RMON Command Reference

This chapter describes commands to configure Remote Monitoring (RMON).

rmon

To enable Remote Monitoring (RMON) on an Ethernet interface, use the **rmon** command in interface configuration mode. To disable RMON on the interface, use the **no** form of this command.

rmon {**native** | **promiscuous**}

Syntax Description

native	Enables RMON on the Ethernet interface. In native mode, the router processes only packets destined for this interface.
promiscuous	Enables RMON on the Ethernet interface. In promiscuous mode, the router examines each packet.

Command Default

RMON is disabled on the interface.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

This command enables RMON on Ethernet interfaces. A generic RMON console application is recommended in order to use the RMON network management capabilities. Simple Network Management Protocol (SNMP) must also be configured. RMON provides visibility of individual nodal activity and monitors all nodes and their interaction on a LAN segment. When the **rmon** command is used, the router automatically installs an Ethernet statistics study for the associated interface.

RMON can be very data and processor intensive. Measure usage effects to ensure that router performance is not degraded and to minimize excessive management traffic overhead. Native mode is less intensive than promiscuous mode.

Examples

The following example enables RMON on an interface and allows the router to examine only packets destined for the interface.

```
Router(config)# interface TenGigabitEthernet4/1
Router(config-if)# rmon native
```

Related Commands

Command	Description
rmon alarm	Sets an alarm on any MIB object.

Command	Description
rmon event	Adds or removes an event in the RMON event table that is associated with an RMON event number.
show rmon	Displays the current RMON agent status on the router.

rmon alarm

To set a RMON alarm on a MIB object, use the **rmon alarm** command in global configuration mode. To disable the alarm, use the **no** form of this command.

rmon alarm *number variable interval* {**delta** | **absolute**} **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *string*]

no rmon alarm number

Syntax Description

number	Alarm number, which is identical to the *alarmIndex* in the alarmTable in the RMON MIB.
variable	MIB object to monitor, which translates into the *alarmVariable* used in the alarmTable of the RMON MIB.
interval	Time in seconds. The alarm monitors the MIB variable, which is identical to the *alarmInterval* used in the alarmTable of the RMON MIB.
delta	Tests the change between MIB variables, which affects the *alarmSampleType* in the alarmTable of the RMON MIB.
absolute	Tests each MIB variable directly, which affects the *alarmSampleType* in the alarmTable of the RMON MIB.
rising-threshold *value*	Specifies the value at which the alarm is triggered.
event-number	(Optional) Event number to trigger when the rising or falling threshold exceeds its limit. This value is identical to the *alarmRisingEventIndex* or the *alarmFallingEventIndex* in the alarmTable of the RMON MIB.
falling-threshold *value*	Specifies the value at which the alarm is reset.
owner *string*	(Optional) Specifies an owner for the alarm, which is identical to the *alarmOwner* in the alarmTable of the RMON MIB.

Command Default

No RMON alarms are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

The MIB object must be specified as a dotted decimal value after the entry sequence (for example, ifEntry.10.1). You cannot specify the variable name and the instance (for example, ifInOctets.1) or the entire dotted decimal notation. The variable must be of the form *entry.integer.instance*.

To disable the RMON alarms, you must use the **no** form of the command on each configured alarm. For example, enter **no rmon alarm 1**, where 1 identifies the alarm to be removed.

Examples

The following example shows how to configure an RMON alarm using the **rmon alarm** command:

```
rmon alarm 10 ifEntry.20.1 20 delta rising-threshold 15 1 falling-threshold 0 owner user1
```

This example configures RMON alarm number 10. The alarm monitors the MIB variable *ifEntry.20.1* once every 20 seconds until the alarm is disabled, and checks the change in the rise or fall of the variable. 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. The possible events 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.

Related Commands

Command	Description
rmon	Enables RMON on an Ethernet interface.
rmon event	Adds or removes an event in the RMON event table that is associated with an RMON event number.
show rmon	Displays the current RMON agent status on the router.

rmon collection history

To enable RMON history gathering on an interface, use the **rmon collection history** command in interface configuration mode. To disable the history gathering on an interface, use the **no** form of this command.

rmon collection history controlEntry *integer* [**buckets** *bucket-number*] [**interval** *seconds*] [**owner** *ownername*]

no rmon collection history controlEntry *integer* [**buckets** *bucket-number*] [**interval** *seconds*] [**owner** *ownername*]

Syntax Description

controlEntry	Specifies the RMON group of statistics using a value.
integer	Integer that identifies the RMON group of statistics and matches the index value returned for SNMP requests. The range is from 1 to 65535.
owner	(Optional) Specifies the name of the owner of the RMON group of statistics.
ownername	(Optional) Name of the owner of the RMON group of statistics.
buckets *bucket-number*	(Optional) Specifies the maximum number of buckets desired for the RMON collection history group of statistics.
interval *seconds*	(Optional) Specifies the interval, in seconds, when history should be gathered in a single bucket. When the interval ends, history is collected into a new bucket.

Command Default

The RMON history gathering is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

Use the **show rmon capture** and **show rmon matrix** commands to display RMON statistics.

Examples

The following example enables RMON history collection with an ID number of 5 and an owner named user1.

```
Router(config-if)# rmon collection history controlEntry 5 buckets 5 interval 10 owner user1
```

Related Commands

Command	Description
show rmon capture	Displays the RMON buffer capture table and current configuration.
show rmon matrix	Displays the RMON matrix table and values associated with RMON variables.

rmon collection host

To enable a RMON MIB host collection group of statistics on an interface, use the **rmon collection host** command in interface configuration mode. To remove the specified RMON host collection, use the **no** form of the command.

rmon collection host controlEntry *integer* [**owner** *ownername*]

no rmon collection host controlEntry *integer* [**owner** *ownername*]

Syntax Description

controlEntry	Specifies the RMON group of statistics using a value.
integer	Integer that identifies the RMON group of statistics and matches the index value returned for SNMP requests. The range is from 1 to 65535.
owner	(Optional) Specifies the name of the owner of the RMON group of statistics.
ownername	(Optional) Name of the owner of the RMON group of statistics.

Command Default

RMON host collection is not specified.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

Use the **show rmon hosts** and **show rmon matrix** commands to display RMON statistics.

Examples

The following command shows how to enable an RMON collection host group of statistics with an ID number of 10, and specifies *user1* as the owner:

```
Router(config-if)# rmon collection host controlEntry 10 owner user1
```

Related Commands

Command	Description
show rmon hosts	Displays the RMON hosts table.
show rmon matrix	Displays the RMON matrix table and values associated with RMON variables.

rmon event

To add or remove an event in the RMON event table that is associated with an RMON event number, use the **rmon event** command in global configuration mode. To remove an event in the RMON event table, use the **no** form of this command.

rmon event *number* [**log**] [**trap** *community*] [**description** *string*] [**owner** *string*]

no rmon event number

Syntax Description

number	Assigned event number, which is identical to the *eventIndex* in the eventTable in the RMON MIB.
log	(Optional) Generates an RMON log entry when the event is triggered and sets the *eventType* in the RMON MIB to *log* or *log-and-trap*.
trap *community*	(Optional) Specifies the SNMP community string used for this trap. Configures the setting of the *eventType* in the RMON MIB for this row as either *snmp-trap* or *log-and-trap*. This value is identical to the *eventCommunityValue* in the eventTable in the RMON MIB.
description *string*	(Optional) Specifies a description of the event, which is identical to the event description in the eventTable of the RMON MIB.
owner *string*	(Optional) Owner of this event, which is identical to the *eventOwner* in the eventTable of the RMON MIB.

Command Default

None.

Command Modes

Global configuration (config)

Command History

Release	Modification
9.3.0	This command was introduced.

Examples

The following example shows how to enable the **rmon event** command.

```
rmon event 1 log trap eventtrap description "High ifOutErrors" owner user
```

This example creates RMON event number 1, which is defined as *High ifOutErrors*, and generates a log entry when the event is triggered by an alarm. The user *user* owns the row that is created in the event table by this command. This example also generates a SNMP trap when the event is triggered.

Related Commands

Command	Description
rmon	Enables Remote Network Monitoring (RMON) on an Ethernet interface.
rmon alarm	Sets a RMON alarm on a MIB object.
show rmon	Displays the current RMON agent status on the router.

show controllers

To display the RMON performance parameters for 15 minute or 1 day intervals, use the **show controllers** command in privileged EXEC mode.

show controllers dwdm *slot/port* **pm interval** {**15-min** | **24-hour**}

Syntax Description

slot/port	Slot and port.
pm interval	Specifies the interval for performance monitoring.
15-min	Displays the performance parameters for a 15-minute interval.
24-hour	Displays the performance parameters for 1 day interval.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.3.0	This command was introduced.

Examples

The following example shows how to display the RMON performance parameters for a 15-minute interval.

```
Router# show controllers dwdm 4/3 pm interval 15-min
```

show rmon

To display the current RMON agent status on the router, use the **show rmon** command in privileged EXEC mode.

show rmon [**task** | **alarms** | **capture** | **events** | **filter** | **history** | **hosts** | **matrix** | **statistics** | **topn**]

Syntax Description

task	Displays general RMON statistics.
alarms	Displays the RMON alarm table.
capture	Displays the RMON buffer capture table and current configuration.
events	Displays the RMON event table.
filter	Displays the RMON filter table.
history	Displays the RMON history table.
hosts	Displays the RMON hosts table.
matrix	Displays the RMON matrix table and values associated with RMON variables.
statistics	Displays the RMON statistics table
topn	Displays the RMON top-n hosts table

Command Default

The **task** option is displayed.

Command Modes

Privileged Exec (#)

Command History

Release	Modification
9.3.0	This command was introduced.

Examples

The following example shows how to display general RMON statistics.

```
Router# show rmon

145678 packets input (34562 promiscuous), 0 drops
145678 packets processed, 0 on queue, queue utilization 15/64
```

The following example shows how to display the contents of the RMON alarm table.

```
Router# show rmon alarms
```

```
Alarm 2 is active, owned by manager1
 Monitors ifEntry.1.1 every 30 seconds
 Taking delta samples, last value was 0
 Rising threshold is 15, assigned to event 12
 Falling threshold is 0, assigned to event 0
 On startup enable rising or falling alarm
```

The following example shows how to display the contents of the RMON capture table and current configuration.

```
Router# show rmon capture
```

```
Buffer 4096 is active, owned by manager1
 Captured data is from channel 4096
 Slice size is 128, download size is 128
 Download offset is 0
 Full Status is spaceAvailable, full action is lockWhenFull
 Granted 65536 octets out of 65536 requested
 Buffer has been on since 00:01:16, and has captured 1 packets
  Current capture buffer entries:
   Packet 1 was captured 416 ms since buffer was turned on
   Its length is 326 octets and has a status type of 0
   Packet ID is 634, and contains the following data:
00 00 0c 03 12 ce 00 00 0c 08 9d 4e 08 00 45 00
01 34 01 42 00 00 1d 11 e3 01 ab 45 30 15 ac 15
31 06 05 98 00 a1 01 20 9f a8 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00
```

The following example shows how to display the contents of the RMON event table.

```
Router# show rmon events
```

```
Event 12 is active, owned by manager1
 Description is interface-errors
 Event firing causes log and trap to community rmonTrap, last fired
00:00:00
```

The following example shows how to display the contents of the RMON filter table.

```
Router# show rmon filter
```

```
Filter 4096 is active, and owned by manager1
 Data offset is 12, with
 Data of  08 00 00 00 00 00 00 00 00 00 00 00 00 00 ab 45 30 15 ac 15 31
 06
 Data Mask is ff ff 00 00 00 00 00 00 00 00 00 00 00 00 ff ff ff ff ff
ff ff ff
 Data Not Mask is 0
 Pkt status is 0, status mask is 0, not mask is 0
 Associated channel 4096 is active, and owned by manager1
 Type of channel is acceptFailed, data control is off
```

```
 Generate event index 0
 Event status is eventFired, # of matches is 1482
 Turn on event index is 0, turn off event index is 0
```

The following example shows how to display the contents of the RMON history table.

```
Router# show rmon history
```

```
Entry 1 is active, and owned by manager1
 Monitors ifEntry.1.1 every 30 seconds
 Requested # of time intervals, ie buckets, is 5
 Granted # of time intervals, ie buckets, is 5
  Sample # 14 began measuring at 00:11:00
   Received 38346 octets, 216 packets,
   0 broadcast and 80 multicast packets,
   0 undersized and 0 oversized packets,
   0 fragments and 0 jabbers,
   0 CRC alignment errors and 0 collisions.
   # of dropped packet events is 0
   Network utilization is estimated at 10
```

The following example shows how to display the contents of the RMON hosts table.

```
Router# show rmon hosts
```

```
Host Control Entry 1 is active, and owned by manager1
 Monitors host ifEntry.1.1
 Table size is 51, last time an entry was deleted was 00:00:00
  Creation Order number is 1
   Physical address is 0000.0c02.5808
   Packets: rcvd 6963, transmitted 7041
   Octets: rcvd 784062, transmitted 858530
   # of packets transmitted: broadcast 28, multicast 48
   # of bad packets transmitted is 0
```

The following example shows how to display the contents of the RMON matrix table and values associated with RMON variables.

```
Router# show rmon matrix
```

```
Matrix 1 is active, and owned by manager1
 Monitors ifEntry.1.1
 Table size is 451, last time an entry was deleted was at 00:00:00
```

The following example shows how to display the contents of the RMON statistics table.

```
Router# show rmon statistics
```

```
Interface 1 is active, and owned by config
 Monitors ifEntry.1.1 which has
 Received 60739740 octets, 201157 packets,
 1721 broadcast and 9185 multicast packets,
 0 undersized and 0 oversized packets,
 0 fragments and 0 jabbers,
 0 CRC alignment errors and 32 collisions.
```

```
 # of dropped packet events (due to lack of resources): 511
 # of packets received of length (in octets):
  64: 92955, 65-127: 14204, 128-255: 1116,
  256-511: 4479, 512-1023: 85856, 1024-1518:2547
```

The following example shows how to display the contents of the RMON top-n hosts table.

```
Router# show rmon topn
```

```
Host Entry 1 of report 1 is active, owned by manager1
 The rate of change is based on hostTopNInPkts
 This report was last started at 00:00:00
 Time remaining in this report is 0 out of 0
 Hosts physical address is 00ad.beef.002b
 Requested # of hosts: 10, # of hosts granted: 10
Report # 1 of Top N hosts entry 1 is recording
Host 0000.0c02.5808 at a rate of 12
```

Related Commands

Command	Description
rmon	Enables RMON on an Ethernet interface.
rmon alarm	Sets a RMON alarm on a MIB object.
rmon collection history	Enables RMON history gathering on an interface.
rmon collection host	Enables RMON MIB host collection group of statistics on an interface.
rmon event	Adds or removes an event in the RMON event table that is associated with an RMON event number.