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## **Cisco Virtual Security Gateway for Nexus 1000V Series Switch Troubleshooting Guide, Release 4.2(1)VSG1(2)**

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## Preface

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This preface describes the audience, organization, and conventions of the *Cisco Virtual Security Gateway (VSG) Troubleshooting Guide, Release 4.2(1)VSG1(2)*. It also provides information on how to obtain related documentation.

This chapter includes the following sections:

- [Audience, page vii](#)
- [Organization, page vii](#)
- [Document Conventions, page viii](#)
- [Related Documentation, page ix](#)
- [Obtaining Documentation and Submitting a Service Request, page x](#)

## Audience

This publication is for experienced network administrators who configure and maintain a Cisco Virtual Security Gateway (VSG).

## Organization

This document is organized into the following chapters:

Title	Description
<a href="#">Chapter 1, “Overview”</a>	Describes basic troubleshooting information.
<a href="#">Chapter 2, “Using Troubleshooting Tools”</a>	Describes the available troubleshooting tools.
<a href="#">Chapter 3, “Troubleshooting Installation Issues”</a>	Describes how to troubleshoot installation problems.
<a href="#">Chapter 4, “Troubleshooting Licensing Issues”</a>	Describes how to identify and resolve problems related to licensing for the Cisco VSG.
<a href="#">Chapter 5, “Troubleshooting Module Issues”</a>	Describes how to identify and resolve problems with modules.
<a href="#">Chapter 6, “Troubleshooting Policy Engine Issues”</a>	Describes policy engine troubleshooting issues.

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Title	Description
Chapter 7, “Troubleshooting High Availability Issues”	Describes how to identify and resolve problems related to High Availability (HA).
Chapter 8, “Troubleshooting System Issues”	Describes how to identify and resolve system-related problems in Cisco VSG.
Chapter 9, “Before Contacting Technical Support”	Describes the steps to take before requesting technical support.

## Document Conventions

Command descriptions use these conventions:

Convention	Description
<b>boldface font</b>	Commands and keywords are in boldface.
<i>italic font</i>	Arguments for which you supply values are in italics.
[ ]	Elements in square brackets are optional.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Screen examples use these conventions:

screen font	Terminal sessions and information that the switch displays are in screen font.
<b>boldface screen font</b>	Information that you must enter is in boldface screen font.
<i>italic screen font</i>	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:



### Note

Means reader *take note*. Notes contain helpful suggestions or references to material not covered in the manual.



### Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



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## Related Documentation

This section contains information about the documentation available for Cisco Virtual Security Gateway and related products.

### Cisco Virtual Security Gateway Documentation

The following Cisco Virtual Security Gateway for the Nexus 1000V Series Switch documents are available on Cisco.com at the following URL:

[http://www.cisco.com/en/US/products/ps13095/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps13095/tsd_products_support_series_home.html)

- *Cisco Virtual Security Gateway for Nexus 1000V Series Switch Release Notes, Release 4.2(1)VSG1(2)*
- *Cisco Virtual Security Gateway, Release 4.2(1)VSG1(2) and Cisco Virtual Network Management Center, Release 1.2 Installation and Upgrade Guide*
- *Cisco Virtual Security Gateway for Nexus 1000V Series Switch License Configuration Guide, Release 4.2(1)VSG1(2)*
- *Cisco Virtual Security Gateway for Nexus 1000V Series Switch Configuration Guide, Release 4.2(1)VSG1(2)*
- *Cisco Virtual Security Gateway for Nexus 1000V Series Switch Command Reference, Release 4.2(1)VSG1(2)*
- *Cisco Virtual Security Gateway for Nexus 1000V Series Switch Troubleshooting Guide, Release 4.2(1)VSG1(2)*

### Cisco Virtual Network Management Center Documentation

The following Cisco Virtual Network Management Center documents are available on Cisco.com at the following URL:

[http://www.cisco.com/en/US/products/ps11213/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps11213/tsd_products_support_series_home.html)

- *Release Notes for Cisco Virtual Network Management Center, Release 1.2*
- *Cisco Virtual Security Gateway, Release 4.2(1)VSG1(2) and Cisco Virtual Network Management Center, Release 1.2 Installation and Upgrade Guide*
- *Cisco Virtual Network Management Center CLI Configuration Guide, Release 1.2*
- *Cisco Virtual Network Management Center GUI Configuration Guide, Release 1.2*
- *Cisco Virtual Network Management Center XML API Reference Guide, Release 1.2*

### Cisco Nexus 1000V Series Switch Documentation

The Cisco Nexus 1000V Series Switch documents are available on Cisco.com at the following URL:

[http://www.cisco.com/en/US/products/ps9902/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps9902/tsd_products_support_series_home.html)

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## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.



# CHAPTER 1

## Overview

---

This chapter introduces the basic concepts, methodology, and general troubleshooting guidelines for problems that might occur when configuring and using the Cisco VSG.

This chapter includes the following sections:

- [Overview of the Troubleshooting Process, page 1-1](#)
- [Overview of Best Practices, page 1-1](#)
- [Troubleshooting Basics, page 1-2](#)
- [Overview of Symptoms, page 1-3](#)
- [System Messages, page 1-3](#)
- [Troubleshooting with Logs, page 1-5](#)
- [Contacting Cisco Customer Support, page 1-6](#)

## Overview of the Troubleshooting Process

To troubleshoot your network, follow these steps:

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Gather information that defines the specific symptoms.  |
| <b>Step 2</b> | Identify all potential problems that could be causing the symptoms.                               |
| <b>Step 3</b> | Eliminate each potential problem (from most likely to least likely) until the symptoms disappear. |
- 

## Overview of Best Practices

Best practices are the recommended steps you should take to ensure the proper operation of your network. We recommend the following general best practices for most networks:

- Maintain a consistent Cisco VSG release across all network devices.
- Refer to the release notes for your Cisco VSG release for the latest features, limitations, and caveats.
- Enable system message logging. See the [“Overview of Symptoms” section on page 1-3](#).
- Verify and troubleshoot any new configuration changes after implementing the change.

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## Troubleshooting Basics

This section introduces questions to ask when troubleshooting a problem with Cisco VSG or connected devices. Use the answers to these questions to identify the scope of the problem and to plan a course of action.

This section includes the following topics:

- [Troubleshooting Guidelines, page 1-2](#)
- [Gathering Information, page 1-2](#)

## Troubleshooting Guidelines

By answering the questions in the following sections, you can determine the paths you must follow and the components that you should investigate further.

Answer the following questions to determine the status of your installation:

- Is this a newly installed system or an existing installation? (It could be a new host, switch, or VLAN.)
- Has the host ever been able to see the network?
- Are you trying to solve an existing application problem (too slow, too high latency, excessively long response time) or did the problem show up recently?
- What changed in the configuration or in the overall infrastructure immediately before the applications started to have problems?

To discover a network problem, follow these steps:

- 
- Step 1** Gather information on problems in your system. See the [“Gathering Information” section on page 1-2](#).
  - Step 2** Verify the Layer 2 connectivity. See the [“Overview of Symptoms” section on page 1-3](#).
  - Step 3** Verify the configuration for your end devices (storage subsystems and servers).
  - Step 4** Verify end-to-end connectivity. See the [“Overview of Symptoms” section on page 1-3](#).
- 

## Gathering Information

This section highlights the tools that are commonly used to troubleshoot problems within your network. These tools are a subset of what you may use to troubleshoot your specific problem.

Each chapter in this guide may include additional tools and commands specific to the symptoms and possible problems covered in that chapter.

You should also have an accurate topology of your network to help isolate problem areas.

Enter the following commands and examine the outputs:

- **show vsg**
- **show version**
- **show running-config**
- **show logging log**

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- **show interfaces brief**
- **show interface data 0**
- **show accounting log**
- **show tech support**
- **show vnm-pa-status**
- **show ac-driver statistics**

## Overview of Symptoms

The symptom-based troubleshooting approach provides multiple ways to diagnose and resolve problems. By using multiple entry points with links to solutions, this guide serves users who might have identical problems that are perceived by different indicators. You can search this guide in PDF form, use the index, or rely on the symptoms and diagnostics listed in each chapter as entry points to access necessary information.

Using a given a set of observable symptoms on a network, you can diagnose and correct software configuration issues and inoperable hardware components so that the problems are resolved with minimal disruption to the network. Those problems and corrective actions include the following:

- Identify key Cisco VSG troubleshooting tools.
- Obtain and analyze protocol traces using Switched Port Analyzer (SPAN) or Ethalyzer on the command line interface (CLI).
- Identify or rule out physical port issues.
- Identify or rule out switch module issues.
- Diagnose and correct Layer 2 issues.
- Diagnose and correct Layer 3 issues.
- Obtain core dumps and other diagnostic data for use by the Cisco Technical Assistance Center (TAC).
- Recover from switch upgrade failures.

## System Messages

The system software sends the syslog (system) messages to the console (and, optionally, to a logging server on another system) during operation. Not all messages indicate a problem with your system. Some messages are purely informational, while others might help diagnose problems with links, internal hardware, or the system software.

This section includes the following topics:

- [System Message Text, page 1-4](#)
- [Syslog Server Implementation, page 1-4](#)

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## System Message Text

Message-text is a text string that describes the condition. This portion of the message might contain detailed information about the event, including terminal port numbers, network addresses, or addresses that correspond to locations in the system memory address space. Because the information in these variable fields changes from message to message, it is represented here by short strings enclosed in square brackets ([ ]). A decimal number, for example, is represented as [dec].

```
2009 Apr 29 12:35:51 vsg %KERN-1-SYSTEM_MSG: stun_set_domain_id : Setting domain ID (1024)
- kernel
```

Use this string to find the matching system message in the *Cisco NX-OS System Messages Reference*.

Each system message has an explanation and recommended action. The action might be as simple as no action required or it might involve a fix or a recommendation to contact technical support as shown in the following example:

```
Error Message 2009 Apr 29 14:57:23 vsg %MODULE-5-MOD_OK: Module 3 is online (serial:
)
```

**Explanation** VEM module inserted successfully on slot 3.

**Recommended Action** None. This is an information message. Use the **show module** command to verify the module in slot 3.

## Syslog Server Implementation

The syslog facility allows the Cisco VSG device to send a copy of the message log to a host for more permanent storage. This feature can be useful if you must examine the logs over a long period of time or when the Cisco VSG device is not accessible.

The example provided in this section shows how to configure a Cisco VSG device to use the syslog facility on a Solaris platform. Although a Solaris host is being used, syslog configuration on all UNIX and Linux systems is very similar.

Syslog uses a facility to determine how the logging should be handled on the syslog server (the Solaris system in this example) and the message severity. Therefore, different message severities can be handled differently by the syslog server. The messages could be logged to different files or e-mailed to a particular user. Specifying a severity determines that all messages of that level and greater severity (lower number) will be acted upon by the syslog facility.



### Note

You should configure the Cisco VSG messages to be logged to a different file from the standard syslog file so that they cannot be confused with other non-Cisco syslog messages. The logfile should not be located on the / file system, to prevent log messages from filling up the / file system.

Syslog Client: switch1

Syslog Server: 172.22.36.211 (Solaris)

Syslog facility: local1

Syslog severity: notifications (level 5, the default)

File to log Cisco VSG messages to: /var/adm/nxos\_logs

To configure a syslog server, follow these steps:

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**Step 1** Configure the Cisco VSG syslog policy and server through the Cisco VNMC GUI. See the *Cisco Virtual Network Management Center GUI Configuration Guide*, “Configuring Syslog Policy.”

**Step 2** Configure the syslog server as follows:

- a. Modify `/etc/syslog.conf` to handle local1 messages. For Solaris, there must be at least one tab between the facility.severity and the action (`/var/adm/nxos_logs`).

```
#Below is for the NX-OS logging
local1.notice /var/adm/nxos_logs
```

- b. Create a log file.

```
#touch /var/adm/nxos_logs
```

- c. Restart the syslog function.

```
# /etc/init.d/syslog stop
# /etc/init.d/syslog start
syslog service starting.
```

- d. Verify that the syslog function has started.

```
# ps -ef |grep syslogd
root 23508 1 0 11:01:41 ? 0:00 /usr/sbin/syslogd
```

**Step 3** Test the syslog server by creating an event in the Cisco VSG. This example shows that the system image messages generated are listed on the syslog server. Notice that the IP address of the Cisco VSG is listed in brackets.

```
# tail -f /var/adm/nxos_logs
Sep 17 11:07:41 [172.22.36.142.2.2] : 2004 Sep 17 11:17:29 pacific:
%AAA-6-AAA_ACCOUNTING_MESSAGE: update:171.70.212.30@pts/3:admin:configure terminal ; no
boot system (SUCCESS)
Sep 17 11:07:49 [172.22.36.142.2.2] : 2004 Sep 17 11:17:36 pacific:
%AAA-6-AAA_ACCOUNTING_MESSAGE: update:171.70.212.30@pts/3:admin:Boot Image list set to
bootflash:/nexus-1000v-mzg.VSG1.1.bin
Sep 17 11:07:51 [172.22.36.142.2.2] : 2004 Sep 17 11:17:39 pacific:
%AAA-6-AAA_ACCOUNTING_MESSAGE: update:171.70.212.30@pts/3:admin:configure terminal ; boot
system bootflash:/nexus-1000v-mzg.VSG1.1.bin (SUCCESS)
```

## Troubleshooting with Logs

The Cisco VSG generates many types of system messages on the switch and sends them to a syslog server. You can view these messages to determine what events may have led up to the current problem condition that you are facing.

### Viewing Logs

You can access and view logs in the Cisco VSG by entering the `show logging ?` command as follows:

```
vsg# show logging ?
```

```
console      Show console logging configuration
info         Show logging configuration
internal     syslog syslog internal information
last        Show last few lines of logfile
```

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level	Show facility logging configuration
logfile	Show contents of logfile
loopback	Show logging loopback configuration
module	Show module logging configuration
monitor	Show monitor logging configuration
nvrाम	Show NVRAM log
pending	server address pending configuration
pending-diff	server address pending configuration diff
server	Show server logging configuration
session	Show logging session status
status	Show logging status
timestamp	Show logging timestamp configuration
	Pipe command output to filter

For example, the **show logging** command output is as follows:

```
vsg# show logging server
Logging server: enabled
{192.0.1.1}
server severity: critical
server facility: user
```

## Contacting Cisco Customer Support

If you are unable to solve a problem after using the troubleshooting suggestions in this guide, contact a customer service representative for assistance and further instructions. Before you call, have the following information ready to help your service provider assist you as quickly as possible:

- Version of the Cisco VSM/VSG and VNMC software
- Version of the ESX and vCenter Server software
- Contact phone number
- Brief description of the problem
- Brief explanation of the steps that you have already taken to isolate and resolve the problem

If you purchased the product and support contract from Cisco, contact Cisco for support. Cisco provides Layer 1, Layer 2, and Layer 3 support.

After you have collected this information, see the [“Obtaining Documentation and Submitting a Service Request”](#) section on page -x.

For more information about the steps to take before calling technical support, see the [“Before Contacting Technical Support”](#) section on page 9-1.





## CHAPTER 2

# Using Troubleshooting Tools

---

This chapter describes the troubleshooting tools that are available for the Cisco Virtual Security Gateway (VSG).

This chapter includes the following sections:

- [Commands, page 2-1](#)
- [Ping, page 2-1](#)
- [Traceroute, page 2-2](#)
- [Monitoring Processes and CPUs, page 2-2](#)
- [Syslog, page 2-7](#)
- [CLI Configuration, page 2-8](#)
- [Show Commands, page 2-14](#)

## Commands

Use the CLI from a local console or remotely use the CLI through a Telnet or Secure Shell (SSH) session. The CLI provides a command structure that is similar to the Cisco NX-OS software, with context-sensitive help, **show** commands, multi-user support, and role-based access control.

Each feature has **show** commands that provide information about the feature configuration, status, and performance. Additionally, you can use the following commands for more information:

- **show system**—Provides information on system-level components, including codes, errors, and exceptions. Use the **show system error-id** command to find details on error codes:

```
vsg# show system error-id 0x401e0008
Error Facility: sysmgr
Error Description: request was aborted, standby disk may be full
```

## Ping

The ping utility generates a series of echo packets to a destination across a TCP/IP internetwork. When the echo packets arrive at the destination, they are rerouted and sent back to the source. Using ping, you can verify connectivity and latency to a particular destination across an IP routed network.

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Ping allows you to ping a port or end device. By specifying the IPv4 address, you can send a series of frames to a target destination. When these frames reach the target, they are looped back to the source and a time stamp is taken. Ping helps you to verify the connectivity and latency to a destination.

## Traceroute

Use traceroute to do the following tasks:

- Trace the route followed by the data traffic.
- Compute inter-switch (hop-to-hop) latency.

The **traceroute** command identifies the path taken on a hop-by-hop basis and includes a time stamp at each hop in both directions. This command tests the connectivity of ports along the path between the generating switch and the switch closest to the destination.

If the destination cannot be reached, the path discovery starts, which traces the path up to the point of failure.

## Monitoring Processes and CPUs

You can monitor and the CPU status and usage.

This section includes the following topics:

- [Identifying the Running Processes and Their States, page 2-2](#)
- [Displaying CPU Usage, page 2-5](#)
- [Displaying CPU and Memory Information, page 2-6](#)

## Identifying the Running Processes and Their States

The **show processes** command identifies the running processes and the status of each process as follows:

- PID—Process ID.
- State—Process state.
- PC—Current program counter in hex format.
- Start\_cnt—How many times a process has been started (or restarted).
- TTY—Terminal that controls the process. A dash (-) usually means a daemon that is not running on any particular TTY.
- Process—Name of the process.

Process states are as follows:

- D—Uninterruptible sleep (usually I/O).
- R—Runnable (on run queue).
- S—Sleeping.
- T—Traced or stopped.
- Z—Defunct zombie process.
- NR—Not-running.

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- ER—Should be running but is currently not running. The ER state typically designates a process that has been restarted too many times, which causes the system to classify it as faulty and disable it.

This example shows how to identify the available options for the **show processes** command:

```
vsg# show processes ?
<CR>
>      Redirect it to a file
>>    Redirect it to a file in append mode
cpu    Show processes CPU Info
log    Show information about process logs
memory Show processes Memory Info
vdc    Show processes in vdc
|      Pipe command output to filter
vsg#
```

This example shows how to display the complete output from the Cisco VSG:

```
vsg# show processes
```

PID	State	PC	Start_cnt	TTY	Process
1	S	b7f8a468	1	-	init
2	S	0	1	-	ksoftirqd/0
3	S	0	1	-	desched/0
4	S	0	1	-	events/0
5	S	0	1	-	khelper
10	S	0	1	-	kthread
18	S	0	1	-	kblockd/0
35	S	0	1	-	khubd
188	S	0	1	-	pdflush
189	S	0	1	-	pdflush
190	S	0	1	-	kswapd0
191	S	0	1	-	aio/0
776	S	0	1	-	kseriod
823	S	0	1	-	kide/0
833	S	0	1	-	ata/0
837	S	0	1	-	scsi_eh_0
1175	S	0	1	-	kjournald
1180	S	0	1	-	kjournald
1743	S	0	1	-	kjournald
1750	S	0	1	-	kjournald
1979	S	b7f6c18e	1	-	portmap
1992	S	0	1	-	nfsd
1993	S	0	1	-	nfsd
1994	S	0	1	-	nfsd
1995	S	0	1	-	nfsd
1996	S	0	1	-	nfsd
1997	S	0	1	-	nfsd
1998	S	0	1	-	nfsd
1999	S	0	1	-	nfsd
2000	S	0	1	-	lockd
2001	S	0	1	-	rpciod
2006	S	b7f6e468	1	-	rpc.mountd
2012	S	b7f6e468	1	-	rpc.statd
2039	S	b7dd1468	1	-	sysmgr
2322	S	0	1	-	mping-thread
2323	S	0	1	-	mping-thread
2339	S	0	1	-	stun_kthread
2340	S	0	1	-	stun_arp_mts_kt
2341	S	0	1	-	stun_packets_re
2376	S	0	1	-	redun_kthread
2377	S	0	1	-	redun_timer_kth
2516	S	0	1	-	sf_rdn_kthread

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```

2517      S b7f37468          1    - xinetd
2518      S b7f6e468          1    - tftpd
2519      S b79371b6          1    - syslogd
2520      S b7ecb468          1    - sdwrapd
2521      S b7d6c468          1    - platform
2526      S      0              1    - ls-notify-mts-t
2539      S b7eaabe4          1    - pfm_dummy
2548      S b7f836be          1    - klogd
2555      S b7c07be4          1    - vshd
2556      S b7e4e468          1    - stun
2557      S b7af2f43          1    - smm
2558      S b7ea0468          1    - session-mgr
2559      S b7cb2468          1    - psshelper
2560      S b7f75468          1    - lmgrd
2561      S b7e69be4          1    - licmgr
2562      S b7eb4468          1    - fs-daemon
2563      S b7e96468          1    - feature-mgr
2564      S b7e44468          1    - confcheck
2565      S b7ea8468          1    - capability
2566      S b7cb2468          1    - psshelper_gsvc
2577      S b7f75468          1    - cisco
2580      S b777d40d          1    - clis
2586      S b76a340d          1    - port-profile
2588      S b7cf9468          1    - xmlma
2589      S b7e59497          1    - vnm_pa_intf
2590      S b7e6c468          1    - vmm
2591      S b7b7d468          1    - vdc_mgr
2592      S b7e72468          1    - ttyd
2593      R b7eda5f5          1    - sysinfo
2594      S b7d06468          1    - sksd
2596      S b7e82468          1    - res_mgr
2597      S b7e48468          1    - plugin
2598      S b7bb7f43          1    - npacl
2599      S b7e93468          1    - mvsh
2600      S b7e01468          1    - module
2601      S b78fb40d          1    - fwm
2602      S b7e92468          1    - evms
2603      S b7e8c468          1    - evmc
2604      S b7ec3468          1    - core-dmon
2605      S b7e10468          1    - bootvar
2606      S b767040d          1    - ascii-cfg
2607      S b7ce4be4          1    - securityd
2608      S b77bf40d          1    - cert_enroll
2609      S b7ce1468          1    - aaa
2612      S b7aecf43          1    - l3vm
2613      S b7adff43          1    - u6rib
2614      S b7addf43          1    - urib
2615      S b7dce468          1    - ExceptionLog
2616      S b7da8468          1    - ifmgr
2617      S b7ea4468          1    - tcap
2621      S b75e140d          1    - snmpd
2637      S b7f03896          1    - PMon
2638      S b7be1468          1    - aclmgr
2662      S b7af0f43          1    - adjmgr
2670      S b7aecf43          1    - arp
2671      S b791c896          1    - icmpv6
2672      S b7993f43          1    - netstack
2746      S b778d40d          1    - radius
2747      S b7f3ebe4          1    - ip_dummy
2748      S b7f3ebe4          1    - ipv6_dummy
2749      S b789840d          1    - ntp
2750      S b7f3ebe4          1    - pktmgr_dummy
2751      S b7f3ebe4          1    - tcpudp_dummy
2755      S b782740d          1    - cdp

```

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```

2756      S  b7b6240d          1      -  dcos-xinetd
2758      S  b7b8d40d          1      -  ntpd
2869      S  b7dd9468          1      -  vsim
2870      S  b797440d          1      -  ufdm
2871      S  b796740d          1      -  sal
2872      S  b793840d          1      -  pltfm_config
2873      S  b782f40d          1      -  monitor
2874      S  b7d80468          1      -  ipqosmgr
2875      S  b7a2827b          1      -  igmp
2876      S  b7a4340d          1      -  eth-port-sec
2877      S  b7b29468          1      -  copp
2878      S  b7ad740d          1      -  eth_port_channel
2879      S  b7b05468          1      -  vlan_mgr
2880      S  b767240d          1      -  ethpm
2921      S  b7d1e468          1      -  msp
2924      S  b7e8c468          1      -  vsn_service_mgr
2925      S  b7e25497          1      -  sp
2926      S  b7832497          1      -  policy_engine
2927      S  b7e3d497          1      -  inspect
3064      S  b7f836be          1      1  getty
3066      S  b7f806be          1      S0  getty
3091      S  b7f1deee          1      -  pa-httpd.sh
3092      S  b73da4c7          1      -  svc_sam_vsnAG
3096      S  b7db7b49          1      -  httpd
3098      S  b7476be4          1      -  svc_sam_commonA
3103      S  b70254c7          1      -  svc_sam_dme
3108      S  b7f1deee          1      -  sam_cores_mon.s
3150      S  b7db6dcc          1      -  httpd
25835     S  b7b4f40d          1      -  dcos_sshd
25850     S  b78e7eee          1      0  vsh
26766     S  b7f5d468          1      -  sleep
26768     S  b7f5d468          1      -  sleep
26769     R  b7f426be          1      0  more
26770     R  b790ebe4          1      0  vsh
26771     R  b7f716be          1      -  ps
-         NR  -                  0      -  tacacs
-         NR  -                  0      -  dhcp_snoop
-         NR  -                  0      -  installer
-         NR  -                  0      -  private-vlan
-         NR  -                  0      -  scheduler
-         NR  -                  0      -  vbuilder
vsg#

```

## Displaying CPU Usage

You can use the **show processes cpu** command to display CPU usage. The command output includes the following information:

- Runtime(ms)—CPU time that the process has used, expressed in milliseconds
- Invoked—Number of times that the process has been invoked
- uSecs—Microseconds of CPU time as an average for each process invocation
- 1Sec—CPU usage as a percentage for the last one second

This example shows how to display all of the CPU processes:

```
vsg# show processes cpu
```

```

PID      Runtime(ms)   Invoked    uSecs   1Sec   Process
-----  -
1         1519         14917     101     0.0%   init

```

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```

 2          555    16391    33    0.0%  ksoftirqd/0
 3          96     59084     1    0.0%  desched/0
 4         1469    36858    39    0.0%  events/0
 5          35     2901    12    0.0%  khelper
10           0         14     3    0.0%  kthread
18           1         193     9    0.0%  kblockd/0
35           0         1     3    0.0%  khubd
188          0         3     0    0.0%  pdflush
189          95    13678     6    0.0%  pdflush
190           0         1     0    0.0%  kswapd0
191           0         2     1    0.0%  aio/0
776          0         1     3    0.0%  kseriod
823           3        138    28    0.0%  kide/0
833           0         2     2    0.0%  ata/0
837           0         1     4    0.0%  scsi_eh_0
1175          0         5    12    0.0%  kjournald
1180          0         1     5    0.0%  kjournald
1743          5        194    29    0.0%  kjournald
1750          0        21    21    0.0%  kjournald
1979          0        21    25    0.0%  portmap
1992          0        32    23    0.0%  nfsd
1993          0        20     4    0.0%  nfsd
1994          0        20     2    0.0%  nfsd
1995          0        20     2    0.0%  nfsd
1996          0        20     1    0.0%  nfsd
1997          0        20     9    0.0%  nfsd
1998          0        22     3    0.0%  nfsd
1999          0        22     3    0.0%  nfsd
2000          0         2    18    0.0%  lockd
2001          0         1     1    0.0%  rpciod
2006          0         1    53    0.0%  rpc.mountd
2012          1         5   341    0.0%  rpc.statd
2039          906   148314     6    0.0%  sysmgr
2322          0         1     9    0.0%  mping-thread
2323          0         1     3    0.0%  mping-thread
...
vsg#
```

## Displaying CPU and Memory Information

You can use the **show system resources** command to display system-related CPU and memory statistics as follows:

- The load is defined as the number of running processes. The average reflects the system load over the past 1, 5, and 15 minutes.
- Processes display the number of processes in the system and how many processes are running when the command is issued.
- The CPU states show the CPU usage percentage in the user mode, kernel mode, and idle time in the last one second.
- The memory usage provides the total memory, used memory, free memory, memory used for buffers, and memory used for the cache in kilobytes. Buffers and cache are also included in the used memory statistics.

This example shows how to display the results of available system resources:

```

vsg# show system resources
Load average:  1 minute: 0.00   5 minutes: 0.00   15 minutes: 0.02
Processes   :   321 total, 1 running
CPU states   :   0.0% user,   0.0% kernel,  100.0% idle
```

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```
Memory usage: 1944668K total, 1114044K used, 830624K free
               62340K buffers, 479040K cache
vsg#
```

# Syslog

The system message logging software saves messages in a log file or directs messages to other devices. This feature provides the following capabilities:

- Logging information for monitoring and troubleshooting.
- Selecting the types of logging information for capture.
- Selecting the destination of the captured logging information.

A syslog can store a chronological log of system messages locally or send the messages to a central syslog server. Syslog messages can also be sent to the console for immediate use. These messages can vary in detail depending on the configuration.

Syslog messages are categorized into seven severity levels from debug to critical events. Severity levels that are reported can be limited for specific services within the switch.

Log messages are not saved across system reboots. However, a maximum of 100 log messages with a severity level of critical and below (levels 0, 1, and 2) can be logged and saved to a local file or server.

This section includes the following topics:

- [Logging Levels, page 2-7](#)
- [Enabling Logging for Telnet or SSH, page 2-7](#)

## Logging Levels

The Cisco VSG supports the following logging levels:

- 0—Emergency
- 1—Alert
- 2—Critical
- 3—Error
- 4—Warning
- 5—Notification
- 6—Informational
- 7—Debugging

By default, the switch logs normal but significant system messages to a log file and sends these messages to the system console. Users can specify which system messages are saved, based on the type of facility and the severity level. Messages are time stamped to enhance real-time debugging and management.

## Enabling Logging for Telnet or SSH

System logging messages are sent to the console based on the default or configured logging facility and severity values.

Users can disable logging to the console or enable logging to a given Telnet or Secure Shell (SSH) session.

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- To disable console logging, use the **no logging console** command in interface configuration mode.
- To enable logging for Telnet or SSH, use the **terminal monitor** command in EXEC mode.



### Note

When logging to a console session is disabled or enabled, that state is applied to all future console sessions. If you exit and log in again to a new session, the state is preserved. When logging to a Telnet or SSH session that is enabled or disabled, that state applies only to that session. The state is not preserved after you exit the session.

The **no logging console** command is enabled by default. Use this command to disable console logging. The **terminal monitor** command is disabled by default. Use this command to enable logging for Telnet or SSH.

For more information about configuring syslog, see the *Cisco Virtual Network Management Center GUI Configuration Guide*.

## CLI Configuration

This section includes the following topics:

- [Event Log, page 2-8](#)
- [Configuration and Restrictions, page 2-9](#)

## Event Log

This section describes event logs.

This section includes the following topics:

- [Event Log Configuration Format, page 2-8](#)
- [Viewing the Event Log Configuration, page 2-8](#)
- [Viewing Event Logs, page 2-9](#)
- [Event Log Configuration Persistence, page 2-9](#)

## Event Log Configuration Format

The configuration is displayed using this format:

```
[no] event-log inspect {{error | info} | {{ftp {error | info | warn | pkt_trace}} | {rsh {error | info | pkt_trace}} | {tftp {error | info }}} [terminal]
```

You can configure event logs for either the inspection process or one of its modules. For example, you can use the **event-log inspect error terminal** command to enable error events for the inspection process and to display these messages on the terminal where the command was entered.

## Viewing the Event Log Configuration

You can display the event log configuration by using the **show event-log all** command. This example shows how to display the event logs for all the processes and their modules:

```
vsg# show event-log all
```



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```
event-log inspect tftp error
event-log inspect rsh error
event-log inspect ftp error terminal
event-log policy_engine attr-mgr error
event-log service-path sp pkt-error terminal
vsg#W
```

## Viewing Event Logs

Event logs are always logged in a process that is specific to the message buffer. Process logging in the event log buffer does not incur any overhead. In addition to using the **show event-log** command, you can display messages on a terminal where the event logs are enabled by using the terminal option, which is useful for reproducing a certain behavior.

The **show** command shows all the processes that are integrated with the event log Cisco VSG infrastructure. You can display inspection event logs using the **show system internal event-log inspect** command. The Cisco VSG event log infrastructure is a layer on top of the Cisco NX-OS event log infrastructure. Event logs can be redirected to a file and exported.

To display event logs on the terminal, use the **terminal** option while configuring the event. Different terminals can view different event logs. For example, use the **event-log inspect ftp info terminal** command to enable the information event logs for the inspection FTP module and to display the logs on the terminal. Use the **event-log inspect rsh error terminal** command to display only the error logs that are related to the RSH module. This command helps to debug various modules at the same time.

## Event Log Configuration Persistence

You can save the event log configuration by using the **event-log save config** command. This command allows you to save all of the currently enabled event logs in a file. This file is read at the time of the module/process initialization with the event log infrastructure. The event log configuration that is relevant to the process is reapplied during initialization, which makes the event log configuration persistent across the process/system reboot. Some important things about the event log configuration are as follows:

- Terminal information is not reapplied for process or system restarts because that information might not be applicable.
- The event log configuration is independent of the other Cisco NX-OS configurations. The **copy running-config startup-config** and **show running-config** commands do not save and display the event log configuration.
- The event log configuration is specific to the individual system. In a high-availability setup, the configuration must be set up on both systems.

## Configuration and Restrictions

Event logs CLIs for the Cisco VSG are classified based on the process and its modules. This section describes event log commands.

This section includes the following topics:

- [VNS Agent, page 2-10](#)
- [Inspection Process, page 2-11](#)
- [Service Path Process, page 2-12](#)

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- [Policy Engine Process, page 2-13](#)
- [Restrictions, page 2-14](#)

## VNS Agent

Virtual Network Service (VNS) agent-related event logs are maintained on the Virtual Supervisor Module (VSM), not on the Cisco VSG.

This section includes the following topics:

- [Core Module, page 2-10](#)
- [VPath Module, page 2-10](#)
- [License Module, page 2-10](#)

### Core Module

Core events are those events that are related to port attach, port detach, Internet Protocol Database (IPDB), and to port-profile CLI.

This example shows how to enable/disable error messages for the vns\_agent core module:

```
vsm# event-log vns-agent core-error [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent core-error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the vns\_agent core module:

```
vsm# event-log vns-agent core-info [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent core-info [terminal] ----->disable messages to the terminal
```

### VPath Module

Because the VPath module works based on core-module events, you should always enable core module event logs before you enable the VPath module events.

This example shows how to enable/disable error messages for the vns\_agent VPath module:

```
vsm# event-log vns-agent vpath-error [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent vpath-error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the vns\_agent VPath module:

```
vsm# event-log vns-agent vpath-info [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent vpath-info [terminal] ----->disable messages to the terminal
```

### License Module

Because the license module works based on core-module events, you should always enable the core module event logs before enabling the license module.

This example shows how to enable/disable error messages for the vns\_agent license module:

```
vsm# event-log vns-agent license-error [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent license-error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the vns\_agent license module:

```
vsm# event-log vns-agent license-info [terminal] ----->enable messages to the terminal
vsm# no event-log vns-agent license-info [terminal] ----->disable messages to the terminal
```

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## Inspection Process

The inspection process uses event log commands for the inspection process and the File Transfer Protocol (FTP), Remote Shell (RSH), and Trivial File Transfer Protocol (TFTP) modules. These processes are all available on the Cisco VSG.

Use the **event-log inspect error** command to display configuration errors, process initialization errors, and so forth. This example shows how to enable/disable error messages for the inspection process:

```
vsg# event-log inspect error [terminal] ----->enable messages to the terminal
vsg# no event-log inspect error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the inspection process:

```
vsg# event-log inspect info [terminal] ----->enable messages to the terminal
vsg# no event-log inspect info [terminal] ----->disable messages to the terminal
```

Use the **event-log inspect ftp error** command to display FTP packet processing errors. This example shows how to enable/disable error messages for the inspection FTP module:

```
vsg# event-log inspect ftp error [terminal] ----->enable messages to the terminal
vsg# no event-log inspect ftp error [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:12:14 2010 ie_ftp: flow (->(ING), 6912), Bad ftp command.
Mon Oct 4 15:12:14 2010 ie_ftp: flow (->(ING), 6912), invalid PORT request / PASV reply.
```

This example shows how to enable/disable informational event log messages for the inspection FTP module:

```
vsg# event-log inspect ftp info [terminal] ----->enable messages to the terminal
vsg# no event-log inspect ftp info [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:12:18 2010 ie_ftp: embryonic connection request (ip, port, proto, pfid, cid,
action, offload) = (192.168.1.20, 40074, tcp, 13569, 6912, 3,1).
Mon Oct 4 15:17:11 2010 ie_ftp: flow (<-(ING), 6912), more reply expected in cmd-reply.
```

This example shows how to enable/disable warning messages for the inspection FTP module:

```
vsg# event-log inspect ftp warn [terminal] ----->enable messages to the terminal
vsg# no event-log inspect ftp warn [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:19:03 2010 ie_ftp: flow (<-(ING), 8192), ftp reply not terminated properly.
```

This example shows how to enable/disable packet trace messages for the inspection FTP module:

```
vsg# event-log inspect ftp pkt_trace [terminal] ----->enable messages to the terminal
vsg# no event-log inspect ftp pkt_trace [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:31:46 2010 ie_ftp: flow (->(ING), 17152), flags(S:)
Mon Oct 4 15:31:54 2010 ie_ftp: flow (->(ING), 17152), cmd (USER)
```

This example shows how to enable/disable error messages for the inspection RSH module:

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```
vsg# event-log inspect rsh error [terminal] ----->enable messages to the terminal
vsg# no event-log inspect rsh error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the inspection RSH module:

```
vsg# event-log inspect rsh info [terminal] ----->enable messages to the terminal
vsg# no event-log inspect rsh info [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:21:29 2010 ie_rsh: emryonic connection request (ip, port, proto, pfid, cid,
action, offload) = (192.168.1.10, 1021, tcp, 22529, 11264, 3, 1).
```

This example shows how to enable/disable packet trace messages for the inspection RSH module:

```
vsg# event-log inspect rsh pkt_trace [terminal] ----->enable messages to the terminal
vsg# no event-log inspect rsh pkt_trace [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:25:26 2010 ie_rsh: flow (->(ING), 15872), rsh inspect action stop punt
```

This example shows how to enable/disable error messages for the inspection TFTP module:

```
vsg# event-log inspect tftp error [terminal] ----->enable messages to the terminal
vsg# no event-log inspect tftp error [terminal] ----->disable messages to the terminal
```

This example shows how to enable/disable informational messages for the inspection TFTP module:

```
vsg# event-log inspect tftp info [terminal] ----->enable messages to the terminal
vsg# no event-log inspect tftp info [terminal] ----->disable messages to the terminal
```

The command output is as follows:

```
Mon Oct 4 15:27:42 2010 ie_tftp: emryonic connection request (ip, port, proto, pfid, cid,
action, offload) = (192.168.1.10, 32771, udp, 33281, 16640, 3, 1)
```

## Service Path Process

The service path processes are available on the Cisco VSG.

This section includes the following topics:

- [Service Path Module, page 2-12](#)
- [Service Path Flow Manager, page 2-13](#)
- [AC Module, page 2-13](#)

The service path process exposes event log output for the VSN service path, flow manager, AC infrastructure modules.

## Service Path Module

The `event-log service-path sp error` command can display a failure to initialize the FE, and so forth. This example shows how to enable/disable error messages for the service path module:

```
vsg# event-log service-path sp error [terminal] ----->enable messages to the terminal
vsg# no event-log service-path sp error [terminal] ----->disable messages to the terminal
```

Use the `event-log service-path sp info` command to display FE initialization messages, control path messages, and so forth. This example shows how to enable/disable informational messages for the service path module:

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```
vsg# event-log service-path sp info [terminal] ----->enable messages to the terminal
vsg# no event-log service-path sp info [terminal] ----->disable messages to the terminal
```

The **event-log service-path sp pkt-error** command can display failure to read or write a packet, a corrupted packet, and so forth. This example shows how to enable/disable packet error messages for the service path module:

```
vsg# event-log service-path sp pkt-error [terminal] ----->enable messages to the terminal
vsg# no event-log service-path sp pkt-error [terminal] ----->disable messages to the terminal
```

The **event-log service-path sp pkt-info** command can display the field description of a packet, where the packet arrived from or going to, decisions taken on the packet, and so forth. This example shows how to enable/disable packet informational messages for the service path module:

```
vsg# event-log service-path sp pkt-info [terminal] ----->enable messages to the terminal
vsg# no event-log service-path sp pkt-info [terminal] ----->disable messages to the terminal
```

The **event-log service-path sp pkt-detail** command can display the first few 100 bytes of the incoming packets. This example shows how to enable/disable detailed packet messages for the service path module:

```
vsg# event-log service-path sp pkt-detail [terminal] ----->enable messages to the terminal
vsg# no event-log service-path sp pkt-detail [terminal] ----->disable messages to the terminal
```

### Service Path Flow Manager

This example shows how to enable/disable the packet messages for the service path flow manager module:

```
vsg# event-log service-path fm error [terminal] ----->enable messages to the terminal
vsg# no event-log service-path fm error [terminal] ----->disable messages to the terminal
```

### AC Module

The **event-log service-path ac error** command can display failure to initialize the AC, timer, FD, pending queue, and so forth. This example shows how to enable/disable error messages for the AC module:

```
vsg# event-log service-path ac error [terminal] ----->enable messages to the terminal
vsg# no event-log service-path ac error [terminal] ----->disable messages to the terminal
```

The **event-log service-path ac info** command can display AC initialization messages, control path messages, and so forth. This example shows how to enable/disable informational messages for the AC module:

```
event-log service-path ac info [terminal] ----->enable messages to the terminal
no event-log service-path ac info [terminal] ----->disable messages to the terminal
```

### Policy Engine Process

The policy engine processes are available on the Cisco VSG.

This section contains the following topic:

- [Attribute Manager Module, page 2-14](#)

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### Attribute Manager Module

This section describes the attribute manager-related errors.

You can use the **event-log policy-engine attr-mgr error** command to display the policy ID for a PE evaluation lookup based on the VNSP ID, IP address, zone name resolution, attribute fetched, and so forth.

This example shows how to enable/disable error messages for the attribute manager module:

```
vsg# event-log policy-engine attr-mgr error [terminal] ----->enable messages to the
terminal
vsg# no event-log policy-engine attr-mgr error [terminal] ----->disable messages to the
terminal
```

This example shows how to enable/disable informational messages for the attribute manager module:

```
vsg# event-log policy-engine attr-mgr info [terminal] ----->enable messages to the
terminal
vsg# no event-log policy-engine attr-mgr info [terminal] ----->disable messages to the
terminal
```

### Restrictions

The event log configuration has the following restrictions:

- Terminal information is not reapplied in case of process restart/system restart because it may or may not be applicable.
- Event log configuration is independent of the other Cisco NX-OS configurations. The Cisco NX-OS **copy running-config startup-config** and **show running-config** commands do not save and display event log configuration.
- Event log configuration is specific to the individual system. In the high availability (HA) setup, this configuration must be done on both of the systems.

## Show Commands

This section includes the following topics:

- [VSM Show Commands, page 2-14](#)
- [Cisco VSG show Commands, page 2-20](#)

## VSM Show Commands

This section includes the following topics:

- [show vnm-pa status, page 2-15](#)
- [show vsn brief, page 2-15](#)
- [show vsn detail \[port\] \[vlan vlan-num ip ip-addr\] \[module module-num\], page 2-15](#)
- [show vsn port \[vethernet veth-num\], page 2-16](#)
- [show vsn connection, page 2-16](#)
- [show vsn statistics \[vlan vlan-num ip ip-addr\] \[module module-num\], page 2-17](#)

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- `clear vsn statistics [vlan vlan-num ip ip-addr] [module module-num]`, page 2-19

### show vnm-pa status

You can display the VNM policy agent status by entering the **show vnm-pa status** command.

This example shows how to display the VNM policy agent installation status:

```
vsm2# show vnm-pa status
VNM Policy-Agent status is - Installed Successfully. Version 1.0(1j)-vsm
vsm2#
```

### show vsn brief

You can display a consolidated view of all VSNs in use by using the **show vsn brief** command.

This example shows how to display all VSNs in use:

```
vsm2# show vsn brief
VLAN          IP-ADDR          MAC-ADDR          FAIL-MODE          STATE          MODULE
78            10.0.0.1         00:50:56:9c:04:28  Close              Up             3
vsm2#
```

FAIL-MODE specifies the behavior when the Virtual Ethernet Module (VEM) has no connectivity to the Cisco VSG. The default is Close (packets are dropped). Open means packets are forwarded.

The MAC-ADDR column lists the MAC address of the data0 interface that corresponds to that Cisco VSG (if the VEM can resolve it). If the VEM does not resolve the MAC address, it cannot redirect packets to the Cisco VSG. If a valid MAC address is not shown, check if the Cisco VSG data0 is reachable from the VEM. If there is no valid MAC-ADDR, these are possible reasons:

- The data0 interface on the Cisco VSG is not configured
- The VLAN is not up
- A mismatch has occurred in the VLAN specified in the **vn-service** command and the port profile used for the Cisco VSG VM.

The STATE can be Up, Down, or No Licenses. If Down, the MAC-ADDR is not resolved or the module is not up. If multiple VEM modules inherit the same VM port profile, those interfaces must pass all checks before the state can be Up. If No Licenses appears, install the Cisco VSG license on the VSM.

The MODULE column lists the VEM numbers whose interfaces have inherited this configuration.

### show vsn detail [port] [vlan vlan-num ip ip-addr] [module module-num]

You can display detailed information for all VSNs in use by using the **show vsn detail** command. Information is displayed for each of the associated VEM modules. The command output displays the port profile, security profile, organization, and list of Cisco Nexus 1000V ports that have inherited this configuration. Also displayed are any configuration mismatches between the VSM and VEM missing ports for a given port profile, all ports of a port profile that are not configured with same security profile, and so forth.

This example shows how to display all VSNs in use:

```
vsm# show vsn detail
#VSN VLAN: 756, IP-ADDR: 200.1.1.67
MODULE          VSN-MAC-ADDR          FAIL-MODE          VSN-STATE
3  00:50:56:83:03:1c    Close              Up
4  00:50:56:83:03:1c    Close              Up
```

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```
#VSN Ports, Port-Profile, Org and Security-Profile Association:
#VSN VLAN: 756, IP-ADDR: 200.1.1.67
  Port-Profile: profile-data, Security-Profile: sec-profile-stress1, Org:
root/Tenant-Stress1
  Module Vethernet
    3 9, 7, 8
    4 5, 6
vsm#
```

The Vethernet column shows the virtual Ethernet (vEth) interfaces that are bound to the appropriate VEM listed in the Module column and that they inherit the correct port profile.

Possible red flags include notations (\* or ??) against the security profile or organization (the Org column).

### show vsn port [vethernet veth-num]

You can display information for each vEth interface by using the **show vsn port** command. By default, all attached vEths are listed. Use the **vethernet** option for output of a specific vEth interface.

This example shows how to display the vEth interfaces:

```
vsm2# show vsn port
Veth          : Veth4
VM Name       : win2k3
VM uuid      : 42 1c 5a e4 51 c3 5d d9-60 fa a5 0c b0 4e d0 ea
DV Port       : 576
DVS uuid      : bc aa 1c 50 87 47 8d 08-fe 7e a9 aa 89 24 bf 8e
Flags         : 0x48
VSN Data IP   : 10.0.0.1
Security Profile : spcustom
Org           : orgroot
VNSP id       : 1
IP addresses:
  100.1.1.20
vsm2#
```



#### Note

- Any field with a value of Not set is an improper port configuration.
- For the VM Name value, make sure the VM name matches name of the VM associated with this vNIC.
- For VSN Data IP, Security Profile, and Org values, ensure that correct values for this VM are displayed.
- The VNSP ID should never be zero.
- For IP Addresses, ensure that the list of IP addresses matches the IP addresses configured for the specific vNIC for that VM. If not, use the **vemcmd show learnt** command on all VEM modules to display the Internet Protocol Database (IPDB) table.

### show vsn connection

You can display VSN connections by using the **show vsn connection** command.

This example shows how to display VSN connections:

```
VSM-207-1# show vsn connection vlan 159 ip 15.15.15.15 module 4
Flags:
A - seen ack for syn/fin from src   a - seen ack for syn/fin from dst
```



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```

E - tcp conn established (SasA done)
F - seen fin from src          f - seen fin from dst
O - conn offloaded to vPath at src  o - conn offloaded to vPath at dst
P - policy at src              p - policy at dst
R - seen rst from src          r - seen rst from dst
S - seen syn from src          s - seen syn from dst
T - tcp conn torn down (FafA done) x - IP-fragment connection

VSG IP 15.15.15.15 VLAN 159
#Module 4
Proto      SrcIP[:Port]  DstIP[:Port]  VLAN   Action   Flags   Bytes
icmp       10.100.201.176 10.100.201.185 160    permit  PpOo    53312

```

## **show vsn statistics [vlan vlan-num ip ip-addr] [module module-num]**

You can display VSN statistics by using the **show vsn statistics** command.

This example shows how to display the VSN statistics:

```

vsm# show vsn statistics
#VSN VLAN: 756, IP-ADDR: 200.1.1.67
Module: 3
#VPath Packet Statistics      Ingress      Egress      Total
Total Seen                    381295      622662      1003957
Policy Redirects              0            120681      120681
No-Policy Passthru           14830       14835       29665
Policy-Permits Rcvd          0            120681      120681
Policy-Denies Rcvd           0            0            0
Permit Hits                   366465     487146      853611
Deny Hits                    0            0            0
Decapsulated                  0            120681      120681
Fail-Open                     0            0            0
Badport Err                   0            0            0
VSN Config Err                0            0            0
ARP Resolve Err               0            0            0
Encap Err                     0            0            0
All-Drops                     0            0            0
Total Rcvd From VSN                                120681
Non-Cisco Encap Rcvd          0
VNS-Port Drops                0
Policy-Action Err             0
Decap Err                      0
L2-Frag Sent                   0
L2-Frag Rcvd                   0
L2-Frag Coalesced              0

#VPath Flow Statistics
Active Flows                    0 Active Connections                    0
Forward Flow Create             120681 Forward Flow Destroy                  120681
Reverse Flow Create             120681 Reverse Flow Destroy                  120681
Flow ID Alloc                   241362 Flow ID Free                          241362
Connection ID Alloc             120681 Connection ID Free                    120681
L2 Flow Create                   0 L2 Flow Destroy                       0
L3 Flow Create                   0 L3 Flow Destroy                       0
L4 TCP Flow Create               241362 L4 TCP Flow Destroy                   241362
L4 UDP Flow Create               0 L4 UDP Flow Destroy                   0
L4 Oth Flow Create               0 L4 Oth Flow Destroy                   0
Embryonic Flow Bloom            0 Embryonic Flow Bloom                 0
L2 Flow Timeout                 0 L2 Flow Offload                       0
L3 Flow Timeout                 0 L3 Flow Offload                       0
L4 TCP Flow Timeout              249934 L4 TCP Flow Offload                   120681
L4 UDP Flow Timeout              0 L4 UDP Flow Offload                   0

```

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```

L4 Oth Flow Timeout          0 L4 Oth Flow Offload          0
Flow Lookup Hit             853611 Flow Lookup Miss             241362
Flow Dual Lookup           998732 L4 TCP Tuple-reuse          0
Flow Classify Err          0 Flow ID Alloc Err           0
Conn ID Alloc Err          0 Hash Alloc Err              0
Flow Exist                 0 Flow Entry Exhaust          0
Flow Removal Err           0 Bad Flow ID Receive         0
Flow Entry Miss            0 Flow Full Match Err         0
Bad Action Receive         0 Invalid Flow Pair           0
Invalid Connection         0
Hash Alloc                 0 Hash Free                   0
InvalFID Lookup            0 InvalFID Lookup Err         0
Deferred Delete            0

Module: 4
#VPath Packet Statistics      Ingress      Egress      Total
Total Seen                   9886         9890        19776
Policy Redirects              0             0            0
No-Policy Passthru           9886         9890        19776
Policy-Permits Rcvd          0             0            0
Policy-Denies Rcvd           0             0            0
Permit Hits                   0             0            0
Deny Hits                    0             0            0
Decapsulated                  0             0            0
Fail-Open                     0             0            0
Badport Err                   0             0            0
VSN Config Err                0             0            0
ARP Resolve Err               0             0            0
Encap Err                      0             0            0
All-Drops                      0             0            0
Total Rcvd From VSN           0
Non-Cisco Encap Rcvd          0
VNS-Port Drops                0
Policy-Action Err             0
Decap Err                      0
L2-Frag Sent                   0
L2-Frag Rcvd                   0
L2-Frag Coalesced              0

#VPath Flow Statistics
Active Flows                   0 Active Connections          0
Forward Flow Create            0 Forward Flow Destroy        0
Reverse Flow Create            0 Reverse Flow Destroy        0
Flow ID Alloc                  0 Flow ID Free                 0
Connection ID Alloc           0 Connection ID Free          0
L2 Flow Create                 0 L2 Flow Destroy              0
L3 Flow Create                 0 L3 Flow Destroy              0
L4 TCP Flow Create             0 L4 TCP Flow Destroy          0
L4 UDP Flow Create             0 L4 UDP Flow Destroy          0
L4 Oth Flow Create             0 L4 Oth Flow Destroy          0
Embryonic Flow Create          0 Embryonic Flow Bloom         0
L2 Flow Timeout                0 L2 Flow Offload              0
L3 Flow Timeout                0 L3 Flow Offload              0
L4 TCP Flow Timeout            0 L4 TCP Flow Offload          0
L4 UDP Flow Timeout            0 L4 UDP Flow Offload          0
L4 Oth Flow Timeout            0 L4 Oth Flow Offload          0
Flow Lookup Hit                0 Flow Lookup Miss             0
Flow Dual Lookup               0 L4 TCP Tuple-reuse          0
Flow Classify Err              0 Flow ID Alloc Err           0
Conn ID Alloc Err              0 Hash Alloc Err              0
Flow Exist                     0 Flow Entry Exhaust          0
Flow Removal Err               0 Bad Flow ID Receive         0
Flow Entry Miss                0 Flow Full Match Err         0
Bad Action Receive             0 Invalid Flow Pair           0
Invalid Connection              0

```

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```

Hash Alloc                0 Hash Free                0
InvalFID Lookup          0 InvalFID Lookup Err      0
Deferred Delete          0
vsm#

```

**clear vsn statistics [vlan *vlan-num* ip *ip-addr*] [module *module-num*]**

You can clear the VSN statistics by using the **clear vsn statistics** command.

This example shows how to clear VSN statistics:

```

vsm# clear vsn statistics vlan 756 ip 200.1.1.67 module 3
Cleared statistics successfully for specified VSN in module 3
vsm-fcs# show vsn statistics vlan 756 ip 200.1.1.67 module 3
#VSN VLAN: 756, IP-ADDR: 200.1.1.67
Module: 3
#VPath Packet Statistics      Ingress      Egress      Total
Total Seen                    0             0            0
Policy Redirects              0             0            0
No-Policy Passthru            0             0            0
Policy-Permits Rcvd           0             0            0
Policy-Denies Rcvd            0             0            0
Permit Hits                    0             0            0
Deny Hits                     0             0            0
Decapsulated                  0             0            0
Fail-Open                     0             0            0
Badport Err                   0             0            0
VSN Config Err                0             0            0
ARP Resolve Err               0             0            0
Encap Err                     0             0            0
All-Drops                     0             0            0
Total Rcvd From VSN           0
Non-Cisco Encap Rcvd          0
VNS-Port Drops                0
Policy-Action Err             0
Decap Err                     0
L2-Frag Sent                  0
L2-Frag Rcvd                  0
L2-Frag Coalesced             0

#VPath Flow Statistics
Active Flows                   0 Active Connections        0
Forward Flow Create            0 Forward Flow Destroy      0
Reverse Flow Create            0 Reverse Flow Destroy      0
Flow ID Alloc                  0 Flow ID Free               0
Connection ID Alloc           0 Connection ID Free        0
L2 Flow Create                 0 L2 Flow Destroy           0
L3 Flow Create                 0 L3 Flow Destroy           0
L4 TCP Flow Create             0 L4 TCP Flow Destroy       0
L4 UDP Flow Create             0 L4 UDP Flow Destroy       0
L4 Oth Flow Create             0 L4 Oth Flow Destroy       0
Embryonic Flow Create          0 Embryonic Flow Bloom      0
L2 Flow Timeout                0 L2 Flow Offload           0
L3 Flow Timeout                0 L3 Flow Offload           0
L4 TCP Flow Timeout            0 L4 TCP Flow Offload       0
L4 UDP Flow Timeout            0 L4 UDP Flow Offload       0
L4 Oth Flow Timeout            0 L4 Oth Flow Offload       0
Flow Lookup Hit                0 Flow Lookup Miss          0
Flow Dual Lookup               0 L4 TCP Tuple-reuse        0
Flow Classify Err              0 Flow ID Alloc Err         0
Conn ID Alloc Err              0 Hash Alloc Err           0
Flow Exist                     0 Flow Entry Exhaust        0
Flow Removal Err               0 Bad Flow ID Receive       0

```

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```

Flow Entry Miss          0 Flow Full Match Err      0
Bad Action Receive      0 Invalid Flow Pair        0
Invalid Connection      0
Hash Alloc              0 Hash Free                0
InvalFID Lookup        0 InvalFID Lookup Err     0
Deferred Delete        0
vsm#

```

## Cisco VSG show Commands

The attribute manager maintains a set of tables and does a lookup that is based on the fields in the packet. There are three main tables: DV port table, VM table, and VNSP table. Use the **show vsg dvport** command to display runtime information for the DV port table. For the other two tables, use the **show vsg vm** and **show vsg vnsp** commands.

Hash tables are maintained based on IP addresses (IP address to DV port entry) and VNSP ID (VNSP ID to VNSP entry). An IP address is used when fetching attributes (custom and VM attributes) that are based on the source or destination IP address. It is also used to determine which policy set to evaluate for a given traffic type. The VNSP ID is used (valid VNSP ID in the packet header) to determine which policy set to evaluate. Custom attributes can also be fetched.

This section includes the following topics:

- [show vnm-pa status, page 2-20](#)
- [show service-path statistics, page 2-21](#)
- [clear service-path statistics, page 2-22](#)
- [show service-path connection, page 2-22](#)
- [clear service-path connection, page 2-23](#)
- [show vsg ip-binding, page 2-23](#)
- [show vsg dvport {dvport\\_id}, page 2-24](#)
- [show vsg vm name {name}, page 2-26](#)
- [show vsg security-profile \[{vnsp-name} | detail | table\], page 2-28](#)
- [show vsg zone, page 2-29](#)
- [clear policy-engine, page 2-30](#)
- [show ac-driver statistics, page 2-30](#)
- [clear ac-driver statistics, page 2-30](#)
- [show system internal ac ipc-stats fe \[process-name\], page 2-30](#)
- [clear system internal ac ipc-stats fe \[process-name\], page 2-31](#)
- [show inspect ftp statistics, page 2-31](#)
- [clear inspect ftp statistics, page 2-32](#)

### show vnm-pa status

Enter the **show vnm-pa status** command to display the VNMC policy agent status.

This example shows how to display the VNMC policy agent status:

```

vsg# show vnm-pa status
VNMC Policy-Agent status is - Installed Successfully. Version 1.0(1j)-vsg

```

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vsg#

## show service-path statistics

You can display the following statistics that pertain to one vPath by using the **show service-path statistics** command:

- The packets seen by the service path from the vPath.
- Flows created by the service path due to these packets.
- Packets dropped in the service path due to various errors.



### Note

If no module is given, the command displays the aggregate statistics of all the modules in the given SVS domain.

This command provides the following keyword filters:

- **svs-domain-id** *domain-id*—Displays only the Cisco VSG connections that are associated to the svs-domain specified in the *domain-id*.
- **module** *module-num*—Displays only the Cisco VSG connections that are associated to the svs-domain and VEM module specified in the *domain-id* and the *module-num*. Use this keyword filter only with the **svs-domain-id** filter.

This example shows how to display the statistics using the **svs-domain-id** keyword filter:

```
vsg# show service-path statistics svs-domain-id 118 module 5
Input Packet                161359233  Output Packet                161359220
Vpath Ingress Packet       7608059   Vpath Egress Packet         153751174
Vpath Frag                  0         VSN Offload Packet          0
ARP Packet                  0         Unknown L2 Packet           0
802.3 Packet                0         Vpath Jumbo Frame           0
IPV4 Packet                 161359233  IPV4 options Packet         0
IPV4 Frag                   0         Unknown L3Proto Packet      0
ICMP Packet                 66        IGMP Packet                  0
TCP Packet                  161359095  UDP Packet                   72
Policy Lookup Packet        160669149  Inspect FTP Packet          0
Inspect RSH Packet          0         Inspect TFTP Packet         0
Policy Lookup Fail          0         Policy Lookup Drop          0
Inspect FTP Fail            0         Inspect FTP Drop            0
Inspect RSH Fail            0         Inspect RSH Drop            0
Inspect TFTP Fail           0         Inspect TFTP Drop           0
Malformed Packet           0         Output Fail                  0
Active Flows                 473278    Active Connections           379521
Forward Flow Create          8690219   Forward Flow Destroy         3008524
Reverse Flow Create          3362016   Reverse Flow Destroy         8570433
Flow ID Alloc                12052235  Flow ID Free                 11578957
Connection ID Alloc          3362016   Connection ID Free           2982495
L2 Flow Create               0         L2 Flow Destroy              0
L3 Flow Create               66        L3 Flow Destroy              66
L4 TCP Flow Create           12052097  L4 TCP Flow Destroy          11578819
L4 UDP Flow Create           72        L4 UDP Flow Destroy          72
L4 Other Flow Create         0         L4 Other Flow Destroy        0
Embryonic Flow Create        0         Embryonic Flow Bloom         0
L2 Flow Timeout              0         L2 Flow Offload              0
L3 Flow Timeout              99        L3 Flow Offload              66
L4 TCP Flow Timeout          25158984  L4 TCP Flow Offload          160668998
L4 UDP Flow Timeout          108       L4 UDP Flow Offload          72
L4 Other Flow Timeout        0         L4 Other Flow Offload        0
Flow Lookup Hit              157997217  Flow Lookup Miss             12052235
```

## Send document comments to [vsg-docfeedback@cisco.com](mailto:vsg-docfeedback@cisco.com).

```

Flow Dual Lookup          138932556 L4 TCP Tuple-reuse          151978861
Flow Classify Err        0 Flow ID Alloc Err          0
Conn ID Alloc Err        0 Hash Alloc Err             0
Flow Exist               0 Flow Entry Exhaust         0
Flow Removal Err         0 Bad Flow ID receive        0
Flow Entry Missing       0 Flow Full Match Err        0
Bad Action Received      0 Invalid Flow Pair          0
Invalid Connection       0
vsg#

```

### clear service-path statistics

You can clear the service path statistics globally by using the **clear service-path statistics** command when no option is given. When the SVS domain ID and the module are provided, entering the command clears the statistics of the specified module.

This command provides the following keyword filters:

- **svs-domain-id** *domain-id*—Displays only the Cisco VSG connections that are associated to the svcs-domain specified in the *domain-id*.
- **module** *module-num*—Displays only the Cisco VSG connections that are associated to the svcs-domain and VEM module specified in the *domain-id* and the *module-num*. Use this only with the **svs-domain-id** filter.

This example shows how to clear the service path statistics:

```

vsg# clear service-path statistics
vsg#

```

### show service-path connection

You can display the connections (flow-table) maintained in the Cisco VSG by using the **show service-path connection** command. These connections are provided per VEM module per SVS domain.

This command provides the following keyword filters:

- **svs-domain-id** *domain-id*—Displays only the Cisco VSG connections that are associated to the svcs-domain specified in the *domain-id*.
- **module** *module-num*—Displays only the Cisco VSG connections that are associated to the svcs-domain and VEM module specified in the *domain-id* and the *module-num*. Use this keyword filter only with the **svs-domain-id** keyword filter.

This example shows the output for the command:

```

vsg# show service-path connection
Flags:
P - policy at src                p - policy at dst
O - conn offloaded to ser-path at src  o - conn offloaded to ser-path at dst
S - seen syn from src            s - seen syn from dst
A - seen ack for syn/fin from src    a - seen ack for syn/fin from dst
F - seen fin from src            f - seen fin from dst
R - seen rst from src            r - seen rst from dst
E - tcp conn established (SasA done)  T - tcp conn torn down (FafA done)

#SVS Domain 2007  Module  3
Proto SrcIP[:Port]          DstIP[:Port]          VLAN Action  Flags
icmp   10.100.201.176          10.100.201.185        160  permit  PpOo

#SVS Domain 2007  Module  4
Proto SrcIP[:Port]          DstIP[:Port]          VLAN Action  Flags
icmp   10.100.201.176          10.100.201.185        160  permit  PpOo

```

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## clear service-path connection

You can clear the connections (flow-table) maintained in the Cisco VSG by using the **clear service-path connection** command.

This example shows how to clear the flow-table connection output:

```
vsg# clear service-path connection
vsg#
```

## show vsg ip-binding

You can display a list of VM IP addresses and associated Virtual Network Service Profiles (VNSPs) with the associated policy set by using the **show vsg ip-binding** command. This information helps you to troubleshoot data path issues. The attribute manager determines which policy set to evaluate for a given packet (source IP address is the key for the lookup).

When debugging issues (for example, the wrong policy set or no policy), use this command to ensure that IP bindings (IP address to VNSP association) are correct. This association can also affect VNSP and VM attributes fetched by the attribute manager.

This example shows how to display the list of VM IP addresses and associated VNSPs:

```
vsn# show vsg-ip-binding
-----
VM IP address      Security-Profile Name      Policy Name
-----
100.1.246.6        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.5        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.4        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.3        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.2        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.1        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.10       sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.9        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.8        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
100.1.246.7        sec-profile-one@root/Tenant-one  policysset-one@root/Tenant-one
vsn#
```

You can use the **show vsg ip-binding vm** command to show all IP VM bindings.

This example shows how to display all IP VM bindings:

```
vsg# show vsg ip-binding vm
-----
VM IP address      VM Name      Port Profile Name
-----
10.100.201.185    linux-206-185  profile_test2
10.100.201.176    linux-206-176  profile_test2
```

You can use the **show vsg ip-binding vm detail** command to see more details about the IP VM bindings.

This example shows how to display the details of the IP VM bindings:

```
vsg# show vsg ip-binding vm detail
VM IP address      : 10.100.201.185
VM Name           : linux-206-185
VM uuid           : 421cefd6-29d1-4c8e-e563-2c3a4d58cd31
DV Port           : 1209::1c7b1c50-f1b7-9a71-259d-820f4713a4b1
Port Profile      : profile_test2
```

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```

VM IP address      : 10.100.201.176
VM Name           : linux-206-176
VM uuid          : 421c44f9-91e0-b063-4fb0-ff3f4d736c3b
DV Port          : 1208::1c7b1c50-f1b7-9a71-259d-820f4713a4b1
Port Profile     : profile_test2

```

### show vsg dvport {*dvport\_id*}

You can display relevant information for a DV port by using the **show vsg dvport** command. A DV port is a logical representation of a vNIC. By default, this displays information for all DV ports. Specify a particular DV port with the *dvport id* parameter.

This example shows how to display the DV port information:

```

vsg# show vsg dvport

DV Port           : 576::bcaa1c50-8747-8d08-fe7e-a9aa8924bf8e
Security Profile : spcustom
VM uuid          : 421c5ae4-51c3-5dd9-60fa-a50cb04ed0ea
Port Profile     : vm_data
IP Addresses     :
                  100.1.1.20
                  100.1.1.10

```

### show vsg vm

You can display information for all VMs on a VSG by using the **show vsg vm** command. In addition to the existing VM information, zone names are displayed in the command output. DV port information is not display to limit verbosity.

This example shows how to display all VMs on a VSG:

```

firewall-1# show vsg vm
VM uuid          : 42031129-65af-976b-5c5c-509966ffdede
VM attributes :
  name           : gentoo-246-2
  vapp-name      :
  os-fullname    : other 2.6x linux (64-bit)
  tools-status   : not-installed
  host-name      : 10.193.77.246
  cluster-name   :

VM uuid          : 4203326d-91d1-2fba-838a-3a551e5bcce1
VM attributes :
  name           : gentoo-246-8
  vapp-name      :
  os-fullname    : other 2.6x linux (64-bit)
  tools-status   : not-installed
  host-name      : 10.193.77.246
  cluster-name   :

VM uuid          : 420392dd-1146-f8eb-f0cb-363fb999a02d
VM attributes :
  name           : gentoo-246-10
  vapp-name      :
  os-fullname    : other 2.6x linux (64-bit)
  tools-status   : not-installed
  host-name      : 10.193.77.246
  cluster-name   :

VM uuid          : 42036819-f763-342a-8833-c24f9c55261f
VM attributes :

```



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```
name : gentoo-246-4
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 420374a0-a81d-fe72-1dd8-f7b4ece9194c
VM attributes :
name : gentoo-246-5
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 4203625c-d9d0-1dde-228e-a2aaa97ad7c2
VM attributes :
name : gentoo-246-1
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 42034686-db79-478a-920f-2dd2cce07151
VM attributes :
name : gentoo-246-7
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 4203ac4a-a7f6-3320-436d-29a49c1c73e8
VM attributes :
name : gentoo-246-9
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 42033483-18b1-a89f-2f24-ae142365f061
VM attributes :
name : gentoo-246-6
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 420360fb-cfcc-21f0-b3dd-f3650ff37a6d
VM attributes :
name : gentoo-246-3
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :
firewall-1#
```

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## **show vsg vm name {name}**

You can display information of one or more VMs by entering the **show vsg vm name** command. The VM name should be specified as a parameter and can be the name or the first few characters of the name. The information for the VM includes the details of each DV port used by the VM and zones that the VM belongs to.

The following example shows how to display information for the VM with a name that starts with linux-204.

```
firewall-1# show vsg vm name linux-204
VM uuid      : 421ceac2-3b3f-67f9-b71c-3755d2c8cabe
VM attributes :
  cluster-name      : cluster23
  host-name         : 10.193.77.204
  name              : linux-204-184
  os-fullname       : red hat enterprise linux 4 (32-bit)
  os-hostname       :
  res-pool          : resources
  tools-status      : not-installed
  vapp-name         :
DV Port(s) :
  DV Port          : 272::1c7b1c50-f1b7-9a71-259d-820f4713a4b1
  Security Profile : SP-DC1@root/Cisco-Tenant1
  Port Profile      : profile_App2
  IP Addresses     :
    20.100.201.184
  DV Port          : 240::1c7b1c50-f1b7-9a71-259d-820f4713a4b1
  Security Profile : SP-App1@root/Cisco-Tenant1
  Port Profile      : profile_App1
  IP Addresses     :
    10.100.201.184
Zone(s) :
  zone_linux_204@root/Cisco-Tenant1

firewall-1#
```

## **show vsg vm uuid {vm\_uuid}**

You can display relevant information for a particular VM by using the **show vsg vmuuid** command. The attribute manager looks up the VM attributes for the VM based on this association before doing a policy evaluation.

When debugging issues, such as when the wrong VM attributes are fetched, check the output of this command as well as the IP address to DV port mapping.

This example shows how to display the relevant information for a VM:

```
firewall-1# show vsg vm uuid
VM uuid      : 42031129-65af-976b-5c5c-509966ffdede
VM attributes :
  name            : gentoo-246-2
  vapp-name       :
  os-fullname     : other 2.6x linux (64-bit)
  tools-status    : not-installed
  host-name       : 10.193.77.246
  cluster-name    :
VM uuid      : 4203326d-91d1-2fba-838a-3a551e5bccel
VM attributes :
```

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```
name : gentoo-246-8
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 420392dd-1146-f8eb-f0cb-363fb999a02d
VM attributes :
name : gentoo-246-10
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 42036819-f763-342a-8833-c24f9c55261f
VM attributes :
name : gentoo-246-4
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 420374a0-a81d-fe72-1dd8-f7b4ece9194c
VM attributes :
name : gentoo-246-5
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 4203625c-d9d0-1dde-228e-a2aaa97ad7c2
VM attributes :
name : gentoo-246-1
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 42034686-db79-478a-920f-2dd2cce07151
VM attributes :
name : gentoo-246-7
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 4203ac4a-a7f6-3320-436d-29a49c1c73e8
VM attributes :
name : gentoo-246-9
vapp-name :
os-fullname : other 2.6x linux (64-bit)
tools-status : not-installed
host-name : 10.193.77.246
cluster-name :

VM uuid : 42033483-18b1-a89f-2f24-ae142365f061
VM attributes :
name : gentoo-246-6
```

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```

vapp-name          :
os-fullname        : other 2.6x linux (64-bit)
tools-status       : not-installed
host-name          : 10.193.77.246
cluster-name       :

VM uuid           : 420360fb-cfcc-21f0-b3dd-f3650ff37a6d
VM attributes :
  name            : gentoo-246-3
  vapp-name       :
  os-fullname     : other 2.6x linux (64-bit)
  tools-status    : not-installed
  host-name       : 10.193.77.246
  cluster-name    :
firewall-1#

```

**show vsg security-profile *[[vnsn-name]]* detail | table**

You can display information for a specific VNISP or all VNISPs by using the **show vsg security-profile** command. The attribute manager looks up custom attributes for a particular VNISP that is based on this association before doing a policy evaluation. By default, information is displayed for all VNISPs. You can specify a particular VNISP by using the *vnsn-name* argument.

When debugging issues such as the wrong policy set are evaluated, check if the correct policy set is associated with the VNISP. If custom attribute values are not correct, this command displays some details.

The detail version of this command includes names of the VMs that are using the security-profile in addition to their security-profile information. A VNISP name can be specified to get details of a specific security-profile.

The following example shows how to display detailed information about a specific Cisco VSG security profile with the name *sp\_deny@root*:

```

firewall-1# show vsg security-profile sp_deny@root detail
VNISP           : sp_deny@root
VNISP id        : 5
Policy Name     : ps_deny@root
Policy id       : 3
Custom attributes :
  Name          : vnsporg
  Value         : root

  Name          : profile1
  Value         : eng

Virtual Machines:
  sg-pg-vm206
  sg-pg-redhat

```

```
firewall-1#
```

You can display the associated VNISP ID and policy for all VNISPs by using the **show vsg security-profile** command. The attribute manager uses this association when looking up a VNISP and associated policy from the packet that reaches the data0 interface of the Cisco VSG. When VPath redirects the packets to the Cisco VSG, the VNISP ID is added in the packet header.

This example shows how to display brief tabular information for the Cisco VSG security profile:

```

firewall-tenant-aa# show vsg security-profile table
-----
Security-Profile Name      VNISP ID      Policy Name
-----
default@root              1             default@root

```

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```
sec-profile-AB@root/Tenant-A/Data-Center-B 30
sec-profile-AA@root/Tenant-A/Data-Center-A 31
policyset-AA@root/Tenant-A/Data-Center-A

firewall-tenant-aa#
```

### show vsg zone

You can display VM to zone mappings on a Cisco VSG by using the **show vsg zone** command.

This example shows how to display the VM to zone mappings on a Cisco VSG:

```
vsg# show vsg zone
Zone : zone2@root/test34
Virtual Machines :
linux-206-185
-----
Zone : zone1@root/test34
Virtual Machines :
linux-206-176
-----
```

### show policy-engine stats

You can display statistics on the policy engine by using the **show policy-engine stats** command.

This example shows how to display the statistics for the Cisco VSG policy engine:

```
firewall-1# show policy-engine stats

Policy Match Stats:

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

policyset-one@root/Tenant-one : 844935064
  policy-one/rule-z1@root/Tenant-one : 808288619 (Permit)
  policy-one/rule-one@root/Tenant-one : 366464445 (Permit)
  NOT_APPLICABLE       :          0 (Drop)

firewall-1#
```

This example shows how to use the help (?) feature of the command to display command options:

```
firewall-1# show policy-engine ?
WORD  Enter policy-name to show its stats
stats Show the Stats

firewall-1# show policy-engine policyset-one@root/Tenant-one stats

Policy Match Stats:

policyset-one@root/Tenant-one : 844935064
  policy-one/rule-z1@root/Tenant-one : 808288619 (Permit)
  policy-one/rule-one@root/Tenant-one : 366464445 (Permit)
  NOT_APPLICABLE       :          0 (Drop)

firewall-1#
```

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## clear policy-engine

You can clear the policy-engine statistics by using the **clear policy-engine** command.

This example shows how to see the options for clearing the policy-engine statistics:

```
firewall-1# clear policy-engine ?
WORD  Enter policy-name to clear its stats
stats Clear the Stats
```

When the **stats** argument is used, the statistics are cleared and the only response for a successful action is a return to the prompt. This example shows how to clear the policy engine statistics:

```
firewall-1# clear policy-engine stats
firewall-1#
```

## show ac-driver statistics

You can display statistics that are collected in the AC driver module by using the **show ac-driver statistics** command. These statistics indicate how many packets are received, how many of those received packets are from vPath, how many packets are passed up to the service path, how many packets are passed as a response to the vPath and any error statistics, and so on.

This example shows how to display the AC driver module statistics:

```
firewall-1# show ac-driver statistics
#Packet Statistics:
Rcvd Total                852079858  Buffers in Use                3190
Rcvd VPath Pkts          848148272  Sent to VPath                 846621771
Sent to Service-Path     848148272  Sent to Control-Path         3931586
All Drops                 0          Invalid LLC                    0
Invalid OUI               0          Invalid VNS Hdr                0
Invalid VNS PDU           1          Service-Path not Inited       0
Service-Path Down        0          Rcvd Bad Descriptor           0
Send to Service-Path Err  0          Packet Offset Err              0
Send Bad Descriptor      0          Send NIC Err                   0
firewall-1#
```

## clear ac-driver statistics

You can clear the statistics that are collected in the AC driver module by using the **clear ac-driver statistics** command.

This example shows how to clear the statistics collected in the AC driver module:

```
vsg# clear ac-driver statistics
Cleared statistics successfully.
vsg#
```

## show system internal ac ipc-stats fe [*process-name*]

You can display internal statistics of the following processes by using the **show system internal ac ipc-stats fe** command:

- attribute-manager
- inspection-ftp
- inspection-rsh
- inspection-tftp

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- service-path

This example shows how to display the statistics for the inspection-ftp process:

```
firewall-1# show system internal ac ipc-stats fe inspection-ftp
=====
Instance:                1
IPC Type:                 MTS(SAP 1326)
  Async requests sent:   0
  Async responses received: 0
  Async requests received: 764364
  Async responses sent: 764364
  Sendto requests sent: 32485
  Sendto requests received: 32485
  Async send errors:    0
  Async receive errors: 0
  Async response errors: 0
  Sendto send errors:  0
  Sendto receive errors: 0
  Receive errors:      0
  Token errors :       0
  Destination not found errors: 0
  Sendto response errors: 0
  Timer Errors :       0
  Timouts :            0
  Recv Queue Len:     11
  Queue Length High:  0
  Reciever Busy Errors: 0
=====

firewall-1#
```

### clear system internal ac ipc-stats fe [*process-name*]

You can clear the internal statistics for the following processes by using the **clear system internal ac ipc-stats fe** command:

- attribute-manager
- inspection-ftp
- inspection-rsh
- inspection-tftp
- service-path

This example shows how to clear the statistics for the inspection-ftp process:

```
firewall-1# clear system internal ac ipc-stats fe inspection-ftp
firewall-1#
```

### show inspect ftp statistics

You can display the following inspect FTP statistics pertaining to one vPath by using the **show inspect ftp statistics** command:

- The packets seen by the inspect FTP path from the vPath.
- Flows created by the inspect FTP path due to these packets.
- Packets dropped in the inspect FTP path due to various errors.

This example shows how to display the FTP statistics:

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```

firewall-1# show inspect ftp statistics
Input packets          764364
Dropped packets       0
Reset-drop packets    0
New connections       32485
Deleted connections   31064
IPC errors            0
IPC allocation errors 0

SVS Domain 131 Module 4
Input packets          764364
Dropped packets       0
Reset-drop packets    0
New connections       32485
Deleted connections   31064

firewall-1# show inspect ftp statistics svs-domain-id 131 module 4
Input packets          764364
Dropped packets       0
Reset-drop packets    0
New connections       32485
Deleted connections   31064
Port zero drops       0
Invalid port drops    0
No port drops         0
Port command long drops 0
Rx port mismatch drops 0
Command not port command drops 0
Embryonic connections 32485
Embryonic connection failures 0
Memory allocations    64970
Memory de-allocations 63549
Memory allocation failures 0
Command in reply mode drops 0
Invalid command drops 0
Un-supported command drops 0
Command not terminated drops 0
Unexpected reply drops 0
Command too short drops 0
Reply code invalid drops 0
Reply length negative drops 0
Reply unexpected drops 0
Rx command in command mode drops 0

firewall-1#

```

## clear inspect ftp statistics

Use the **clear inspect ftp statistics** command to clear the inspect FTP statistics globally when no option is given. When the SVS domain ID and the module are provided, the command clears the statistics of the specified module.

This command provides the following keyword filters:

- **svs-domain-id** *domain-id*—Displays only the Cisco VSG connections that are associated to the svs-domain specified in the *domain-id*.
- **module** *module-num*—Displays only the Cisco VSG connections that are associated to the SVS domain and VEM module specified in the *domain-id* and the *module-num*. Use this keyword filter only with the **svs-domain-id** filter.

This example shows how to clear the inspect FTP statistics:



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```
firewall-1# clear inspect ftp statistics
firewall-1#
firewall-1# clear inspect ftp statistics svcs-domain-id 131 module 4
firewall-1#
```

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## CHAPTER 3

# Troubleshooting Installation Issues

---

This chapter describes how to troubleshoot installation issues for the Cisco Virtual Security Gateway (VSG).

This chapter includes the following sections:

- [Verifying the VMware License Version, page 3-1](#)
- [Verifying Port Group Assignments for a Cisco VSG VM Virtual Interface, page 3-2](#)
- [OVA Installation Behavior, page 3-3](#)

## Verifying the VMware License Version

Before beginning to troubleshoot any installation issues, use this procedure to verify that your ESX server has the VMware Enterprise Plus license that includes the Distributed Virtual Switch feature.

### BEFORE YOU BEGIN

Before beginning, you must know or do the following:

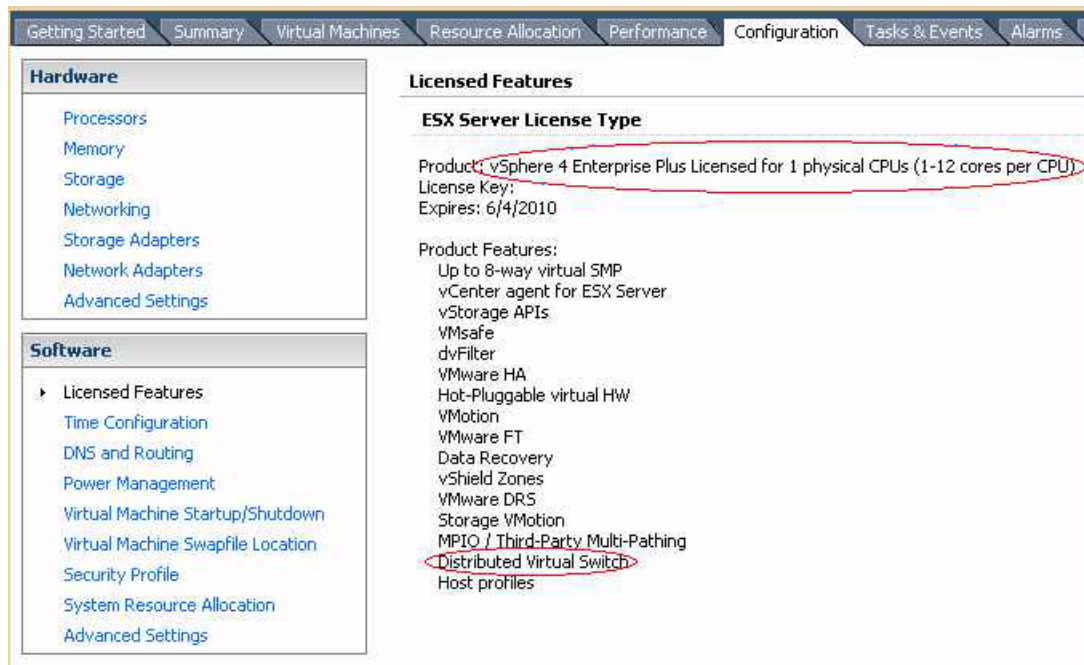
- Log in to the vSphere client where the Cisco VSG will be installed on the ESX server.
- Log in to the Cisco VSG CLI in EXEC mode.
- If your vSphere ESX server does not have the Enterprise Plus license, you must upgrade your license.

### DETAILED STEPS

- 
- Step 1** From the vSphere client, choose the host whose Enterprise Plus license that you want to check.
  - Step 2** Click the **Configuration** tab and choose **Licensed Features**.  
The Enterprise Plus licensed features appear. See [Figure 3-1](#).

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**Figure 3-1 Verification of License**



**Step 3** Verify that the following are included in the Licensed Features:

- Enterprise Plus license
- Distributed Virtual Switch feature

**Step 4** Do one of the following:

- If the ESX server has an Enterprise Plus license, you do not have to do anything because the Cisco VSG is available to you.
- If the ESX server does not have an Enterprise Plus license, upgrade the VMware License to an Enterprise Plus license so that you can see the Cisco VSG.

## Verifying Port Group Assignments for a Cisco VSG VM Virtual Interface

Create the following port profiles on the VSM:

- Data interface port profile (VLAN is the data VLAN)
- HA interface port profile (VLAN is the HA VLAN)
- Management port profile (VLAN is the management VLAN)

Ensure that the port groups are assigned to the three virtual interfaces of the Cisco VSG VM in the following order:

1. Network adapter 1 for the data port group
2. Network adapter 2 for the management port group
3. Network adapter 3 for the HA port group

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The Cisco VSG VM network adapter 1, network adapter 2, and network adapter 3 are carrying the data VLAN, the HA VLAN, and the management VLAN respectively.

## OVA Installation Behavior

During OVA installation, the following error message might appear:

```
"The network card VirtualE1000 has dvPort backing, which is not supported. This could be because the host does not support vDS, or because the host is not using vDS."
```

To work around this error, ensure that all three network interfaces in the Cisco VSG port profile are set to the VM Network (port profile from vSwitch) during OVA installation.

Once the virtual machine is created, the port profile for the three interfaces should be changed according to the *Cisco Virtual Security Gateway, Release 4.2(1)VSG1(2)* and *Cisco Virtual Network Management Center, Release 1.2 Installation and Upgrade Guide*.

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## CHAPTER 4

# Troubleshooting Licensing Issues

---

This chapter describes how to troubleshoot issues that are related to firewall licensing on the Virtual Supervisor Module (VSM).

This chapter includes the following sections:

- [Information about Licensing, page 4-1](#)
- [Troubleshooting Unlicensed Cisco VSG Modules, page 4-2](#)
- [Troubleshooting License Installation Issues, page 4-3](#)
- [Determining Cisco VSG License Usage, page 4-4](#)
- [Viewing Installed License Information, page 4-4](#)
- [Troubleshooting the Removal of a License, page 4-5](#)

## Information about Licensing

The Cisco Virtual Security Gateway (VSG) license package name is NEXUS1000V\_VSG\_SERVICES\_PKG.

The licensing model for the Cisco VSG is based on the number of CPU sockets of the ESX servers attached as Virtual Ethernet Modules (VEMs) to the Virtual Supervisor Module (VSM).

A module is licensed or unlicensed according to the following definitions:

- **Firewalled module**—A VEM is considered to be firewalled if it can acquire licenses for all of its CPU sockets.
- **Nonfirewalled module**—A VEM is considered to be nonfirewalled if it cannot acquire licenses for any, or a subset of, its CPU sockets.

If a VEM is nonfirewalled, all the virtual Ethernet ports on the VEM that correspond to the virtual machines (VMs) are kept in pass-through mode, so that these virtual machines are not firewalled.

By default, the VSM contains 16 CPU socket licenses for Cisco VSGs. This license is valid only for the first 60 days after the deployment of VSM.

For additional information about licensing, see the *Cisco Virtual Security Gateway for Nexus 1000V Series Switch License Configuration Guide, Release 4.2(1)VSG1(2)*.

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## Troubleshooting Unlicensed Cisco VSG Modules

By default, both the VSM and the Cisco VSG have 16 CPU socket licenses that are valid for 60 days.

This section includes the following topics:

- [Checking the Number of Cisco VSG Licenses, page 4-2](#)
- [Identifying an Unlicensed Cisco VSG, page 4-2](#)

### Checking the Number of Cisco VSG Licenses

You can check the number of Cisco VSG licenses in use and see the list of modules that are firewalled by entering the **show license usage** command.

This example shows how to display the license usage for your Cisco VSG:

```
vem# show license usage NEXUS_VSG_SERVICES_PKG
-----
Feature Usage Info
-----
    Installed Licenses : 0
    Default Eval Licenses : 16
    Max Overdraft Licenses : 0
    Installed Licenses in Use : 0
    Overdraft Licenses in Use : 0
    Default Eval Lic in Use : 2
    Default Eval days left : 55
    Licenses Available : 14
    Shortest Expiry : 18 Apr 2011
-----
Application
-----
VEM 3 - Socket 1
VEM 3 - Socket 2
-----
vem#
```

As shown, the output module 3 is firewalled and two Cisco VSG licenses have been assigned.

### Identifying an Unlicensed Cisco VSG

You can identify an unlicensed Cisco VSG by entering the **show vsn detail** command on the VSM.

This example shows how to display the details of the Cisco VSG:

```
vsm# show vsn detail
#VSN VLAN: 754, IP-ADDR: 200.1.1.10
  MODULE      VSN-MAC-ADDR  FAIL-MODE  VSN-STATE
    3  00:50:56:83:00:01      Close  No-License

#VSN Ports, Port-Profile, Org and Security-Profile Association:
#VSN VLAN: 754, IP-ADDR: 200.1.1.10
  Port-Profile: profile-traffic, Security-Profile: sec-profile-perf, Org:
root/Tenant-perf-1.1
  Module  Vethernet
    3  9
vsm#
```



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As shown in the command output, the status field for VEM 3 does not have a Cisco VSG license.



**Note**

The server administrator has no information on whether the VEMs are Cisco VSG licensed or unlicensed. Therefore, the Cisco VSG license state of the VEMs must be communicated to the server administrators so that they are aware that the vEthernet interfaces on unlicensed Cisco VSGs cannot firewall traffic.

## Troubleshooting License Installation Issues

This section describes how to troubleshoot Cisco VSG license installation issues.



**Note**

This section assumes that you have a valid Cisco VSG license file.

For additional information about licensing, see the *Cisco Virtual Security Gateway for Nexus 1000V Series Switch License Configuration Guide, Release 4.2(1)VSG1(2)*.

This section includes the following topics:

- [License Troubleshooting Checklist, page 4-3](#)
- [Contents of the License File, page 4-3](#)
- [Removing an Evaluation License File, page 4-4](#)

## License Troubleshooting Checklist

Before you start the troubleshooting process, follow these requirements:

- Make sure that the name of the license file is less than 32 characters.
- Make sure that no other license file with the same name is installed on the VSM. If there is a license file with the same name, rename your new license file to something else.
- Do not edit the contents of the license file. If you have already done so, contact your Cisco Technical Assistance Center (TAC) Team.
- Make sure that the host ID in the license file is the same as the host ID on the switch.

## Contents of the License File

The Cisco VSG license file looks as follows:

```
Linux(debug) # cat vsg.lic
SERVER this_host ANY
VENDOR cisco
INCREMENT NEXUS_VSG_SERVICES_PKG cisco 1.0 3-mar-2011 16 \
    HOSTID=VDH=1218291845128904258 \
    NOTICE="<LicFileID>20101203153943867</LicFileID><LicLineID>1</LicLineID> \
    <PAK></PAK>" SIGN=00310BEEE50A
Linux(debug) #
```

You can identify the host ID of the VSM by entering the **show license host-id** command.

This example shows the results of the command:

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```
vsm# show license host-id
License hostid: VDH=1218291845128904258
vsm#
```

Notice that in both instances of the command output the host-id matches and is equal to VDH=1218291845128904258.



**Note**

Both NEXUS1000V\_LAN\_SERVICES and NEXUS\_VSG\_SERVICES use the same host ID (host ID of VSM). There is no such host ID on the VSG.

## Removing an Evaluation License File

If an evaluation license file is already installed on the VSM, you must remove it from the VSM before installing a permanent license file. For more information, see the *Cisco Virtual Security Gateway for Nexus 1000V Series Switch License Configuration Guide, Release 4.2(1)VSG1(2)*.

## Determining Cisco VSG License Usage

You can view the Cisco VSG license state of the VEMs on your VSM and the number of CPU sockets per VEM by entering the **module vem 3 execute vemcmd show vsn config** command.

This example shows how to display the internal license information:

```
vsm# module vem 3 execute vemcmd show vsn config
VNS Enabled | VNS Licenses Available 2
VSN#  VLAN          IP          STATIC-MAC          LEARNED-MAC  LTLs
  1    754          200.1.1.10  00:00:00:00:00:00  00:50:56:83:00:01  0
vsm#
```

In this command output, VEM 3 is licensed. It has two CPU sockets and it currently uses two firewall licenses.

## Viewing Installed License Information

You can view the installed license count by entering the **show license usage** command.

This example shows how to display the installed licenses count:

```
vsm# show license usage
Feature                               Ins  Lic  Status Expiry Date Comments
                                   Count
-----
NEXUS_VSG_SERVICES_PKG                No   16   In use 18 Jan 2012 -
NEXUS1000V_LAN_SERVICES_PKG           No   16   In use 18 Jan 2012 -
vsm#
```

The output shows that 16 licenses (LAN and Cisco VSG) have been installed and they will expire on January 18, 2012.

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## Troubleshooting the Removal of a License

You cannot clear a license file that is being used. To clear a license file, make sure that all modules check in the Cisco VSG license back to the license pool. You can check in the licenses by entering the **vsg license transfer src-vem [module\_#] license\_pool** command.

After doing the license transfer, clear the license file using the **clear license** command.

This example shows how to clear the license file:

```
vsm# clear license vsg.lic
vsm# clearing license . . . . done
vsm#
```

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## CHAPTER 5

# Troubleshooting Module Issues

---

This chapter describes how to troubleshoot various issues that could occur while the Cisco VSG is communicating with the Virtual Supervisor Module (VSM), Virtual Ethernet Module (VEM), Cisco Virtual Network Management Center (VNMC), or the vCenter Server.

This chapter includes the following sections:

- [Troubleshooting Cisco VSG and VSM Interactions, page 5-1](#)
- [Troubleshooting Cisco VSG and VEM Interactions, page 5-2](#)
- [Troubleshooting VSM and Cisco VNMC Interactions, page 5-8](#)
- [Troubleshooting Cisco VSG and Cisco VNMC Interactions, page 5-8](#)
- [Troubleshooting Cisco VNMC and vCenter Server Interactions, page 5-9](#)

## Troubleshooting Cisco VSG and VSM Interactions

This section describes how to troubleshoot issues with the Cisco VSG and VSM interactions.

The port profile used to bring up the data interface of the Cisco VSG should not have any vn service or org configured.

This example shows how to use a port profile to bring up the Cisco VSG data interface:

```
vsm# show port-profile name vsg-data
port-profile vsg-data
  type: Vethernet
  description:
  status: enabled
  max-ports: 32
  inherit:
  config attributes:
    switchport mode access
    switchport access vlan 754
    no shutdown
  evaluated config attributes:
    switchport mode access
    switchport access vlan 754
    no shutdown
  assigned interfaces:
    Vethernet4
    Vethernet6
  port-group: vsg-data
  system vlans: none
  capability l3control: no
```

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```
capability iscsi-multipath: no
port-profile role: none
port-binding: static
vsm#
```

Make sure that you add the Cisco VSG service VLAN and HA VLAN as part of the allowed VLAN under the uplink port profile. Without adding this information into the allowed VLAN, Cisco VSGs may not pair. If you have a Cisco VSG on one VEM and the VMs to be firewalled are on another VEM, you must make sure that the Cisco VSG service VLAN is added as the allowed VLAN under the uplink port profile.

The example shows that VLAN 753 and 754 are added as part of the trunk. The VLAN 751 is used for control (VSM), the VLAN 752 for packet, the VLAN 754 for the Cisco VSG service, and the VLAN 753 for the Cisco VSG high availability.

```
vsm# show port-profile name perf-uplink
port-profile perf-uplink
type: Ethernet
description:
status: enabled
max-ports: 32
inherit:
config attributes:
  switchport mode trunk
  switchport trunk allowed vlan 751-754
  no shutdown
evaluated config attributes:
  switchport mode trunk
  switchport trunk allowed vlan 751-754
  no shutdown
assigned interfaces:
  Ethernet3/4
  Ethernet4/4
port-group: perf-uplink
system vlans: 751-752
capability l3control: no
capability iscsi-multipath: no
port-profile role: none
port-binding: static
vsm#
```

For the port profiles that are used to protect the VMs, make sure that you provide the correct vn service IP (the exact data 0 IP address of the Cisco VSG), and the service VLAN and the security profile name. Make sure under the org that you have configured the tenant name as root/Tenant-cisco.

## **Troubleshooting Cisco VSG and VEM Interactions**

This section describes how to troubleshoot issues with Cisco VSG and VEM interactions.

This section includes the following topics:

- [Policies Configured on the Cisco VSG but Not Effective, page 5-3](#)
- [Traffic Fails to Reach Destination with a Permit Policy Configured on the Cisco VSG, page 5-3](#)
- [Security Posture Not Maintained After the vMotion of the VM to the new ESX Host, page 5-5](#)
- [Policy Decision Inconsistent with the Port Profile Changes, page 5-6](#)
- [Using vPath Ping to Determine Connectivity, page 5-6](#)

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## Policies Configured on the Cisco VSG but Not Effective

Sometimes, when the policies are configured on the Cisco VSG and the data traffic is sent from the VMs, traffic flows through the Cisco Nexus 1000V switch as if the firewall service is not enabled on the port.

### Possible reasons:

- VMs are not bound to the proper port profiles.
- The license is not available or is not installed/configured on the module.

### Verifications:

- Check if the VMs to be protected are bound to proper port profiles. The port profiles are expected to have the org/vn-service identified.
- On the Cisco VSG, enter the **show vsg ip-binding** command to see if the VM IP to service profile binding is present.
- On the VEM, enter the **vemcmd show vsn binding** command to check if the VM is protected by the firewall.
- To get the lower threshold limit (LTL) of the VM on the VEM, enter the **vemcmd show port** command as follows:

```
# vemcmd show port | grep w2k-client_110.eth2 <--- VM name
   50      Veth5      UP      UP      FWD      0      w2k-client_110.eth2
#
```

Verify if the LTL is found as follows:

```
# vemcmd show vsn binding
VNS Enabled | VNS Licenses Available 1 <--- should be nonzero
LTL  VSN  VLAN      IP      STATIC-MAC      LEARNED-MAC
50   1    501      10.1.1.61  00:00:00:00:00:00  00:50:56:9c:3c:c5
The Learned Mac should not be 00:00:00:00:00:00. It should be a valid mac.
#
```

The VNS Licenses Available message should display a nonzero value in the output.



### Note

All **vemcmd** commands can be executed by logging into the ESX via SSH.

## Traffic Fails to Reach Destination with a Permit Policy Configured on the Cisco VSG

When policies are configured on the Cisco VSG to permit a certain type of traffic, but the traffic does not reach the destination, a complete failure can result.

### Possible reason:

The Virtual Ethernet Modules (VEMs) have not learned the MAC address of the Cisco VSG.

### Verifications:

Check if the Cisco VSG MAC address is learned on all the VEMs that host the protected VMs involved in the communication by entering the **vemcmd show vsn config** command on the VEM.

This example shows how to display the Cisco VSG configuration:

```
# vemcmd show vsn config
VNS Enabled | VNS Licenses Available 1
```

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```
VSN# VLAN IP STATIC-MAC LEARNED-MAC LTLs
1 501 10.1.1.61 00:00:00:00:00:00 00:50:56:9c:3c:c5 0
#
```

The following conditions should be displayed on the command output:

- The VNS Licenses Available message should display a nonzero value.
- The learned MAC address in the above output should not be 00:00:00:00:00:00.
- The learned MAC address should match with the MAC address of the Cisco VSG that is intended to protect the VMs.

You can find the MAC address of the Cisco VSG by entering the **show interface data 0** command.

This example shows how to display information on the interface for the Cisco VSG:

```
vsg# show interface data 0
data0 is up
Hardware: Ethernet, address: 0050.569c.3cc5 (bia 0050.569c.3cc5) <----
MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA
full-duplex, 10 Gb/s
Auto-Negotiation is turned on
Rx
0 input packets
Tx
8084 output packets
vsg#
```

If the learned MAC address in the **vemcmd show vsn config** command is 00:00:00:00:00:00, manually check if the Cisco VSG service (data) interface is bound to the proper port profile and has the right VLAN configured.

You can check the Cisco VSG service interface assignment on the VEM by entering the **vemcmd show** command.

This example shows how to check the Cisco VSG service interface assignment:

```
# vemcmd show bd 501 <--- 501 is the service vlan
BD 501, vdc 1, vlan 501, 4 ports
Portlist:
6 vns
18 vmnic1
58 tenant1-primary ethernet0 <--- VSG VM name
#
```

The Cisco VSG VM name should be displayed as part of the output.

You can display the port profile that is associated with the Cisco VSG's service interface by entering the **show port-profile name pp-name** command on the VSM.

If the Cisco VSG is bound to the proper port profile and has the correct service VLAN, check the upstream switches. Ensure that this service VLAN is configured across all ports in all upstream switches to which all the VEMs (those talking to that Cisco VSG) are connected.

You can ensure that the service VLAN is configured and enabled (active) on the VSM by entering the **show vlan** command.

This example shows how to display the VLAN configurations:

```
vsm# show vlan

VLAN Name                               Status    Ports
-----
```



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```
1 default active
501 VLAN0501 active Po1, Po2, Po3, Po4, Veth3
vsm#
```

Make sure that the following occurs:

- Service VLAN (501) is configured in the uplink port profile on the VSM.
- Service VLAN is not configured as a system VLAN on the uplink port profile.

You can confirm the configuration by entering the **show running-config port-profile system-data-uplink** command.

This example shows the results of the command:

```
vsm# show running-config port-profile system-data-uplink

!Command: show running-config port-profile system-data-uplink
!Time: Thu Feb 24 13:06:30 2011

version 4.2(1)SV1(4)
port-profile type ethernet system-data-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 51-53,501
  no shutdown
  system vlan 51-52
  state enabled
vsm#
```

## Security Posture Not Maintained After the vMotion of the VM to the new ESX Host

After performing vMotion of the traffic VM, the security posture as defined by the policies in the Cisco VSG can be disrupted.

### Possible reasons:

- The license was not checked out on the new module.
- The VEM did not learn the MAC address of the Cisco VSG.

### Verifications:

- Check if the Cisco VSG MAC is learned on all the VEMs that host the protected VMs involved in communication by entering the **vemcmd show vsn config** command.

This example shows how to display the Cisco VSG MAC information:

```
# vemcmd show vsn config
VNS Enabled | VNS Licenses Available 1
VSN# VLAN IP STATIC-MAC LEARNED-MAC LTLs
1 501 10.1.1.61 00:00:00:00:00:00 00:50:56:9c:3c:c5 0
#
```

- The VNS Licenses Available message should display a nonzero value.
- The learned MAC address should not be 00:00:00:00:00:00.
- The learned MAC address should match with the MAC address of the Cisco VSG that is intended to protect the VMs.

This example shows how to find the MAC address of the Cisco VSG on the corresponding Cisco VSG:

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```
vsg# show interface data 0
data0 is up
Hardware: Ethernet, address: 0050.569c.3cc5 (bia 0050.569c.3cc5) <----
MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA
full-duplex, 10 Gb/s
Auto-Negotiation is turned on
Rx
    0 input packets
Tx
    8084 output packets
vsg#
```

- If the learned MAC address in the **vemcmd show vsn config** command is 00:00:00:00:00:00, manually check if the Cisco VSG service (data) interface is bound to the proper port profile and has the right VLAN configured.

This example shows how to check the Cisco VSG service interface assignment on the VEM:

```
# vemcmd show bd 501 <----- 501 is the service vlan
BD 501, vdc 1, vlan 501, 4 ports
Portlist:
    6 vns
    18 vmnic1
    58 tenant1-primary ethernet0 <----- VSG VM name
#
```

The Cisco VSG VM name should be displayed as part of the output.

You can view the port-profile information for the Cisco VSG's service interface by entering the **show port-profile name *pp-name*** command on the VSM.

If the Cisco VSG is bound to the proper port profile and has the correct service VLAN, check the upstream switches. Ensure the service VLAN is configured across all ports in all upstream switches to which all the VEMs (those talking to that Cisco VSG) are connected.

## Policy Decision Inconsistent with the Port Profile Changes

When policy decisions are inconsistent with the port-profile changes, either of these conditions can exist:

- A user changed the port profile of the traffic VM from one Cisco VSG port profile to another (having a different security profile).
- A policy is modified and the newer policy does not take immediate effect.

### Reason:

Because of the existing flows, the old policy decision is continued.

### Action:

Administrators must clear the flows in the vPath and Cisco VSG when the policy is modified.

## Using vPath Ping to Determine Connectivity

You can use the vpath **ping** command to determine the connectivity between the Cisco VSG and the VEM.

The following example shows how to see the VSG connections and if they are reachable:

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```
VSM-1# ping vsn all src-module all
ping vsn 106.1.1.1 vlan 54 from module 3 5, seq=0 timeout=1-sec
  module(usec) : 3(156) 5(160)
ping vsn 110.1.1.1 vlan 54 from module 3 5, seq=0 timeout=1-sec
  module(failed) : 3(VSN ARP not resolved) 5(VSN ARP not resolved)

ping vsn 106.1.1.1 vlan 54 from module 3 5, seq=1 timeout=1-sec
  module(usec) : 3(230) 5(151)
ping vsn 110.1.1.1 vlan 54 from module 3 5, seq=1 timeout=1-sec
  module(failed) : 3(VSN ARP not resolved) 5(VSN ARP not resolved)

ping vsn 106.1.1.1 vlan 54 from module 3 5, seq=2 timeout=1-sec
  module(usec) : 3(239) 5(131)
ping vsn 110.1.1.1 vlan 54 from module 3 5, seq=2 timeout=1-sec
  module(failed) : 3(VSN ARP not resolved) 5(VSN ARP not resolved)

ping vsn 106.1.1.1 vlan 54 from module 3 5, seq=3 timeout=1-sec
  module(usec) : 3(248) 5(153)
ping vsn 110.1.1.1 vlan 54 from module 3 5, seq=3 timeout=1-sec
  module(failed) : 3(VSN ARP not resolved) 5(VSN ARP not resolved)

ping vsn 106.1.1.1 vlan 54 from module 3 5, seq=4 timeout=1-sec
  module(usec) : 3(259) 5(126)
ping vsn 110.1.1.1 vlan 54 from module 3 5, seq=4 timeout=1-sec
  module(failed) : 3(VSN ARP not resolved) 5(VSN ARP not resolved)
```

This example shows how VSN ping options are displayed:

```
VSM-1# ping vsn ?
all    All VSNs associated to VMs
ip     IP Address
vlan   VLAN Number
```

This example shows how VSN ping options are displayed for all source modules:

```
VSM-1# ping vsn all src-module ?
<3-66>    Module number
all       All modules in VSM
vpath-all All modules having VMs associated to VSNs
```

This example shows how to set up a ping for all source modules from a specified IP address:

```
VSM-1# ping vsn ip 10.1.1.60 src-module all
ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=0 timeout=1-sec
  module(usec) : 4(301) 5(236)
  module(failed) : 7(VSN ARP not resolved)

ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=1 timeout=1-sec
  module(usec) : 4(241) 5(138) 7(270)

ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=2 timeout=1-sec
  module(usec) : 4(230) 5(155) 7(256)

ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=3 timeout=1-sec
  module(usec) : 4(250) 5(154) 7(284)

ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=4 timeout=1-sec
  module(usec) : 4(231) 5(170) 7(193)
```

This example shows to set up a ping for all vpath source modules for a specified IP address:

```
VSM-1# ping vsn ip 10.1.1.60 src-module vpath-all
ping vsn 10.1.1.60 vlan 501 from module 4 5, seq=0 timeout=1-sec
  module(usec) : 4(223) 5(247)
```

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```
ping vsn 10.1.1.60 vlan 501 from module 4 5, seq=1 timeout=1-sec
  module(usec)   : 4(206) 5(167)
```

```
ping vsn 10.1.1.60 vlan 501 from module 4 5, seq=2 timeout=1-sec
  module(usec)   : 4(241) 5(169)
```

This example shows how to set up a ping for all source modules of a specified IP address with a time-out and a count:

```
VSM-1# ping vsn ip 10.1.1.60 src-module all timeout 2 count 3
ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=0 timeout=2-sec
  module(usec)   : 4(444) 5(238) 7(394)
```

```
ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=1 timeout=2-sec
  module(usec)   : 4(259) 5(154) 7(225)
```

```
ping vsn 10.1.1.60 vlan 501 from module 4 5 7, seq=2 timeout=2-sec
  module(usec)   : 4(227) 5(184) 7(216)
```

## Troubleshooting VSM and Cisco VNMC Interactions

After registering the VSM to the Cisco VNMC, you can check the status of the VSM and Cisco VNMC policy agents by entering the **show vnm-pa status** command.

This example shows how to check the status:

```
vsm# show vnm-pa status
VNM Policy-Agent status is - Installed Successfully.
vsm#
```

If there is a failure, there can be several reasons. One failure could be because the Cisco VNMC is unreachable or dead. Ping to the Cisco VNMC IP to check for a response. If there is no response, look at the network connectivity.

Another reason could occur because of the wrong shared secret.

This example shows the results of this type of failure:

```
vsm# show vnm-pa status
VNM Policy-Agent status is - Installation Failure
Incorrect shared secret.
vsm#
```

Provide the correct password and register again.

On the Cisco VNMC GUI, on the Administration > Service Registry > Clients tab, make sure that the registered VSM is shown as registered under the Oper State column.

On the Cisco VNMC GUI, make sure that the org is configured in the same way as in the port profile. The registered VSM should also be available under the Resources > Virtual Supervisor Modules. If the org is not properly configured on the port profile, the Config State will display as “org-not-found” under the port profiles tab of the registered VSM. After editing the port profile with the correct org name, the Config State changes to OK.

## Troubleshooting Cisco VSG and Cisco VNMC Interactions

After registering the Cisco VSG to the Cisco VNMC, you can check the status by entering the **show vnm-pa status** command.

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This example shows how to check the Cisco VSG registration status:

```
vsg# show vnm-pa status
VNM Policy-Agent status is - Installed Successfully.
vsg#
```

If there is a failure, there can be several reasons. One failure could be because the Cisco VNMC is unreachable or dead. Ping to the Cisco VNMC IP to check for a response. If there is no response, look at the network connectivity.

Another reason could occur because of the wrong shared secret.

This example shows the results of this type of failure:

```
vsg# show vnm-pa status
VNM Policy-Agent status is - Installation Failure
Incorrect shared secret.
vsg#
```

Provide the correct password and register again.

On the Cisco VNMC GUI, on the Administration > Service Registry > Clients tab, make sure that the registered VSM is shown as registered under the Oper State column.

## Troubleshooting Cisco VNMC and vCenter Server Interactions

To enable the Cisco VNMC to communicate with the vCenter Server, you must have installed the Cisco VNMC's vCenter extension XML plug-in.

The vCenter Server is added to the Cisco VNMC with the provided IP address and name under Administration > VM Managers > Add VM manager. The Operational State of the newly added vCenter Server indicates that it is up.

Other possible operational states could be unreachable or bad credentials. If the state is unreachable, the vCenter Server is down or could not be reached. To check if you can access the vCenter server on the Cisco VNMC, use SSH to the Cisco VNMC with the user as admin and the VNMC password.

You can check reachability by entering the **connect local-mgmt** command.

This example shows how to access the vCenter Server:

```
vnmc# connect local-mgmt
Cisco Virtual Network Management Center
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
vnmc(local-mgmt)#
```

Use the **ping** command to check if you can reach the vCenter Server (assuming that the vCenter Server does not block the **ping** command).

On the Cisco VNMC GUI, go to Administration > VMManagers tab and expand the VM Managers. Click on the vCenter Server object and review the right pane. If the state shows as bad-credentials, you have not registered the vCenter Server extension XML plugin for that vCenter Server. Go to the vCenter

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Server that is being added and install the vCenter Server extension XML plugin. For instructions, see the *Cisco Virtual Network Management Center GUI Configuration Guide*, “Chapter 7 - Configuring VM Managers.”



## CHAPTER 6

# Troubleshooting Policy Engine Issues

---

This chapter describes how to troubleshoot issues that might occur on the policy engine.

This chapter includes the following sections:

- [Policy Engine Troubleshooting Commands, page 6-1](#)
- [Policy/Rule Not Working as Expected, page 6-1](#)
- [Policy/Rule Based on VM Attributes Not Working - But Without VM Attributes Policy/Rule Works, page 6-2](#)
- [Policy/Rule Configured for Non-Firewalled VMs \(port profiles\) Not Working, page 6-2](#)
- [Policy Engine Statistics Show Hits as 0 and Traffic Not Reaching the Cisco VSG, page 6-2](#)

## Policy Engine Troubleshooting Commands

When there are policy engine issues, use these commands to troubleshoot:

- **show run rule**—Displays all rules configured in the Cisco VSG
- **show run policy**—Displays all policies configured in the Cisco VSG
- **show run zone**—Displays all zones configured in the Cisco VSG
- **show run object-group**—Displays all object-groups configured in the Cisco VSG
- **show policy-engine stats**—Displays statistics about the rule hits in the Cisco VSG
- **clear policy-engine stats**—Clears the statistics about the rule hits in the Cisco VSG

## Policy/Rule Not Working as Expected

When policies or rules do not work as expected, do the following:

- Check the show policy-engine statistics and verify that the hits are incrementing by entering the **show policy-engine stats** command. If not, go to the module interactions section to see why hits are not incrementing.
- When policy engine statistics are incrementing, check the rule name that is being hit.
- View the configuration of the rule by entering the **show run rule rule-name** command. Verify that the conditions are configured correctly.

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## Policy/Rule Based on VM Attributes Not Working - But Without VM Attributes Policy/Rule Works

A policy or rule with VM attributes requires additional data for the Cisco VSG to evaluate the policy engine. This data, if not complete, can result in incorrect or not applicable hits in the statistics. When the policy or rule is configured with VM attributes, make sure that you see VM information in the following outputs:

- **show vsg ip-binding**—The output should have the IPs of all the VMs for which the rules will be written in the Cisco VSG.
- **show vsg dviewport**—The output should have the port profile and IP information of all the VMs for which rules will be written in the Cisco VSG.
- **show vsg vm**—The output should have VM attribute values (whichever is present in the vCenter for a given VM) of all the VMs for which rules will be written in the Cisco VSG.

## Policy/Rule Configured for Non-Firewalled VMs (port profiles) Not Working

To enable firewall protection for a VM, you must configure the `vn-service` and `org` CLI in the port profile at the VSM—this enables access to IP addresses and other attributes for the VM.

To write policies or rules for VMs based on the vCenter attributes (and at the same time not be protected), configure the `org` CLI only in the port profile to enable learning of IP addresses and other attributes for the VM with no firewall protection (for example, a client VM running Windows OS and a server running the Linux OS). To turn on firewall protection for the server VM (any traffic to or from server VM is protected by the Cisco VSG but not the client VM), write a rule saying that the source with the Windows OS and destination with the Linux OS VM is permitted by doing the following:

- Configure the `vn-service` and `org` CLI in the server VM port profile at the VSM.
- Configure the `org` CLI for the client VM port profile at VSM (no `vn-service`).
- Write a rule with a source condition OS name that contains the Windows and a destination VM name server VM, action permit.

## Policy Engine Statistics Show Hits as 0 and Traffic Not Reaching the Cisco VSG

Verify if the correct MAC address is displayed by entering the **show vsm brief** in the VSM. The MAC address should be the MAC address of the Cisco VSG data interface. If the MAC address is correct, check the following:

- Confirm that the buffers in use are not zero by entering the **show ac-driver statistics** command. If zero, check/fix the adapter type.
- The Cisco VSG data0 interface's adapter type in the VSM VM properties should be set to VMXNET3.
- If the Cisco VSG data interface adapter type E1000 does not work properly, set to VMXNET3.



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When the Cisco VSG is deployed using the OVA format, the Cisco VSG does not have this issue because the adapter type is automatically correctly selected.

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## CHAPTER 7

# Troubleshooting High Availability Issues

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This chapter describes how to troubleshoot issues related to high availability (HA).

This chapter includes the following sections:

- [Information About Cisco VSG High Availability, page 7-1](#)
- [Problems with High Availability, page 7-2](#)
- [High Availability Troubleshooting Commands, page 7-5](#)
- [Standby Synchronization, page 7-9](#)
- [Standby Synchronization, page 7-9](#)

## Information About Cisco VSG High Availability

Cisco VSG high availability (HA) is a subset of the Cisco NX-OS HA. The following HA features minimize or prevent traffic disruption in the event of a failure:

- [Redundancy, page 7-1](#)
- [Isolation of Processes, page 7-1](#)
- [Cisco VSG Failovers, page 7-2](#)

### Redundancy

Cisco VSG redundancy is equivalent to HA pairing. The two possible redundancy states are **active** and **standby**. An active Cisco VSG is always paired with a standby Cisco VSG. HA pairing is based on the Cisco VSG ID. Two Cisco VSGs that are assigned an identical ID are automatically paired. All processes running in the Cisco VSG are data path critical. If one process fails in an active Cisco VSG, a failover to the standby Cisco VSG occurs instantly and automatically.

### Isolation of Processes

The Cisco VSG software contains independent processes known as services. These services perform a function or set of functions for a subsystem or feature set of the Cisco VSG. Each service and service instance runs as an independent, protected process. This operational process ensures a highly fault-tolerant software infrastructure and fault isolation between services. Any failure in a service

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instance does not affect any other services running at that time. Additionally, each instance of a service runs as an independent process. For example, two instances of a routing protocol run as separate processes.

## Cisco VSG Failovers

The Cisco VSG HA pair configuration allows uninterrupted traffic forwarding by using stateful failovers when a failure occurs.

## Problems with High Availability

The following key problems are found in Cisco VSG HA. In addition to these issues, some of the common Cisco NX-OS HA symptoms are listed in [Table 7-1](#). The symptoms that are related to high availability, their possible causes, and recommended solutions are as follows.

- Cisco VSG pair communication problems
- Cisco VSGs do not reach an active/standby status
- Sometimes, the Cisco VSG reboots continuously when tenants share the management network (for example, collisions of the domain ID):
  - In a multitenant environment, if there is a shared management network and if a collision occurs in the domain ID (two or more tenants using the same domain ID), that triggers spontaneous reboots of the Cisco VSGs that are involved in the collision. There is no workaround for this issue. When domain IDs are provisioned, they must be unique across all tenants
- Cisco VSGs in the HA pair get stuck in bash# prompt mode during reboots/upgrades/switchovers
- Cisco VSGs in the HA pair get stuck in boot# prompt mode during reboots/upgrades/switchovers

**Table 7-1** Problems with High Availability

Symptom	Possible Cause	Solution
The active Cisco VSG does not see the standby Cisco VSG.	Roles are not configured properly: <ul style="list-style-type: none"> <li>• primary</li> <li>• secondary</li> </ul>	Do the following: <ol style="list-style-type: none"> <li>1. Verify the role of each Cisco VSG by entering the <b>show system redundancy status</b> command.</li> <li>2. Update an incorrect role by entering the <b>system redundancy role</b> command.</li> <li>3. Save the configuration by entering the <b>copy run start</b> command.</li> </ol>
	Network connectivity problems are occurring between the Cisco VSG and the upstream and virtual switches. The problem could be in the control or management VLAN.	Restore connectivity as follows: <ol style="list-style-type: none"> <li>1. From the vSphere client, shut down the Cisco VSG, which should be in standby mode.</li> <li>2. From the vSphere client, bring up the standby Cisco VSG after network connectivity is restored.</li> </ol>

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**Table 7-1**      **Problems with High Availability (continued)**

Symptom	Possible Cause	Solution
The active Cisco VSG does not complete synchronization with the standby Cisco VSG.	A version mismatch between Cisco VSGs might be occurring.	Do the following: <ol style="list-style-type: none"> <li>1. Verify the software version on both Cisco VSGs by entering the <b>show version</b> command.</li> <li>2. Reinstall the secondary Cisco VSG with the same version used in the primary.</li> </ol>
	Fatal errors occur during the gsync process. Check the gsyncctrl log by entering the <b>show system internal log sysmgr gsyncctrl</b> command and look for fatal errors.	Reload the standby Cisco VSG by entering the <b>reload module standby_module_number</b> command. See the “ <a href="#">Reloading a Module</a> ” section on page 7-8.
The standby Cisco VSG reboots periodically.	The Cisco VSG has connectivity only through the management interface. When a Cisco VSG is able to communicate through the management interface, but not through the control interface, the active Cisco VSG resets the standby to prevent the two Cisco VSGs from being in HA mode and out of sync.	Check control VLAN connectivity between the primary and secondary Cisco VSG by entering the <b>show system internal redundancy info</b> command. In the output, <b>degraded_mode flag = true</b> . If there is no connectivity, restore it through the control interface.
Both Cisco VSGs are in active mode.	The following network connectivity problems might be occurring: <ul style="list-style-type: none"> <li>• Check for control and management VLAN connectivity between the Cisco VSG at the upstream and virtual switches.</li> <li>• When the Cisco VSG cannot communicate through any of these two interfaces, they both try to become active.</li> </ul>	If network problems exist, do the following: <ol style="list-style-type: none"> <li>1. From the vSphere client, shut down the Cisco VSG, which should be in standby mode.</li> <li>2. From the vSphere client, bring up the standby Cisco VSG after network connectivity is restored.</li> </ol>

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**Table 7-1**      **Problems with High Availability (continued)**

Symptom	Possible Cause	Solution
Active and standby Cisco VSGs are not synchronized.	<p><b>Incompatible versions</b></p> <p>The boot variables for active and standby Cisco VSGs are set to different image names, or if image names are the same, the files are not the correct files.</p> <p>When active and standby Cisco VSGs are running different versions that are not HA compatible, they are unable to synchronize.</p>	<p>Update the software version or the boot variables as follows:</p> <ol style="list-style-type: none"> <li>From each Cisco VSG (active and standby), verify the software version by entering the <b>show version</b> command.</li> <li>Reload the standby Cisco VSG with the version that is running in the active by doing one of the following: <ul style="list-style-type: none"> <li>Correcting the boot variable names</li> <li>Replacing the incorrect software files</li> </ul> </li> </ol> <p>See the <a href="#">“Reloading a Module” section on page 7-8</a>.</p>
	<p><b>Broadcast traffic problem</b></p> <p>The broadcast traffic from the standby to the active Cisco VSG might prevent the Cisco VSGs from synchronizing. The standby Cisco VSG tries to contact the active Cisco VSG periodically, but if broadcast traffic problems persist for over a minute when the standby is booting up, the system cannot synchronize.</p>	<p>Fix the traffic problem and reload the standby Cisco VSG as follows.</p> <ol style="list-style-type: none"> <li>From the standby Cisco VSG, verify the broadcast traffic problem by entering the <b>show system internal log symmgr verctrl</b> command.</li> </ol> <p>The following message appears:</p> <pre>standby_verctrl: no response from the active System Manager</pre> <ol style="list-style-type: none"> <li>Fix network connectivity.</li> <li>Reload the standby Cisco VSG by using the <b>reload module standby_module_number</b> command.</li> </ol> <p>See the <a href="#">“Reloading a Module” section on page 7-8</a>.</p>
	<p><b>False standby removal</b></p> <p>The active Cisco VSG falsely detects a disconnect with the standby. The standby is removed and reinserted and synchronization does not occur.</p>	<p>Verify redundancy states and reload the standby Cisco VSG as follows:</p> <ol style="list-style-type: none"> <li>Verify active Cisco VSG redundancy by using the <b>show system internal redundancy status</b> command. The output is as follows: <pre>RDN_DRV_ST_AC_NP</pre> </li> <li>Verify the standby Cisco VSG redundancy by using the <b>show system internal redundancy status</b> command. The output is as follows: <pre>RDN_DRV_ST_SB_AC</pre> </li> <li>Reload the standby Cisco VSG by using the <b>reload module standby_module_number</b> command.</li> </ol> <p>See the <a href="#">“Reloading a Module” section on page 7-8</a>.</p>

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## High Availability Troubleshooting Commands

This section lists commands that you can use to troubleshoot problems related to high availability.

This section includes the following topics:

- [Checking the Domain ID of the Cisco VSG, page 7-5](#)
- [Checking Redundancy, page 7-5](#)
- [Checking the System Manager State, page 7-7](#)
- [Reloading a Module, page 7-8](#)
- [Attaching to the Standby Cisco VSG Console, page 7-8](#)

### Checking the Domain ID of the Cisco VSG

You can display the domain ID information by entering the **show vsg** command.

This example shows how to display the domain ID information:

```
vsg# show vsg
Model: VSG
HA ID: 3000
VSG Software Version: 4.2(1)VSG1(1) build [4.2(1)VSG1(1)]
VNMC IP: 10.193.75.145
vsg#
```

### Checking Redundancy

This section includes the following topics:

- [Checking the System Redundancy Status, page 7-5](#)
- [Checking the System Internal Redundancy Status, page 7-6](#)

### Checking the System Redundancy Status

You can check the system redundancy status by entering the **show system redundancy status** command.

This example shows how to display the system redundancy status:

```
vsg# show system redundancy status
Redundancy role
-----
      administrative:  primary <-- Configured redundancy role
      operational:    primary <-- Current operational redundancy role

Redundancy mode
-----
      administrative:  HA
      operational:    HA

This supervisor (sup-1)
-----
      Redundancy state:  Active <-- Redundancy state of this VSG
      Supervisor state:  Active
      Internal state:   Active with HA standby
```

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```
Other supervisor (sup-2)
-----
Redundancy state: Standby <-- Redundancy state of the other VSG
Supervisor state: HA standby
Internal state: HA standby <-- The standby VSG is in HA mode and in sync
vsg#
```

## Checking the System Internal Redundancy Status

You can check the system internal redundancy status by entering the **show system internal redundancy info** command.

This example shows how to display the system internal redundancy status information:

```
vsg# show system internal redundancy info
My CP:
  slot: 0
  domain: 184 <-- Domain id used by this VSG
  role: primary <-- Redundancy role of this VSG
  status: RDN_ST_AC <-- Indicates redundancy state (RDN_ST) of the this VSG is Active (AC)
  state: RDN_DRV_ST_AC_SB
  intr: enabled
  power_off_reqs: 0
  reset_reqs: 0
Other CP:
  slot: 1
  status: RDN_ST_SB <-- Indicates redundancy state (RDN_ST) of the other VSG is Standby (SB)
  active: true
  ver_rcvd: true
  degraded_mode: false <-- When true, it indicates that communication through the control interface is faulty
Redun Device 0: <-- This device maps to the control interface
  name: ha0
  pdev: ad7b6c60
  alarm: false
  mac: 00:50:56:b7:4b:59
  tx_set_ver_req_pkts: 11590
  tx_set_ver_rsp_pkts: 4
  tx_heartbeat_req_pkts: 442571
  tx_heartbeat_rsp_pkts: 6
  rx_set_ver_req_pkts: 4
  rx_set_ver_rsp_pkts: 1
  rx_heartbeat_req_pkts: 6
  rx_heartbeat_rsp_pkts: 442546 <-- Counter should be increasing, as this indicates that communication between VSG is working properly.
  rx_drops_wrong_domain: 0
  rx_drops_wrong_slot: 0
  rx_drops_short_pkt: 0
  rx_drops_queue_full: 0
  rx_drops_inactive_cp: 0
  rx_drops_bad_src: 0
  rx_drops_not_ready: 0
  rx_unknown_pkts: 0
Redun Device 1: <-- This device maps to the mgmt interface
  name: hal
  pdev: ad7b6860
  alarm: true
  mac: ff:ff:ff:ff:ff:ff
  tx_set_ver_req_pkts: 11589
  tx_set_ver_rsp_pkts: 0
  tx_heartbeat_req_pkts: 12
  tx_heartbeat_rsp_pkts: 0
```



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```

rx_set_ver_req_pkts: 0
rx_set_ver_rsp_pkts: 0
rx_heartbeat_req_pkts: 0
rx_heartbeat_rsp_pkts: 0 <-- When communication between VSG through the control
interface is interrupted but continues through the mgmt interface, the
rx_heartbeat_rsp_pkts will increase.
rx_drops_wrong_domain: 0
rx_drops_wrong_slot: 0
rx_drops_short_pkt: 0
rx_drops_queue_full: 0
rx_drops_inactive_cp: 0
rx_drops_bad_src: 0
rx_drops_not_ready: 0
rx_unknown_pkts: 0
vsg#

```

## Checking the System Manager State

You can check the system internal sysmgr state by entering the **show system internal sysmgr state** command.

This example shows how to display the system internal sysmgr state information:

```
vsg# show system internal sysmgr state
```

```

The master System Manager has PID 1988 and UUID 0x1.
Last time System Manager was gracefully shutdown.
The state is SRV_STATE_MASTER_ACTIVE_HOTSTDBY entered at time Tue Apr 28 13:09:13 2009.

The '-b' option (disable heartbeat) is currently disabled.

The '-n' (don't use rlimit) option is currently disabled.

Hap-reset is currently enabled.

Watchdog checking is currently disabled.

Watchdog kgdb setting is currently enabled.

```

Debugging info:

```

The trace mask is 0x00000000, the syslog priority enabled is 3.
The '-d' option is currently disabled.
The statistics generation is currently enabled.

```

HA info:

```

slotid = 1    supid = 0
cardstate = SYSMGR_CARDSTATE_ACTIVE.
cardstate = SYSMGR_CARDSTATE_ACTIVE (hot switchover is configured enabled).
Configured to use the real platform manager.
Configured to use the real redundancy driver.
Redundancy register: this_sup = RDN_ST_AC, other_sup = RDN_ST_SB.
EOBC device name: eth0.
Remote addresses:  MTS - 0x00000201/3      IP - 127.1.1.2
MSYNC done.
Remote MSYNC not done.
Module online notification received.
Local super-state is: SYSMGR_SUPERSTATE_STABLE
Standby super-state is: SYSMGR_SUPERSTATE_STABLE

```

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```
Swover Reason : SYSMGR_SUP_REMOVED_SWOVER <-- Reason for the last switchover
Total number of Switchovers: 0 <-- Number of switchovers
                >> Duration of the switchover would be listed, if any.
```

Statistics:

```
Message count:          0
Total latency:          0           Max latency:          0
Total exec:             0           Max exec:             0
vsg#
```

## Reloading a Module

You can reload a module by entering the **reload module** command.



**Note** Using the **reload** command without specifying a module reloads the whole system.

This example shows the output for the command:

```
vsg# reload module 2
This command will reboot the system (y/n)? y
vsg#
```

## Attaching to the Standby Cisco VSG Console

The standby Cisco VSG console is not accessible externally. You can access the standby Cisco VSG console through the active Cisco VSG by entering the **attach module module-number** command.

This example shows how to access the standby Cisco VSG through the active Cisco VSG:

```
vsg# attach module 2
Attaching to module 2...
To exit type 'exit', to abort type '$.'
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
vsg#
```

## Checking for the Event History Errors

You can check for errors in the event history by entering the **show system internal sysmgr event-history errors** command.

This example shows how to display errors that have been logged in the event-history:

```
vsg# show system internal sysmgr event-history errors
Event:E_DEBUG, length:122, at 370850 usecs after Thu Feb 3 09:45:28 2011
```

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```
[101] sysmgr_sdb_set_standby_state: Setting standby super state in sdb for vdc 1 to
SYSMGR_SUPERSTATE_STABLE, returned
0x0

Event:E_DEBUG, length:73, at 408277 usecs after Thu Feb  3 09:44:52 2011
[101] active_gsyncctrl_info_parse: UUID 0xB6 in vdc 1 service not running

Event:E_DEBUG, length:73, at 593428 usecs after Thu Feb  3 09:44:49 2011
[101] active_gsyncctrl_info_parse: UUID 0xE0 in vdc 1 service not running

Event:E_DEBUG, length:80, at 624613 usecs after Thu Feb  3 09:44:40 2011
[101] process_plugin_load_complete_msg: Start done rcvd for all plugins in vdc 1

Event:E_DEBUG, length:89, at 624611 usecs after Thu Feb  3 09:44:40 2011
[101] process_plugin_load_complete_msg: Received plugin start done for plugin 1 for vdc 1

Event:E_DEBUG, length:99, at 518152 usecs after Thu Feb  3 09:44:39 2011
[101] perform_bootup_plugin_manager_interactions: all bootup plugins have now been loaded
in vdc: 1

Event:E_DEBUG, length:79, at 518150 usecs after Thu Feb  3 09:44:39 2011
[101] perform_bootup_plugin_manager_interactions:incrementing number of plugins

Event:E_DEBUG, length:118, at 518020 usecs after Thu Feb  3 09:44:39 2011
[101] perform_bootup_plugin_manager_interactions: plugin has been loaded in vdc 1 -
sending response to Plugin Manager

Event:E_DEBUG, length:58, at 631599 usecs after Thu Feb  3 09:44:38 2011
[101] process_reparse_request: on vdc 1, plugin start rcvd
vsg#
```

## Standby Synchronization

This section includes the following topic:

- [Synchronization Fails, page 7-9](#)

## Synchronization Fails

If the standby Cisco VSG is stuck in the synchronization stage, follow these steps on the active Cisco VSG:

**Step 1** Enter the **show system internal sysmgr state** command and check for a line similar to the following:

```
Gsync in progress for uuid: xxxx
```

If this entry is present and shows the same xxxx value for a long time, the system has trouble synchronizing the state for one of the processes.

**Step 2** Identify the process by entering the **show system internal sysmgr service running | grep xxxx** command.

This message appears in the first few lines of the output:

```
BL-bash# show system internal sysmgr state
The master System Manager has PID 1350 and UUID 0x1.
Last time System Manager was gracefully shutdown.
Gsync in progress for uuid: 0x18
```

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The state is SRV\_STATE\_MASTER\_ACTIVE\_HOTSTDBY entered at time Mon Feb 21 17:56:39 2011.

The '-b' option (disable heartbeat) is currently disabled.

...

If the synchronization for each process occurs quickly, you might not have the chance to see the line (you might have to enter the command repeatedly as the standby Cisco VSG). If gsync for a particular process gets stuck, the line stays in the output for a while.

- Step 3** If you are able to login to the console of the standby Cisco VSG (you might need to press Ctrl-C after giving the password), check the output of these two commands:
- **show system internal sysmgr state**
  - **show system internal sysmgr service running | grep xxxx**  
where xxxx is from the line “Gsync in progress for uuid: xxxx” (found by using the **show system internal sysmgr state** command)
- Step 4** If access to the system is available only after the standby server has booted up and synchronized with the active server, use the following commands:
- Enter the **show system internal sysmgr bootupstats** command and look for processes that took much longer than the rest, in the time that the system took to boot.
  - On the standby console, enter the **show system internal sysmgr gsyncstats** command and look for processes with large Gsync time values.
-



## CHAPTER 8

# Troubleshooting System Issues

---

This chapter describes how to troubleshoot Cisco Virtual Security Gateway (VSG) system issues.

This chapter includes the following sections:

- [Information About the System, page 8-1](#)
- [Problems with VM Traffic, page 8-2](#)
- [VEM Troubleshooting Commands, page 8-2](#)
- [VEM Log Commands, page 8-3](#)

## Information About the System

The Cisco VSG provides firewall functionality for the VMs that have the vEths with port profiles created by the Virtual Supervisor Module (VSM). To allow the Cisco VSG to function properly, the Cisco VSG should have registered with a Cisco Virtual Network Management Center (VNMC) and the Cisco VSG's data interface MAC address should be seen by the VSM.

The example shows how to display information about the system:

```
vsg# show vsg
Model: VSG
HA ID: 218
VSG Software Version: 4.2(1)VSG1(1) build [4.2(1)VSG1(1)]
VNMC IP: 10.193.77.223
VSG-PERF-1_1#
VSG-PERF-1_1# show vnm-pa status
VNM Policy-Agent status is - Installed Successfully. Version 1.0(1j)-vsg
vsg#
```

Make sure that the Cisco VSG MAC address is learned by the VSM by entering the **show vsn details** command as follows:

```
vsm# show vsn detail
#VSN VLAN: 754, IP-ADDR: 200.1.1.10
  MODULE      VSN-MAC-ADDR  FAIL-MODE  VSN-STATE
    3  00:50:56:83:00:01    Close      Up

#VSN Ports, Port-Profile, Org and Security-Profile Association:
#VSN VLAN: 754, IP-ADDR: 200.1.1.10
  Port-Profile: profile-traffic, Security-Profile: sec-profile-perf, Org:
root/Tenant-perf-1.1
  Module Vethernet
    3  9
```

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vsm#

For more information, see the following documents:

- *Cisco Virtual Security Gateway, Release 4.2(1)VSG1(1)*
- *Cisco Virtual Network Management Center, Release 1.0.1 Installation*
- *Quick Start Guide for Cisco Virtual Security Gateway and Cisco Virtual Network Management Center.*

## Problems with VM Traffic

When troubleshooting problems with intra-host VM traffic, follow these guidelines:

- Make sure that at least one of the VMware virtual NICs is on the correct DV's port group and is connected.
- If the VMware virtual NIC is down, determine if there is a conflict between the MAC address configured in the OS and the MAC addresses as assigned by VMware. You can see the assigned MAC addresses in the .vmx file.

When troubleshooting problems with inter-host VM traffic, follow these guidelines:

- Determine if there is exactly one uplink sharing a VLAN with the VMware virtual NIC. If there is more than one uplink, they must be in a port channel.
- Ping an SVI on the upstream switch by entering the **show intX counters** command.

## VEM Troubleshooting Commands

This section includes the following topics:

- [Displaying VEM information, page 8-2](#)
- [Displaying Miscellaneous VEM Details, page 8-3](#)

## Displaying VEM information

Use the following commands to display Virtual Ethernet Module (VEM) information:

- **vemlog**—Displays and controls VEM kernel logs
- **vemcmd**—Displays configuration and status information
- **vem-support all**—Displays support information
- **vem status**—Displays status information
- **vem version**—Displays version information
- **vemcmd show arp all**—Displays the ARP table on the VEM
- **vemcmd show vsn config**—Displays all the Cisco VSGs configured on the VEM and the Cisco VSG licensing status (firewall on or off).
- **vemcmd show vsn binding**—Displays all of the VM LTL ports to the Cisco VSG bindings
- **vemcmd show learnt**—Displays all of the VMs that have been learned by the VEM

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## Displaying Miscellaneous VEM Details

These commands provide additional VEM details:

- **vemlog show last *number-of-entries***—Displays the circular buffer

This example shows how to display the number of entries in the circular buffer:

```
[root@esx-cos1 ~]# vemlog show last 5
Timestamp                Entry CPU  Mod Lv      Message
Oct 13 13:15:52.615416    1095  1    1  4 Warning vssnet_port_pg_data_ ...
Oct 13 13:15:52.620028    1096  1    1  4 Warning vssnet_port_pg_data_ ...
Oct 13 13:15:52.630377    1097  1    1  4 Warning sv_sswitch_state ...
Oct 13 13:15:52.633201    1098  1    1  8 Info    vssnet new switch ...
Oct 13 13:16:24.990236    1099  1    0  0      Suspending log
```

- **vemlog show info**—Displays information about entries in the log

This example shows how to display log entries:

```
[root@esx-cos1 ~]# vemlog show info
Enabled: Yes
Total Entries: 1092
Wrapped Entries: 0
Lost Entries: 0
Skipped Entries: 0
Available Entries: 6898
Stop After Entry: Not Specified
```

- **vemcmd help**—Displays the type of information you can display

This example shows how to display the vemcmd help:

```
[root@esx-cos1 ~]# vemcmd help
show card                Show the card's global info
show vlan [vlan]         Show the VLAN/BD table
show bd [bd]             Show the VLAN/BD table
show l2 <bd-number>     Show the L2 table for a given BD/VLAN
show l2 all              Show the L2 table
show port [priv|vsm]     Show the port table
show pc                  Show the port channel table
show portmac             Show the port table MAC entries
show trunk [priv|vsm]   Show the trunk ports in the port table
show stats               Show port stats
```

## VEM Log Commands

Use the following commands to control the vemlog:

- **vemlog stop**—tops the log
- **vemlog clear**—Clears the log
- **vemlog start *number-of-entries***—Starts the log and stops it after the specified number of entries
- **vemlog stop *number-of-entries***—Stops the log after the next specified number of entries
- **vemlog resume**—Starts the log but does not clear the stop value

You can display the list of debug filters by entering the **vemlog show debug | grp vpath** command.

This example shows how to display the list of debug filters:

```
~ # vemlog show debug | grep vpath
```

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```
      vpath      ENWID P ( 95)      ENW      ( 7)
    vpathapi    ENWID P ( 95)      ENW      ( 7)
      vpathfm    ENWID P ( 95)      ENW      ( 7)
    vpathfsm    ENWID P ( 95)      ENW      ( 7)
  vpathutils    ENWID P ( 95)      ENW      ( 7)
    vpathtun    ENWID P ( 95)      ENW      ( 7)
~ #
```





## CHAPTER 9

# Before Contacting Technical Support

---

This chapter describes the steps to take before calling for technical support.

This chapter includes the following sections:

- [Gathering Information for Technical Support, page 9-1](#)
- [Obtaining a File of Core Memory Information, page 9-2](#)
- [Copying Files, page 9-2](#)



---

**Note** If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL: [http://www.cisco.com/en/US/support/tsd\\_cisco\\_worldwide\\_contacts.html](http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html)

---

## Gathering Information for Technical Support

Use this procedure to gather information about your network that you will provide to your customer support representative or Cisco TAC.



---

**Note** Required logs and counters are part of volatile storage and do not persist through a reload. Do not reload the module or the switch until you have completed this procedure.

---

### DETAILED STEPS

---

- Step 1** Configure your Telnet or Secure Shell (SSH) application to log screen output to a text file.
- Step 2** Set the number of lines that appear on the screen so that pausing is disabled:  
**terminal length 0**
- Step 3** Display the configuration information needed to troubleshoot your network by entering the **show tech-support** command.
- Step 4** Capture the error codes that appear in your message logs by entering the following commands:
  - **show logging logfile**—Displays the contents of the logfile.
  - **show logging last *number***—Displays the last few lines of the logfile.
- Step 5** Gather your answers to the following questions:

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- On which Cisco VSG is the problem occurring?
- Are Cisco Virtual Security Gateway (VSG) software, driver versions, operating systems versions, and storage device firmware in your fabric?
- Are you running ESX and vCenter Server software?
- What is your network topology?
- Did you make any changes to the environment (VLANs, adding modules or upgrades) before or at the time of this event?
- Are there other similarly configured devices that could have this problem but do not?
- Where was this problematic device connected (which switch and interface)?
- When did this problem first occur?
- When did this problem last occur?
- How often does this problem occur?
- How many devices have this problem?
- Were any traces or debug output captured during the problem time? What troubleshooting steps have you tried? Which, if any, of the following tools were used?
  - Ethalyzer, local or remote SPAN
  - CLI debug commands
  - traceroute, ping
- Is your problem related to a software upgrade attempt?
  - What was the original Cisco VSG version?
  - What is the new Cisco VSG version?

## Obtaining a File of Core Memory Information

Cisco customer support engineers often use files from your system for analysis. One such file that contains memory information is referred to as a core dump. The file is sent to a TFTP server or to a flash card in slot0: of the local switch. You should set up your switch to generate this file under the instruction of your TAC representative, and send it to a TFTP server so that it can be e-mailed to TAC.

This example shows how to generate a file of core memory information or a core dump:

```
vsg(config)# system cores tftp://10.91.51.200/svr15svc_cores
vsg(config)# show system cores
Cores are transferred to tftp://10.91.51.200/svr15svc_cores
vsg(config)#
```

**Note**

The filename (indicated by svr15svc\_cores) must exist in the TFTP server directory.

## Copying Files

You might need to move files to or from the switch. These files may include log, configuration, or firmware files.

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The Cisco VSG always acts as a client. For example, an FTP/SCP/TFTP session always originates from the switch and either pushes files to an external system or pulls files from an external system.

```
File Server: 172.22.36.10
File to be copied to the switch: /etc/hosts
```

The **copy** CLI command supports 4 transfer protocols and 12 different sources for files.

This example shows the results of the command:

```
vsg# copy ?
bootflash:      Select source filesystem
core:           Select source filesystem
debug:          Select source filesystem
ftp:            Select source filesystem
log:            Select source filesystem
modflash:       Select source filesystem
nvram:          Select source filesystem
running-config Copy running configuration to destination
scp:            Select source filesystem
sftp:           Select source filesystem
startup-config Copy startup configuration to destination
system:         Select source filesystem
tftp:           Select source filesystem
volatile:       Select source filesystem
vsg#
```

This example shows how to use secure copy (SCP) as the transfer mechanism:

```
vsg# scp: [//[username@]server] [/path]
vsg#
```

This example shows how to copy /etc/hosts from 172.22.36.10 using the user user1, where the destination is hosts.txt:

```
vsg# copy scp://user1@172.22.36.10/etc/hosts bootflash:hosts.txt
user1@172.22.36.10's password:
hosts 100% |*****| 2035 00:00
vsg#
```

This example shows how to back up the startup configuration to an SFTP server:

```
vsg# copy startup-config sftp://user1@172.22.36.10/test/startup-configuration.bak1
Connecting to 172.22.36.10...
User1@172.22.36.10's password:
vsg#
```



### Tip

You should back up the startup-configuration file to a server daily and before you make any changes. You could use a short script to be run on the Cisco VSG to perform a save and a backup of the configuration. The script must contain two commands: **copy running-configuration startup-configuration** and **copy startup-configuration tftp://server/name**. To execute the script, use the **run-script [filename]** command.

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