



## CHAPTER 11

# Configuring RMON

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

This chapter includes the following sections:

- [Information About RMON, page 11-1](#)
- [Licensing Requirements for RMON, page 11-3](#)
- [Prerequisites for RMON, page 11-3](#)
- [Guidelines and Limitations, page 11-3](#)
- [Configuring RMON, page 11-3](#)
- [Verifying RMON Configuration, page 11-6](#)
- [RMON Example Configuration, page 11-6](#)
- [Related Topics, page 11-7](#)
- [Default Settings, page 11-7](#)
- [Additional References, page 11-7](#)

## 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.

RMON is disabled by default and no events or alarms are configured in Cisco NX-OS. You can configure your RMON alarms and events by using the CLI or an SNMP-compatible network management station.

This section includes the following topics:

- [RMON Alarms, page 11-2](#)
- [RMON Events, page 11-2](#)
- [High Availability, page 11-2](#)
- [Virtualization Support, page 11-3](#)

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## 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

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

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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

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The falling threshold must be less than the rising threshold.

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## 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.

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## 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 4.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
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 NX-OS licensing scheme. For more information, see the <i>Cisco NX-OS Licensing Guide</i> .

## 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 4.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 only configure an RMON alarm 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.

## Configuring RMON

This section includes the following topics:

- [Configuring RMON Alarms, page 11-4](#)
- [Configuring RMON Events, page 11-5](#)



### Note

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

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## 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 10-7).

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*] **falling-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	<b>config t</b>  <b>Example:</b> switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#	Places you in global configuration mode.

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	Command	Purpose
Step 2	<pre>rmon alarm index mib-object sample-interval {absolute   delta} rising-threshold value [event-index] falling-threshold value [event-index] [owner name]  <b>Example:</b> 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</pre>	Creates an RMON alarm. The value range is from –2147483647 to 2147483647. The owner name can be any alphanumeric string.
	<pre>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]  <b>Example:</b> 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</pre>	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	<pre>show rmon {alarms   hcalarms}  <b>Example:</b> switch(config)# show rmon alarms</pre>	(Optional) Displays information about rmon alarms or high capacity alarms.
Step 4	<pre>copy running-config startup-config  <b>Example:</b> switch(config)# copy running-config startup-config</pre>	(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 10-7).

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 [description string] [log] [trap] [owner name]**

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3. `show rmon events`
4. `copy running-config startup-config`

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#	Places you in global configuration mode.
Step 2	<b>rmon event index [description string] [log] [trap] [owner name]</b>  <b>Example:</b> switch(config)# rmon event 1 trap	Configures an RMON event. The description string and owner name can be any alphanumeric string.
Step 3	<b>show rmon events</b>  <b>Example:</b> switch(config)# show rmon events	(Optional) Displays information about rmon events.
Step 4	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config)# copy running-config startup-config	(Optional) Saves this configuration change.

## Verifying RMON Configuration

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

Command	Purpose
<code>show rmon alarms</code>	Displays information about RMON alarms.
<code>show rmon events</code>	Displays information about RMON events.
<code>show rmon hcalarms</code>	Displays information about RMON hcalarms.
<code>show rmon logs</code>	Displays information about RMON logs.

## RMON Example Configuration

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
```

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## Related Topics

See the following related topics:

- [Configuring SNMP, page 10-1.](#)

## Default Settings

Table 11-1 lists the default settings for RMON parameters.

**Table 11-1**      *Default RMON Parameters*

Parameters	Default
Alarms	None configured.
Events	None configured.

## Additional References

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

- [Related Documents, page 11-7](#)
- [Standards, page 11-7](#)
- [MIBs, page 11-8](#)

## Related Documents

Related Topic	Document Title
RMON CLI commands	<i>Cisco Nexus 7000 Series NX-OS System Management Command Reference</i>
VDCs and VRFs	<i>Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 4.x</i>

## 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.	—

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## MIBs

MIBs	MIBs Link
<ul style="list-style-type: none"><li>• RMON-MIB</li></ul>	To locate and download MIBs, go to the following URL: <a href="http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml">http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml</a>