



## CHAPTER 50

# Configuring RMON

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RMON is an Internet Engineering Task Force (IETF) standard monitoring specification that allows various network agents and console systems to exchange network monitoring data. You can use the RMON alarms and events to monitor Cisco MDS 9000 Family switches running the Cisco SAN-OS Release 2.0(1b) or later or Cisco NX-OS 4.1(3) software.

This chapter includes the following sections:

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## About RMON

All switches in the Cisco MDS 9000 Family support the following RMON functions (defined in RFC 2819):

- **Alarm**—Each alarm monitors a specific management information base (MIB) object for a specified interval. When the MIB object value exceeds a specified value (rising threshold), the alarm condition is set and only one event is triggered regardless of how long the condition exists. When the MIB object value falls below a certain value (falling threshold), the alarm condition is cleared. This allows the alarm to trigger again when the rising threshold is crossed again.
- **Event**—Determines the action to take when an event is triggered by an alarm. The action can be to generate a log entry, an SNMP trap, or both.

For agent and management information, see the *Cisco MDS 9000 Family MIB Quick Reference*.

For information on an SNMP-compatible network management station, see the *Cisco MDS 9000 Family Fabric Manager Configuration Guide*.

For SNMP security-related CLI configurations, see the [“About SNMP Security” section on page 33-1](#)

## Configuring RMON

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

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**Note**

You must enable the RMON traps in the SNMP configuration for the RMON configuration to function correctly.

To enable RMON traps in the SNMP configuration, follow these steps:

	Command	Purpose
Step 1	switch# <b>config t</b>	Enters configuration mode.
Step 2	switch(config)# <b>snmp-server enable traps rmon</b>	Enables the RMON trap types.

**Tip**

We recommend an additional, generic RMON console application on the network management station (NMS) to take advantage of RMON's network management capabilities. Refer to the *Cisco MDS 9000 Family Fabric Manager Configuration Guide*.

**Note**

You must also configure SNMP on the switch to access RMON MIB objects.

## RMON Alarm Configuration

You can set an alarm on any MIB object. The specified MIB must be an existing SNMP MIB object in standard dot notation (1.3.6.1.2.1.2.2.1.14.16777216 for ifInOctets.16777216).

Use one of the following options to specify the interval to monitor the MIB variable (ranges from 1 to 4294967295 seconds):

- Use the **delta** option to test the change between samples of a MIB variable.
- Use the **absolute** option to test each MIB variable directly.
- Use the **delta** option to test any MIB objects that are counters.

The range for the **rising threshold** and **falling threshold** values is -2147483647 to 2147483647.

**Caution**

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

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.

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To enable RMON alarms, follow these steps:

	Command	Purpose
Step 1	switch# <b>config t</b>	Enters configuration mode.
Step 2	switch(config)# <b>rmon alarm 20 1.3.6.1.2.1.2.2.1.14.16777216 2900 delta rising-threshold 15 1 falling-threshold 0 owner test</b>	Configures RMON alarm number 20 to monitor the 1.3.6.1.2.1.2.2.1.14.16777216 once every 900 seconds until the alarm is disabled and checks the change in the variable's rise or fall. If the value shows a MIB counter increase of 15 or more, the software triggers an alarm. The alarm in turn triggers event number 1, which is configured with the RMON event command. Possible events can include a log entry or an SNMP trap. If the MIB value changes by 0, the alarm is reset and can be triggered again.
	switch(config)# <b>no rmon alarm 2</b>	Deletes the specified entry from the alarm table.

## RMON Event Configuration

To enable RMON events, follow these steps:

	Command	Purpose
Step 1	switch# <b>config t</b>	Enters configuration mode.
Step 2	switch(config)# <b>rmon event 2 log trap eventtrap description CriticalErrors owner Test2</b>	Creates RMON event number 2 to define CriticalErrors and generates a log entry when the event is triggered by the alarm. The user Test2 owns the row that is created in the event table by this command. This example also generates an SNMP trap when the event is triggered.
	switch(config)# <b>no rmon event 5</b>	Deletes an entry from the RMON event table.

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## RMON Verification

Use the **show rmon** and **show snmp** commands to display configured RMON and SNMP information (see [Example 50-1](#) and [50-3](#)).

### Example 50-1 Displays Configured RMON Alarms

```
switch# show rmon alarms
Alarm 1 is active, owned by admin
Monitors 1.3.6.1.2.1.2.2.1.16.16777216 every 1 second(s)
Taking delta samples, last value was 0
Rising threshold is 1, assigned to event 0
Falling threshold is 0, assigned to event 0
On startup enable rising or falling alarm
```

### Example 50-2 Displays Configured RMON High Capacity Alarms

```
switch# show rmon hcalarms
High Capacity Alarm 10 is active, owned by Testuser
Monitors 1.3.6.1.2.1.31.1.1.1.6.16785408 every 300 second(s)
Taking absolute samples, last value was 0 (valuePositive)
Rising threshold low is 4294967295 & high is 15 (valuePositive)
Rising threshold assigned to event 1
Falling threshold low is 0 & high is 0 (valueNotAvailable)
Falling threshold assigned to event 0
On startup enable rising alarm
Number of Failed Attempts is 0
```



#### Note

High capacity RMON alarms can be configured using the CISCO-HC-ALARM-MIB. See the [Cisco MDS 9000 Family MIB Quick Reference](#).

### Example 50-3 Displays Configured RMON Events

```
switch# show rmon events
Event 2 is active, owned by Test2
Description is CriticalErrors
Event firing causes log and trap to community eventtrap, last fired 0
Event 500 is active, owned by admin
Description is
Event firing causes log, last fired 138807208
```

## Default Settings

[Table 50-1](#) lists the default settings for all RMON features in any switch.

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**Table 50-1**      **Default RMON Settings**

<b>Parameters</b>	<b>Default</b>
RMON alarms	Disabled.
RMON events	Disabled.

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