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# CHAPTER 1

## Configuring RMON

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This chapter describes how to configure the RMON feature.

This chapter includes the following sections:

- [Information About RMON, page 1-1](#)
- [Configuration Guidelines and Limitations, page 1-2](#)
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## Information About RMON

RMON is an Internet Engineering Task Force (IETF) standard monitoring specification that allows various network agents and console systems to exchange network monitoring data. The Cisco NX-OS supports RMON alarms, events and logs to monitor Cisco Nexus 5000 Series switches

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 Nexus 5000 Series. You can configure your RMON alarms and events by using the CLI or an SNMP-compatible network management station

This section contains the following topics:

- [RMON Alarms, page 1-1](#)
- [RMON Events, page 1-2](#)

## 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).

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

- MIB object to monitor
- Sampling interval—The interval that the Cisco Nexus 5000 Series switch uses to collect a sample value of the MIB object.
- The 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 the Cisco Nexus 5000 Series switch triggers a rising alarm or resets a falling alarm.
- Falling threshold—The value at which the Cisco Nexus 5000 Series switch triggers a falling alarm or resets a rising alarm.
- Events—The action that the Cisco Nexus 5000 Series switch 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.

## Configuration Guidelines and Limitations

RMON has the following configuration guidelines and limitations:

- You must configure an SNMP user as 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.

## Configuring RMON

This section includes the following topics:

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- [Configuring RMON Alarms, page 1-3](#)
- [Configuring RMON Events, page 1-4](#)

**Note**

If you are familiar with the Cisco IOS CLI, be aware that the Cisco NX-OS commands for this feature might differ from the Cisco IOS commands that you would use.

## Configuring RMON Alarms

You can configure RMON alarms on any integer-based SNMP MIB object. The following two types of SNMP alarms can be configured:

- 32-bit RMON alarm
- 64-bit high-capacity RMON alarm

To configure the 32-bit RMON alarm, use the **rmon alarm** command. To configure the 64-bit high-capacity RMON alarm, use the **rmon hcalarm** command.

You can optionally specify the following parameters:

- The event-number for 32-bit and 64-bit RMON alarms. The event number triggers the alarm if the rising or falling threshold exceeds the specified limit. Use the *rising-event* or *falling-event* parameters to specify the event-number value. The range is from 0 to 65535. If no value is specified, event 0 is the default.
- The rising and falling threshold value for 32-bit RMON alarms. Use the **rising-threshold value** command or the **falling-threshold value** command. The range is from – 2147483647 to 214748364.
- The rising threshold value for 64-bit RMON alarms. Use the **rising-threshold-high value** command to configure the upper 32 bits of the 64-bit rising threshold value. Use the **rising-threshold-low value** command to configure the lower 32 bits of the 64-bit rising threshold value. The range is from 0 to 4294967295.
- The falling threshold value for 64-bit RMON alarms. Use the **falling-threshold-high value** command to configure the upper 32 bits of the 64-bit falling threshold value. Use the **falling-threshold-low value** command to configure the lower 32 bits of the 64-bit falling threshold value. The range is from 0 to 4294967295.
- The owner of the alarm.

Ensure you have configured an SNMP user and enabled SNMP notifications (see the [“Configuring SNMP” section on page 1-5](#)).

To configure RMON alarms, perform this task:

Command	Purpose
Step 1 switch# <b>configure terminal</b>	Enters configuration mode.

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	Command	Purpose
Step 2	switch(config)# <b>rmon alarm</b> <i>index</i> <i>mib-object</i> <i>sample-interval</i> { <b>absolute</b>   <b>delta</b> } <b>rising-threshold</b> <i>value</i> [ <i>event-index</i> ] <b>falling-threshold</b> <i>value</i> [ <i>event-index</i> ] [ <i>owner name</i> ]	Creates a 32-bit RMON alarm. The value range is from – 2147483647 to 2147483647. The owner name can be any alphanumeric string.
	switch(config)# <b>rmon hcalarm</b> <i>index</i> <i>mib-object</i> <i>sample-interval</i> { <b>absolute</b>   <b>delta</b> } <b>rising-threshold-high</b> <i>value</i> <b>rising-threshold-low</b> <i>value</i> [ <i>event-index</i> ] <b>falling-threshold-high</b> <i>value</i> <b>falling-threshold-low</b> <i>value</i> [ <i>event-index</i> ] [ <i>owner name</i> ] [ <b>storagetype</b> <i>type</i> ]	Creates a 64-bit high-capacity RMON 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	switch(config)# <b>show rmon</b> { <b>alarms</b>   <b>hcalarms</b> }	(Optional) Displays information about rmon alarms or high capacity alarms.
Step 4	switch(config)# <b>copy running-config</b> <b>startup-config</b>	(Optional) Saves this configuration change.

The following example shows how to configure RMON alarms:

```
switch# configure terminal
switch(config)# rmon alarm 20 1.3.6.1.2.1.2.2.1.14 2900 delta rising-threshold 1500 1
falling-threshold 0 owner test
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
switch(config)# show rmon alarms
switch(config)# copy running-config startup-config
```

## Configuring RMON Events

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

Ensure you have configured an SNMP user and enabled SNMP notifications (see the “[Configuring SNMP](#)” section on page 1-5).

To configure RMON events, perform this task:

	Command	Purpose
Step 1	switch# <b>configure terminal</b>	Enters configuration mode.
Step 2	switch(config)# <b>rmon event</b> <i>index</i> [ <i>description string</i> ] [ <b>log</b> ] [ <b>trap</b> ] [ <i>owner</i> <i>name</i> ]	Configures an RMON event. The description string and owner name can be any alphanumeric string.

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	Command	Purpose
Step 3	<code>switch(config)# show rmon {alarms   hcalarms}</code>	(Optional) Displays information about RMON alarms or high-capacity alarms.
Step 4	<code>switch(config)# copy running-config startup-config</code>	(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 creates a delta rising alarm on ifInOctets.14 and associates a notification event with this alarm:

```
configure terminal
  rmon alarm 20 1.3.6.1.2.1.2.2.1.14 2900 delta rising-threshold 1500 1 falling-threshold 0
  owner test
  rmon event 1 trap
```

## Related Topics

See the following related topics:

- [Configuring SNMP, page 1-5.](#)

## Default Settings

[Table 1-1](#) lists the default settings for RMON parameters.

**Table 1-1** Default RMON Parameters

Parameters	Default
Alarms	None configured
events	None configured

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