



# Cloud Networking and Services Update

## Nexus 1000V Update

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Cloud Networking and Services Group

March, 2014

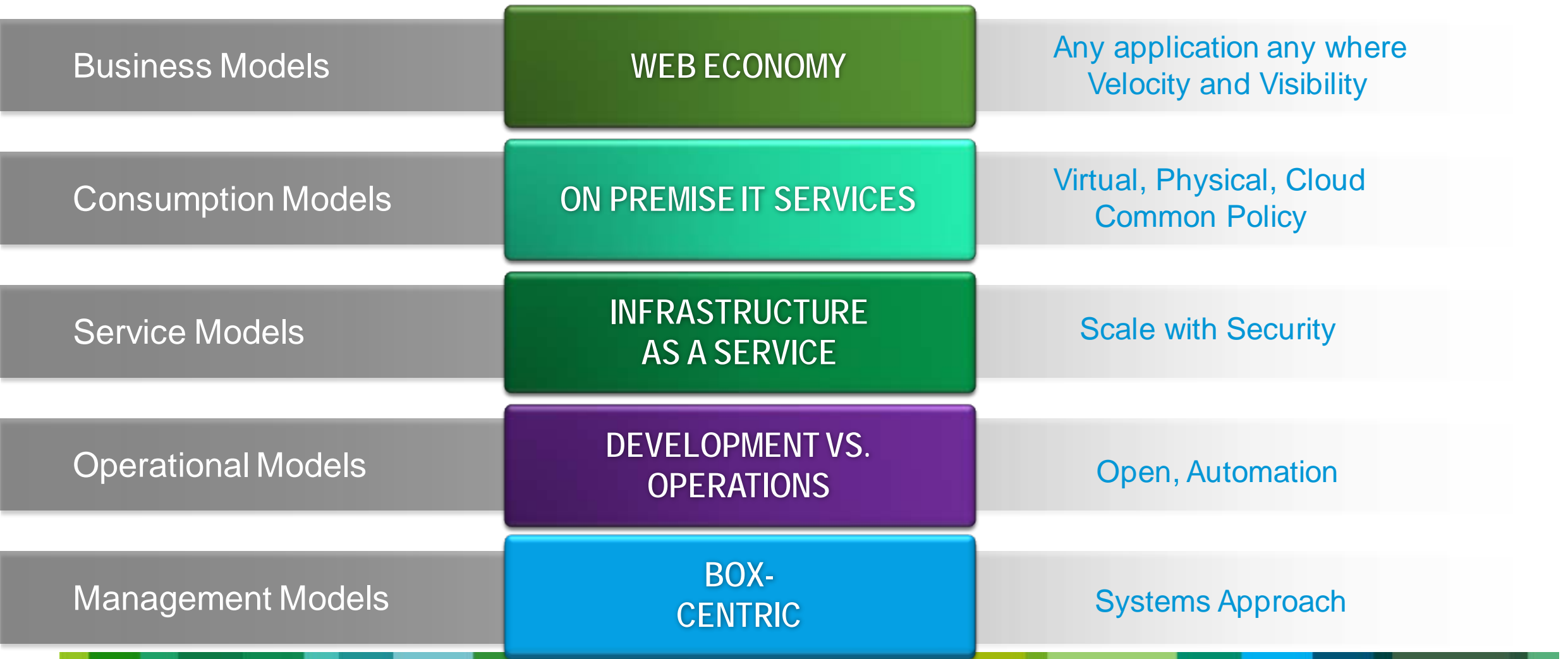
# Legal Disclaimer

Many of the products and features described herein remain in varying stages of development and will be offered on a when-and-if-available basis. This roadmap is subject to change at the sole discretion of Cisco, and Cisco will have no liability for delay in the delivery or failure to deliver any of the products or features set forth in this document.

# Agenda

- Nexus 1000V Introduction
- Nexus 1000V for vSphere
- Nexus 1000V for Hyper-V
- Nexus 1000V for KVM
- Nexus 1000V vPath and Citrix Netscaler 1000V update

# IT'S ALL ABOUT THE APPLICATION SHIFTS THAT ARE RE-DEFINING IT—AT ALL LEVELS



# Data Center Transformation - Requirements



## Virtualized Data Center

- Consistent operational model of physical and virtual resources
- Flexibility to select any hypervisor for Applications
- Consistency across physical and virtual service nodes
- Consistent Application Policy Enforcement



## Private Cloud

- Automation through Cloud Management Platforms
- Flexibility with Application placement on any hypervisor
- Automated service insertion, policy management and chaining
- Increased Resource Utilization



## Hybrid Cloud

- Seamless Secure extension of private cloud to public cloud
- Single pane of management of local/remote resources
- Consistent servers and policies regardless of location of workloads
- Choice in Cloud Providers and Multi-Cloud Models

# Cisco's Cloud Networking and Services Portfolio

## Virtual Application Networking

Nexus 1000V with built-in Distributed Virtual Firewall (VSG)  
for vSphere, Hyper-V **New** and KVM

## Virtual Network Services

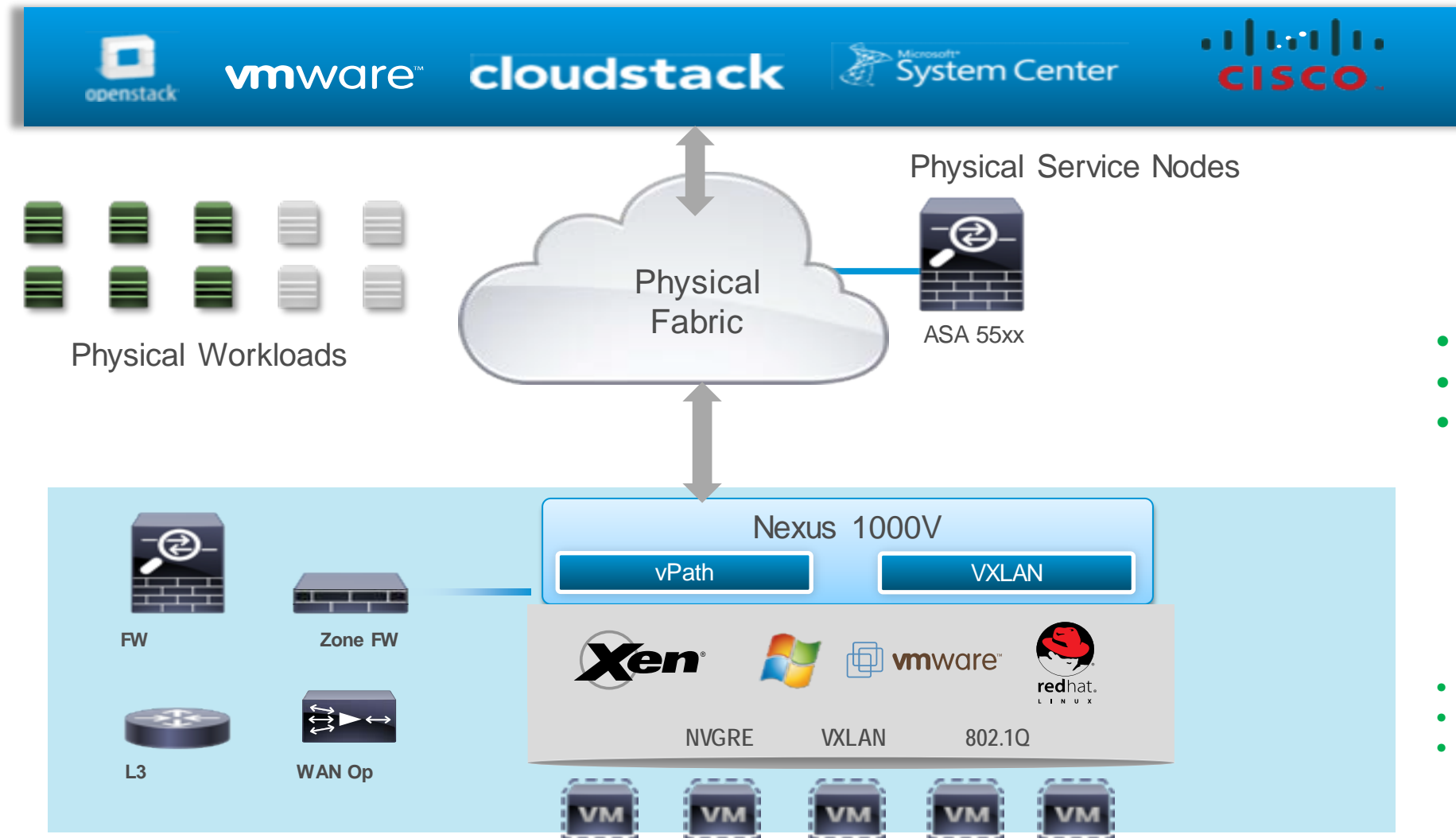
- L4-L7 Services Hosting Platform
- Perimeter Firewall - ASA1000V,
  - Cloud Services Router - CSR
  - Virtual Network Analysis Modules - vNAM,
  - Virtual Wide Area Acceleration - vWaas **New**
  - Load Balancer - Citrix NetScaler 1000V

## Hybrid Cloud

InterCloud **New**

# Nexus 1000V for Any Fabric Architecture

Seamless Interaction Across Physical and Virtual Workloads & Services



Orchestration  
and Fabric  
Automation

Physical  
Fabric Infrastructure

- Traditional
- Dynamic Fabric Automation
- Application Centric Infrastructure

Virtual  
Fabric Infrastructure

- Multi-Hypervisor
- vPath L4-L7 Services
- VXLAN

# Nexus 1000V Architecture – Consistency Across Multi Hypervisors

Network Admin



Virtual Supervisor Module

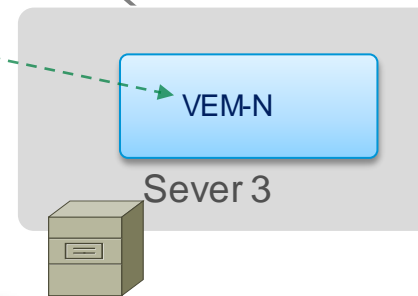
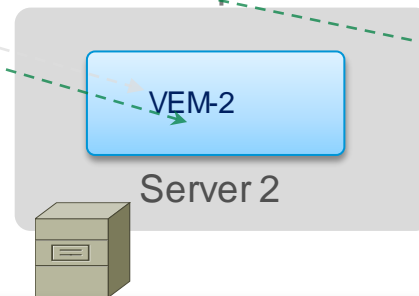
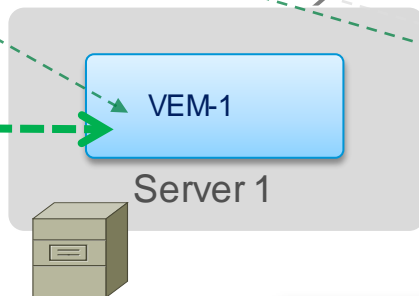


### Highlights

- Physical Networking Consistency – NX-OS
- Multi Hypervisor Consistency
- Innovative Security and Monitoring Solutions



Cloud/Server Admin



VEM: Virtual Ethernet Module

Any Hypervisor



# Use Cases for Nexus 1000V – 9000+ Customers

Virtual Data Center

Managing Policies for VMs



Secure Container - Cloud

Secure Multi-Tenancy



VDI

Secure VDI



OpenStack

Self-Service Cloud



Multi-DC

DC to DC Live Migration



Virtual Services Hosting

Easy of Deployment



Hybrid Cloud/Shadow IT

Secure Extension



# Nexus 1000V 2.0 for vSphere

1H  
CY12

## v2.1 (Oct 12)

- VXLAN
- vCloud Director Integration
- vCenter Plug-in
- vTracker
- Enhanced Installer
- Simpler upgrade
- Split VSMs across DCs
- VEMs in remote locations
- Essential (free) & Advanced Edition
- TrustSec – SGT, SXP

1H  
CY13

## v2.2.1 (June 13)

- Scale:
  - 4K ports
  - 128 hosts
  - 300 vEths/VEM
- VXLAN Enhancements
  - no multicast
  - no flood/learn (single VSM)
- VXLAN GW on 1010/1110 (Advanced)
- VMW 5.5 support

2H  
CY13

Oct 13

v2.2.1a  
Oct 13

Citrix  
NetScaler1000V

1H  
CY13

Jan 14

v2.2.2

Support  
For DFA

vSphere 5.5  
supported

# Nexus 1000V Editions

## Nexus 1000V Essential Edition

**The world's most advanced virtual switch available across vSphere and Hyper-V Platforms**

- Full Layer-2 Feature Set
- Security, QoS Policies
- VXLAN virtual overlays
- Full monitoring and management capabilities
- vPath enabled Virtual Services

**No-Cost Version**

## Nexus 1000V Advanced Edition

### **Increased Scale and Security**

- All Feature of Essential Edition
- Virtual Security Gateway - Distributed firewall
- Increased Scale up to 256 servers
- Large Scale VXLAN overlay
- Enhanced Security Features
- VXLAN Gateway

**Licensed per CPU**

**Nexus 1000V Editions Offers Flexibility for Customers to Deploy Cisco Virtual Data Center**

# Existing 1.0 Customers (with active SmartNet Support)

Free Upgrade to Advanced Edition

## N1KV Release 1.X

N1KV Licenses  
Bought and Deployed

Existing Cisco TAC Support Contract Will  
Include Cisco  
VSG Support

Free Upgrade to  
Release 2.x  
Advanced for  
active SmartNet  
Customers

## N1KV Release 2.x

**N1KV—Advanced Edition:**  
No Cost  
Use Existing Licenses



**VSG License\*:**  
No Cost

\*Contact Cisco Representative  
for Free VSG licenses for old releases. With 2.2 release  
no VSG license required

# Nexus 1000V 3.0 for vSphere

Summer  
2014

- ACI Fabric Support
- Increased Scale:
  - 12K ports
  - 256 hosts
  - 1000 ports/VEM
- VXLAN Enhancements
  - BGP control plane (multi-VSM)
    - VTEP distribution
- VXLAN GW as VM
- Cisco TrustSec 2.0
  - SGACL
  - Native SGT Tagging
- IPv6 with ACL
- Virtual Security Gateway with increased scale

# Existing Customers (with active SmartNet Support)

Free Upgrade to 3.0 Edition

N1KV Release 1.X and 2.X

N1KV Licenses (1.0) and Advanced Licenses (2.0)  
Bought and Deployed

Free Upgrade to  
Release 3.x  
Advanced for  
Active SmartNet  
Customers

N1KV Release 3.x

**N1KV—Advanced Edition:**  
No Cost  
Use “New” Licenses\*

\*Contact Cisco TAC. New Licenses will be used after entitlement check

# Enhanced out of box experience of Nexus 1000V

Introducing Nexus 1000V Manager – Free tool available in Q2CY14

## Install & Migrate

Ease Install of VEM/VSM and migration to VMs to N1KV



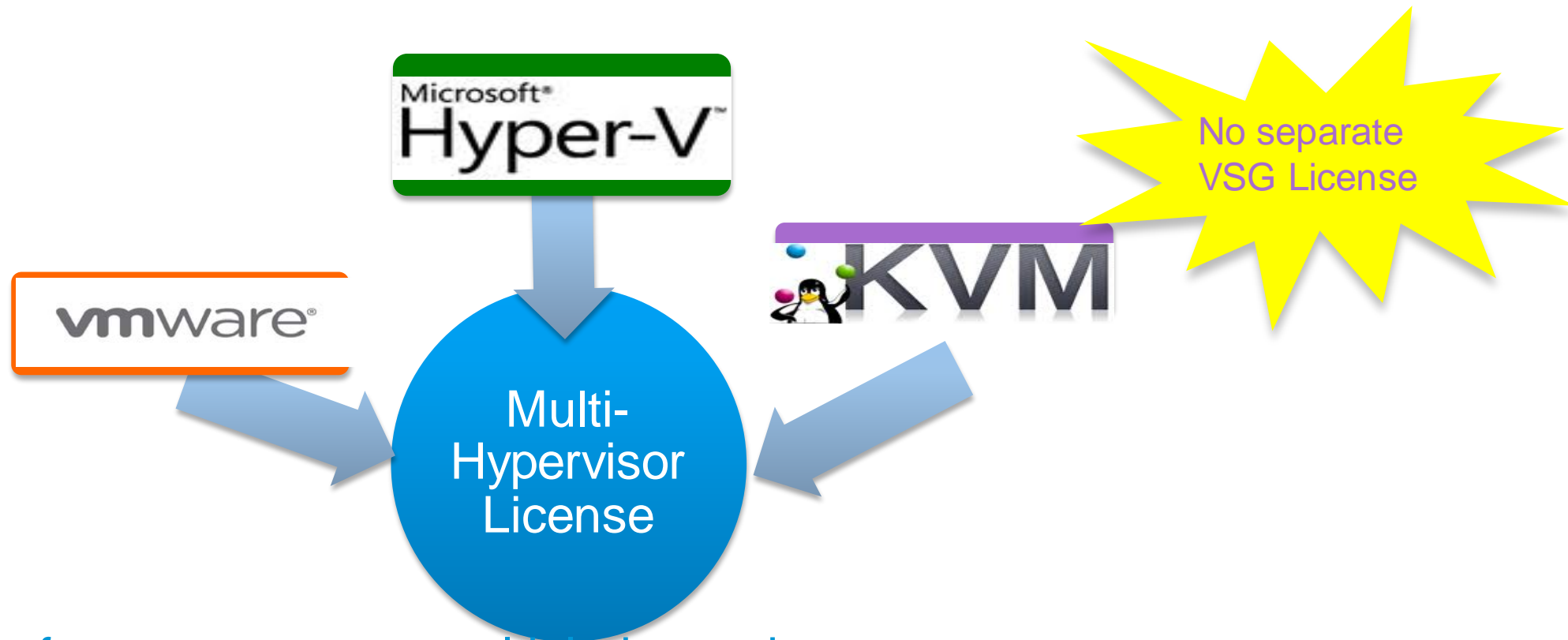
## Upgrade & Monitor

Upgrade multiple VSM and VEM and monitor on-going performance

## Configure

Configure and Manage N1KV features and port-profiles

# Simplify Ordering/Deployment – Multi-Hypervisor License



- One License file for re-use across multiple hypervisors
- No more separate PIDs and licenses for Hyper-V
- Existing customers can move to Hyper-V and re-host their existing license by contacting Cisco TAC
- New changes effective from Hyper-V Release 5.2(1)SM1(5.2) and VSG Release 5.2(1)VSG2(1.1a)



# Nexus 1000V for Hyper-V v1.5.2 Change

## Multi-Hypervisor Licensing

Deprecated PIDs	New multi-hypervisor PIDs	PID Description
<del>N1K-MLCPU-01</del> <del>L-N1K-MLCPU-01</del>	N1K-VLCPU-01 L-N1K-VLCPU-01	Nexus 1000V Advanced Edition Multi-hypervisor Paper/eDelivery CPU License Qty. 1-Pack
<del>N1K-MLCPU-04</del> <del>L-N1K-MLCPU-04</del>	N1K-VLCPU-04 L-N1K-VLCPU-04	Nexus 1000V Advanced Edition Multi-hypervisor Paper/eDelivery CPU License Qty. 4-Pack
<del>N1K-MLCPU-16</del> <del>L-N1K-MLCPU-16</del>	N1K-VLCPU-16 L-N1K-VLCPU-16	Nexus 1000V Advanced Edition Multi-hypervisor Paper/eDelivery CPU License Qty. 16-Pack
<del>N1K-MLCPU-32</del> <del>L-N1K-MLCPU-32</del>	N1K-VLCPU-32 L-N1K-VLCPU-32	Nexus 1000V Advanced Edition Multi-hypervisor Paper/eDelivery CPU License Qty. 32-Pack



# Nexus 1000V for Hyper-V Update

Presenter Name and Title

February, 2014

# Cisco Nexus 1000V for Hyper-V



Q1CY13			Q2CY14			Q3CY13			Q4CY13			Q1CY14			Q2CY14		
Jan	Feb	Mar	Apr	Ma	Jun	Jul	Au	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Ma	Jun

Q1CY13	Q2CY14	Q3CY13	Q4CY13	Q1CY14	Q2CY14
	<b>SCVMM SP1</b> <ul style="list-style-type: none"> <li>V1.5.1 Feature-set</li> <li>VSG network attributes</li> <li>SCVMM integration</li> <li>PowerShell</li> </ul>		<b>WS2012 R2</b> <ul style="list-style-type: none"> <li>R2 support</li> <li>Powershell</li> <li>VSG with VM-attributes</li> <li>VMDC/DCI</li> <li>Multi-Hypervisor licensing</li> </ul>		<b>FUTURE</b> <ul style="list-style-type: none"> <li>HVN</li> <li>VXLAN</li> </ul>

# What is new with N1KV/Hyper-V(v1.5.2)?

R2 support, VSG with VM-attributes, multi-hypervisor licensing

- Support for Windows Server 2012 R2
- Additional PowerShell Commands
- Multi-hypervisor Licensing
- VSG/PNSC support for VM and Custom attributes

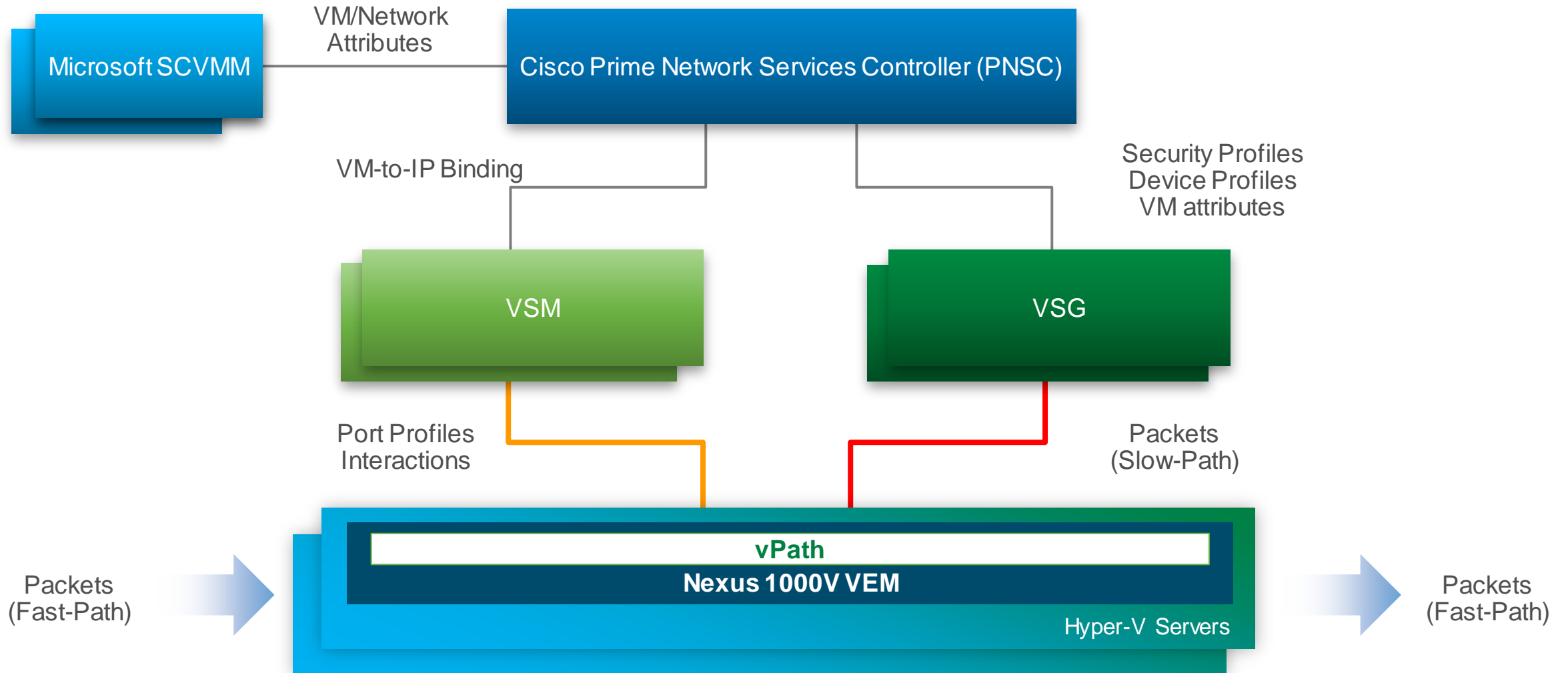
# What is new with v1.5.2?

## New REST-APIs & PowerShell Commands

- CRUD Operations for User-creation
  - To Create/Read/Update/Delete VSM user account information
  - Get-User, New-User, Set-User, Remove-User
- Managing SPAN & ERSPAN sessions
  - To Create/Read/Update/Delete SPAN/ERSPAN session information
  - Get-Session, New-Session, Set-Session, Remove-Session
- CRUD operations for port-profiles
  - To Create/Update/Delete port-profiles
  - New-PortProfile, Set-PortProfile, Remove-PortProfile

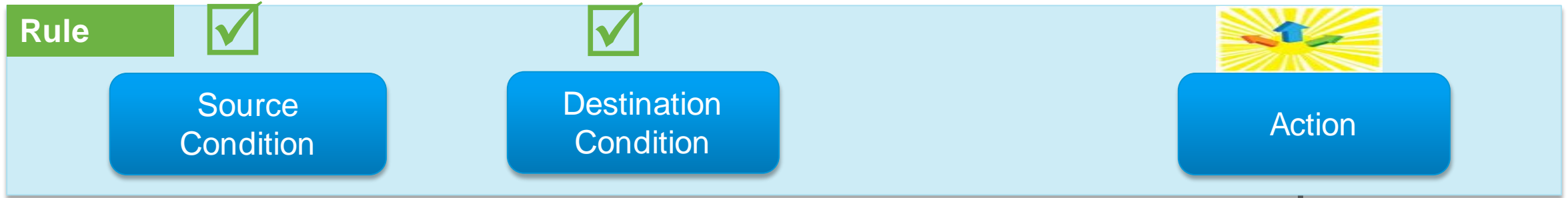
# Cisco Virtual Security Gateway

## SCVMM Integration & VM-attributes



# Cisco Virtual Security Gateway

## Security Rules with VM & Custom attributes



**Condition**

Attribute Type :

**Expression**

Attribute Name :  Operator :  Attribute Value :

Condition Match Criteria:  Match All (And)  Match Any (Or)

Action:  drop  permit  reset  log

VM Attributes
VM Name
Guest OS name
Port Profile Name
VM DNS Name

Network Attributes
IP Address
Network Port

Operator
eq
neq
gt
lt
range
Not-in-range
Prefix

Operator
member
Not-member
Contains
And (Global Level)
Or (Global Level)

# N1K & VSG with Hyper-V Update

Feature	Description
Windows 2012 R2	Validation for Windows Server 2012 R2 (A script will be made available on CDN)
SCVMM R2	Simplify creation of SCVMM constructs (A script, to do manual refresh, will be made available on CDN)
VM attribute support with VSG	Guest OS full name and image name, Virtual machine name, Port profile name, Virtual machine Domain Name System (DNS) name
VSG deployed as Virtual Machine Appliance	Only Medium form factor is supported
VSG Simplified licensing	No additional VSG license required for advanced edition

## Compatibility Matrix for Products in Hyper-V Release

**Hyper-V release**  
**5.2 SM1 (5.2)**

**Cisco VSG**  
**Release 5.2 (VSG2(1.1a))**

**Cisco Prime NSC Release 3.2.1**

**Release Note**

[http://www.cisco.com/en/US/docs/switches/datacenter/nexus1000/hyperv/sw/5\\_2\\_1\\_sm1\\_5\\_2/release/notes/n1000v\\_rn.html](http://www.cisco.com/en/US/docs/switches/datacenter/nexus1000/hyperv/sw/5_2_1_sm1_5_2/release/notes/n1000v_rn.html)

**VSG Data Sheet**

[http://www.cisco.com/en/US/prod/collateral/modules/ps2706/ps11208/data\\_sheet\\_c78-618244.html](http://www.cisco.com/en/US/prod/collateral/modules/ps2706/ps11208/data_sheet_c78-618244.html)





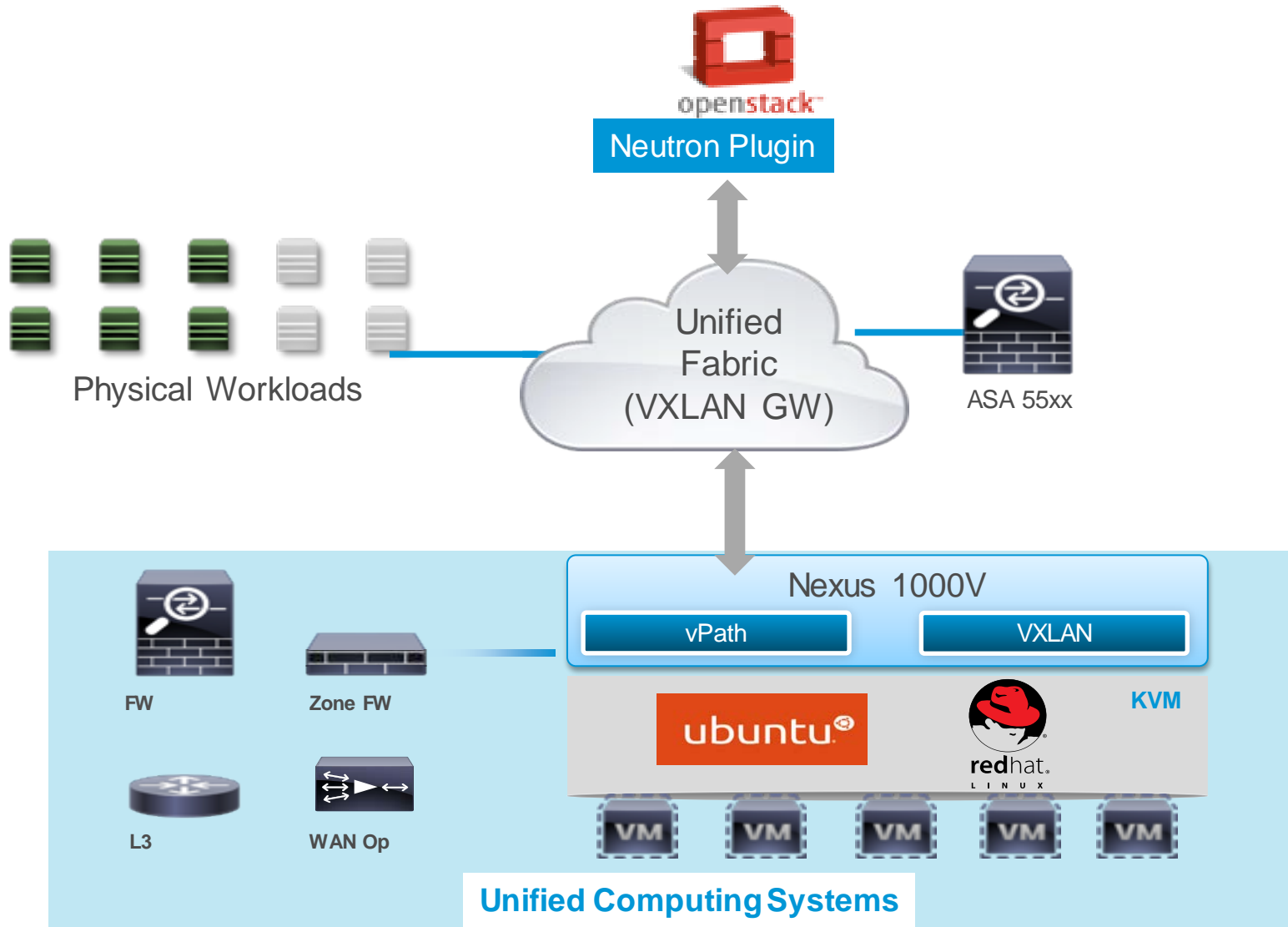
# Nexus 1000V for KVM – OpenStack Integration

Presenter Name and Title

February, 2014

# Openstack Solution with Cisco Unified Data Center

## Wider Portfolio OpenStack/VXLAN Support for Mainstream Deployments



- Nexus 1000V on KVM for OpenStack **New**
  - Ubuntu
  - Redhat (Future)
- VXLAN Gateway **New**
  - Nexus 9000 **New**
  - Nexus 7700 **New**
  - Nexus 5600 **New**
  - Nexus 3100
- UCS Certified for OpenStack solutions on
  - Redhat
  - Ubuntu
  - Suse

# Cisco Nexus 1000V for KVM

1Q  
CY14

- Havana OS Release
- N1kV on KVM- Canonical Ubuntu Juju/Charm Install
- Ubuntu 12.04 support
- 64 servers, 2000 ports
- REST API
- ACL
- Netflow
- IGMP snooping
- Port Channel
- VXLAN Multicast Mode
- Enhanced VXLAN unicast-only mode
- VXLAN GW on KVM
- Multi-Hypervisor Licensing
- Horizon Dashboard

2H  
CY14

- Ice House OpenStack Release
- Redhat support
- Large Scale and Services
- Service chaining
- Additional enhancements

# Ubuntu JuJu/Charm based Nexus 1000V Installation

The screenshot displays the Juju web interface for an environment named 'maas'. The main area shows a deployment plan with the following components and relationships:

- openstack-dashboard** and **vsm** are connected to **nova-cloud-controller**.
- nova-cloud-controller** is connected to **image-service:image-service**.
- image-service:image-service** is connected to **nova-compute** and **quantum-gateway**.
- cloud-computd** and **quantum-network-service:quantum-network-service** are connected to **nova-compute**.
- nova-compute** is connected to **juju-info:openstack-nova**.
- juju-info:openstack-nova** is connected to **vem**.
- vem** is connected to **quantum-gateway**.

A detailed view of the **nova-compute** charm is shown on the right, listing its interfaces:

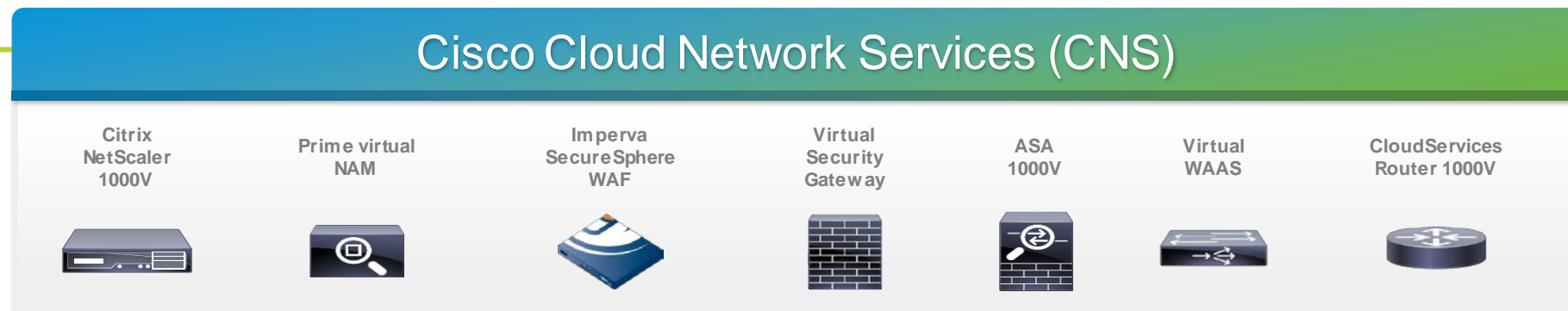
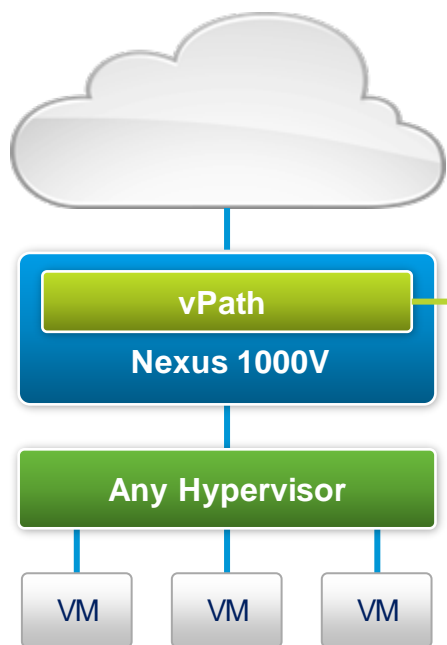
- rabbitmq-server**
  - Interface: rabbitmq
  - Name: amqp
  - Role: requirer
  - Scope: global
- vem**
  - Interface: juju-info
  - Name: juju-info
  - Role: provider
  - Scope: container
- glance**
  - Interface: glance
  - Name: image-service
  - Role: requirer
  - Scope: global
- mysql**

# Virtualized Network with Cisco vPath



# Cisco Cloud Network Services

- A complete Layer 4 through 7 virtual service portfolio
- Best-in-class service insertion technology with vPath
- Built for all major hypervisor platforms

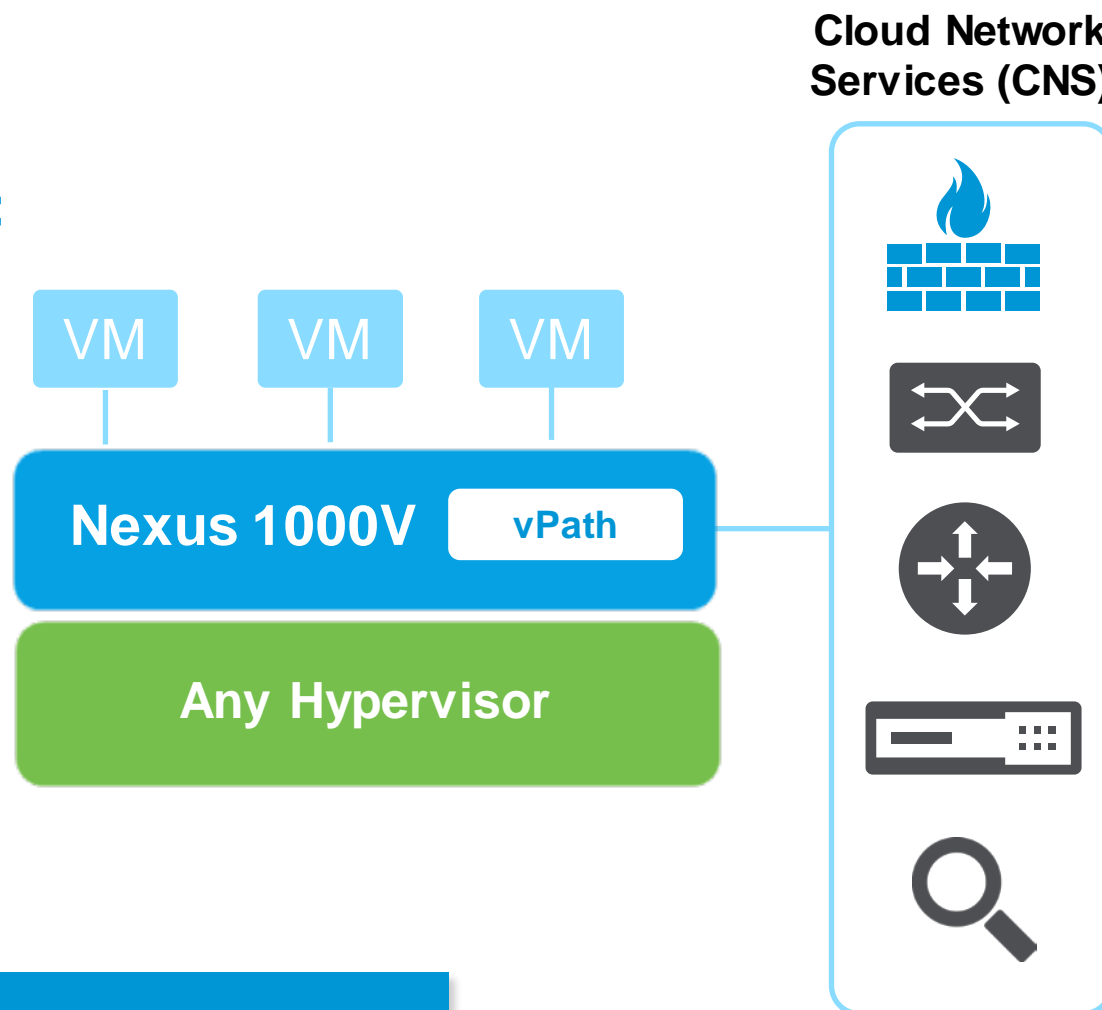


Nexus 1000V (Dist. Virtual Switch)	VSG (Zone-based FW)	ASA 1000V (Cloud FW)	vWAAS (WAN Optimization)	CSR 1000V (Cloud Router)	vNAM (Network Analytics)	Partner Services
<ul style="list-style-type: none"> <li>• Distributed switch</li> <li>• NX-OS consistency</li> </ul>	<ul style="list-style-type: none"> <li>• VM-level controls</li> <li>• Zone-based FW</li> </ul>	<ul style="list-style-type: none"> <li>• Edge firewall, VPN</li> <li>• Protocol Inspection</li> </ul>	<ul style="list-style-type: none"> <li>• WAN optimization</li> <li>• Application traffic</li> </ul>	<ul style="list-style-type: none"> <li>• WAN L3 gateway</li> <li>• Routing and VPN</li> </ul>	<ul style="list-style-type: none"> <li>• App Visibility (L2-L7)</li> <li>• Overlay Intelligence (OTV, VXLAN, FP**)</li> </ul>	<ul style="list-style-type: none"> <li>• Citrix NetScaler 1000V virtual ADC</li> <li>• Imperva Web App. FW</li> </ul>

# vPath benefits

## vPath is Nexus 1000V dataplane component:

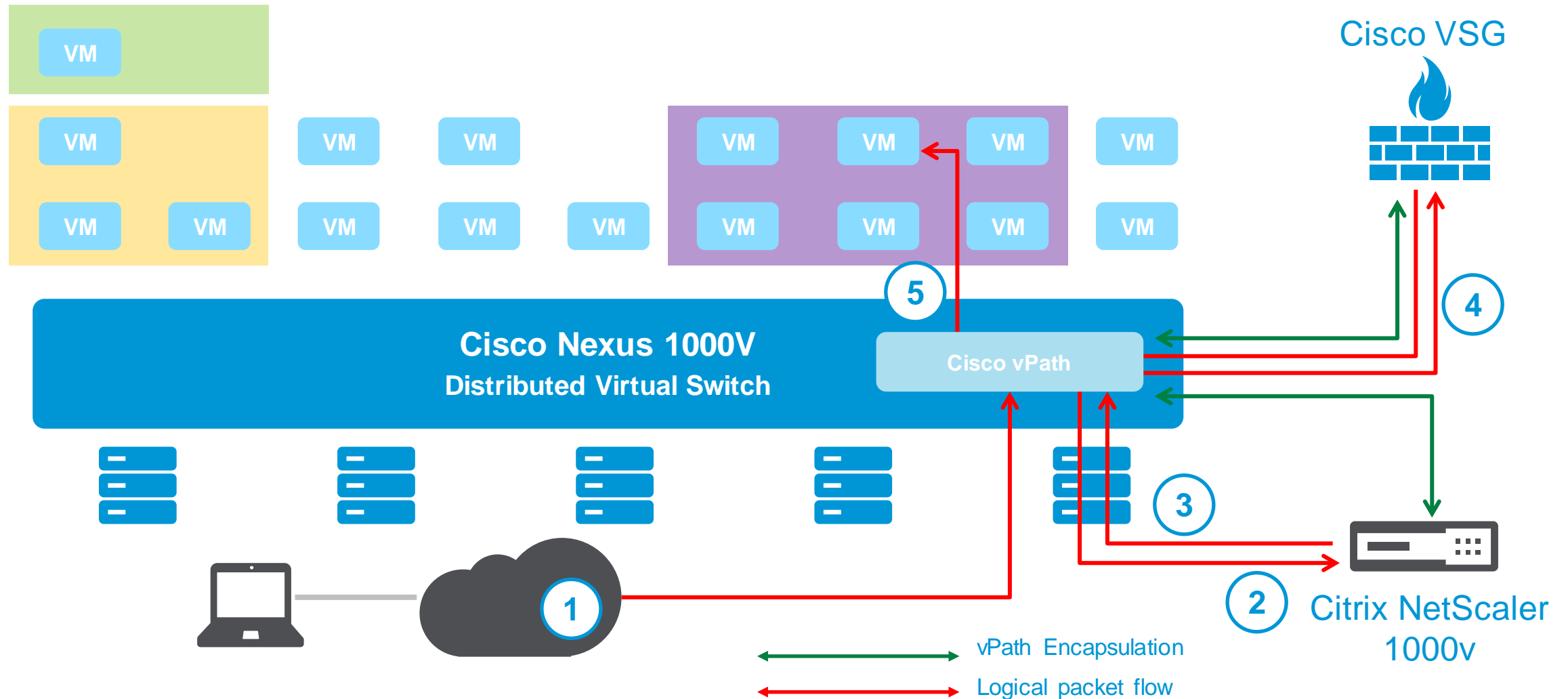
1. Topology-agnostic service insertion model
2. Service chaining across multiple virtual services
3. Performance acceleration with vPath
4. Efficient and scalable architecture
5. Non-disruptive operational model
6. VM policy mobility with VM mobility



**Best-In-Class Virtual Service Insertion Architecture**

# Security services chaining with vPath – VSG & NS

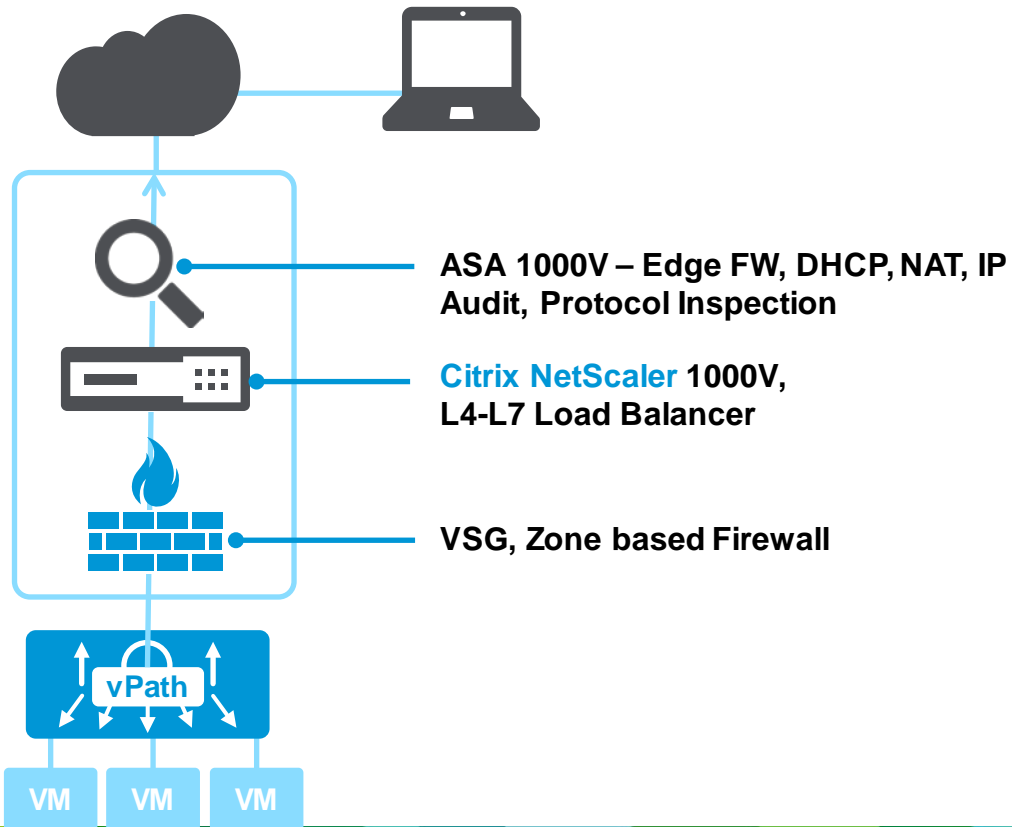
Intelligent traffic steering through multiple network services





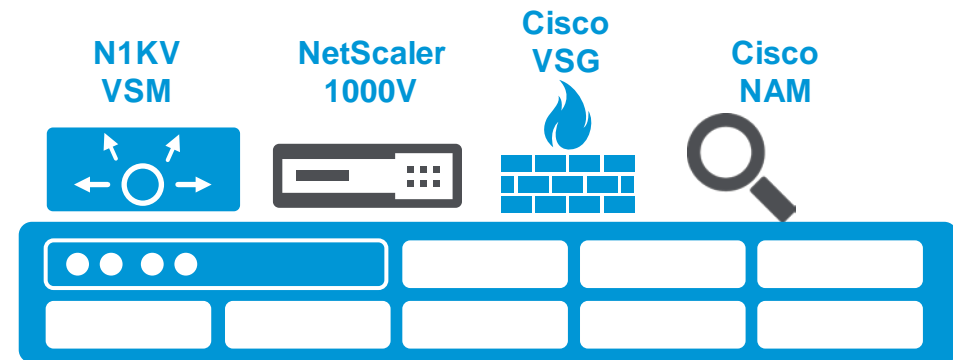
# Citrix NetScaler 1000V – integrated into Cisco architecture

## ① vPath Integrated: Dynamic Policy-based Service Insertion



## ② Available on Nexus 1110: Platform optimized for Virtual Services

- 10G and SSL ready soon
- Ease of deployment, troubleshooting of virtual services
- Maximized investment

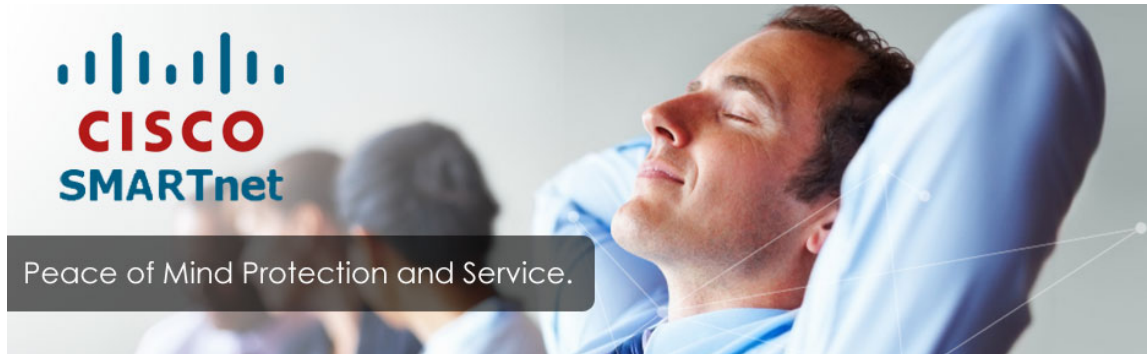


Nexus 1110: Cloud Network Services Platform

# Citrix NetScaler 1000V – integrated into Cisco architecture

## ③ Cisco Validated and Cisco Supported

- Entire solution validated and certified by Cisco
- Single Point of Contact for Cloud Network Services
- Same customer experience across physical and virtual support

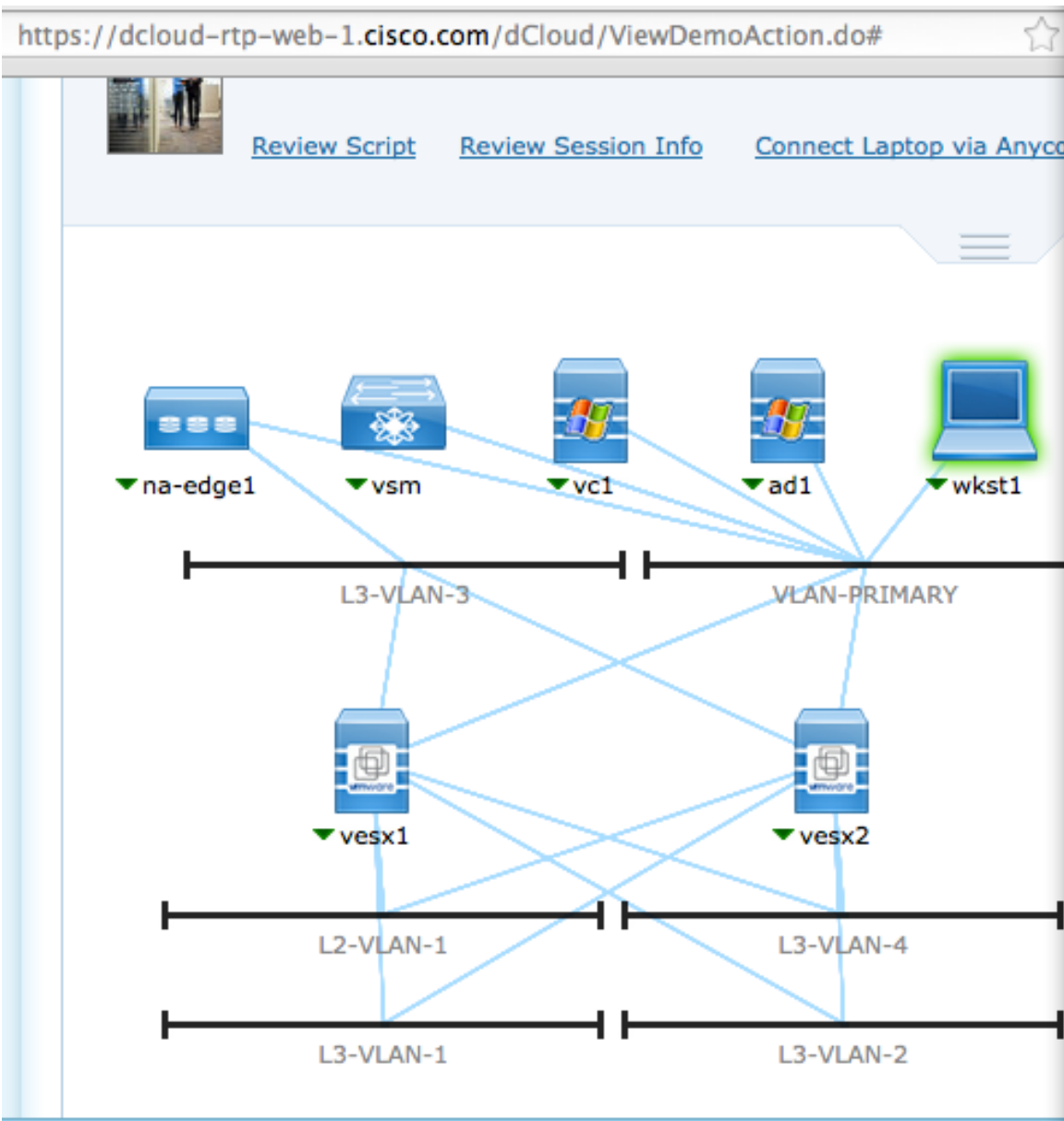


## ④ NetScaler Features\* with Flexible Pay-Grow on same platform

- Standard, Enterprise and Platinum Feature Editions
- Throughputs: 500 Mbps, 1Gbps & 2Gbps, 4Gbps
- N1110 – 10G & SSL ready soon: optimized for ADC & like functionality
- With TriScale, cluster multiple instances as 1 instance while deploying other services on the same N1110

# NX1Kv & NS1Kv available now in Cisco's dCloud

(<https://dcloud.cisco.com>)



### WKST1 (Remote Desktop)

Browser: <http://ns2.dcloud.cisco.com/menu/neo#>

File Edit View Favorites Tools Help

vSphere Web Client NS 1000V -A(108) NS 1000V -B(109)

Host Name: ns2.dcloud.cisco.com(ns2) Version: NS10.1: Build 120.

## Citrix NetScaler 1000V (500)

Logout CITRIX

Dashboard Configuration Reporting

NetScaler > Traffic Management > Load Balancing

- System
- AppExpert
- Traffic Management
  - Load Balancing**
    - Virtual Servers
    - Services
    - Service Groups
    - Monitors

Getting Started  
Load Balancing wizard for Citrix XenApp  
Load Balancing wizard for Citrix XenDesktop

XenApp Setup  
XenApp

XenMobile MDM  
Citrix

# Summary

- Nexus 1000V Provides consistent virtual networking across vSphere, Hyper-V and KVM and is available for all Cisco Fabric designs including DFA and ACI
- Nexus 1000V for vSphere 3.0 provides increased scale and security
- Nexus 1000V provides single flexible license to use across different hypervisors
- Nexus 1000V VSG no longer needs a separate license
- Nexus 1000V for Hyper-V is available for WS2012 R2
- Nexus 1000V for KVM for Canonical to be available end of March
- Nexus 1000V for KVM for Redhat to be available in summer 2014
- Citrix Netscaler 1000V is a Cisco sold & supported virtual loadbalancer solution that runs as a VM or on Nexus 1110/CSP platform

# For More Information

- Cisco Nexus 1000V Community

<https://communities.cisco.com/community/technology/datacenter/nexus1000v>

- Cisco Nexus 1000V Product Information

<http://www.cisco.com/c/en/us/products/switches/virtual-networking/index.html>

- Upcoming Seminars

3/19 – Cisco Nexus 1000V for VMware vSphere Update

3/26 – Cisco Nexus 1000V for Microsoft Hyper-V update

4/2 - Citrix Netscaler 1000V Update

Future – Cisco Nexus 1000V KVM/OpenStack Solution

Cisco Nexus 1000V for ACI deployments

Cisco Nexus 1000V Distributed Firewall – VSG Deployment

Thank you.

