CHAPTER 27

Configuring RMON

This chapter describes how to configure Remote Network Monitoring (RMON) on the IE 3000 switch.

RMON is a standard monitoring specification that defines a set of statistics and functions that can be exchanged between RMON-compliant console systems and network probes. RMON provides you with comprehensive network-fault diagnosis, planning, and performance-tuning information.

Note For complete syntax and usage information for the commands used in this chapter, see the "System Management Commands" section in the *Cisco IOS Configuration Fundamentals Command Reference, Release 12.2* from the Cisco.com page under **Documentation > Cisco IOS Software > 12.2 Mainline > Command References**.

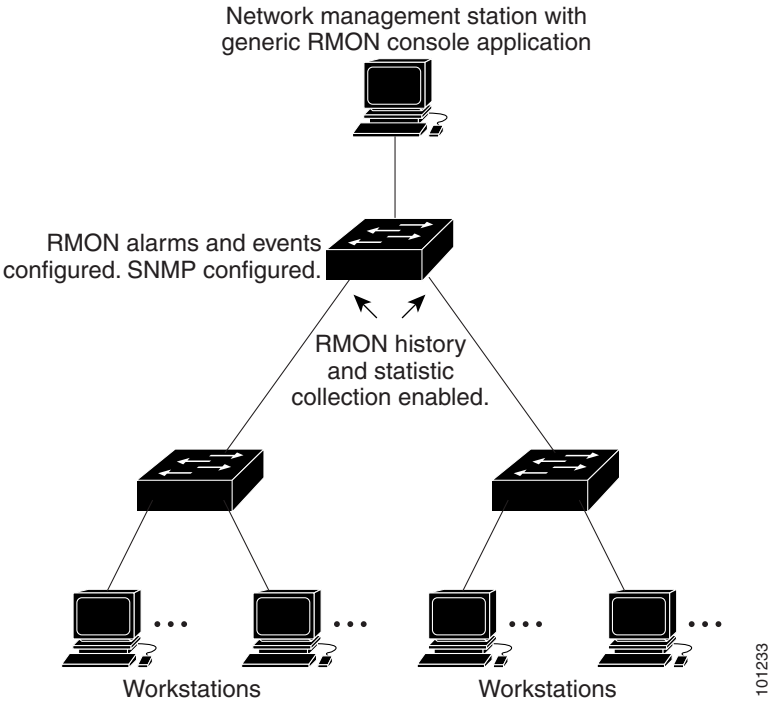
This chapter consists of these sections:

- Understanding RMON, page 27-1
- Configuring RMON, page 27-2
- Displaying RMON Status, page 27-6

Understanding 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. You can use the RMON feature with the Simple Network Management Protocol (SNMP) agent in the switch to monitor all the traffic flowing among switches on all connected LAN segments as shown in Figure 27-1.

Figure 27-1 Remote Monitoring Example



The switch supports these RMON groups (defined in RFC 1757):

- Statistics (RMON group 1)—Collects Ethernet statistics (including Fast Ethernet and Gigabit Ethernet statistics, depending on the switch type and supported interfaces) on an interface.
- History (RMON group 2)—Collects a history group of statistics on Ethernet ports (including Fast Ethernet and Gigabit Ethernet statistics, depending on the switch type and supported interfaces) for a specified polling interval.
- Alarm (RMON group 3)—Monitors a specific management information base (MIB) object for a specified interval, triggers an alarm at a specified value (rising threshold), and resets the alarm at another value (falling threshold). Alarms can be used with events; the alarm triggers an event, which can generate a log entry or an SNMP trap.
- Event (RMON group 9)—Specifies the action to take when an event is triggered by an alarm. The action can be to generate a log entry or an SNMP trap.

Because switches supported by this software release use hardware counters for RMON data processing, the monitoring is more efficient, and little processing power is required.

Configuring RMON

These sections contain this configuration information:

- Default RMON Configuration, page 27-3
- Configuring RMON Alarms and Events, page 27-3 (required)
- Collecting Group History Statistics on an Interface, page 27-5 (optional)
- Collecting Group Ethernet Statistics on an Interface, page 27-5 (optional)

Default RMON Configuration

RMON is disabled by default; no alarms or events are configured.

Configuring RMON Alarms and Events

You can configure your switch for RMON by using the command-line interface (CLI) or an SNMP-compatible network management station. We recommend that you use a generic RMON console application on the network management station (NMS) to take advantage of the RMON network management capabilities. You must also configure SNMP on the switch to access RMON MIB objects. For more information, see Chapter 29, "Configuring SNMP."

Beginning in privileged EXEC mode, follow these steps to enable RMON alarms and events. This procedure is required.

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**rmon alarm** *number variable interval* {**absolute** | **delta**} **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *string*]	Set an alarm on a MIB object. • For *number*, specify the alarm number. The range is 1 to 65535. • For *variable*, specify the MIB object to monitor. • For *interval*, specify the time in seconds the alarm monitors the MIB variable. The range is 1 to 4294967295 seconds. • Specify the **absolute** keyword to test each MIB variable directly. Specify the **delta** keyword to test the change between samples of a MIB variable. • For *value*, specify a number at which the alarm is triggered and one for when the alarm is reset. The range for the rising threshold and falling threshold values is -2147483648 to 2147483647. • (Optional) For *event-number*, specify the event number to trigger when the rising or falling threshold exceeds its limit. • (Optional) For **owner** *string*, specify the owner of the alarm.

	Command	Purpose
Step 3	**rmon event** *number* [**description** *string*] [**log**] [**owner** *string*] [**trap** *community*]	Add an event in the RMON event table that is associated with an RMON event number. • For *number*, assign an event number. The range is 1 to 65535. • (Optional) For **description** *string*, specify a description of the event. • (Optional) Use the **log** keyword to generate an RMON log entry when the event is triggered. • (Optional) For **owner** *string*, specify the owner of this event. • (Optional) For **trap** *community*, enter the SNMP community string used for this trap.
Step 4	**end**	Return to privileged EXEC mode.
Step 5	**show running-config**	Verify your entries.
Step 6	**copy running-config startup-config**	(Optional) Save your entries in the configuration file.

To disable an alarm, use the **no rmon alarm** *number* global configuration command on each alarm you configured. You cannot disable at once all the alarms that you configured. To disable an event, use the **no rmon event** *number* global configuration command. To learn more about alarms and events and how they interact with each other, see RFC 1757.

You can set an alarm on any MIB object. The following example configures RMON alarm number 10 by using the **rmon alarm** command. The alarm monitors the MIB variable *ifEntry.20.1* once every 20 seconds until the alarm is disabled and checks the change in the variable's rise or fall. If the *ifEntry.20.1* value shows a MIB counter increase of 15 or more, such as from 100000 to 100015, the alarm is triggered. 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 *ifEntry.20.1* value changes by 0, the alarm is reset and can be triggered again.

```
Switch(config)# rmon alarm 10 ifEntry.20.1 20 delta rising-threshold 15 1
falling-threshold 0 owner jjohnson
```

The following example creates RMON event number 1 by using the **rmon event** command. The event is defined as *High ifOutErrors* and generates a log entry when the event is triggered by the alarm. The user *jjones* 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)# rmon event 1 log trap eventtrap description "High ifOutErrors" owner
jjones
```

Collecting Group History Statistics on an Interface

You must first configure RMON alarms and events to display collection information.

Beginning in privileged EXEC mode, follow these steps to collect group history statistics on an interface. This procedure is optional.

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**interface** *interface-id*	Specify the interface on which to collect history, and enter interface configuration mode.
Step 3	**rmon collection history** *index* [**buckets** *bucket-number*] [**interval** *seconds*] [**owner** *ownername*]	Enable history collection for the specified number of buckets and time period. • For *index*, identify the RMON group of statistics The range is 1 to 65535. • (Optional) For **buckets** *bucket-number,* specify the maximum number of buckets desired for the RMON collection history group of statistics. The range is 1 to 65535. The default is 50 buckets. • (Optional) For **interval** *seconds*, specify the number of seconds in each polling cycle. The range is 1 to 3600. The default is 1800 seconds. • (Optional) For **owner** *ownername*, enter the name of the owner of the RMON group of statistics.
Step 4	**end**	Return to privileged EXEC mode.
Step 5	**show running-config**	Verify your entries.
Step 6	**show rmon history**	Display the contents of the switch history table.
Step 7	**copy running-config startup-config**	(Optional) Save your entries in the configuration file.

To disable history collection, use the **no rmon collection history** *index* interface configuration command.

Collecting Group Ethernet Statistics on an Interface

Beginning in privileged EXEC mode, follow these steps to collect group Ethernet statistics on an interface. This procedure is optional.

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**interface** *interface-id*	Specify the interface on which to collect statistics, and enter interface configuration mode.

	Command	Purpose
Step 3	**rmon collection stats** *index* [**owner** *ownername*]	Enable RMON statistic collection on the interface. • For *index*, specify the RMON group of statistics. The range is from 1 to 65535. • (Optional) For **owner** *ownername*, enter the name of the owner of the RMON group of statistics.
Step 4	**end**	Return to privileged EXEC mode.
Step 5	**show running-config**	Verify your entries.
Step 6	**show rmon statistics**	Display the contents of the switch statistics table.
Step 7	**copy running-config startup-config**	(Optional) Save your entries in the configuration file.

To disable the collection of group Ethernet statistics, use the **no rmon collection stats** *index* interface configuration command.

This example shows how to collect RMON statistics for the owner *root*:

```
Switch(config)# interface gigabitethernet1/1
Switch(config-if)# rmon collection stats 2 owner root
```

Displaying RMON Status

To display the RMON status, use one or more of the privileged EXEC commands in Table 27-1:

Table 27-1 Commands for Displaying RMON Status

Command	Purpose
show rmon	Displays general RMON statistics.
show rmon alarms	Displays the RMON alarm table.
show rmon events	Displays the RMON event table.
show rmon history	Displays the RMON history table.
show rmon statistics	Displays the RMON statistics table.

For information about the fields in these displays, see the "System Management Commands" section in the *Cisco IOS Configuration Fundamentals Command Reference, Release 12.2* from the Cisco.com page under **Documentation > Cisco IOS Software > 12.2 Mainline > Command References**.