



# Vblock & Nexus 1000V / VSG / vWAAS

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# Public Webcasts Series, Spring 2012

Date	Technical Track Topics	Webinar
2/14/12	Virtual Security Gateway (VSG) v1.3 Technical Deep Dive	<a href="#">Play</a>
2/22/12	Nexus 1000V v1.5 Technical Deep Dive	<a href="#">Play</a>
2/29/12	Nexus 1010-X v1.4 Technical Deep Dive	<a href="#">Play</a>
3/7/12	vWAAS and Nexus 1000V Technical Deep Dive	<a href="#">Play</a>
3/21/12	VMDC QoS for Hybrid Cloud-based Multimedia Services with the Nexus 1000V	<a href="#">Play</a>
3/28/12	Vblock & Nexus 1000V / VSG / vWAAS	<a href="#">Register</a>
4/4/12	vCloud Director, Nexus 1000V, and VXLAN Technical Deep Dive	<a href="#">Register</a>
4/11/12	Cisco's CloudLab Deep Dive: Hands-on labs for N1KV, VSG & VXLAN	<a href="#">Register</a>

*Above table and presentations: [www.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity)*

# Reference Solutions

Solution	Nexus 1000V	Nexus 1010	Virtual Security Gateway	Virtual WAAS	NAM (N1010)
Vblock	✓		✓	✓	
Virtual Desktop	✓	Implicit Support	✓	✓ *	Implicit Support
Virtual Multi-tenant DC (VMDC)	✓	Implicit support	✓	In Planning	Implicit support
DC-to-DC vMotion	✓	Implicit support	✓	✓	Implicit support
PCI 2.0	✓	Implicit support	✓		Implicit support
Hosted Collaboration	✓	Implicit support			Implicit support

# Agenda

- ✓ Introduction to Cloud Service Assurance
- ✓ Testing the Cloud Service Assurance Solution
- ✓ Resources
- ✓ Q&A as we go...

# Introduction to Cloud Service Assurance

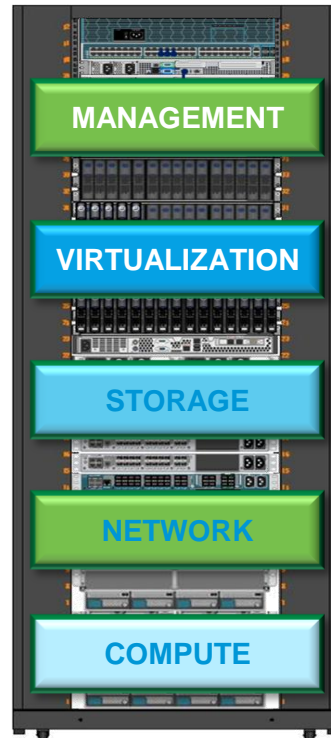


# The Vblock™ Infrastructure Platform: Converged for Optimal Service Delivery

The Emergence of  
Converged  
Infrastructure and  
Cloud Computing



Opportunity for  
Service Providers



- Converged Infrastructure → ▪ OpEx Reduced
- Pre-engineered, tested & integrated...  
...Physical & logical → ▪ Time-to-Revenue Accelerated
- Solutions validation → ▪ Service Creation Simplified
- Roadmap planning, interoperability testing, change management and upgrades → ▪ Service Management Streamlined
- Seamless Support → ▪ Maintenance Consolidated

# Service Assurance Requires a Security Solution



OR



OR



Cisco ASA Adaptive Security Appliances



Cisco Virtual Security Gateway



VMware vShield™



# Service Assurance and an Optimal End-User Experience



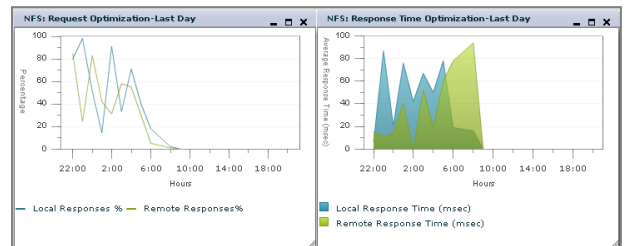
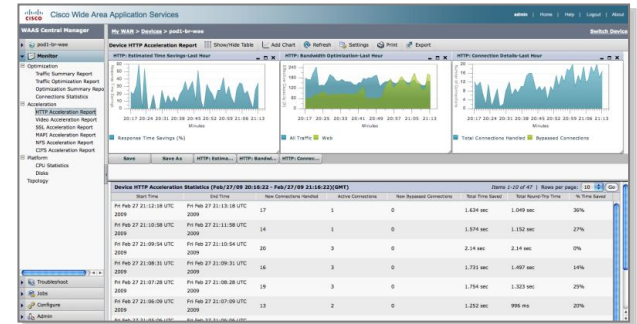
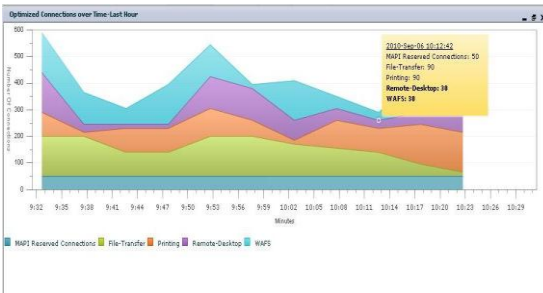
Cisco Wide Area Application Services

OR

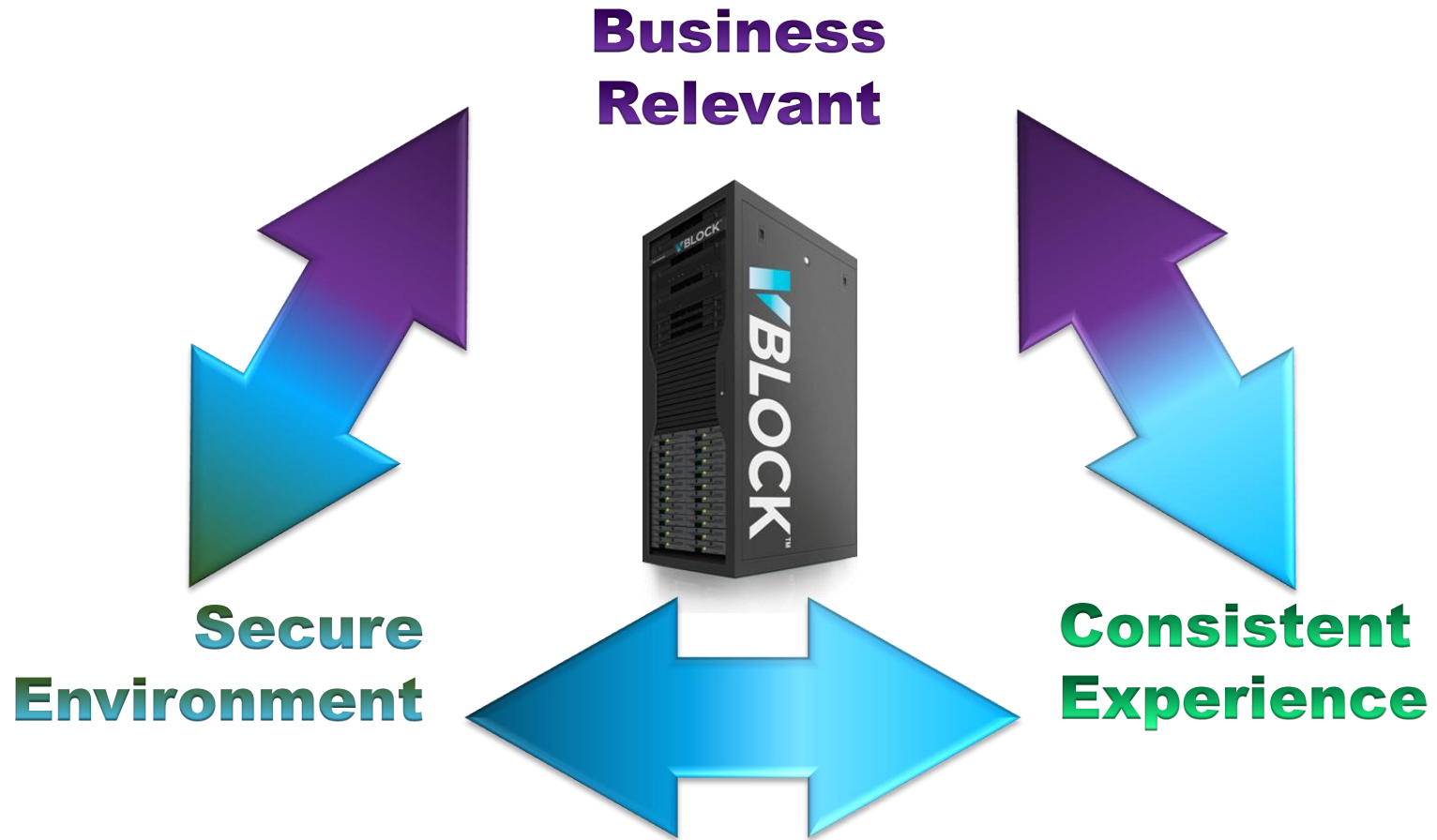




# Performance Management: Critical to Service Assurance



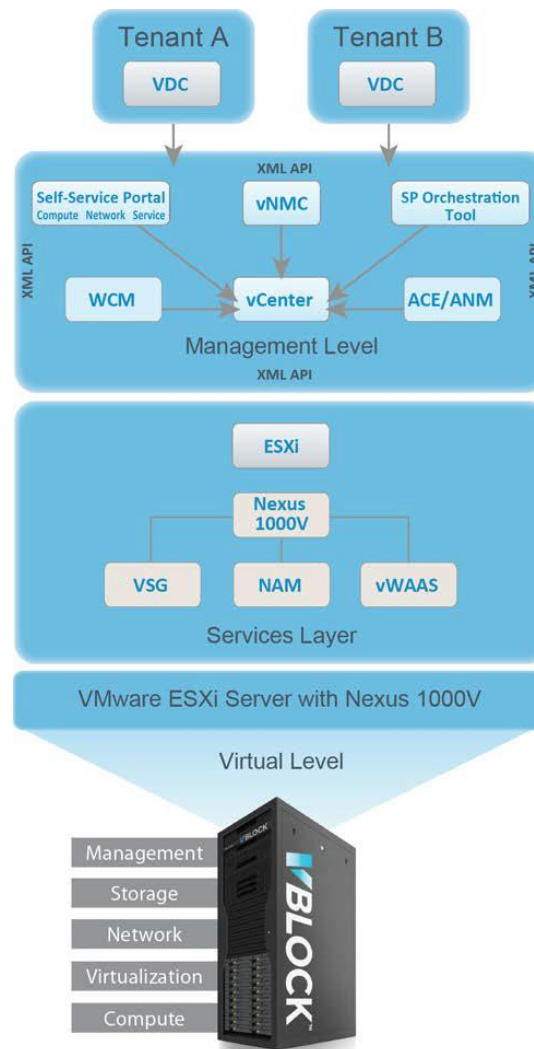
# Cloud Service Assurance with VCE and Vblock Platforms



# Testing the Cloud Service Assurance Solution



# Architecture for Cloud Service Assurance on Vblock Platforms



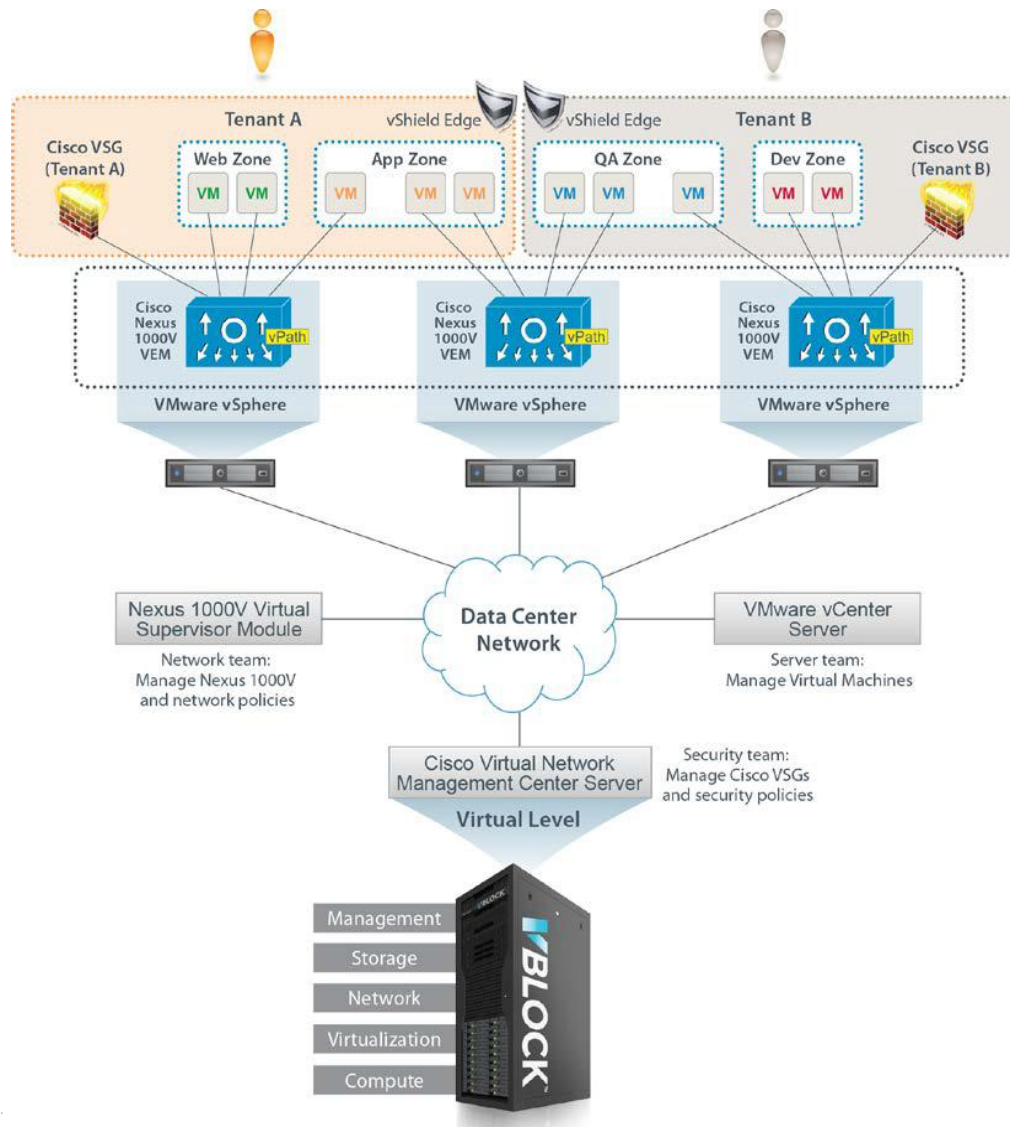
# Cisco VSG Testing Objectives

- Cisco Virtual security Gateway (VSG) provides controls at the VM level, using VM attributes, so that context-based policies can be applied.
- Cisco VNMC is designed to manage Cisco VSG and security policies in a dense multi-tenant environment.

## Objective of the testing to validate Cisco VSG with Vblock to:

- Isolate traffic when VMs are isolated in different VLANs
- Isolate traffic when VMs are not isolated in different VLANs
- Restrict traffic within the same tenant
- Multilayer security using both Cisco VSG and VMware vShield Edge

# Multi-tenant Deployment with Cisco VSG on the Vblock Platform



# Test Case 1: Two Tenants in Different Port Groups and Vlans

The screenshot displays the Cisco Virtual Network Management Center interface. The left sidebar shows a tree view with 'Tenant\_B' selected, and 'Pol\_Tenant\_B' highlighted under the 'Policies' folder. The main pane shows the configuration for 'Pol\_Tenant\_B' with the 'General' tab active. The 'Rules' section contains a table with 3 records.

Name	Source Condition	Destination Condition	Protocol	Ethertype	Action	Records
Permit_FTP	IP Address member Tenant_B_VLAN129	IP Address member Tenant_A_VLAN129 Network Port range 20 - 21	eq TCP	Any	Permit	
Permit_HTTP	IP Address member Tenant_B_VLAN129	Network Port eq 80 IP Address member Tenant_A_VLAN129	eq TCP	Any	Permit	
RDP	Any	Network Port eq 3389	eq TCP	Any	Permit	

# Test Case 1: Two Tenants in Different Port Groups and Vlans (cont)

HTTP traffic being allowed as per the rules.

```
firewall# sh policy-engine stats

Policy Match Stats:

default@root          :          0
 default/default-rule@root :          0 (Drop)
 NOT_APPLICABLE       :          0 (Drop)

Tenant_B_Policy_Set@root/Tenant_B :      13
 Pol_Tenant_B/Permit_FTP@root/Tenant_B :          0 (Permit)
 Pol_Tenant_B/Permit_HTTP@root/Tenant_B :          1 (Permit)
 Pol_Tenant_B/RDP@root/Tenant_B :          2 (Permit)
 NOT_APPLICABLE       :          10 (Drop)

firewall# █
```

Shows the hit counts on the rules for Tenant B's VSG. Notice there is an allow (permit) for the FTP rule. Other traffic is dropped.

```
firewall# sh policy-engine stats

Policy Match Stats:

default@root          :          0
 default/default-rule@root :          0 (Drop)
 NOT_APPLICABLE       :          0 (Drop)

Tenant_B_Policy_Set@root/Tenant_B :          2
 Pol_Tenant_B/Permit_FTP@root/Tenant_B :          1 (Permit)
 Pol_Tenant_B/Permit_HTTP@root/Tenant_B :          0 (Permit)
 Pol_Tenant_B/RDP@root/Tenant_B :          0 (Permit)
 NOT_APPLICABLE       :          1 (Drop)

firewall# █
```



## Test Case 2: Two Tenants in Different Port Groups, but the Same VLAN

Shows the hits after an FTP connection is successful from Tenant B to Tenant A. Notice the drops in the rules.

```
firewall# sh policy-engine stats

Policy Match Stats:

default@root
  default/default-rule@root : 0
  NOT_APPLICABLE           : 0 (Drop)

Tenant_B_Policy_Set@root/Tenant_B : 27
  Pol_Tenant_B/Permit_FTP@root/Tenant_B : 1 (Permit)
  Pol_Tenant_B/Permit_HTTP@root/Tenant_B : 0 (Permit)
  Pol_Tenant_B/RDP@root/Tenant_B : 0 (Permit)
  NOT_APPLICABLE : 26 (Drop)

firewall# █
```

Shows the same screenshot, but this time it reflects hits on the rules for HTTP.

```
firewall# sh policy-engine stats

Policy Match Stats:

default@root
  default/default-rule@root : 0
  NOT_APPLICABLE           : 0 (Drop)

Tenant_B_Policy_Set@root/Tenant_B : 58
  Pol_Tenant_B/Permit_FTP@root/Tenant_B : 1 (Permit)
  Pol_Tenant_B/Permit_HTTP@root/Tenant_B : 1 (Permit)
  Pol_Tenant_B/RDP@root/Tenant_B : 0 (Permit)
  NOT_APPLICABLE : 56 (Drop)

firewall# █
```

# Test Case 3: VSG Restricting Traffic within the same Tenant

HTTP and FTP traffic being initiated from a VM on Tenant B to another VM on Tenant B.

```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>telnet
'telnet' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Administrator>ftp 10.1.128.31
ftp> bye

C:\Users\Administrator>ftp 10.1.128.31
ftp> _
```

Shows the traffic being allowed by VSG on Tenant B, thereby demonstrating that the traffic separation was enforced within the tenant between VMs.

```
firewall# sh policy-engine stats

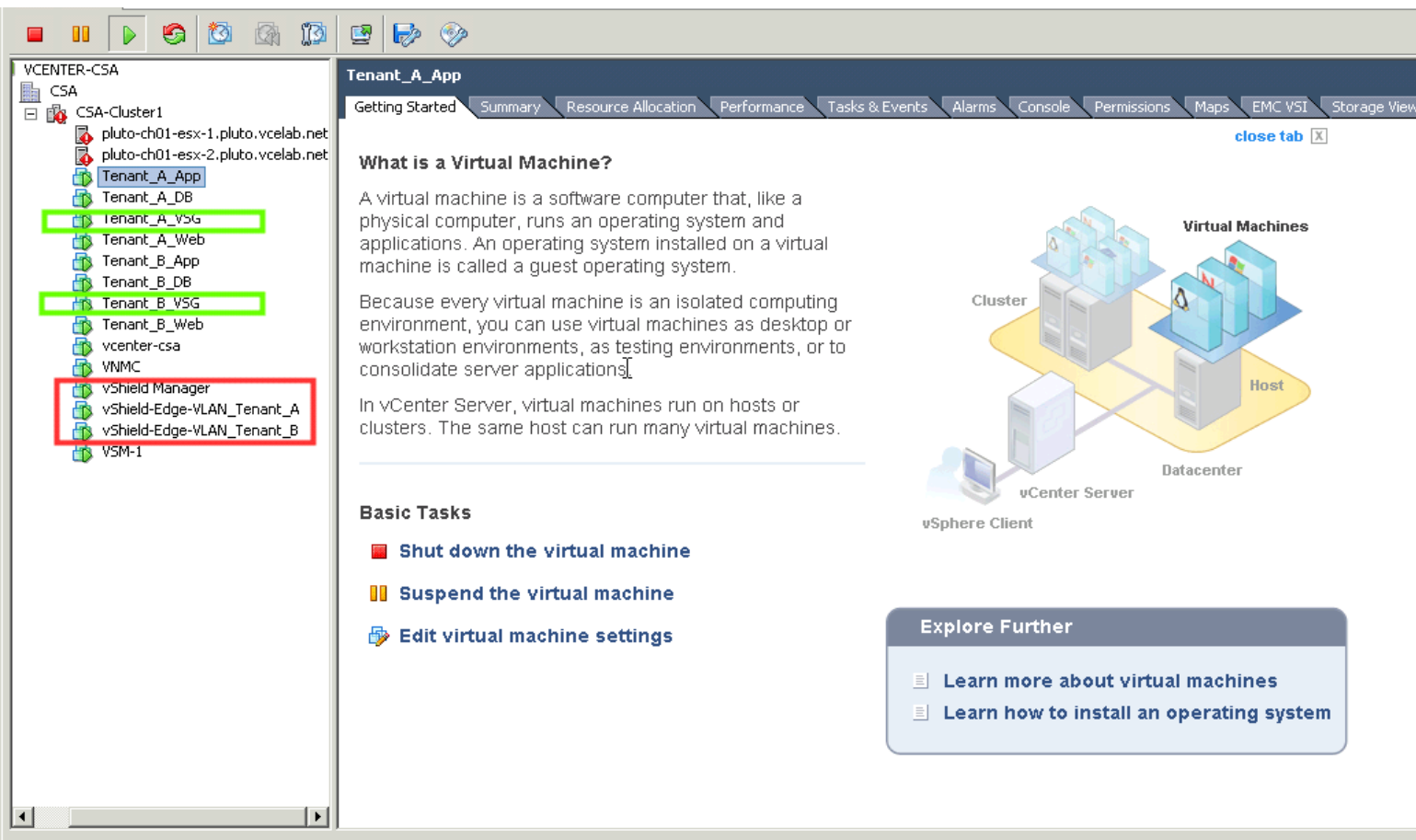
Policy Match Stats:

default@root          :          0
  default/default-rule@root :          0 (Drop)
  NOT_APPLICABLE        :          0 (Drop)

Tenant_B_Policy_Set@root/Tenant_B :      28
  Pol_Tenant_B/WebtoApp@root/Tenant_B :          4 (Log, Permit, "inspect ftp")
  Pol_Tenant_B/App-DB@root/Tenant_B :          0 (Permit)
  Pol_Tenant_B/Permit_FTP@root/Tenant_B :          0 (Permit, "inspect ftp")
  Pol_Tenant_B/Permit_HTTP@root/Tenant_B :          2 (Permit)
  Pol_Tenant_B/RDP@root/Tenant_B :          0 (Permit)
  NOT_APPLICABLE        :          22 (Drop)

firewall# █
```

# Test Case 4: Multilayer Security using VSG and vShield Edge



The screenshot shows the vCenter console interface. On the left, the inventory tree for 'VCENTER-CSA' is visible, with 'Tenant\_A\_VSG' and 'Tenant\_B\_VSG' highlighted in green, and 'vShield-Edge-VLAN\_Tenant\_A' and 'vShield-Edge-VLAN\_Tenant\_B' highlighted in red. The main pane displays the 'Tenant\_A\_App' summary page, which includes a 'What is a Virtual Machine?' section, 'Basic Tasks' (Shut down, Suspend, Edit settings), and an 'Explore Further' section with links to learn more about virtual machines and how to install an operating system.

## What is a Virtual Machine?

A virtual machine is a software computer that, like a physical computer, runs an operating system and applications. An operating system installed on a virtual machine is called a guest operating system.

Because every virtual machine is an isolated computing environment, you can use virtual machines as desktop or workstation environments, as testing environments, or to consolidate server applications.

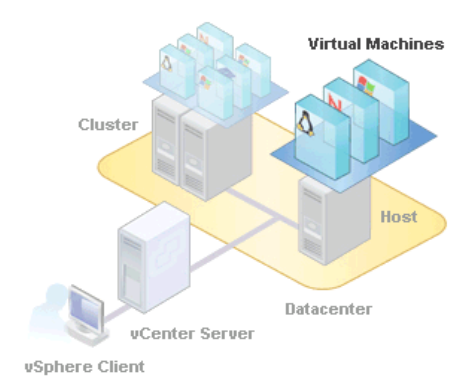
In vCenter Server, virtual machines run on hosts or clusters. The same host can run many virtual machines.

### Basic Tasks

- Shut down the virtual machine
- Suspend the virtual machine
- Edit virtual machine settings

### Explore Further

- Learn more about virtual machines
- Learn how to install an operating system



The diagram illustrates a datacenter environment. It shows a 'Cluster' of hosts and a 'Host' with 'Virtual Machines' running on it. A 'vCenter Server' is connected to the hosts, and a 'vSphere Client' is connected to the vCenter Server.

# Test Case 4: Multilayer Security using VSG and vShield Edge (Cont)

The screenshot displays the vCenter Client interface for configuring vShield Edge on a virtual machine named VLAN\_Tenant\_A. The left-hand navigation pane shows the hierarchy: VSM-1 > VLAN\_Tenant\_A, which is highlighted with a red box. The main window shows the vShield Edge configuration page with several tabs: Getting Started, Summary, Ports, Virtual Machines, Hosts, Tasks & Events, Alarms, Permissions, vShield Edge (highlighted with a red box), and Shield. Below the tabs, there are sub-tabs for Status, Firewall, NAT, DHCP, VPN, Static Routing, and Load Balancer. The Firewall sub-tab is active, showing the 'Default Firewall Settings (Traffic Policy: Block)'. The settings include: Traffic Policy: Blocked, Policy Logging: Enabled, and ICMP Errors: Allowed. Below these settings is a table of firewall rules. The table has columns for Source, Source Port, Destination, Traffic Type, Intf (Dir), Action, Log, Enable, and Notes. Five rules are listed, including ICMP echo-request, RDP, and ICMP any.

Source	Source Port	Destination	Traffic Type	Intf (Dir)	Action	Log	Enable	Notes
Any		10.1.128.2/32	icmp/echo-request	Int:In	Allow	No	Enable	applianceConfig
Any		10.1.130.20/32	icmp/echo-request	Ext:In	Allow	No	Enable	applianceConfig
Any	Any	10.1.128.20-10.1.128 ...	RDP	Ext:In	Allow	Yes	Enable	
Any		Any	any	Int:Out	Allow	Yes	Enable	
Any		Any	icmp:any	Ext:In	Allow	Yes	Enable	

Recent Tasks table:

Name	Target	Status	Details	Initiated by	Requested Start Time
Reconfigure virtual ma...	vcenter-csa	Completed		Administrator	9/19/2009 4:37:45 A...

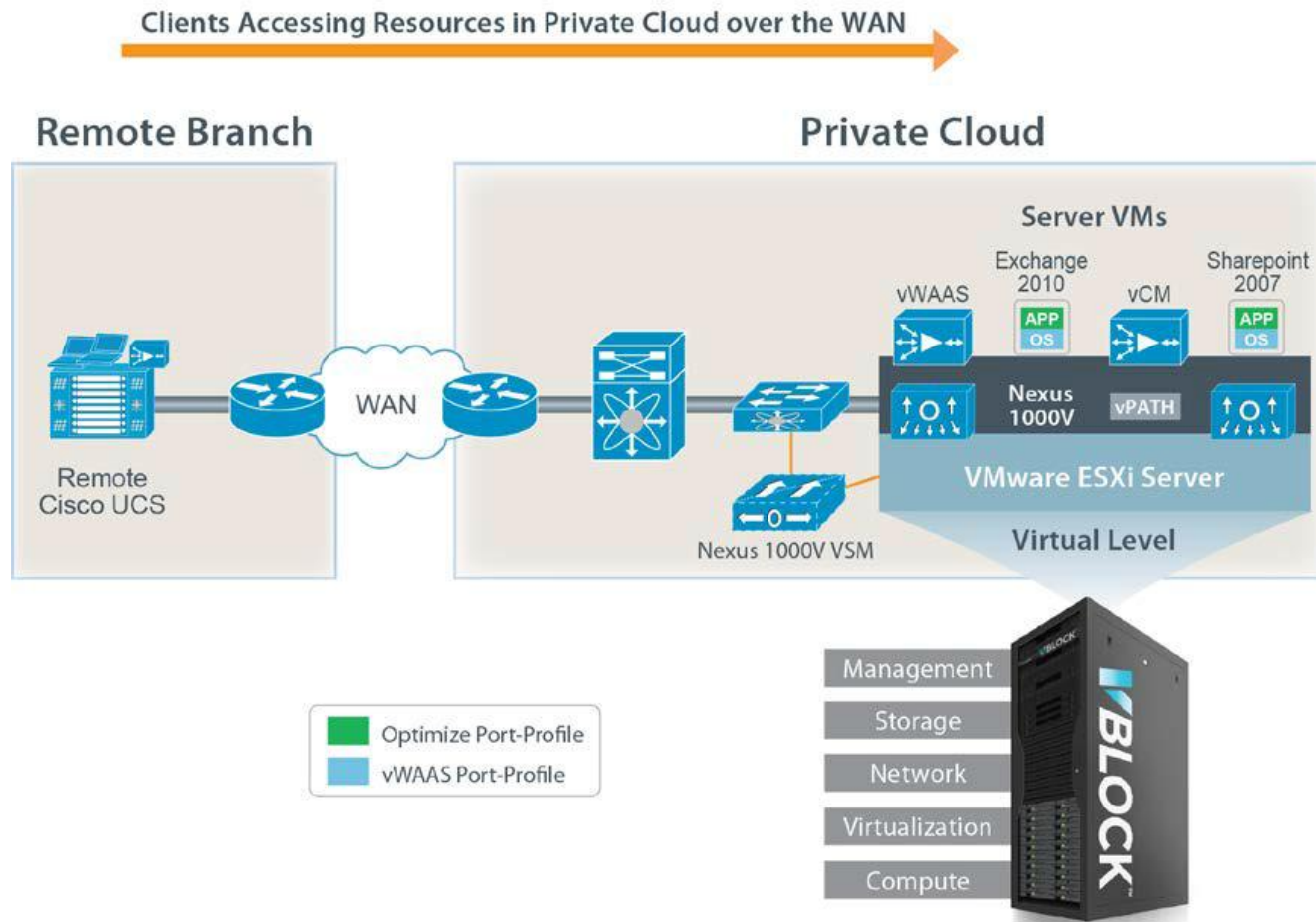
## Cisco vWAAS Testing Objectives

- Cisco vWAAS is a WAN optimization service that is deployed in an application-specific, virtualization aware, on-demand manner.

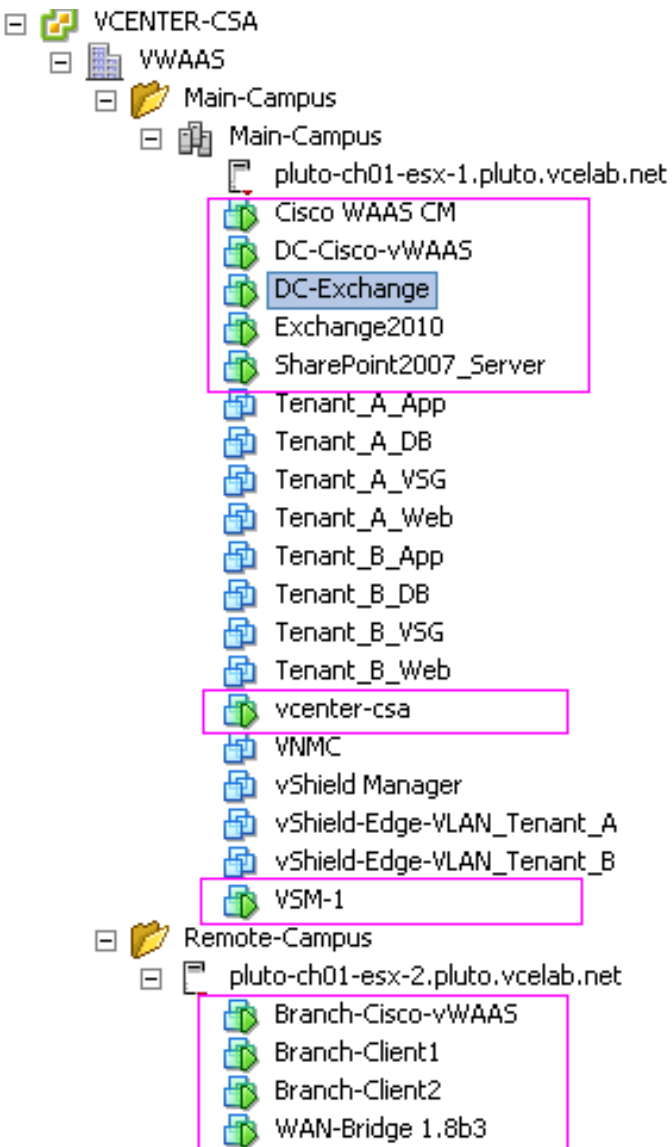
The objective of testing Cisco vWAAS on the Vblock platform is to demonstrate:

- Performance improvements in the network delivery of applications
- Ability to maintain performance SLAs and provide service guarantees to the end customer.

# Cisco vWAAS on Vblock Infrastructure Platform Test Case Topology



# Cisco vWAAS Setup on Vblock Platform

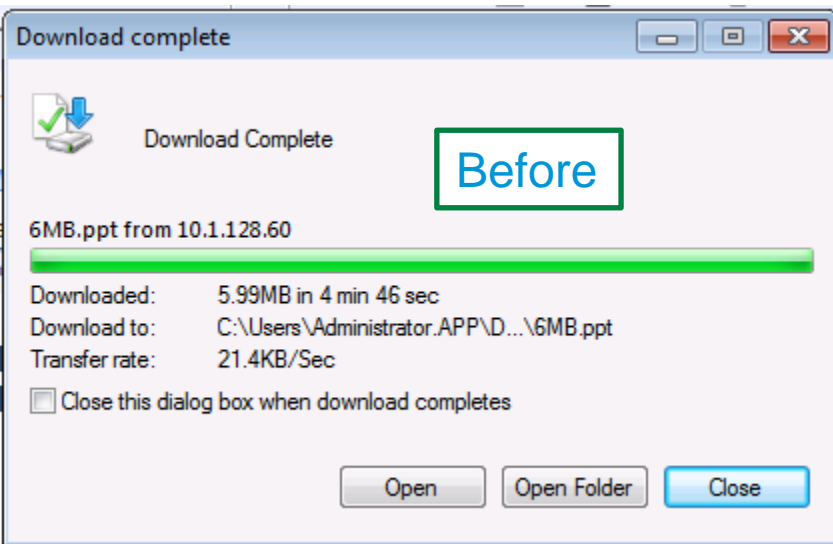


← Datacenter

← Branch

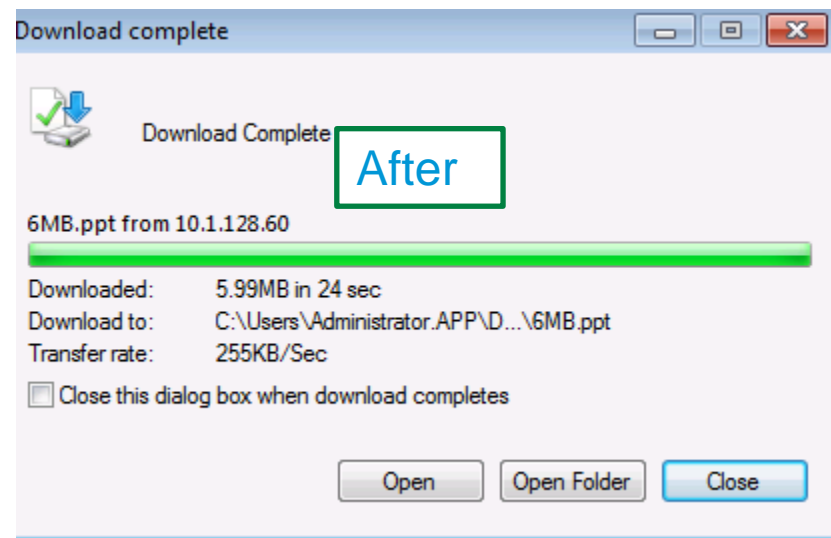
# Test Case 1: Microsoft SharePoint 2007 and vWAAS Optimization

## Without vWAAS Optimization



## Microsoft SharePoint Test With vWAAS Optimization Enabled.

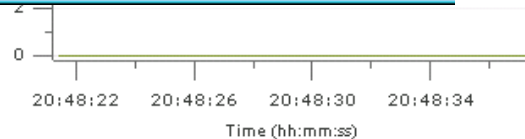
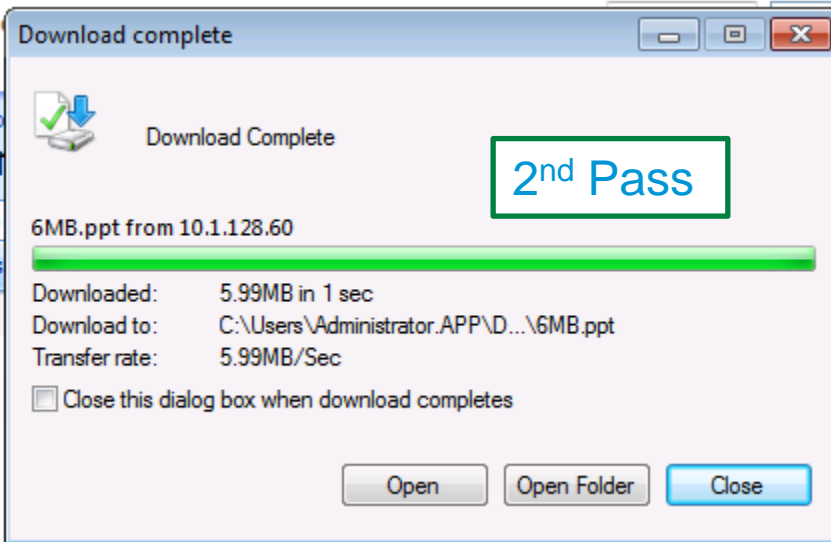
A) Enable vWAAS optimization in the branch and data center so traffic will be intercepted and optimized by the vWAAS device



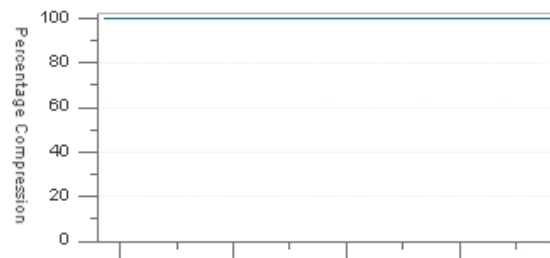


# Test case 1 (Continued)

Repeat test for second download performance



Percentage Compression



## Graphical Test Representation

ails.jsp?id=1068&connid=3201 - Windows Internet Explorer

id=1068&connid=3201 Certificate Error

**Connection Details**

**Source:** 10.1.129.55:58129 **Destination:** 10.1.128.60:80  
**Peer WAE:** DC **Peer Device ID:** 00:50:56:97:00:18  
**Duration:** 0:1:6

**Policy**

**Applied:** TFO, DRE, LZ **Configured:** TFO, DRE, LZ  
**Negotiated:** TFO, DRE, LZ **Peer Configured:** TFO, DRE, LZ  
**Accelerators:** HTTP

**Classifier**

**Classifier:** HTTP **Application:** Web  
**Map:** basic

**Traffic Statistics**

	Original	Optimized
<b>Read :</b>	297bytes	8 KB
<b>Write :</b>	6 MB	2 KB
<b>Total :</b>	6 MB	10 KB

# Test Case 2: Microsoft Exchange Server 2010 and vWAAS Optimization

## Microsoft Exchange Server Test Without vWAAS Optimization

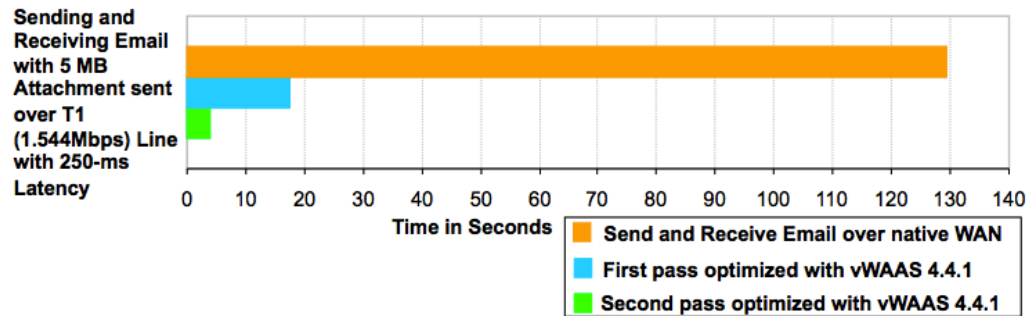
1. Open Microsoft Outlook from the branch location PC.
2. Send an email message with a 5 MB attachment to self.
3. Note the time it takes to send and receive the email.
4. Repeat the test, sending an email message with a 2 MB attachment to self.
5. Use a stopwatch to note and record the time it takes to send and receive the email.

## Microsoft Exchange Server Test With vWAAS Optimization

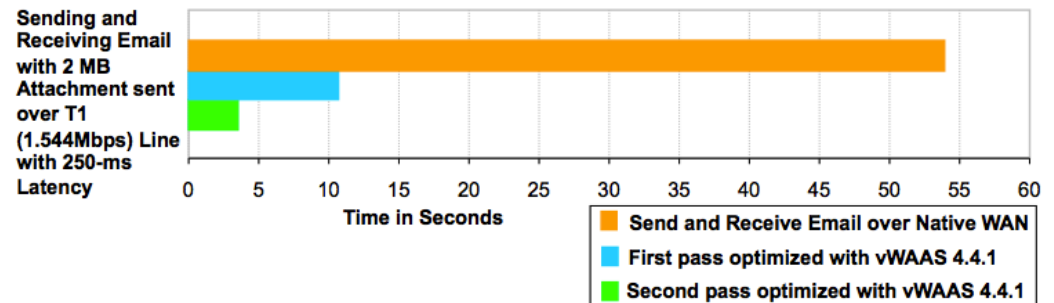
1. Enable vWAAS optimization.
2. Open Microsoft Outlook from the branch location PC.
3. Send an email message with a 5 MB attachment to self.
4. Use a stopwatch to note and record the time it takes to send and receive the email message.
5. Repeat the test with a 2 MB attachment.
6. Use a stopwatch to note and record the time it takes to send and receive the email message.

## Test Case 2 (Continued)

5 MB attachment over native WAN with and without vWAAS optimization enabled.



2 MB attachment over native WAN with and without vWAAS optimization enabled.



# Manage Application Performance

## The Foundation for Demonstrating ROI

### Challenge:

Provide an SLA from the SP DC to the Customer location

### Solutions:



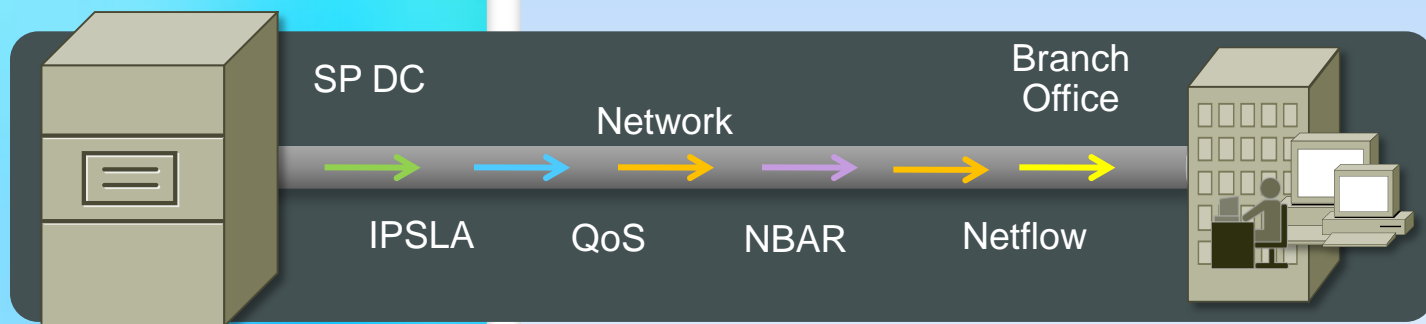
*Performance Monitoring:* Virtual NAM, NAM – collects network performance data and makes it available to reporting systems



*Reporting:* From best-in-class Cisco partners, including NetQoS, InfoVista, and Fluke Networks.



*Application Visibility and Control:* IOS – Netflow (network traffic stats), IPSLA (network traffic policy), NBAR (application recognition for traffic reporting), QoS (control of application traffic)



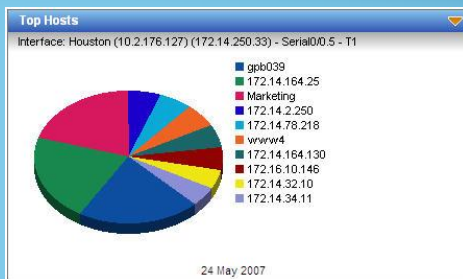
# Application Performance Management Visibility, Monitoring, and Control Services

## CAPABILITIES

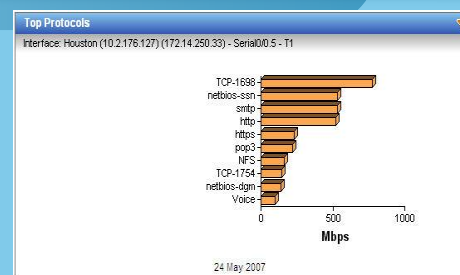
- Application Recognition
  - Packet inspection
  - Application flow control
  - Integration with NMS Systems
- Visibility
  - Monitoring
  - Control

Visibility into application performance and SLAs

## SERVICES



Monitoring and  
Reporting



Classification and  
Control

# Conclusion

- Cloud Service Assurance (CSA) can be implemented by using virtual appliances from Cisco, and that these have been demonstrated to work on Vblock™ Infrastructure Platforms in a multi-tenant environment.
- Using virtual appliances, service providers can reduce capital expenditures and operating expenses and offer SLAs to end customers to fulfill their critical application demands in the trusted multi-tenancy (TMT) environment.

## REFERENCE

<http://www.vce.com/pdf/solutions/vce-cloud-service-assurance.pdf>

# Resources





# CCO Links

## Software, Documentation & Screencasts

Product	CCO Links
Vblock <a href="http://www.cisco.com/go/vblock">www.cisco.com/go/vblock</a>	<ul style="list-style-type: none"><li>• <a href="#">VSG and vWAAS Virtual Services for Vblock Platforms Blog Post</a></li></ul>
Nexus 1000V (v1.5.1) <a href="http://www.cisco.com/go/1000v">www.cisco.com/go/1000v</a>	<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 Security Gateway (v 1.3.1) <a href="http://www.cisco.com/go/vsg">www.cisco.com/go/vsg</a>	<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>
vWAAS <a href="http://www.cisco.com/go/vwaas">www.cisco.com/go/vwaas</a>	<ul style="list-style-type: none"><li>• <a href="#">SW Download</a></li><li>• <a href="#">Documentation</a></li></ul>

# Reference Solutions

## *With Nexus 1000V, VSG & vWAAS*

- [Vblock with Nexus 1000V](#)
- [Vblock with VSG and vWAAS](#)
- Virtual Desktop
  - [1000V and VMware View](#)
  - [1000V and VSG in VXI Reference Architecture](#)
- Virtual Workload Mobility (aka DC-to-DC vMotion)
  - [Cisco, VMware and EMC \(with 1000V and VSG\)](#)
- [PCI 2.0 with Nexus 1000V and VSG](#)

# N1K Public Webcasts, Fall 2011

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

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

# N1K Public Webcasts – Spring 2011

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>

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

# N1K Public Resources

- 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))

- 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](#)

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

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

- Cheat Sheets

Nexus 1010 Configuration Cheat Sheet v.2.0  
<https://communities.cisco.com/docs/DOC-28188>

Nexus 1000V w/ UCS Configuration Cheat Sheet v.1.1  
<https://communities.cisco.com/docs/DOC-28187>

More on the way....

# 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)

**Just added: VXLAN Basic Introduction**

# Additional N1K Public 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.cisco.com/go/1000vcommunity](http://www.cisco.com/go/1000vcommunity)
- 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)

Thank you.

