CHAPTER 23

Configuring RMON

This chapter describes how to configure Remote Network Monitoring (RMON) on your switch.

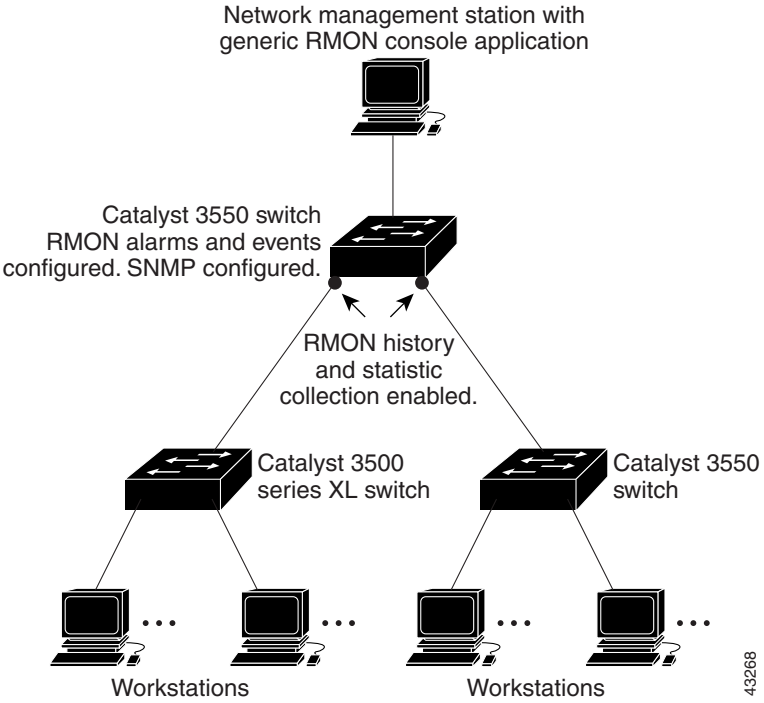
Note For complete syntax and usage information for the commands used in this chapter, refer to the *Cisco IOS Configuration Fundamentals Command Reference for Release 12.1*.

This chapter consists of these sections:

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.

Figure 23-1 Remote Monitoring Example



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

- Statistics (RMON group 1)—Collects Ethernet, Fast Ethernet, and Gigabit Ethernet statistics on an interface.
- History (RMON group 2)—Collects a history group of statistics on Ethernet, Fast Ethernet, and Gigabit Ethernet 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)—Determines 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 IOS release use hardware counters for RMON data processing, the monitoring is more efficient, and little processing power is required.

Configuring RMON

This section describes how to configure RMON on your switch. It contains this configuration information:

- Default RMON Configuration, page 23-3
- Configuring RMON Alarms and Events, page 23-3
- Configuring RMON Collection on an Interface, page 23-5

Default RMON Configuration

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

Only RMON 1 is supported on the switch.

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 RMON's network management capabilities. You must also configure SNMP on the switch to access RMON MIB objects. For more information, see Chapter 25, "Configuring SNMP."

Beginning in privileged EXEC mode, follow these steps to enable RMON alarms and events:

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**rmon alarm** *number variable interval* {**delta** | **absolute**} **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 **delta** keyword to test the change between samples of a MIB variable; specify the **absolute** keyword to test each MIB variable directly. • 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 *string*, specify the owner of the alarm.

	Command	Purpose
Step 3	**rmon event** *number* [**log**] [**trap** *community*] [**description** *string*] [**owner** *string*]	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) Use the **log** keyword to generate an RMON log entry when the event is triggered. • (Optional) For *community*, enter the SNMP community string used for this trap. • (Optional) For **description** *string*, specify a description of the event. • (Optional) For **owner** *string*, specify the owner of this event.
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, refer to 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
```

Configuring RMON Collection 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:

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**interface** *interface-id*	Enter interface configuration mode, and specify the interface on which to collect history.
Step 3	**rmon collection history** *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]	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 *ownername*, enter the name of the owner of the RMON group of statistics. • For *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. • For *seconds*, specify the number of seconds in each polling cycle.
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.

Beginning in privileged EXEC mode, follow these steps to collect group Ethernet statistics on an interface:

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

	Command	Purpose
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.

Displaying RMON Status

To display the RMON status, use one or more of the privileged EXEC commands in Table 23-1:

Table 23-1 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.