object (expression)

To specify the objects to use while evaluating an expression, use the **object** command in expression configuration mode. To disable the configured settings, use the **no** form of this command.

object *object-number*

no object *object-number*

Syntax Description

object-number	The object number, which is associated with variables while evaluating an expression.

Command Default

No object is configured for evaluating an expression by default.

Command Modes

Expression configuration (config-expression)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Usage Guidelines

The *object-number* associates the objects with variables in an expression. The variable corresponding to an object contains $ (dollar sign) and the object number. For example, the object number is 1, the variable is $1. The **object** command can be used multiple times to define multiple objects or the variables in an expression.

Examples

The following example shows how to specify the objects used in expressions:

```
Router(config)# snmp mib expression owner john name expression1
Router(config-expression)# object 10
Router(config-expression)#
```

Related Commands

Command	Description
snmp mib expression owner	Specifies an expression.

object id

To specify the object identifier of an object associated with an event, use the **object id** command in event object list, event action set, event action notification, or event trigger configuration modes. To disable the configured settings, use the **no** form of this command.

object id *object-identifier*

no object id

Syntax Description

object-identifier	Object identifier of an object. The default is 0.0.

Command Default

By default the object identifier is not specified.

Command Modes

Event object list configuration (config-event-objlist)

Event action notification configuration (config-event-action-notification)

Event action set configuration (config-event-action-set)

Event trigger configuration (config-event-trigger)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Usage Guidelines

The **object id** command specifies the object identifier of the object associated with an event. If notifications are enabled for an event, the system sends a notification whenever the object is modified.

Examples

The following example shows how to set the object identifier to 2.2 in event object list configuration mode:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# snmp mib event object list owner owner1 name objectA 10
Router(config-event-objlist)# object id 2.2
Router(config-event-objlist)#
```

The following example shows how to set the object identifier to 2.2 in action notification configuration mode:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# action notification
Router(config-event-action-notification)# object id 2.2
Router(config-event-action-notification)#
```

The following example shows how to set the object identifier to 2.2 in action set configuration mode:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# action set
Router(config-event-action-set)# object id 2.2
Router(config-event-action-set)#
```

The following example shows how to set the object identifier to 2.2 in event trigger configuration mode:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# object id 2.2
Router(config-event-trigger)#
```

Related Commands

Command	Description
action	Configures actions for an event.
snmp mib event object list	Configures a list of objects.
snmp mib event trigger owner	Specifies the owner for an event trigger.

object-list

To specify the bulk statistics object list to be used in the bulk statistics schema, use the **object-list** command in Bulk Statistics Schema configuration mode. To remove an object list from the schema, use the **no** form of this command.

object-list *list-name*

no object-list

Syntax Description

list-name	Name of a previously configured bulk statistics object list.

Command Default

No bulk statistics object list is specified.

Command Modes

Bulk Statistics Schema configuration (config-bulk-sc)

Command History

Release	Modification
12.0(24)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

This command associates a bulk statistics object list with the schema being configured. The object list should contain a list of MIB objects to be monitored.

Only one object list can be specified for each schema.

Examples

In the following example, the object list named E0InOctets is associated with the schema named E0:

```
Router(config)# snmp mib bulkstat schema E0
Router(config-bulk-sc)# object-list EOInOctets
Router(config-bulk-sc)# instance exact interface FastEthernet 3/0
Router(config-bulk-sc)# exit
```

Related Commands

Command	Description
instance	Specifies the instance that, when appended to the object list, gives the OID of the object instance to be monitored in the bulk statistics schema.
snmp mib bulkstat schema	Names a bulk statistics schema and enters Bulk Statistics Schema configuration mode.

object list

To configure a list of objects during an event, use the **object list** command in event trigger, event action notification, event trigger existence, event trigger boolean, or event trigger threshold configuration mode. To disable the configured settings, use the **no** form of this command.

object list owner *object-list-owner* **name** *object-list-name*

no object list

Syntax Description

owner	Indicates the owner of the object list.
object-list-owner	Name of the object list owner.
name	Indicates the name of the object list.
object-list-name	Unique name that identifies the object list.

Command Default

By default, the object lists are not configured.

Command Modes

Event trigger configuration (config-event-trigger)

Event action notification configuration (config-event-action-notification)

Event trigger existence configuration (config-event-trigger-existence)

Event trigger boolean configuration (config-event-trigger-boolean)

Event trigger threshold configuration (config-event-trigger-threshold)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Examples

The following example shows how to specify the object list for an event trigger:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# object list owner owner1 name objectA
Router(config-event-trigger)#
```

The following example shows how to specify the object list for an action notification:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# action notification
Router(config-event-action-notification)# object list owner owner1 name objectA
Router(config-event-action-notification)#
```

The following example shows how to specify the object list for an existence trigger test:

```
Router(config-event-trigger)# test existence
```

```
Router(config-event-trigger-existence)# object list owner owner1 name objectA
Router(config-event-trigger-existence)#
```

The following example shows how to specify the object list for a Boolean trigger test:

```
Router(config-event-trigger)# test boolean
Router(config-event-trigger-boolean)# object list owner owner1 name objectA
Router(config-event-trigger-boolean)#
```

The following example shows how to specify the object list for a threshold trigger test:

```
Router(config-event-trigger)# test threshold
Router(config-event-trigger-threshold)# object list owner owner1 name objectA
Router(config-event-trigger-threshold)#
```

Related Commands

Command	Description
snmp mib event trigger	Specifies the event trigger owner while configuring management event.
test	Enables a trigger test.

object wildcard

To specify if the object identifier is to be fully specified or wildcarded, use the **object wildcard** command in event trigger configuration mode.

object wildcard

Syntax Description

This command has no arguments or commands.

Command Default

By default, object identifiers are fully specified.

Command Modes

Event trigger configuration (config-event-trigger)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Usage Guidelines

The **object wildcard** command specifies if the object needs to be fully specified or wildcarded. If you do not use this command, by default the objects are fully specified.

Examples

The following example shows how to specify the object identifier to be wildcarded:

```
Router(config)# snmp mib event trigger owner John name TriggerA
Router(config-event-trigger)# object wildcard
Router(config-event-trigger)#
```

Related Commands

Command	Description
action set	Sets actions for an event.

policy (ERM)

To configure an Embedded Resource Manager (ERM) resource policy, use the **policy** command in ERM configuration mode. To disable this function, use the **no** form of this command.

policy *policy-name* [**global** | **type** *resource-user-type*]

no policy *policy-name*

Syntax Description

policy-name	Name of the policy you want to configure.
global	(Optional) Configures a global policy.
type	(Optional) Specifies a type for the policy you are configuring.
resource-user-type	(Optional) Name of the resource user type.

Command Default

Disabled

Command Modes

ERM configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Usage Guidelines

You can configure a resource policy only in ERM configuration mode.

Examples

The following example shows how to configure a resource policy with the policy name cpu_mem_policy and the resource user type iosprocess:

```
Router(config-erm)# policy cpu_mem_policy type iosprocess
```

Related Commands

Command	Description
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
show resource database	Displays the resource database details.
show resource owner	Displays the resource owner details.
show resource relationship	Displays the resource relationship details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level resource owners.

policy (resource group)

To apply an already configured policy to a specified resource group, use the **policy** command in resource group configuration mode. To disable this function, use the **no** form of this command.

policy *policy-name*

no policy *policy-name*

Syntax Description

policy-name	Name of the policy to apply to the resource group.

Command Default

Disabled

Command Modes

Resource group configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

Before applying a policy to a resource group, you must configure a resource policy using the **policy** *policy-name* command in Embedded Resource Manager (ERM) configuration mode and create a resource group using the **user group** *resource-group-name* **type** *resource-user-type* command in ERM configuration mode.

When you apply a policy using the **policy** *policy-name* command in resource group configuration mode, you are applying a policy (which contains the thresholds) to the resource group you created using the **user group** *resource-group-name* **type** *resource-user-type* command in ERM configuration mode.

For example, you create a resource group with the name lowPrioUsers and type iosprocess and have low-priority resource users (RUs) or tasks such as HTTP and Simple Network Management Protocol (SNMP) that you want to set a threshold for as a group. You must add the RUs to lowPrioUsers using the **instance** *instance-name* command and then apply a resource policy. If the resource policy you apply sets a minor rising threshold value of 10 percent, a notification is sent to the RUs in lowPrioUsers when the accumulated usage of both HTTP and SNMP RUs crosses the 10 percent threshold (for example, if HTTP usage is 4 percent and SNMP usage is 7 percent).

Examples

The following example shows how to apply a resource policy named group-policy1 to a resource group named lowPrioUsers:

```
Router(config-erm)# user group lowPrioUsers type iosprocess
Router(config-res-group)# policy group-policy1
```

Related Commands

Command	Description
instance (resource group)	Adds the RUs to the resource group.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
user (ERM)	Creates a resource group.

policy-list

To associate a policy list with a Command Scheduler occurrence, use the **policy-list** command in kron-occurrence configuration mode. To delete a policy list from the Command Scheduler occurrence, use the **no** form of this command.

policy-list *list-name*

no policy-list *list-name*

Syntax Description

list-name	Name of the policy list.

Command Default

No policy list is associated.

Command Modes

Kron-occurrence configuration (kron-config-occurrence)

Command History

Release	Modification
12.3(1)	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI.

Usage Guidelines

Use the **policy-list** command with the **kron occurrence** command to schedule one or more policy lists to run at the same time or interval. Use the **kron policy-list** command in conjunction with the **cli** command to create a Command Scheduler policy list containing EXEC command line interface (CLI) commands to be scheduled to run on the router at a specified time.

When the *list-name* is new, a policy list structure is created. When the *list-name* is not new, the existing policy list is edited.

The Command Scheduler process is useful to automate the running of EXEC commands at recurring intervals, and can it be used in remote routers to minimize manual intervention.

Examples

The following example shows how to create a Command Scheduler occurrence named may and associate a policy list named sales-may with the occurrence:

```
Router(config)# kron occurrence may at 6:30 may 20 oneshot
Router(config-kron-occurrence)# policy-list sales-may
```

Related Commands

Command	Description
cli	Specifies EXEC CLI commands within a Command Scheduler policy list.
kron occurrence	Specifies schedule parameters for a Command Scheduler occurrence and enters kron-occurrence configuration mode.
kron policy-list	Specifies a name for a Command Scheduler policy and enters kron-policy configuration mode.

poll-interval

To configure the polling interval for a bulk statistics schema, use the **poll-interval** command in Bulk Statistics Schema configuration mode. To remove a previously configured polling interval, use the **no** form of this command.

poll-interval *minutes*

no poll-interval

Syntax Description

minutes	Integer in the range from 1 to 20000 that specifies, in minutes, the polling interval of data for this schema. The default is 5.

Command Default

Object instances are polled once every five minutes.

Command Modes

Bulk Statistics Schema configuration (config-bulk-sc)

Command History

Release	Modification
12.0(24)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

The **poll-interval** command sets how often the MIB instances specified by the schema and associated object list are to be polled. Collected data is stored in the local bulk statistics file for later transfer.

Examples

In the following example, the polling interval for bulk statistics collection is set to once every 3 minutes in the schema called FastEthernet2/1-CAR:

```
Router(config)# snmp mib bulkstat schema FastEthernet2/1-CAR
Router(config-bulk-sc)# object-list CAR-mib
Router(config-bulk-sc)# poll-interval 3
Router(config-bulk-sc)# instance wildcard oid 3.1
Router(config-bulk-sc)# exit
```

Related Commands

Command	Description
snmp mib bulkstat schema	Names a bulk statistics schema and enters Bulk Statistics Schema configuration mode.

prefix object

To enable the application to determine the object based on instance indexing, use the **prefix object** command in the expression object configuration mode.

prefix object *object-id*

Syntax Description

object-id	Object identifier of an object.

Command Default

No object is prefixed by default.

Command Modes

Expression object configuration (config-expression-object)

Command History

Release	Modification
12.4(20)T	This command was introduced.

Usage Guidelines

The **prefix object** command enables the application to determine an object according to the instance indexing. The instance index is used in expValueTable. The **prefix object** command eliminates the need to scan expObjectTable to determine a prefix, thereby easing the burden of an application.

Examples

The following example shows how to specify a prefix object:

```
Router(config)# snmp mib expression owner John name ExpressionA
Router(config-expression)# object
Router(config-expression-object)# prefix object 0.0.6
Router(config-expression-object)#
```

Related Commands

Command	Description
snmp mib expression owner	Specifies an expression owner.

process cpu autoprofile hog

To enable automatic profiling of CPUHogs, use the **process cpu autoprofile hog** command in global configuration mode. To disable this function, use the **no** form of this command.

process cpu autoprofile hog

no process cpu autoprofile hog

Syntax Description

This command has no arguments or keywords.

Command Default

Automatic profiling of CPUHogs is enabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command enables automatic profiling of CPUHogs by monitoring the CPUHog process and starting the profiling process at the same time.

Examples

The following example shows how to enable automatic profiling of CPUHogs:

```
Router(config)# processes cpu autoprofile hog
```

Related Commands

Command	Description
show processes cpu autoprofile hog	Displays the profile data for CPUHog.

process cpu extended

To monitor an extended CPU load by collecting the size of the history, use the **process cpu extended** command in global configuration mode. To reset the command to its default value, use the **no** form of this command.

process cpu extended [**history** *reports*]

no process cpu extended

Syntax Description

history	(Optional) Specifies the size of the history, in 5-second increments, to be collected for the extended CPU load.
reports	(Optional) Number of reports to collect to represent the size. Valid values are from 2 to 720. The default is 12, which is equivalent to a 1-minute history.

Command Default

Monitoring of the extended CPU load is enabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Examples

The following example shows how to enable the collection of an extended CPU load for a history size of 36, which is equivalent to 3 minutes of history:

```
Router(config)# processes cpu extended history 36
```

Related Commands

Command	Description
show processes cpu extended	Displays an extended CPU load report.

processes cpu pid

To configure profiling of CPU for a process with a process identifier (PID) number, use the **processes cpu pid** command in privileged EXEC mode. To disable this function, use the **no** form of this command.

processes cpu pid *pid* **{autoprofile threshold** *threshold* **| priority {critical | high | low | normal} | quantum** *milliseconds***}**

no processes cpu pid *pid* **autoprofile**

Syntax Description

pid	Process identifier number. The range is from 1 to 4294967295.
autoprofile	Profiles the CPU process automatically.
threshold	Specifies the threshold after which profiling is enabled.
threshold	Threshold in milliseconds. The range is from 50 to 400.
priority	Sets the priority value.
critical	Sets the priority as critical.
high	Sets the priority as high.
low	Sets the priority as low.
normal	Sets the priority as normal.
quantum	Specifies a process scheduling quantum change.
milliseconds	Specifies the quantum interval in seconds. The range is from 20 to 200.

Command Default

Profiling of CPU for a process is not configured.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

You can use the **processes cpu pid** command to configure profiling of CPU for a process with a PID number. Profiling starts when the CPU process takes longer than 100 milliseconds and stops when the process gives up the profiling of the CPU process.

Examples

The following example shows how to configure profiling of CPU for a process with a PID number of 1 and a threshold value of 50:

```
Router(config)# service internal
Router(config)# exit
Router# processes cpu pid 1 autoprofile threshold 50
```

reconnect

To specify the time for the Web Services Management Agent (WSMA) initiator profile to wait before attempting to reconnect a session, use the **reconnect** command in WSMA initiator configuration mode. To disable the configured reconnect time and revert to the default value, use the **no** form of this command.

reconnect *reconnect-time*

no reconnect

Syntax Description

reconnect-time	The time to wait (in seconds) before attempting to reconnect after a connection is lost. The range is from 1 to 2,000,000. The default is 60.

Command Default

The reconnect wait value is set to 60 seconds.

Command Modes

WSMA initiator configuration (config-wsma-init)

Command History

Release	Modification
15.1(1)T	This command was introduced.

Examples

The following example shows how to configure the reconnect wait time:

```
Router(config)# wsma profile initiator prof1
Router(config-wsma-init)# reconnect 120
Router(config-wsma-init)#
```

Related Commands

Command	Description
backup excluded	Sets the time that the WSMA profile must wait after a connection is lost before attempting to connect to the backup transport configuration.
backup hold	Sets the time that the WSMA profile remains connected to the backup transport configuration.
encap	Configures an encapsulation for a WSMA profile.
idle-timeout	Sets a time for the WSMA profile to keep the session alive in the absence of any data traffic.
keepalive	Enables keepalive messages and configures interval and retry values for a WSMA profile.
max-message	Sets the maximum size limit for incoming messages.
stealth	Disables WSMA from sending SOAP faults.
transport	Defines a transport configuration for a WSMA profile.

Command	Description
wsma profile initiator	Configures and enables a WSMA initiator profile.
wsse	Enables the WSSE for a WSMA profile.

resource policy

To enter Embedded Resource Manager (ERM) configuration mode to configure an ERM policy, use the **resource policy** command in global configuration mode. To exit ERM configuration mode, use the **no** form of this command.

resource policy

no resource policy

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Examples

The following example shows how to configure an ERM policy:

```
Router(config)# resource policy
Router(config-erm)# policy memory_policy type iosprocess
Router(config-erm-policy)# system
Router(config-policy-node)# memory processor
Router(config-owner-memory)# critical rising 80
Router(config-owner-memory)# major rising 40 falling 35
```

Related Commands

Command	Description
policy (ERM)	Configures an ERM resource policy.
show resource all	Displays all the resource details.
show resource all	Displays resource details for all RUs.
show resource database	Displays the resource database details.
show resource owner	Displays the resource owner details.
show resource relationship	Displays the resource relationship details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level resource owners.

retain

To configure the retention interval for bulk statistics files, use the **retain** command in Bulk Statistics Transfer configuration mode. To remove a previously configured retention interval from the configuration, use the **no** form of this command.

retain *minutes*

no retain

Syntax Description

minutes	Length of time, in minutes, that the local bulk statistics file should be kept in system memory (the retention interval). The valid range is 0 to 20000. The default is 0.

Command Default

The bulk statistics file retention interval is 0 minutes.

Command Modes

Bulk Statistics Transfer configuration (config-bulk-tr)

Command History

Release	Modification
12.0(24)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

This command specifies how long the bulk statistics file should be kept in system memory, in minutes, after the completion of the collection interval and a transmission attempt is made. The default value of zero (0) indicates that the file will be deleted immediately from local memory after a successful transfer.

If the **retry** command is used, you should configure a retention interval greater than 0. The interval between retries is the retention interval divided by the retry number. For example, if **retain 10** and **retry 2** are configured, retries will be attempted once every 5 minutes. Therefore, if the **retain** command is not configured (retain default is 0), no retries will be attempted.

Examples

In the following example, the bulk statistics transfer retention interval is set to 10 minutes:

```
Router(config)# snmp mib bulkstat transfer bulkstat1
Router(config-bulk-tr)# schema ATM2/0-IFMIB
Router(config-bulk-tr)# url primary ftp://user:pswrd@host/folder/bulkstat1
Router(config-bulk-tr)# retry 2
```

```
Router(config-bulk-tr)# retain 10
Router(config-bulk-tr)# exit
```

Related Commands

Command	Description
retry	Configures the number of retries that should be attempted for sending bulk statistics files.
snmp mib bulkstat transfer	Identifies the transfer configuration with a name and enters Bulk Statistics Transfer configuration mode.

retry (bulkstat)

To configure the number of retries that should be attempted for a bulk statistics file transfer, use the **retry** command in Bulk Statistics Transfer configuration mode. To return the number of bulk statistics retries to the default, use the **no** form of this command.

retry *number*

no retry

Syntax Description

number	Number of transmission retries. The valid range is from 0 to 100.

Command Default

No retry attempts are made.

Command Modes

Bulk Statistics Transfer configuration (config-bulk-tr)

Command History

Release	Modification
12.0(24)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

If an attempt to send the bulk statistics file fails, the system can be configured to attempt to send the file again using the **retry** command. One retry includes an attempt first to the primary destination and then, if the transmission fails, to the secondary location; for example, if the retry value is 1, an attempt will be made first to the primary URL, then to the secondary URL, then to the primary URL again, and then to the secondary URL again.

If the **retry** command is used, you should also use the **retain** command to configure a retention interval greater than 0. The interval between retries is the retention interval divided by the retry number. For example, if **retain 10** and **retry 2** are configured, retries will be attempted once every 5 minutes. Therefore, if the **retain** command is not configured (or the **retain 0** command is used) no retries will be attempted.

Examples

In the following example, the number of retries for the bulk statistics transfer is set to 2:

```
Router(config)# snmp mib bulkstat transfer bulkstat1
Router(config-bulk-tr)# schema ATM2/0-IFMIB
Router(config-bulk-tr)# url primary ftp://user:pswrd@host/folder/bulkstat1
```

```
Router(config-bulk-tr)# retry 2
Router(config-bulk-tr)# retain 10
Router(config-bulk-tr)# exit
```

Related Commands

Command	Description
retain	Configures the retention interval in local system memory (NVRAM) for bulk statistics files.
snmp mib bulkstat transfer	Identifies the transfer configuration with a name and enters Bulk Statistics Transfer configuration mode.

rising (test threshold)

To specify an event owner for the rising threshold trigger, use the **rising event owner** command in event trigger threshold configuration mode. To disable the configured settings, use the **no** form of this command.

rising {*threshold-value* | **event owner** *event-owner* **name** *event-name*}

no rising

Syntax Description

threshold-value	Numerical value to specify the rising threshold. The default value is 0.
event-owner	Owner of an event.
name	Indicates the name of an event.
event-name	Unique name of an event.

Command Default

The default rising threshold value is 0. No event is invoked by default.

Command Modes

Event trigger threshold configuration (config-event-trigger-threshold)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Usage Guidelines

The **rising** command specifies the event to invoke when the rising trigger fires. An event is identified by the owner and name, and is configured by using the **snmp mib event owner** command.

Examples

The following example shows how to specify an event owner for the rising threshold trigger:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test threshold
Router(config-event-trigger-threshold)# rising event owner owner1 name event5
Router(config-event-trigger-threshold)#
```

Related Commands

Command	Description
test	Enables a trigger test.

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**}

no rmon

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 every packet.

Command Default

RMON is disabled on the interface.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

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. SNMP must also be configured. RMON provides visibility of individual nodal activity and allows you to monitor all nodes and their interaction on a LAN segment. When the **rmon** command is issued, the router automatically installs an Ethernet statistics study for the associated interface.

Note RMON can be very data and processor intensive. Users should 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.

All Cisco IOS software feature sets support RMON alarm and event groups. Additional RMON groups are supported in certain feature sets. Refer to the Release Notes for feature set descriptions. As a security precaution, support for the packet capture group allows capture of packet header information only; data payloads are not captured.

The RMON MIB is described in RFC 1757.

Examples

The following example enables RMON on Ethernet interface 0 and allows the router to examine only packets destined for the interface:

```
interface ethernet 0
 rmon native
```

Related Commands

Command	Description
rmon alarm	Sets an alarm on any MIB object.
rmon event	Adds or removes an event in the RMON event table that is associated with an RMON event number.
rmon queuesize	Changes the size of the queue that holds packets for analysis by the RMON process.
show rmon	Displays the current RMON agent status on the router.

rmon alarm

To set an alarm on any 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*] [**interface** *type number* [**trap**]]

no rmon alarm *number*

Syntax Description

number	Alarm number, which is identical to the alarmIndex of the alarmTable in the Remote Monitoring (RMON) MIB.
variable	MIB object to monitor, which translates into the alarmVariable used in the alarmTable of the RMON MIB.
interval	Time, in seconds, that the alarm monitors the MIB variable. This interval 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	Sets the value at which the alarm is triggered.
value	When used with the **rising-threshold** keyword, the value at which the alarm is triggered. When used with the **falling-threshold** keyword, the value at which the alarm is reset.
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	Sets the value at which the alarm is reset.
owner	(Optional) Specifies an owner for the alarm, which is identical to the alarmOwner in the alarmTable of the RMON MIB.
string	(Optional) Name of the owner for the alarm.
interface	(Optional) Specifies that the ifIndex has to be derived from the interface name.
type	(Optional) Interface type. For more information, use the question mark (?) online help function.
number	(Optional) Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.
trap	(Optional) Specifies that ifDescr is included in the alarm notification.

Command Default

No alarms are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
11.2	This command was introduced.
12.2(14)SX	This command was implemented on Supervisor Engine 720 in Cisco IOS Release 12.2(14)SX.
12.2(17d)SXB	This command was implemented on Supervisor Engine 2 in Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(1)S	This command was modified. The **interface** and **trap** keywords and the *type* and *number* arguments were added.

Usage Guidelines

You must specify the MIB object 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 argument must be in 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, to remove alarm 1, use the **no rmon alarm 1** command.

See RFC 1757 for more information about the RMON alarm group.

When you configure a MIB object as ifInOctets.4, ifInOctets is considered as the object, .4 as the instance, and 4 as the ifIndex assigned to the interface. When using the **interface** keyword, you must not specify an instance to configure the MIB object because RMON automatically adds the ifindex to the object.

Note If you configure ifInOctets.4 and the **interface** keyword, the resultant object will be ifInOctets.4.4. This results in the failure of the RMON policy.

The **interface** keyword must be used only for objects that are indexed by the ifindex. If objects have multiple indexes, ifIndex must be the last in the sequence of indexes and the object configuration should include all the previous indexes.

Note You can configure objects that are not indexed by ifindex; however, this results in the failure of RMON policy.

Use the **trap** keyword to include the ifDescr object in the RMON rising and falling alarms.

Examples

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

```
Router(config)# rmon alarm 10 ifEntry.20.1 20 delta rising-threshold 15 1
falling-threshold 0 owner owner1
```

In this example, the RMON alarm number is set to 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. Possible events include a log entry or a Simple Network Management Protocol (SNMP) trap. If the ifEntry.20.1 value changes by 0 (falling threshold is 0), the alarm is reset and can be triggered again.

The following example shows how to configure an RMON alarm to monitor the MIB variable ifInOctets:

```
Router(config)# rmon alarm 30 ifInOctets 30 absolute rising-threshold 200000 1
falling-threshold 50000 1 owner xyz interface ethernet 2/1
```

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 capture-userdata

To disable the packet zeroing feature that initializes the user payload portion of each Remote Monitoring (RMON) MIB packet, use the **rmon capture-userdata** command in global configuration mode. To enable packet zeroing, use the **no** form of this command.

rmon capture-userdata

no rmon capture-userdata

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following command shows how to disable the packet zeroing feature:

```
Router(config)# rmon capture-userdata
```

Related Commands

Command	Description
rmon collection matrix	Enables a RMON MIB matrix group of statistics on an interface.
show rmon matrix	Displays RMON statistics.

rmon collection history

To enable Remote Monitoring (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* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]

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

Syntax Description

controlEntry	Specifies the RMON group of statistics using a value.
integer	Value in the range from 1 to 65535 that identifies the RMON group of statistics and matches the index value returned for Simple Network Management Protocol (SNMP) requests.
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	(Optional) Specifies that a maximum number of buckets desired is set for the RMON collection history group of statistics.
bucket-number	(Optional) Maximum number of buckets.
interval	(Optional) Specifies the number of seconds for which history should be gathered in a single bucket. When the interval ends, history is collected into a new bucket.
seconds	(Optional) Number of seconds in the interval.

Command Default

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example shows how to enables an RMON MIB collection history group of statistics with an ID number of 20 and an owner as john:

```
Router(config-if)# rmon collection history controlEntry 20 owner john
```

Related Commands

Command	Description
show rmon capture	Displays the contents of the RMON history table.
show rmon matrix	Displays the RMON MIB matrix table.

rmon collection host

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

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

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

Syntax Description

controlEntry	Specifies an identification number for the RMON group of statistics.
integer	Integer in the range from 1 to 65535.
owner	(Optional) Indicates that a name is specified for the owner of the RMON group of statistics.
ownername	(Optional) String value identifying the owner.

Command Default

No RMON host collection is specified.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following command shows how to enable an RMON collection host group of statistics with an ID number of 20 and specifies john as the owner:

```
Router(config-if)# rmon collection host controlEntry 20 owner john
```

Related Commands

Command	Description
show rmon hosts	Displays the RMON MIB hosts table.
show rmon matrix	Displays the RMON MIB matrix table.

rmon collection matrix

To enable a Remote Monitoring (RMON) MIB matrix group of statistics on an interface, use the **rmon collection matrix** command in interface configuration mode. To remove a specified RMON matrix group of statistics, use the **no** form of this command.

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

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

Syntax Description

controlEntry	Specifies an identification number for the RMON matrix group of statistics.
integer	Integer in the range from 1 to 65535.
owner	(Optional) Indicates that a name is specified for the owner of the RMON matrix group of statistics.
ownername	(Optional) String that specifies the name of the owner.

Command Default

No RMON matrix group of statistics is specified.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **show rmon matrix** command to display RMON statistics.

Examples

The following command shows how to enable the RMON collection matrix group of statistics with an ID number of 25 and specifies john as the owner:

```
Router(config-if)# rmon collection matrix controlEntry 25 owner john
```

Related Commands

Command	Description
show rmon matrix	Displays the RMON MIB matrix table.

rmon collection rmon1

To enable all possible autoconfigurable Remote Monitoring (RMON) MIB statistic collections on the interface, use the **rmon collection rmon1** command in interface configuration mode. To disable these statistic collections on the interface, use the **no** form of this command.

rmon collection rmon1 controlEntry *integer* [**owner** *ownername*]

no rmon collection rmon1 controlEntry *integer* [**owner** *ownername*]

Syntax Description

controlEntry	Specifies an identification number for the RMON group of statistics.
integer	Integer in the range from 1 to 65535.
owner	(Optional) Indicates that a name is specified for the owner of the RMON group of statistics.
ownername	(Optional) String that identifies the name of the owner.

Command Default

Disabled.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following command shows how to enable the RMON collection rmon1 group of statistics with an ID number of 30 and specifies “john” as the owner:

```
Router(config-if)# rmon collection rmon1 controlEntry 30 owner john
```

Related Commands

Command	Description
show rmon matrix	Displays the RMON MIB matrix table.

rmon event

To add or remove an event (in the Remote Monitoring (RMON) event table) that is associated with an RMON event number, use the **rmon event** command in global configuration mode. To disable RMON on the interface, 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	(Optional) Specifies a Simple Network Management Protocol (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 of the RMON MIB.
community	(Optional) SNMP community string used for a trap.
description	(Optional) Specifies a description of the event, which is identical to the event description in the eventTable of the RMON MIB.
string	(Optional) Description of the event.
owner	(Optional) Specifies an owner for this event, which is identical to the *eventOwner* in the eventTable of the RMON MIB.
string	(Optional) Name of the event owner.

Command Default

No events are configured.

Command Modes

Global configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to the 12.2(17d)SXB release.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use the **trap** *community* keyword and argument to configure 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.

See RFC 1757 for more information about the RMON MIB.

Examples

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

```
rmon event 1 log trap eventtrap description "High ifOutErrors" owner owner2
```

This example configuration 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 owner2 owns the row that is created in the event table by this command. This configuration also generates an SNMP trap when the event is triggered.

Related Commands

Command	Description
rmon	Enables RMON on an Ethernet interface.
rmon alarm	Sets an alarm on any MIB object.
show rmon	Displays the current RMON agent status on the router.

rmon hc-alarms

To set a high-capacity (HC) alarm on any MIB object, use the **rmon hc-alarms** command in global configuration mode. To disable the alarm, use the **no** form of this command.

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

no rmon hc-alarms *number*

Syntax Description

number	Alarm number, which is identical to the alarmIndex object of the alarmTable in the Remote Monitoring (RMON) MIB.
variable	MIB object to monitor, which translates into the alarmVariable object used in the alarmTable of the RMON MIB. Supports 64-bit values.
interval	Time, in seconds, the alarm monitors the MIB variable, which is identical to the alarmInterval object used in the alarmTable of the RMON MIB.
delta	Tests the change between MIB variables, which affects the alarmSampleType object in the alarmTable of the RMON MIB.
absolute	Tests each MIB variable directly, which affects the alarmSampleType object in the alarmTable of the RMON MIB.
rising-threshold	Sets the value at which the alarm is triggered.
value	When used with the **rising-threshold** keyword, the value at which the alarm is triggered. When used with the **falling-threshold** keyword, the value at which the alarm is reset.
event-number	(Optional) Event number to trigger when the rising or falling threshold exceeds its limit. This value is identical to the alarmRisingEventIndex object or the alarmFallingEventIndex object in the alarmTable of the RMON MIB.
falling-threshold	Sets the value at which the alarm is reset.
owner	(Optional) Specifies an owner for the alarm, which is identical to the alarmOwner object in the alarmTable of the RMON MIB.
string	(Optional) Name of the owner for the alarm.

Command Default

No alarms are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SXI	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.

Usage Guidelines

You must specify the MIB object 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 argument 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 4**, where the 4 identifies which alarm is to be removed.

See RFC 3434 for more information about the RMON HC alarm group.

Examples

The following example shows how to configure an RMON HC alarm:

```
Router(config)# rmon hc-alarms 2 ifInOctets.2 20 delta rising-threshold 2000 2
falling-threshold 1000 1 owner own
```

RMON HC alarm number 2 is configured in this example. The alarm monitors the MIB variable ifInOctets.2 once every 20 seconds until the alarm is disabled, and checks the change in the rise or fall of the variable. If the ifInOctets.2 value shows a MIB counter increase of 2000 or more, such as from 100000 to 100015, the alarm is triggered. The alarm in turn triggers event number 2, which is configured with the **rmon event** command. Possible events include a log entry or a Simple Network Management Protocol (SNMP) trap. If the ifInOctets.*2* value changes by 1000 (falling threshold is 1000), 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 hc-alarms	Displays the contents of the RMON HC alarm table of the router.

rmon queuesize

To change the size of the queue that holds packets for analysis by the Remote Monitoring (RMON) process, use the **rmon queuesize** command in global configuration mode. To restore the default value, use the **no** form of this command.

rmon queuesize *size*

no rmon queuesize

Syntax Description

size	Number of packets allowed in the queue awaiting RMON analysis. Default queue size is 64 packets.

Defaults

64 packets

Command Modes

Global configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command applies to the RMON function, which is available on Ethernet interfaces of Cisco 2500 series and Cisco AS5200 series routers only.

You might want to increase the queue size if the RMON function indicates it is dropping packets. You can determine this from the output of the **show rmon** command or from the etherStatsDropEvents object in the etherStats table. A feasible maximum queue size depends on the amount of memory available in the router and the configuration of the buffer pool.

Examples

The following example configures the RMON queue size to be 128 packets:

```
Router(config)# rmon queuesize 128
```

Related Commands

Command	Description
show rmon	Displays the current RMON agent status on the router.