C H A P T E R 14

Configuring RMON

This chapter describes how to configure the RMON feature on Cisco NX-OS devices.

This chapter includes the following sections:

Information About RMON

RMON is a Simple Network Management Protocol (SNMP) Internet Engineering Task Force (IETF) standard monitoring specification that allows various network agents and console systems to exchange network monitoring data. Cisco NX-OS supports RMON alarms, events, and logs to monitor Cisco NX-OS devices.

An RMON alarm monitors a specific management information base (MIB) object for a specified interval, triggers an alarm at a specified threshold value (threshold), and resets the alarm at another threshold value. You can use alarms with RMON events to generate a log entry or an SNMP notification when the RMON alarm triggers.

Beginning with Cisco NX-OS Release 5.1, RMON is enabled by default, but no alarms are configured in Cisco NX-OS. You can configure RMON alarms by using the CLI or an SNMP-compatible network management station.

This section includes the following topics:

RMON Alarms

You can set an alarm on any MIB object that resolves into an SNMP INTEGER type. The specified object must be an existing SNMP MIB object in standard dot notation (for example, 1.3.6.1.2.1.2.2.1.14 represents ifInOctets.14).

When you create an alarm, you specify the following parameters:

• MIB object to monitor.

• Sampling interval—The interval that Cisco NX-OS uses to collect a sample value of the MIB object.

• Sample type—Absolute samples take the current snapshot of the MIB object value. Delta samples take two consecutive samples and calculate the difference between them.

• Rising threshold—The value at which Cisco NX-OS triggers a rising alarm or resets a falling alarm.

• Falling threshold—The value at which Cisco NX-OS triggers a falling alarm or resets a rising alarm.

• Events—The action that Cisco NX-OS takes when an alarm (rising or falling) triggers.

> **Note** Use the hcalarms option to set an alarm on a 64-bit integer MIB object.

For example, you can set a delta type rising alarm on an error counter MIB object. If the error counter delta exceeds this value, you can trigger an event that sends an SNMP notification and logs the rising alarm event. This rising alarm will not occur again until the delta sample for the error counter drops below the falling threshold.

> **Note** The falling threshold must be less than the rising threshold.

RMON Events

You can associate a particular event to each RMON alarm. RMON supports the following event types:

• SNMP notification—Sends an SNMP risingAlarm or fallingAlarm notification when the associated alarm triggers.

• Log—Adds an entry in the RMON log table when the associated alarm triggers.

• Both—Sends an SNMP notification and adds an entry in the RMON log table when the associated alarm triggers.

You can specify a different event for a falling alarm and a rising alarm.

High Availability

Cisco NX-OS supports stateless restarts for RMON. After a reboot or supervisor switchover, Cisco NX-OS applies the running configuration.

Virtualization Support

Cisco NX-OS supports one instance of the RMON per virtual device context (VDC). By default, Cisco NX-OS places you in the default VDC. See the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x.*

RMON is virtual routing and forwarding (VRF) aware. You can configure RMON to use a particular VRF to reach the RMON SMTP server.

Licensing Requirements for RMON

Product	License Requirement
Cisco NX-OS	RMON requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the Cisco NX-OS licensing scheme, see the *Cisco NX-OS Licensing Guide*.

Prerequisites for RMON

RMON has the following prerequisites:

If you configure VDCs, install the Advanced Services license and enter the desired VDC (see the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x*).

Guidelines and Limitations

RMON has the following configuration guidelines and limitations:

- You must configure an SNMP user and a notification receiver to use the SNMP notification event type.

- You can configure an RMON alarm only on a MIB object that resolves to an integer.

- When you configure an RMON alarm, the object identifier must be complete with its index so that it refers to only one object. For example, 1.3.6.1.2.1.2.2.1.14 corresponds to cpmCPUTotal5minRev, and .1 corresponds to index cpmCPUTotalIndex, which creates object identifier 1.3.6.1.2.1.2.2.1.14.1.

Default Settings

Table 14-1 lists the default settings for RMON parameters.

Table 14-1   Default RMON Parameters

Parameters	Default
RMON	Enabled beginning with Cisco NX-OS Release 5.1
Alarms	None configured

Configuring RMON

This section includes the following topics:

> **Note** Be aware that the Cisco NX-OS commands for this feature may differ from those commands used in Cisco IOS.

Configuring RMON Alarms

You can configure RMON alarms on any integer-based SNMP MIB object.

You can optionally specify the following parameters:

- The event-number to trigger if the rising or falling threshold exceeds the specified limit.
- The owner of the alarm.

BEFORE YOU BEGIN

Ensure that you have configured an SNMP user and enabled SNMP notifications (see the "Configuring SNMP" section on page 1-8).

Make sure that you are in the correct VDC. To change the VDC, use the **switchto vdc** command.

SUMMARY STEPS

1. **config t**

2. **rmon alarm** *index mib-object sample-interval* {**absolute** | **delta**} **rising-threshold** *value* [*event-index*] f**alling-threshold** *value* [*event-index*] [**owner** *name*]

   or

   rmon hcalarm *index mib-object sample-interval* {**absolute** | **delta**} **rising-threshold-high** *value* **rising-threshold-low** *value* [*event-index*] **falling-threshold-high** *value* **falling-threshold-low** *value* [*event-index*] [**owner** *name*] [**storagetype** *type*]

3. **show rmon** [**alarms** | **hcalarms**]

4. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#	Places you in global configuration mode.
Step 2	**rmon alarm** *index mib-object sample-interval* {**absolute** | **delta**} **rising-threshold** *value* [*event-index*] **falling-threshold** *value* [*event-index*] [**owner** *name*] **Example:** switch(config)# rmon alarm 20 1.3.6.1.2.1.2.2.1.14.1 2900 delta rising-threshold 1500 1 falling-threshold 0 owner test	Creates an RMON alarm. The value range is from –2147483647 to 2147483647. The owner name can be any alphanumeric string.
	rmon hcalarm *index mib-object sample-interval* {**absolute** | **delta**} **rising-threshold-high** *value* **rising-threshold-low** *value* [*event-index*] **falling-threshold-high** *value* **falling-threshold-low** *value* [*event-index*] [**owner** *name*] [**storagetype** *type*] **Example:** switch(config)# rmon alarm 20 1.3.6.1.2.1.2.2.1.14.16777216 2900 delta rising-threshold-high 15 rising-threshold-low 151 falling-threshold-high 0 falling-threshold-low 0 owner test	Creates an RMON high capacity alarm. The value range is from –2147483647 to 2147483647. The owner name can be any alphanumeric string. The storage type range is from 1 to 5.
Step 3	**show rmon** {**alarms** | **hcalarms**} **Example:** switch(config)# show rmon alarms	(Optional) Displays information about rmon alarms or high capacity alarms.
Step 4	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Saves this configuration change.

Configuring RMON Events

You can configure RMON events to associate with RMON alarms. You can reuse the same event with multiple RMON alarms.

BEFORE YOU BEGIN

Ensure that you have configured an SNMP user and enabled SNMP notifications (see the "Configuring SNMP" section on page 1-8).

Make sure that you are in the correct VDC. To change the VDC, use the **switchto vdc** command.

SUMMARY STEPS

1. **config t**

2. **rmon event** *index* [**log**] [**trap** *string*] [**owner** *name*] [**description** *string*]

3. **show rmon events**

4. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	`config t`
	
	Example:
	`switch# config t`
	`Enter configuration commands, one per`
	`line.  End with CNTL/Z.`
	`switch(config)#`
		Places you in global configuration mode.

Step 2	`rmon event` *index* [`log`] [`trap` *string*] [`owner` *name*] [`description` *string*] **Example:** `switch(config)# rmon event 1 trap trap1`	Configures an RMON event. The trap string, owner name, and description string can be any alphanumeric string.

Step 3	`show rmon events`
	
	Example:
	`switch(config)# show rmon events`
		(Optional) Displays information about rmon events.

Step 4	`copy running-config startup-config`
	
	Example:
	`switch(config)# copy running-config`
	`startup-config`
		(Optional) Saves this configuration change.

Verifying the RMON Configuration

To display RMON configuration information, perform one of the following tasks:

Command	Purpose
show rmon alarms	Displays information about RMON alarms.
show rmon events	Displays information about RMON events.
show rmon hcalarms	Displays information about RMON hcalarms.
show rmon logs	Displays information about RMON logs.

Configuration Example for RMON

This example shows how to create a delta rising alarm on ifInOctets.14 and associates a notification event with this alarm:

```
config t
  rmon alarm 20 1.3.6.1.2.1.2.2.1.14.1 2900 delta rising-threshold 1500 1
falling-threshold 0 owner test
  rmon event 1 trap trap1
```

Related Topics

See the following related topics:

- Configuring SNMP, page 1-1

Additional References

For additional information related to implementing RMON, see the following sections:

- Related Documents, page 14-231
- Standards, page 14-232
- MIBs, page 14-232

Related Documents

Related Topic	Document Title
RMON CLI commands	*Cisco Nexus 7000 Series NX-OS System Management Command Reference*
VDCs and VRFs	*Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x*

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
• RMON-MIB	To locate and download MIBs, go to the following URL: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

Feature History for RMON

Table 14-2 lists the release history for this feature.

Table 14-2   Feature History for RMON

Feature Name	Releases	Feature Information
RMON	5.2(1)	No change from Release 5.1.
RMON	5.1(1)	Enabled RMON by default.
RMON	5.0(2)	No change from Release 4.2.