

Cisco Nexus 1010 Virtual Services Appliance

Product Overview

The Cisco Nexus[®] 1010 Virtual Services Appliance (Figure 1) is a member of the Cisco Nexus 1000V Series Switches. It hosts the Cisco Nexus 1000V Virtual Supervisor Module (VSM) and supports the Cisco Nexus 1000V Network Analysis Module (NAM) Virtual Service Blade to provide a comprehensive solution for virtual access switching. Because the Cisco Nexus 1010 provides dedicated hardware for the VSM, it makes virtual access switch deployment much easier for the network administrator, and with its support for additional virtual service blades such as the Cisco Nexus 1000V NAM Virtual Service Blade, the Cisco Nexus 1010 is a crucial component of a virtual access switch solution.

Figure 1. Cisco Nexus 1010 Virtual Services Appliance

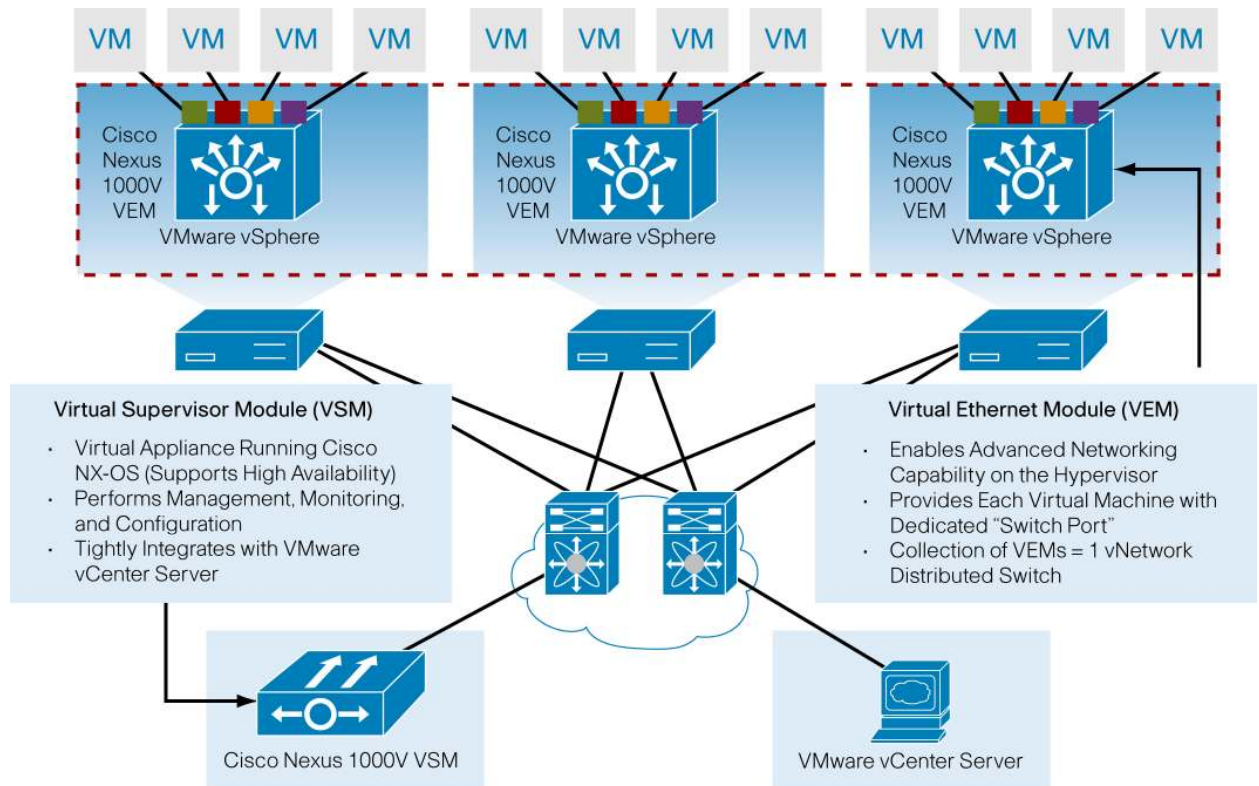


Cisco Nexus 1000V Series

Cisco Nexus 1000V Series Switches are intelligent virtual machine access switches that are designed for VMware vSphere environments running the Cisco[®] NX-OS Software operating system. Operating inside the VMware ESX hypervisor, the Cisco Nexus 1000V Series supports Cisco VN-Link server virtualization technology to provide:

- Policy-based virtual machine (VM) connectivity
- Mobile VM security and network policy, and
- Non-disruptive operational model for your server virtualization and networking teams

When server virtualization is deployed in the data center, virtual servers typically are not managed the same way as physical servers. Server virtualization is treated as a special deployment, leading to longer deployment time, with a greater degree of coordination among server, network, storage, and security administrators. With the Cisco Nexus 1000V Series, you can have a consistent networking feature set and provisioning process all the way from the virtual machine access layer to the core of the data center network infrastructure. Virtual servers can now use the same network configuration, security policy, diagnostic tools, and operational models as their physical server counterparts attached to dedicated physical network ports. Virtualization administrators can access predefined network policy that follows mobile virtual machines to ensure proper connectivity, saving valuable time that administrators can use to focus on virtual machine administration. This comprehensive set of capabilities helps you to deploy server virtualization faster and realize its benefits sooner (Figure 2).

Figure 2. Cisco Nexus 1000V Series Architecture

Product Architecture

With the introduction of the Cisco Nexus 1010, the VSM now has dedicated hardware. Hence, the network administrators can install and configure virtual access switches even more closely to the way they work with physical switches. The dedicated VSM hardware is especially helpful in a data center power up, because there is no dependency in finding server resources for the VSM. Thus, the Cisco Nexus 1010 enables network administrators to manage the Cisco Nexus 1000V virtual access switch just like other physical switches and scale server virtualization deployments (Figure 3).

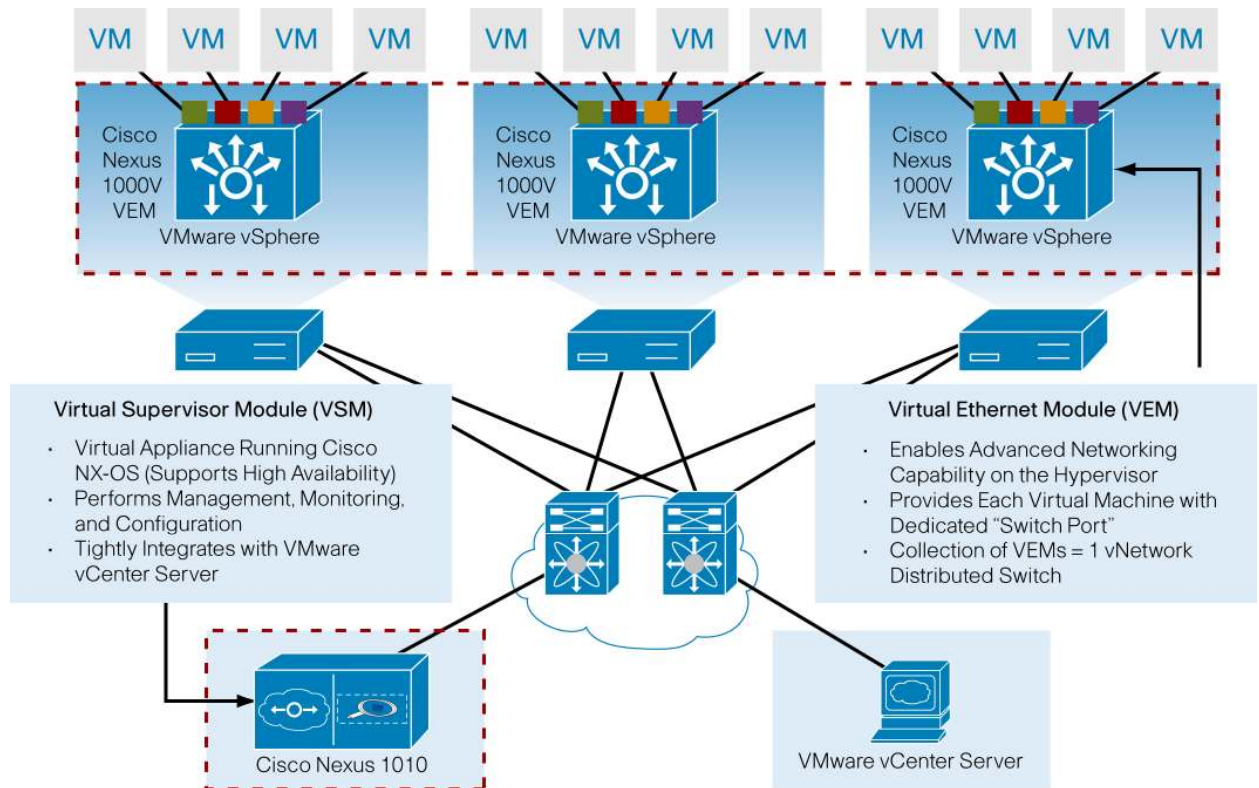
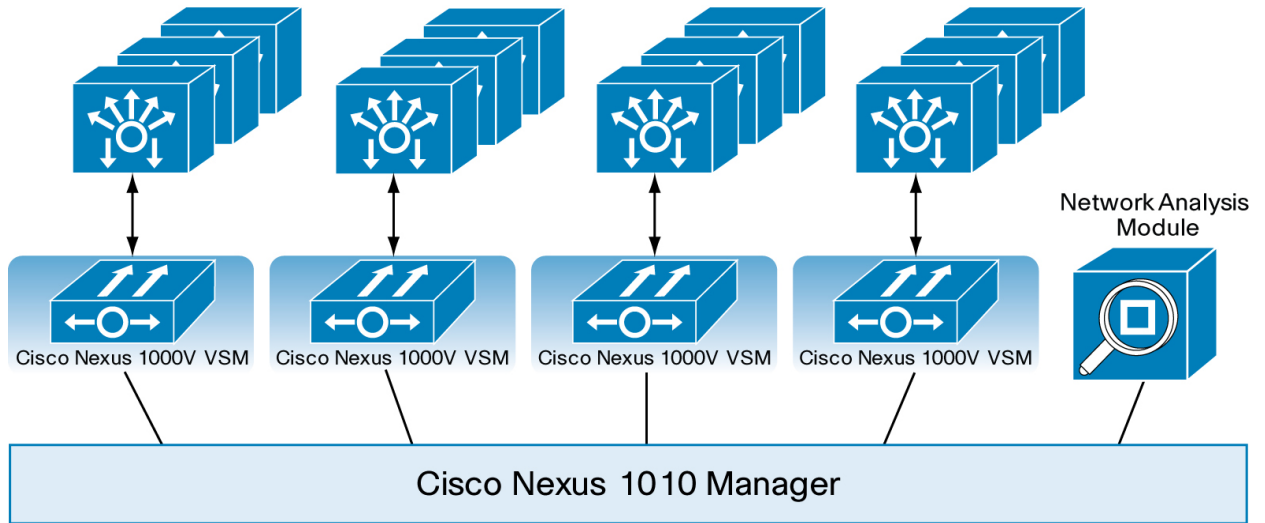
Figure 3. Cisco Nexus 1010 Virtual Services Appliance Architecture

Figure 4 shows the internal architecture of the Cisco Nexus 1010. The Cisco Nexus 1010 contains the Cisco Nexus 1010 Manager, based on Cisco NX-OS, which can host up to four VSMs and support the Cisco Nexus 1000V NAM Virtual Service Blade. Thus, in addition to hosting Cisco Nexus 1000V Series VSMs, the Cisco Nexus 1010 becomes a platform for other networking services and can also support other virtual service blades in the future. Because the Cisco Nexus 1010 uses exactly the same VSM as the Cisco Nexus 1000V Series, the Cisco Nexus 1000V Series solution with Cisco Nexus 1010 has all the features of the Cisco Nexus 1000V Series. Since the Cisco Nexus 1010 Manager is based on Cisco NX-OS, the network administrator has a familiar interface for installing and configuring Cisco Nexus 1010. Cisco Nexus 1010 Manager also supports Cisco NX-OS high availability, allowing a standby Cisco Nexus 1010 to become active if the primary Cisco Nexus 1010 fails.

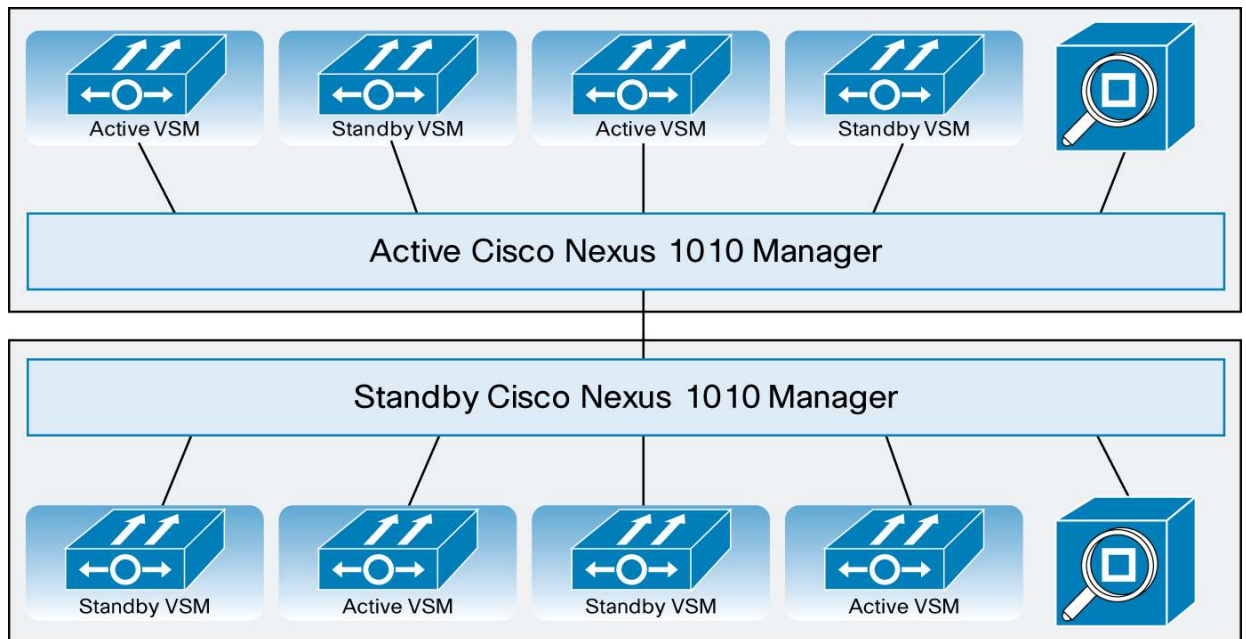
Figure 4. Cisco Nexus 1010 Internal Architecture



Cisco Nexus 1010 High Availability

Figure 5 shows the high availability built into Cisco Nexus 1010 Manager. Because Cisco Nexus 1010 Manager is built on Cisco NX-OS, it offers active-standby redundancy. If one Cisco Nexus 1010 Manager were to fail, the other Cisco Nexus 1010 Manager would automatically take over and continue operation. In addition, Cisco Nexus 1010 Manager automatically places the active VSM to balance the distribution and reduce the potential fault domain.

Figure 5. Cisco Nexus 1010 High Availability



Management of Virtual Service Blade

The Virtual Service Blade provides expansion capabilities, so that new features can be added in the future. Cisco Nexus 1010 Manager enables customers to install, configure, and manage Virtual Service Blades. If the Virtual Service Blade were to stop, Cisco Nexus 1010 Manager automatically restarts it. The Cisco Nexus 1000V Network Analysis Module Virtual Service Blade takes advantage of these capabilities to provide a robust, complete solution for the virtualized data center.

VSM on Cisco Nexus 1010 Compared to VSM as a Virtual Machine

Table 1 compares deployment of a VSM as a virtual machine and on the Cisco Nexus 1010. For customers who wants a completely software deployment of the Cisco Nexus 1000V Series, deployment of the VSM as a virtual machine provides flexibility in VSM placement and even mobility with VMware VMotion. However, for network administrators who want greater control over the management of the VSM, the Cisco Nexus 1010 provides a complete Cisco NX-OS experience in installing the Cisco Nexus 1000V virtual access switch. In addition, the Cisco Nexus 1010 offers fewer dependencies when the data center is powered on since the VSM can be initiated at the same time as the virtual Ethernet modules (VEMs).

Table 1. Comparison of VSM on Cisco Nexus 1010 and VSM as Virtual Machine

Feature	VSM as Virtual Machine	VSM on Cisco Nexus 1010
Cisco Nexus 1000V Features and Scalability	Yes	Yes
VEM Running on VMware vSphere 4 Enterprise Plus	Yes	Yes
Cisco NX-OS High Availability of VSM	Yes	Yes
Software-Only Deployment	Yes	No
Installation Like a Standard Cisco Switch	No	Yes
Network Team Owns and Manages the VSM	No	Yes

Product Specifications

VMware Product Compatibility

The Cisco Nexus 1010 is part of the Cisco Nexus 1000V Series, which is VMware Ready Certified to be compatible with VMware vSphere as a VMware vNetwork Distributed Switch with support for VMware ESX and ESXi hypervisors and integration with VMware vCenter Server.

Maximum Supported Configurations

- 4 Cisco Nexus 1000V VSMs, each capable of managing 64 ESX or ESXi for a total of 256 ESX hosts
- 1 Cisco Nexus 1000V Network Analysis Module Virtual Service Blade

High Availability

- Stateful failover between active and standby Cisco Nexus 1010 Managers
- Restart of VSM and virtual service blade

Management

- Cisco NX-OS Software command-line interface (CLI) console
- Cisco Discovery Protocol Versions 1 and 2
- SNMP (read) Versions 1, 2, and 3
- XML API support
- Enhanced SNMP MIB support
- SSH Version 2
- Telnet
- Authentication, authorization, and accounting (AAA)
- TACACS+
- RADIUS
- Syslog

- Role based access control (RBAC)
- Ingress and egress packet counters per interface
- Network Time Protocol (NTP) RFC 1305
- Domain Name System (DNS) for management interfaces
- CiscoWorks LAN Management Solution (LMS) 3.2, 3.1, and 3.0.1

SNMP MIBs

- Generic MIBs
 - CISCO-TC
 - SNMPv2-MIB
 - SNMP-COMMUNITY-MIB
 - SNMP-FRAMEWORK-MIB
 - SNMP-NOTIFICATION-MIB
 - SNMP-TARGET-MIB
- Configuration MIBs
 - ENTITY-MIB
 - IF-MIB
 - CISCO-ENTITY-EXT-MIB
 - CISCO-ENTITY-FRU-CONTROL-MIB
 - CISCO-FLASH-MIB
 - CISCO-IMAGE-MIB
 - CISCO-CONFIG-COPY-MIB
 - CISCO-ENTITY-VENDORTYPE-OID-MIB
 - ETHERLIKE-MIB
 - MIB-II
- Monitoring MIBs
 - NOTIFICATION-LOG-MIB
 - CISCO-PROCESS-MIB
- Security MIBs
 - CISCO-AAA-SERVER-MIB
 - CISCO-COMMON-MGMT-MIB
- Miscellaneous MIBs
 - CISCO-CDP-MIB
 - CISCO-ENTITY-ASSET-MIB

Supported Standards

Table 2 presents IEEE compliance information, and Table 3 presents RFC compliance information.

Table 2. IEEE Compliance

Standard	Description
IEEE 802.1Q	VLAN tagging
IEEE 802.3	Ethernet
IEEE 802.3ad	Link Aggregation Control Protocol (LACP)

Table 3. RFC Compliance

Standard	Description
IP Services	
RFC 768	User Data Protocol (UDP)
RFC 791	IP
RFC 792	Internet Control Message Protocol (ICMP)
RFC 793	TCP
RFC 826	Address Resolution Protocol (ARP)
RFC 854	Telnet
RFC 894	IP over Ethernet
RFC 1305	NTP Version 3
RFC 1492	TACACS+
RFC 1591	DNS client
RFC 2068	HTTP server
RFC 2138	RADIUS authentication
RFC 2139	RADIUS accounting

System Requirements

- VMware vSphere 4.0 or later with vNetwork Distributed Switch
- Cisco Nexus 1000V Series VSM
 - Hard disk: 3 GB
 - RAM: 2 GB
 - 1 virtual CPU at 1.5 GHz
- Cisco Nexus 1000V Series VEM
 - VMware ESX or ESXi 4.0
 - Hard disk space: 6.5 MB
 - RAM: 150 MB
- Number of VLAN for Layer2 connectivity between VSM and VEM: 1
- Server on VMware Hardware Compatibility List (<http://www.vmware.com/go/hcl>)
- Compatible with any upstream physical switches, including all Cisco Nexus and Cisco Catalyst[®] switches as well as Ethernet switches from other vendors

Hardware Specifications

Table 4 lists the hardware specifications for the Cisco Nexus 1010.

Table 4. Cisco Nexus 1010 Specifications

Item	Specification
Processors	2 Intel Xeon E5650 series 2.66-GHz Hexa Core CPUs
Memory	Four 4-GB RDIMMs RAM
PCIe Slots	<ul style="list-style-type: none"> • 2 PCIe 2.0 slots available • 2 x8 half-length slots • x16 connector on full-height slot and x8 connector on low-profile slot
Mezzanine Card	LSI 1064 Controller-Based Mezzanine Card (RAID 1; 4 ports)
Hard disk	Two 500-GB SATA; 7200 RPM
Optical Drive	24x CD-R/RW DVD±R/RW read-write optical drive
Integrated Graphics	Matrox G200 core embedded in the ServerEngines Pilot II baseboard management controller (BMC)
Cisco UCS Integrated Management Controller	<ul style="list-style-type: none"> • Integrated ServerEngines Pilot II BMC • IPMI 2.0 compliant for management and control • One 10/100BASE-T out-of-band management interface • CLI and web GUI management tool for automated, lights-out management • Keyboard, video, and mouse (KVM)
Front-Panel Connector	Ease of access to front-panel video, 2 USB ports, and serial console
Front-Panel Locator LED	Indicator to help direct administrators to specific servers in large data center environments
Additional Rear Connectors	Additional interfaces include a DB-15 video port, 2 USB 2.0 ports, and a DB-9 serial port
Physical Dimensions (H x W x D)	1RU: 1.7 x 16.9 x 27.8 in. (4.32 x 42.93 x 70.61 cm)
Temperature: Operating	50 to 95°F (10 to 35°C)
Temperature: Nonoperating	-40 to 149°F (-40 to 65°C)
Humidity: Operating	5 to 93% noncondensing
Humidity Nonoperating	5 to 93% noncondensing
Altitude: Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m)
Altitude: Nonoperating	40,000 ft (12,000m)
Power Supply	One 650W
Additional	Cable management arm (CMA) Rail kit

Regulatory Compliance

Table 5 provides regulatory standards compliance information for the Cisco Nexus 1010.

Table 5. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Safety	<ul style="list-style-type: none"> • UL 60950-1 No. 21CFR1040 • CAN/CSA-C22.2 No. 60950-1 • IRAM IEC60950-1 • CB IEC60950-1 • EN 60950-1 • IEC 60950-1 • GOST IEC60950-1 • SABS/CB IEC6095-1 • CCC*/CB GB4943-1995 • CNS14336 • CB IEC60950-1 • AS/NZS 60950-1 • GB4943
EMC: Emissions	<ul style="list-style-type: none"> • 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR2 2 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	<ul style="list-style-type: none"> • EN55024 • CISPR24 • KN 61000-4 Series, KN 24

Ordering Information

Table 6 provides ordering information for the Cisco Nexus 1010. To place an order, visit the [Cisco Ordering](#) homepage. To download software, visit the [Cisco Software Center](#).

Table 6. Ordering Information

Product Name	Part Number
Cisco Nexus 1010 Appliance	N1K-C1010

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco Services helps you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, see [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

Warranty information is available at <http://www.cisco.com/go/warranty>.

For More Information

- For additional information about the Cisco Nexus 1000V Series, visit <http://www.cisco.com/go/nexus1000v>
- For a free evaluation version of the Cisco Nexus 1000V Series, visit <http://www.cisco.com/go/1000veval>
- For additional information about Cisco NX-OS Software, visit <http://www.cisco.com/go/nxos>
- For additional information about VMware vSphere, visit <http://www.vmware.com/go/vsphere>
- For more information about how Cisco and VMware are working together, visit <http://www.vmware.com/cisco>
- For more information about the Cisco Nexus 1000V NAM Virtual Service Blade Network Analysis Module, visit <http://www.cisco.com/go/1000nam>



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