com/go/vsg</a>	1.2 4.2(1)SV1(2)	<ul style="list-style-type: none"> <li>• <a href="#">SW Download</a></li> <li>• <a href="#">Documentation</a></li> <li>• <a href="#">Screencasts</a></li> </ul>
Virtual Network Management Center (VNMC) <a href="http://www.cisco.com/go/vnmc">www.cisco.com/go/vnmc</a>	1.2.1	<ul style="list-style-type: none"> <li>• <a href="#">SW Download</a></li> <li>• <a href="#">Documentation</a></li> <li>• <a href="#">Screencasts</a></li> </ul>

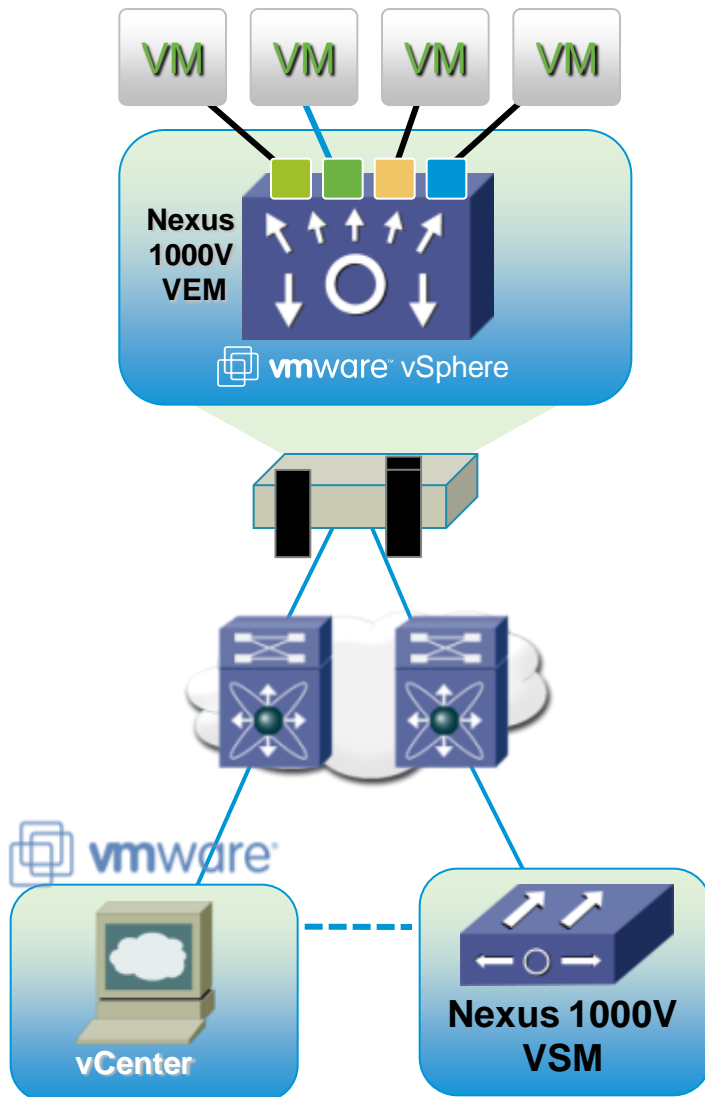
# Nexus 1010 – Release 1.3

CCO posted name: 4.2(1)SP1(3)

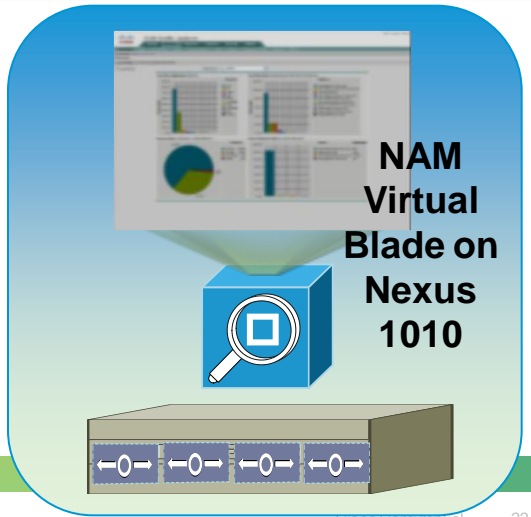
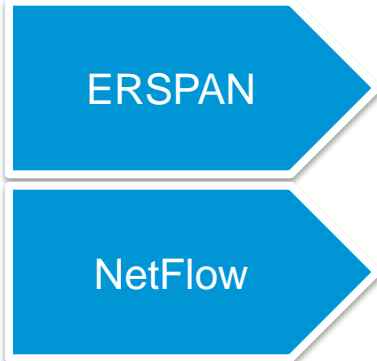
Feature	Description / Benefit
Now up to 6 Virtual Service Blades (VSBs)	Can now host VSMs, VSGs, and NAM* in various combinations; for example: <ul style="list-style-type: none"><li>• Up to 6 VSMs</li><li>• Up to 6 VSGs</li></ul>
VSG 1.2 as a VSB on 1010	Decouples VSG VM from the production workload environment
Virtual service blade export/import	Simplifies management
VSM backup/restore	Enables DR planning
Support for NAM v5.1	Diagnose VM-to-VM traffic
Multi-Gb/s throughput	Greater performance; reduced packet loss
Redundant power supply	Order w/ 1010 or as FRU
Long-distance (DC-to-DC) vMotion support	Span up to 100 km to another DC for load balancing and/or DR

# NAM Virtual Blade on Nexus 1010

Optimize Application Performance and Network Resources



- Application Performance Monitoring
- Traffic Analysis and Reporting
  - Applications, Host, Conversations, VLAN, QoS, etc.
  - Per-application, per-user traffic analysis
- View VM-level Interface Statistics
- Packet Capture and Decodes
- Historical Reporting and Trending



# 1.3 New Features Deep Dive

Speaker Name  
Speaker Title

Date

# Nexus 1010 1.3 New Features

- Internal Improvements that increase VSB network throughput
- Increase VSB capacity 4 → 6
- Ability to run Virtual Security Gateway(VSG)
- VSB Import/Export
- Ability to shut/no shut VSB interfaces
- CDP discovery of upstream switches



# 1.3 Performance Improvements

- Improvements to underlying NXOS
- Improves VSB network throughput by a factor of almost 4x
- Greatly helps NAM performance
- Allows for 2 additional VSB instances  
Increase from 4 to 6
- You can now run up to 6 VSG instances on a 1010

# VSB Import/Export

- Previously no way to save off a VSB
- Works with VSM, NAM, and VSG
- Can Import/Export both primary and secondary
- Export requires that VSB be shutdown
- Images are stored in “export-import/” dir on bootflash

Can be manually copied off to remote storage

# Using Export to backup a VSM

- **Shutdown primary VSM**

Secondary VSM will take over and run Nexus 1000v control plane

```
f340-33-09-n1010-1(config)# virtual-service-blade training
```

```
f340-33-09-n1010-1(config-vsbc-config)# shutdown primary
```

- **Export VSB on 1010**

```
f340-33-09-n1010-1(config-vsbc-config)# export primary
```

Note: export started..

Note: please be patient..

Note: please be patient..

Note: export completed...

- **Verify**

```
f340-33-09-n1010-1(config-vsbc-config)# dir bootflash:///export-import/4
```

```
147779575      Oct 18 02:47:10 2011  Vdisk4.img.tar.00
```

# Using Import to Restore a VSB

- Copy the backup to bootflash

```
f340-33-09-n1010-1# copy scp://root@172.18.217.165/root/Vdisk4.img.tar.00  
bootflash:export-import vrf management
```

- Import the image

```
f340-33-09-n1010-1(config)# virtual-service-blade training  
f340-33-09-n1010-1(config-vsbs-config)# import primary  
Vdisk4.img.tar.00
```

Note: import started..

Note: please be patient..

Note: Import cli returns check VSB status for completion

- Verify

```
f340-33-09-n1010-1(config-vsbs-config)# show virtual-service-blade name  
training
```

# VSB Interfaces shut/no shut

- You can now shut/no shut VSB interfaces

```
f340-33-09-n1010-1# show virtual-service-blade name training
```

```
.
```

```
VsbEthernet 1/4/1: control vlan: 119 state: up
```

```
VsbEthernet 1/4/2: management vlan: 119 state: up
```

```
VsbEthernet 1/4/3: packet vlan: 119 state: up
```

- To manage

```
f340-33-09-n1010-1(config)# interface vsbEthernet 1/4/1
```

```
f340-33-09-n1010-1(config-if)# shut
```

- Verify

```
f340-33-09-n1010-1# show virtual-service-blade name training
```

```
VsbEthernet 1/4/1: control vlan: 119 state: down
```

```
VsbEthernet 1/4/2: management vlan: 119 state: up
```

```
VsbEthernet 1/4/3: packet vlan: 119 state: up
```

# Network Best Practices

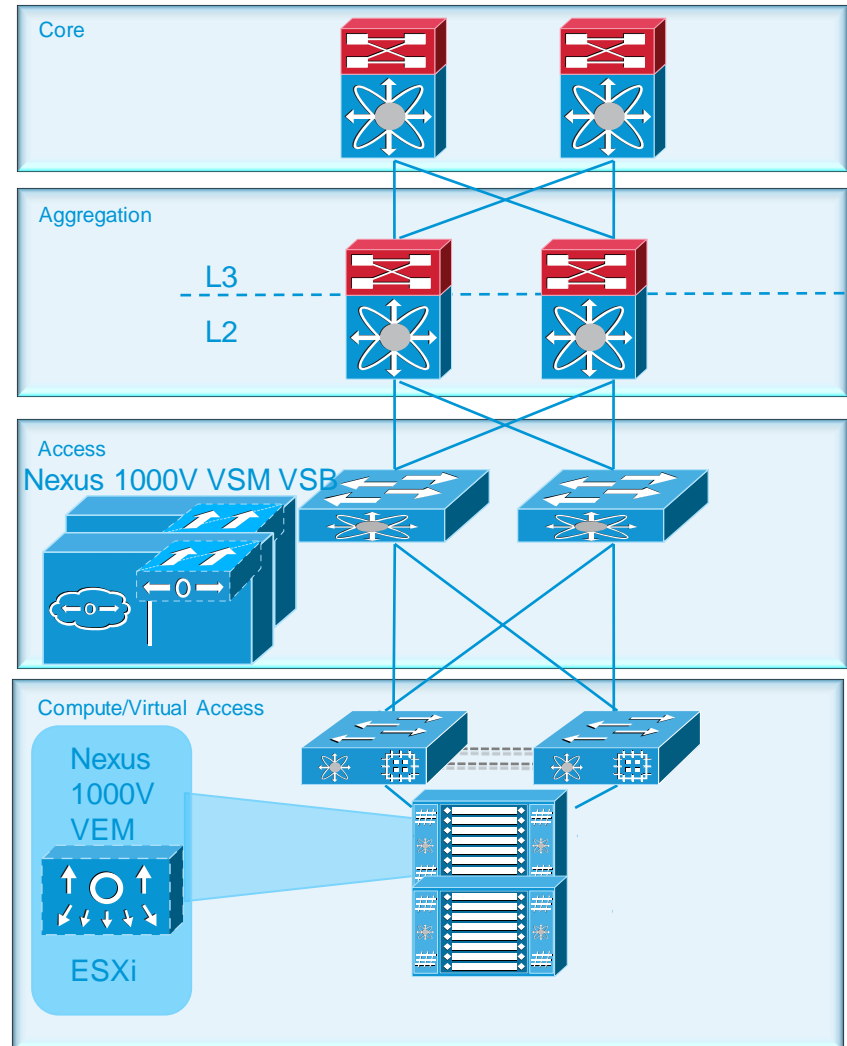


# Cisco Nexus 1010

- Must be deployed in pairs
- Must be in the same L2 domain for management and control
- Splitting VSM primary and secondary between 1010 and ESX is not supported
- 1010 Uses same HA mechanism as VSM
  - Domain id and control vlan are used for pairing and heartbeat
  - Do not overlap the domain id between a 1010 and a VSM

# Nexus 1010 in the Access Layer

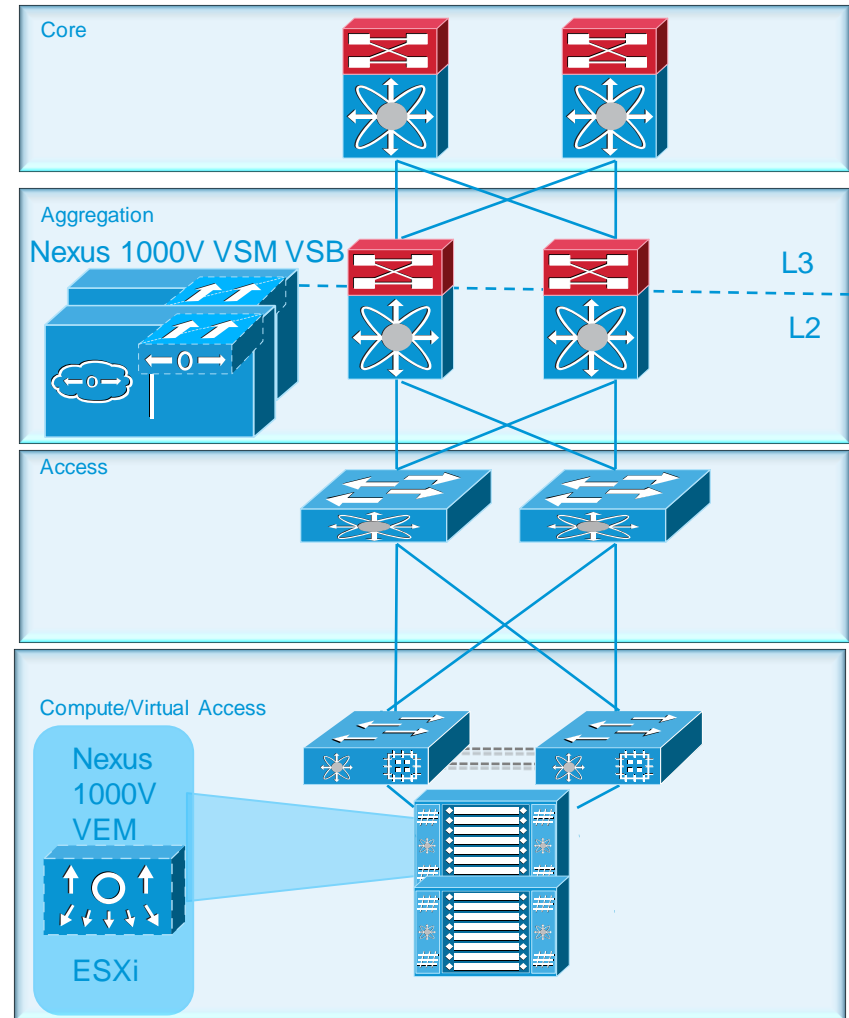
- L2 Control for VSM to VEM is easier here
  - All servers/switches below need Control/Packet VLANs
  - L2 Network Services such as VSG
- L3 Control for VSM possible
- HA pair can be dedicated per POD or customer
  - More VSBs available per POD or customer
- Keep 1010s close the ESX hosts





# Nexus 1010 in the Aggregation Layer

- L3 Control for VSM to VEM is more flexible here
  - IP routing should be robust
  - Suitable for long distance
- L2 Control for VSM possible
- HA pair can be shared among PODs or customers
  - If using L3, there should be IP connectivity to VSM VSB from each POD



# Nexus 1010 Network Topology

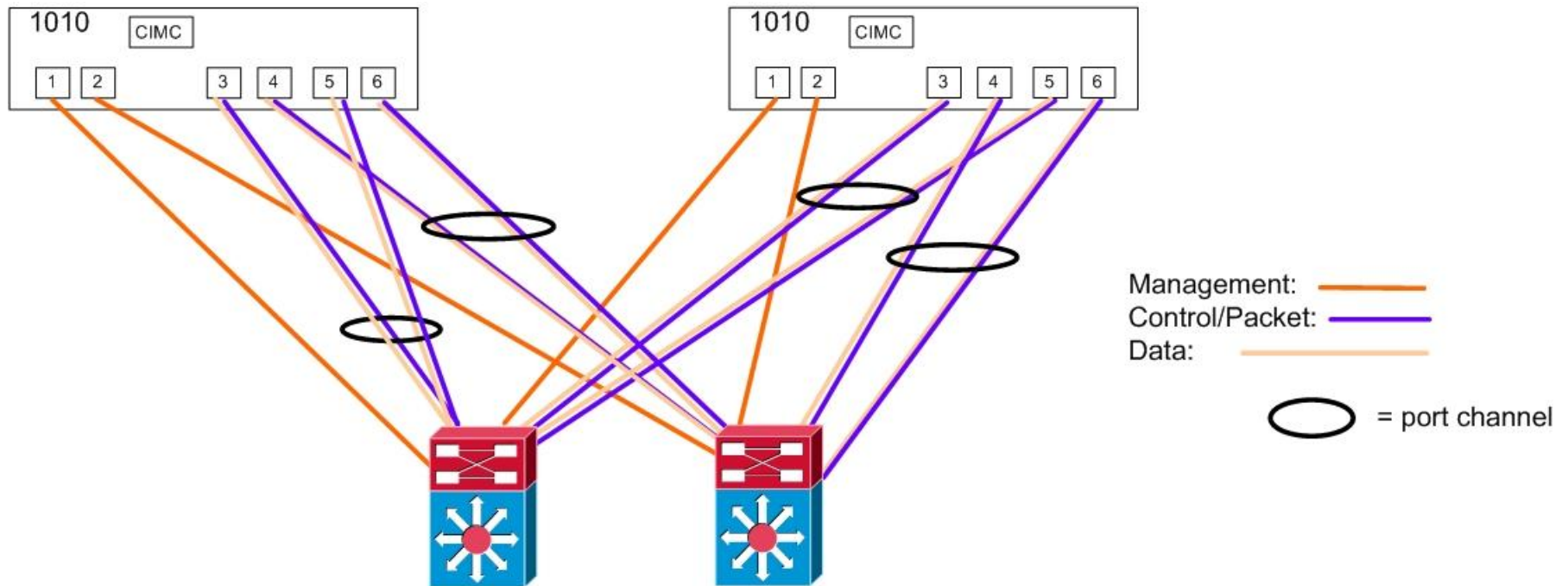
- Network traffic passed is classed into 3 categories
  - Management
  - Control
  - Data
- 1010 has 6 1Gb interfaces
- Offers 4 distinct network topologies
  - These topologies are fixed
  - Topologies are were built based to accommodate certain scenarios
    - NAM traffic, Nexus 1000v control network, simple config
  - All topologies provide redundancy and some provide load balancing
- Best all-around topology is config #3

# Network Uplink Topology #3

- Management gets dedicated interfaces
  - Eth1 and Eth2 dedicated for Management
- Data and Control share 4 interfaces
- Best solution for Control
- 2Gb of throughput
  - maximum redundancy
- Uplinks are bundled together
  - Eth3 and Eth5 are paired and must connect to same switch and port-channel (LACP)
  - Eth4 and Eth6 are paired and must connect to same switch and port-channel (LACP)
  - Data and Control share interfaces
- Cannot define which uplink is used for specific VSMs
  - Traffic is automatically assigned and load balanced

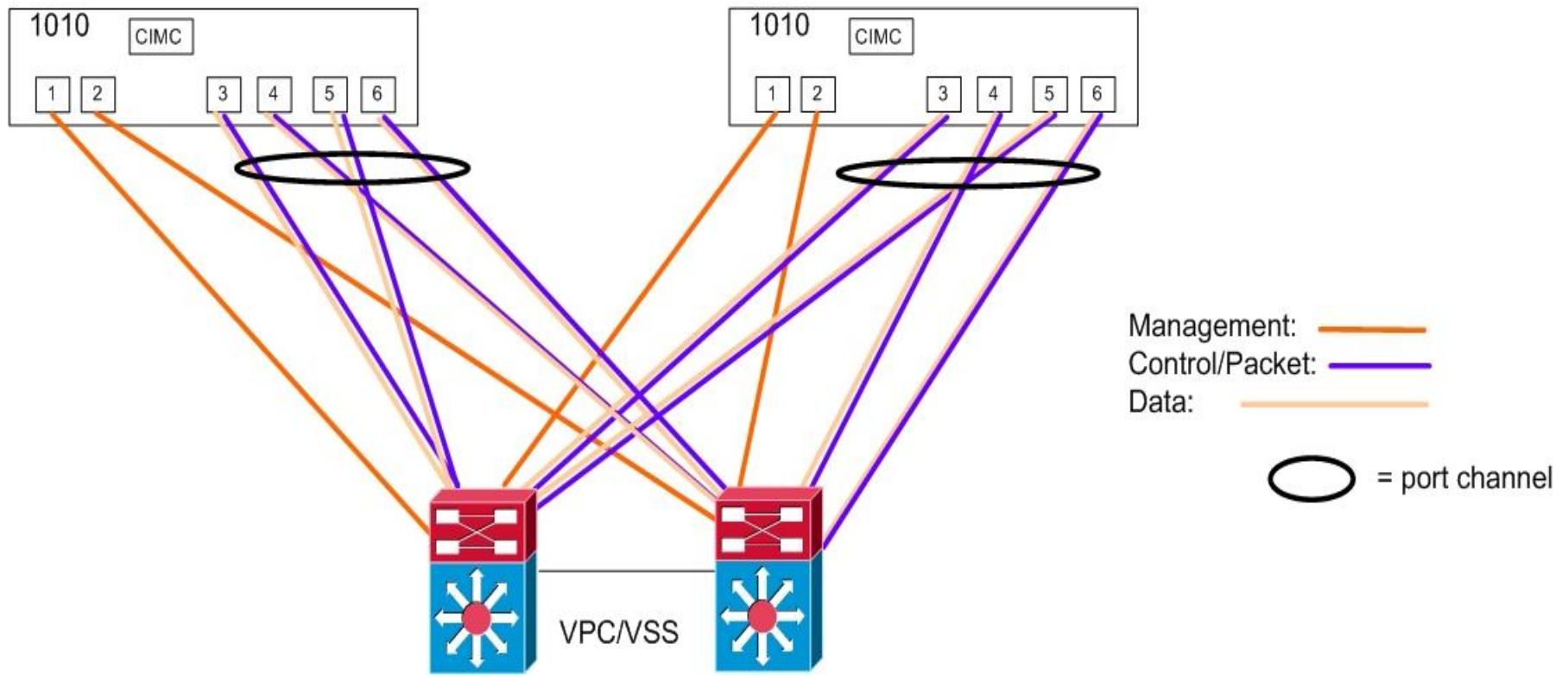
# Topology #3 Valid Configuration

- Paired eth interfaces must be LACP port-channelled to same switch
- Even eth interfaces to one switch and odd eth interfaces to another switch
- Only one port-channel is active

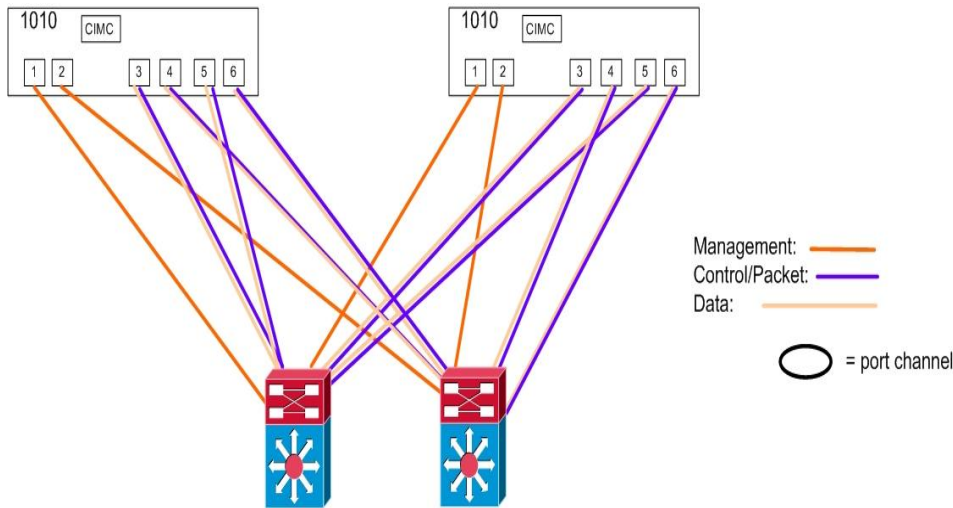


# Topology #3 with VPC/VSS

- Eth3- 6 become one big port-channel
- 4GB of throughput for Control and Data

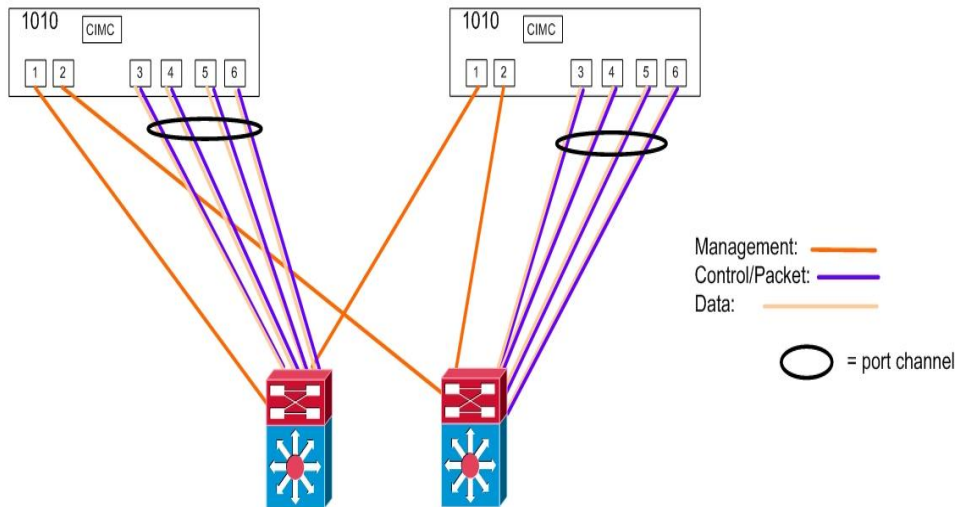


# Examples of Invalid Configuration



No port-channels on Pairs

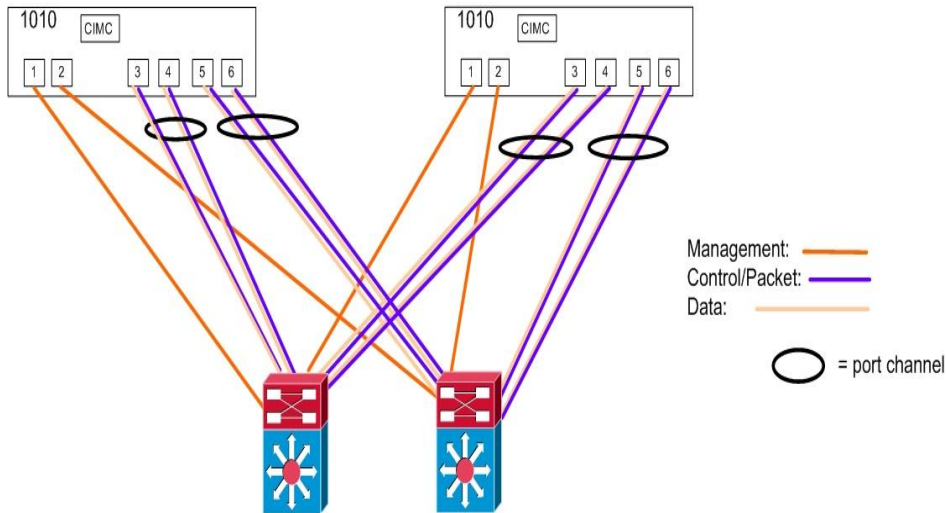
Not supported



All connections port-channelled to same switch.

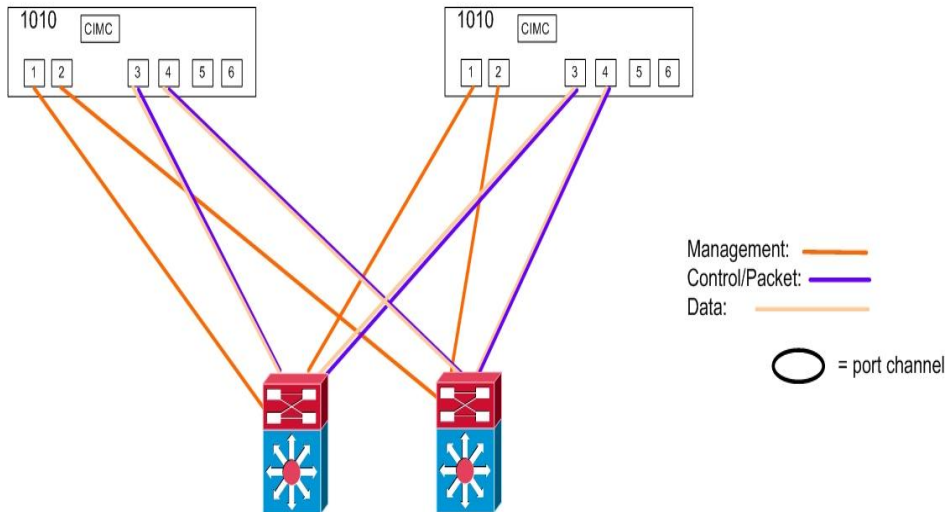
Not supported

# Examples of Invalid Configuration



Wrong Pairs

Eth3 and Eth4 cannot be port-channeled



No redundancy for Pairs



# Resources



# On Cisco.com: 1000V / 1010 / VSG

- CCO Links

1000V: [www.cisco.com/go/1000v](http://www.cisco.com/go/1000v)

1010: [www.cisco.com/go/1010](http://www.cisco.com/go/1010)

VSG: [www.cisco.com/go/vsg](http://www.cisco.com/go/vsg)

VNMC: [www.cisco.com/go/vnmc](http://www.cisco.com/go/vnmc)

vWAAS: [www.cisco.com/go/waas](http://www.cisco.com/go/waas)

NAM on 1010: <http://www.cisco.com/en/US/products/ps10846/index.html> (or [www.cisco.com/go/nam](http://www.cisco.com/go/nam))

- My Cisco Community: [www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity)

- Deployment Guides

[Nexus 1000V Deployment Guide](#)

[Nexus 1000V on UCS – Best Practices](#)

[Nexus 1010 Deployment Guide](#)

[VSG Deployment Guide](#)

- White papers:

[Nexus 1000V and vCloud Director](#)

[N1K on UCS Best Practices](#)

[Nexus 1000V QoS White paper \(draft\)](#)

[VSG and vCloud Director \(draft\)](#)

[vWAAS Technical Overview, vWAAS for Cloud-ready WAN Optimization](#)

# Cisco Validated Designs

## *With Nexus 1000V, Nexus 1010 and VSG*

- [vBlock with Nexus 1000V](#)
- [FlexPOD with Nexus 1000V and Nexus 1010](#)
- [Virtual Multi-tenant Data Center with Nexus 1000V](#)
- Virtual Desktop
  - [1000V and VMware View](#)
  - [1000V and Citrix XenDesktop](#)
  - [1000V and VSG in VXI Reference Architecture](#)
- Virtual Workload Mobility (aka Long-distance vMotion)
  - [Cisco, VMware and EMC \(with 1000V and VSG\)](#)
  - [Cisco, VMware and NetApp \(with 1000V and VSG\)](#)
- [PCI 2.0 with Nexus 1000V and VSG](#)

# N1K Public Webcasts

Date	Business Track Topics	Webinar	Preso	Q&A
3/22	Nexus 1000V/1010 Overview and Update	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
4/05	Virtual Network Services: Virtual Service Datapath (vPath), Network Analysis Module (NAM), Virtual Application Acceleration (vWAAS)	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
4/19	Virtual Security Gateway (VSG) Overview  (Installation Videos: <a href="#">Link</a> )	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
5/03	Journey to the Cloud w/ N1KV: vCloud Director & Long Distance vMotion	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
5/17	Secure Virtual Desktop with Nexus 1000V & VSG	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>

Date	Technical Track Topics	Webinar	Preso	Q&A
3/29	Nexus 1000V v1.4 Features & Install Overview  (Installation Screencasts <a href="#">Link</a> )	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
4/12	Nexus 1010 Overview & Best Practices	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
4/26	Virtual Security Gateway (VSG) Technical Overview	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
5/10	Nexus 1000V Key Features Overview	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
5/24	Nexus 1000V Troubleshooting	<a href="#">Play</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
7/27	Long Distance vMotion with Nexus 1000V and VSG	<a href="#">Play</a>	<a href="#">PDF</a>	
8/10	PCI Reference Architecture with Nexus 1000V and Virtual Security Gateway	<a href="#">Play</a>	<a href="#">PDF</a>	

Webinar Link: [www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity)

# Additional Links

- N1K Download and 60-day Eval: [www.cisco.com/go/1000vdownload](http://www.cisco.com/go/1000vdownload)
- N1K Product Page: [www.cisco.com/go/1000v](http://www.cisco.com/go/1000v)
- N1K Community: [www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity)
- N1K Twitter [www.twitter.com/official\\_1000V](http://www.twitter.com/official_1000V)
- N1K Webinars: [www.tinyurl.com/1000v-webinar](http://www.tinyurl.com/1000v-webinar)
- N1K Case Studies: [www.tinyurl.com/n1k-casestudy](http://www.tinyurl.com/n1k-casestudy)
- N1K Whitepapers [www.tinyurl.com/n1k-whitepaper](http://www.tinyurl.com/n1k-whitepaper)
- N1K Deployment Guide: [www.tinyurl.com/N1k-Deploy-Guide](http://www.tinyurl.com/N1k-Deploy-Guide)
- VXI Reference Implementation: [www.tinyurl.com/vxiconfigguide](http://www.tinyurl.com/vxiconfigguide)
- N1K on UCS Best Practices: [www.tinyurl.com/N1k-On-UCS-Deploy-Guide](http://www.tinyurl.com/N1k-On-UCS-Deploy-Guide)

# Cisco Cloud Lab

## Hands On Training & Demos

- Hands on labs available for Nexus 1000V and VSG in Cloud Lab  
<https://cloudlab.cisco.com>
- Open to all Cisco employees
- Customers/Partners require sponsorship from account team for access via CCO LoginID
- Extended duration lab licenses for 1000V and VSG are available upon request



### Welcome to Cisco CloudLab

Please select one of the available labs, by clicking on its name. Hover over the lab name content.

#### Available labs:

- Cisco Nexus 1000V - Basic Introduction (N1K-000111)
- Cisco Nexus 1000V - Installation (N1K-000211)
- Cisco Nexus 1000V - Upgrade to 1.4 (N1K-000310)
- Cisco Virtual Security Gateway (VSG) - Introduction (VSG-000110)
- Cisco Nexus 7000 - Introduction to NX-OS (N7K-000110)
- Cisco Overlay Transport Virtualization (OTV) (N7K-000210)
- Demo: Cisco Nexus 1000V (Pre-Configured) (N1K-100111)
- Demo: Cisco Virtual Security Gateway (VSG)(Pre-Configured) (VSG-100110)

Thank you.

