action (event) through rising (test threshold)

- action (event), on page 3
- add (bulk statistics object), on page 4
- bandwidth (interface configuration), on page 6
- buffer-size (bulk statistics), on page 9
- comparison, on page 11
- conditional object, on page 12
- context, on page 14
- context (bulk statistics), on page 16
- correlate, on page 17
- delta (test threshold), on page 19
- delta interval, on page 21
- description (event), on page 22
- description (expression), on page 23
- description (trigger), on page 24
- discontinuity object (expression), on page 25
- enable (bulk statistics), on page 27
- enable (event), on page 29
- enable (expression), on page 30
- event owner, on page 31
- expression, on page 33
- falling (test threshold), on page 34
- format (bulk statistics), on page 35
- frequency (event trigger), on page 37
- id (expression), on page 38
- instance (MIB), on page 39
- instance range, on page 41
- instance repetition, on page 43
- no snmp-server, on page 45
- object (expression), on page 46
- object id, on page 47
- object id (event trigger), on page 49
- object list, on page 50
- object-list, on page 52

- poll-interval, on page 54
- prefix object, on page 56
- retain, on page 57
- retry (bulk statistics), on page 59
- rising (test threshold), on page 61

action (event)

To set an action for an event, use the **action** command in event configuration mode. To disable the action for an event, use the **no** form of this command.

action {**set** | **notification**}
no action {**set** | **notification**}

Syntax Description

set	Specifies the action for an event.
notification	Enables notifications for events.

Command Default

No action is set for an event.

Command Modes

Event configuration (config-event)

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

While configuring a set of actions for an event, you can specify the object identifier of the object. You can also configure events to perform activities such as sending notifications or setting a MIB object whenever an event is triggered. If notifications are enabled for an event, the system sends a notification to the SNMP manager whenever the object configured for that event is modified.

Examples

The following example shows how to enable notifications for an event:

```
Router(config)# snmp mib event owner owner1 name test
Router(config-event)# action notification
Router(config-event-action-notification)# end
```

Related Commands

Command	Description
object id	Specifies the object identifier of an object.
snmp mib event owner	Specifies the event owner for a management event.
value	Specifies a value for the object configured for an event.
wildcard	Specifies whether an object used for evaluating an expression is to be wildcarded during an event configuration.

add (bulk statistics object)

To add a MIB object to a bulk statistics object list, use the **add** command in Bulk Statistics Object List configuration mode. To remove a MIB object from an SNMP bulk statistics object list, use the **no** form of this command.

add {*object-nameoid*}
no add {*object-nameoid*}

Syntax Description

object-name	Name of the MIB object to add to the list. Only object names from the Interfaces MIB (IF-MIB.my), Cisco Committed Access Rate MIB (CISCO-CAR-MIB.my) and the MPLS Traffic Engineering MIB (MPLS-TE-MIB.my) may be used.
oid	Object ID (OID) of the MIB object to add to the list.Only OIDs from the Interfaces MIB (IF-MIB.my), Cisco Committed Access Rate MIB (CISCO-CAR-MIB.my) and the MPLS Traffic Engineering MIB (MPLS-TE-MIB.my) may be used.

Command Default

No MIB objects are listed in the bulk statistics object list.

Command Modes

Bulk Statistics Object List configuration (config-bulk-objects)

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

All the objects in an object list have to be indexed by the same MIB index, but the objects need not belong to the same MIB table. For example, it is possible to group ifInoctets and an Ether MIB object in the same schema because the containing tables are indexed by the ifIndex (in the IF-MIB).

Object names are available in the relevant MIB modules. For example, the input byte count of an interface is defined in the Interfaces Group MIB (IF-MIB.my) as ifInoctets. Complete MIB modules can be downloaded from Cisco.com at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

Examples

In the following example, two bulk statistics object lists are configured: one for IF-MIB objects and one for CISCO-CAR-MIB objects. Because the IF-MIB objects and the CISCO-CAR-MIB objects do not have the same index, they must be defined in separate object lists.

```
Router(config)# snmp mib bulkstat object-list if-Objects

Router(config-bulk-objects)# add ifInoctets
Router(config-bulk-objects)# add ifOutoctets

Router(config-bulk-objects)# add ifInUcastPkts

Router(config-bulk-objects)# add ifInDiscards

Router(config-bulk-objects)# exit

Router(config)# snmp mib bulkstat object-list CAR-Objects
Router(config-bulk-objects)# add CcarStatSwitchedPkts

Router(config-bulk-objects)# add ccarStatSwitchedBytes

Router(config-bulk-objects)# add CcarStatFilteredBytes

Router(config-bulk-objects)# exit

Router(config)#
```

Related Commands

Command	Description
snmp mib bulkstat object-list	Names a bulk statistics object list and enters Bulk Statistics Object List configuration mode.

bandwidth (interface configuration)

To set the inherited and received bandwidth values for an interface, use the **bandwidth** command in interface or virtual network interface config mode. To restore the default values, use the **no** form of this command.

bandwidth [{**receive**}] {*kbps* | **inherit** [{*kbps*}]}
no bandwidth [{**receive**}] {*kbps* | **inherit** [{*kbps*}]}

Syntax Description

kbps	Intended bandwidth, in kilobits per second. The range is from 1 to 10000000. For a full bandwidth DS3 line, enter the value 44736.
inherit	(Optional) Specifies how a subinterface inherits the bandwidth of its main interface.
receive	(Optional) Enables asymmetric transmit/receive operations so that the transmitted (**inherit** *kbps*) and received bandwidth are different.

Command Default

Default bandwidth values are set during startup. The bandwidth values can be displayed using the **show interfaces** or **show ipv6 interface** command. If the **receive** keyword is not used, by default, the transmit and receive bandwidths will be assigned the same value.

Command Modes

Interface configuration (config-if)

Virtual network interface (config-if-vnet)

Command History

Release	Modification
10.0	This command was introduced.
12.2T	This command was modified. The **inherit** keyword was added.
12.4(6)T	This command was modified. Support for IPv6 was added.
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.
Cisco IOS XE Release 2.1	This command was implemented on Cisco ASR 1000 Aggregation Services Series Routers.
Cisco IOS XE Release 3.2S	This command was modified. Support was added for this command in virtual network interface configuration mode.
15.1(03)S	This command was modified. Support was added for the **receive** keyword.

Usage Guidelines

Bandwidth Information

The **bandwidth** command sets an informational parameter to communicate only the current bandwidth to the higher-level protocols; you cannot adjust the actual bandwidth of an interface using this command.

Note This is only a routing parameter. It does not affect the physical interface.

Changing Bandwidth

For some media, such as Ethernet, the bandwidth is fixed; for other media, such as serial lines, you can change the actual bandwidth by adjusting the hardware. For both classes of media, you can use the **bandwidth** command to communicate the current bandwidth to the higher-level protocols.

Bandwidth Inheritance

Before the introduction of the **bandwidth inherit** command option, when the bandwidth value was changed on the main interface, the existing subinterfaces did not inherit the bandwidth value. If the subinterface was created before the bandwidth was changed on the main interface, the subinterface would receive the default bandwidth of the main interface, and not the configured bandwidth. Additionally, if the router was subsequently reloaded, the bandwidth of the subinterface would then change to the bandwidth configured on the main interface.

The **bandwidth inherit** command controls how a subinterface inherits the bandwidth of its main interface. This functionality eliminates inconsistencies related to whether the router has been reloaded and what the order was in entering the commands.

The **no bandwidth inherit** command enables all subinterfaces to inherit the default bandwidth of the main interface, regardless of the configured bandwidth. If the **bandwidth inherit** command is used without configuring a bandwidth on a subinterface, all subinterfaces will inherit the current bandwidth of the main interface. If you configure a new bandwidth on the main interface, all subinterfaces will use this new value.

If you do not configure a bandwidth on the subinterface and you configure the **bandwidth inherit** *kbps* command on the main interface, the subinterfaces will inherit the specified bandwidth.

In all cases, if an explicit bandwidth setting is configured on an interface, the interface will use that setting, regardless of whether the bandwidth inheritance setting is in effect.

Bandwidth Receipt

Some interfaces (such as Asymmetric Digital Subscriber Line (ADSL), V.35, RS-449, and High-Speed Serial Interface (HSSI)) can operate with different transmit and receive bandwidths. The **bandwidth receive** command permits this type of asymmetric operation. For example, for ADSL, the lower layer detects the two bandwidth values and configures the Integrated Data Base (IDB) accordingly. Other interface drivers, particularly serial interface cards on low- and midrange-platforms, can operate in this asymmetric bandwidth mode but cannot measure their clock rates. In these cases, administrative configuration is necessary for asymmetric operations.

Examples

The following example shows how to set the full bandwidth for DS3 transmissions:

```
Router(config)# interface serial 0
Router(config-if)# bandwidth 44736
```

The following example shows how to set the receive bandwidth:

```
Router(config)# interface serial 0
Router(config-if)# bandwidth receive 1000
```

Related Commands

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router.
show ipv6 interface	Displays statistics for all interfaces configured on the IPv6 router.

buffer-size (bulk statistics)

To configure a maximum buffer size for the transfer of bulk statistics files, use the **buffer-size** command in Bulk Statistics Transfer configuration mode. To remove a previously configured buffer size from the configuration, use the **no** form of this command.

buffer-size *bytes*
no buffer-size

Syntax Description

bytes	Size of the bulk statistics transfer buffer, in bytes. The valid range is from 1024 to 2147483647. The default is 2048.

Command Default

The default bulk statistics transfer buffer is 2048 bytes.

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

A configured buffer size limit is available primarily as a safety feature. Normal bulk statistics files should not generally meet or exceed the default value while being transferred.

Examples

In the following example, the bulk statistics transfer buffer size is set to 3072 bytes:

```
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)# buffer-size 3072
Router(config-bulk-tr)# enable
Router(config-bulk-tr)# exit
Router(config)#
```

Related Commands

Command	Description
snmp mib bulkstat transfer	Identifies the transfer configuration with a name and enters Bulk Statistics Transfer configuration mode.

comparison

To specify the type of Boolean comparison to be performed, use the **comparison** command in event trigger test boolean configuration mode. To disable the specified comparison value, use the **no** form of this command.

comparison {**equal** | **greatOrEqual** | **greater** | **lessOrEqual** | **lesser** | **unequal**}
no comparison

Syntax Description

equal	Specifies the type of Boolean comparison as equal.
greatOrEqual	Specifies the type of Boolean comparison as equal to or greater than.
greater	Specifies the type of Boolean comparison as greater than.
lessOrEqual	Specifies the type of Boolean comparison as equal to or less than.
lesser	Specifies the type of Boolean comparison as lesser than.
unequal	Specifies the type of Boolean comparison as unequal.

Command Default

The default comparison value for Boolean test is unequal.

Command Modes

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

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The specified value is used for Boolean comparison during trigger tests.

Examples

The following example shows how to specify a comparison value for Boolean test:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test boolean
Router(config-event-trigger-boolean)# comparison unequal
Router(config-event-trigger-boolean)# end
```

Related Commands

Command	Description
test boolean	Configures parameters for the Boolean trigger test.

conditional object

To define a conditional object when evaluating an expression, use the **conditional object** command in expression object configuration mode. To disable the configured settings, use the **no** form of this command.

conditional object *conditional-object-id* [{**wildcard**}]
no conditional object

Syntax Description

conditional-object-id	Conditional object identifier for evaluating the expression. • Conditional object identifiers are specified as a numeric value in dotted decimal format or as an object descriptor.
wildcard	(Optional) Enables a wildcard search for conditional object identifiers.

Command Default

By default, conditional object identifiers are not defined.

Command Modes

Expression object configuration (config-expression-object)

Bulkstat data set expression object configuration (config-bs-ds-expr-obj)

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

An object identifier specifies the instance of an object to consider while evaluating an expression. If an object does not have an instance, the value specified for the object identifier will not be used. Conditional objects determine the use of the value specified for the object identifier.

Examples

The following example shows how to define a conditional object in expression object configuration mode:

```
Device(config)# snmp mib expression owner owner1 name Expression1
Device(config-expression)# object 32
Device(config-expression-object)# conditional object
mib-2.90.1.3.1.1.2.3.112.99.110.4.101.120.112.53
Device(config-expression-object)# end
```

The following example shows how to enable a wildcard search for the conditional object identifier mib-2.5 in expression object configuration mode:

```
Device(config-expression-object)# conditional object mib-2.5 wildcard
Device(config-expression-object)# end
```

The following example shows how to define a conditional object ifDesc in Bulkstat data set expression object configuration mode:

```
Device> enable
Device# configure terminal
Device(config)# bulkstat data dataSet type expression
Device(config-bs-ds-expr)# object 1
Device(config-bs-ds-expr-obj)# conditional object ifDesc
```

Related Commands

Command	Description
snmp mib expression owner	Specifies the owner of an SNMP expression.
object (expression)	Specifies the objects to be used while evaluating an SNMP expression.

context

Note Effective with Cisco IOS Release 15.0(1)M, the **context** command is replaced by the **snmp context**command. See the **snmp context** command for more information.

To associate a Simple Network Management Protocol (SNMP) context with a particular VPN routing and forwarding (VRF) instance, use the **context** command in VRF configuration mode. To disassociate an SNMP context from a VPN, use the **no** form of this command.

context *context-name*
no context

Syntax Description

context-name	Name of the SNMP VPN context. The name can be up to 32 alphanumeric characters.

Command Default

No SNMP contexts are associated with VPNs.

Command Modes

VRF configuration (config-vrf)

Command History

Release	Modification
12.0(23)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(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.2(33)SRB	This command was modified. Support for IPv6 was added.
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.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
15.0(1)M	This command was replaced by the **snmp context** command.

Usage Guidelines

Before you use the **context** command to associate an SNMP context with a VPN, you must do the following:

- Issue the **snmp-server context** command to create an SNMP context.
- Associate a VPN with a context so that the specific MIB data for that VPN exists in the context.
- Associate a VPN group with the context of the VPN using the **context** *context-name*keyword argument pair of the **snmp-server group** command.

SNMP contexts provide VPN users with a secure way of accessing MIB data. When a VPN is associated with a context, MIB data for that VPN exists in that context. Associating a VPN with a context helps service providers to manage networks with multiple VPNs. Creating and associating a context with a VPN enables a provider to prevent the users of one VPN from accessing information about other VPN users on the same networking device.

A route distinguisher (RD) is required to configure an SNMP context. An RD creates routing and forwarding tables and specifies the default route distinguisher for a VPN. The RD is added to the beginning of an IPv4 prefix to make it globally unique. An RD is either an autonomous system number (ASN) relative, which means that it is composed of an autonomous system number and an arbitrary number, or an IP address relative and is composed of an IP address and an arbitrary number.

Examples

The following example shows how to create an SNMP context named context1 and associate the context with the VRF named vrf1:

```
Router(config)# snmp-server context context1
Router(config)# ip vrf vrf1
Router(config-vrf)# rd 100:120
Router(config-vrf)# context context1
```

Related Commands

Command	Description
ip vrf	Enters VRF configuration mode for the configuration of a VRF.
snmp mib community-map	Associates an SNMP community with an SNMP context, engine ID, or security name.
snmp mib target list	Creates a list of target VRFs and hosts to associate with an SNMP v1 or v2c community.
snmp-server context	Creates an SNMP context.
snmp-server group	Configures a new SNMP group or a table that maps SNMP users to SNMP views.
snmp-server trap authentication vrf	Controls VRF-specific SNMP authentication failure notifications.
snmp-server user	Configures a new user to an SNMP group.

context (bulk statistics)

To associate a Simple Network Management Protocol (SNMP) context with the bulk statistics schema, use the **context** command in bulk statistics schema configuration mode. To disassociate an SNMP context from the bulk statistics schema, use the **no** form of this command.

context *context-name*
no context

Syntax Description

context-name	Name of the SNMP context that is associated with the bulk statistics schema.

Command Default

No SNMP context is associated with the bulk statistics schema.

Command Modes

Bulk statistics schema configuration (config-bulk-sc)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

Use the **snmp mib bulkstat schema** command to enter bulk statistics schema configuration mode, and then use the **context** command to associate an SNMP context with the bulk statistics schema.

Examples

The following example shows how to create an SNMP context named ctx and associate the context with the bulk statistics schema:

```
Router(config)# snmp mib bulkstat schema sch
Router(config-bulk-sc)# context ctx
```

Related Commands

Command	Description
snmp mib bulkstat schema	Names an SNMP bulk statistics schema and enters bulk statistics schema configuration mode.

correlate

To build a single complex event, use the correlate command in trigger applet configuration mode. To disable the complex event, use the **no** form of this command.

correlate {**event** *event-tag* | **track** *track-object-number*}[{**andor** | **and** | **or**}]{**event** *event-tag* | **track** *track-object-number*}
no correlate {**event** *event-tag* | **track** *track-object-number*}[{**andor** | **and** | **or**}]{**event** *event-tag* | **track** *track-object-number*}

Syntax Description

event *event-tag*	Specifies the event that can be used with the **trigger** command to support multiple event statements within an applet. If the event associated with the event-tag argument occurs for the number of times specified by the **trigger** command, the result is true. If not, the result is false.
track *track-object-number*	Specifies the event object number for tracking. The range is from 1 to 500. If the tracked object is set, the result of the evaluation is true. If the tracked object is not set or is undefined, the result of the evaluation is false. This result is regardless of the state of the object.
andnot	(Optional) Specifies that if event 1 occurs the action is executed, and if event 2 and event 3 occur together the action is not executed.
and	(Optional) Specifies that if event 1 occurs the action is executed, and if event 2 and event 3 occur together the action is executed.
or	(Optional) Specifies that if event 1 occurs the action is executed, or else if event 2 and event 3 occur together the action is executed.

Command Default

The event detector counter is triggered when the specified counter crosses the threshold.

Command Modes

Trigger applet configuration (config-applet-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.

Usage Guidelines

After you enter the trigger statement, the router enters trigger applet configuration mode. The correlate statement and up to eight attribute statements can be specified in trigger applet configuration mode. These statements are used to create a complex event correlation using the participating event statements to a maximum of eight statements. The correlate statement allows Boolean logic to be used to relate events and tracked objects. When the result of the correlate evaluation is true, the trigger criteria are applied. The correlation occurs from left to right taking into account the attribute statement conditions for the event.

Examples

The following example, shows how to configure a correlate statement after entering trigger applet configuration mode. This applet will run if the write memory or copy run start command occurs within 60 seconds of CRON specified time.

```
Router(config)# event manager applet trigger
Router(config-applet)# event tag e1 cli pattern "write mem.*" sync yes
Router(config-applet)# event tag e2 cli pattern "copy run start" sync yes
Router(config-applet)# trigger occurs 1 period-start 0-59/1 0-23/1 * * 0-7 period 60
Router(config-applet-trigger)# correlate event e1 or event e2
Router(config-applet-trigger)# attribute tag e1 occurs 1
Router(config-applet-trigger)# attribute tag e2 occurs 1
Router(config-applet-trigger)# action 1.0 syslog msg "$_cli_msg Command Executed"
Router(config-applet-trigger)# set 2.0 _exit_status 1
```

In the following example, the applet will run if either the write memory or copy run start command occurs and any syslog message that contains the string “hello” occurs within 60 seconds of any valid CRON specified time.

```
Router(config)# event manager applet trigger
Router(config-applet)# event tag e1 cli pattern "write mem.*" sync yes
Router(config-applet)# event tag e2 cli pattern "copy run start" sync yes
Router(config-applet)# event tag e3 syslog pattern "hello"
Router(config-applet)# trigger occurs 1 period-start 0-59/1 0-23/1 * * 0-7 period 60
Router(config-applet-trigger)# correlate event e1 or event e2 and event e3
Router(config-applet-trigger)# attribute tag e1 occurs 1
Router(config-applet-trigger)# attribute tag e2 occurs 1
Router(config-applet-trigger)# attribute tag e3 occurs 1
Router(config-applet-trigger)# action 1.0 syslog msg "$_cli_msg Command Executed"
Router(config-applet-trigger)# set 2.0 _exit_status 1
```

In the following example, the applet will run when the write memory command is entered and the tracked object 10 is set:

```
Router(config)# event manager applet trigger
Router(config)# event tag e1 cli pattern "write mem.*" sync yes
Router(config)# trigger occurs 1
Router(config-applet-trigger)# correlate event e1 and track 10
Router(config-applet-trigger)# attribute tag e1 occurs 1
Router(config-applet-trigger)# action 1.0 syslog msg "$_cli_msg Command Executed"
Router(config-applet-trigger)# set 2.0 _exit_status 1
```

Related Commands

Command	Description
action syslog	Specifies the action of writing a message to a syslog when an EEM applet is triggered.
attribute	Configures an attribute in a local service profile.
event manager applet	Registers an applet with the EEM and enters applet configuration mode.
trigger (EEM)	Enters the trigger applet configuration mode and specifies the multiple event configuration statements for an EEM applet.

delta (test threshold)

To specify a delta value for the threshold trigger test, use the **delta** command in event trigger threshold configuration mode. To disable the configured settings, use the **no** form of this command.

delta {**falling** | **rising**} {*threshold-value* | **event owner** *event-owner* **name** *event-name*}
no delta {**falling** | **rising**}

Syntax Description

falling	Specifies the delta value for the falling threshold.
rising	Specifies the delta value for the rising threshold.
threshold-value	Delta value for thresholds. The default value is 0.
event	Specifies the event.
owner	Specifies the event owner.
event-owner	Name of the event owner.
name	Specifies the name of an event.
event-name	Name of the event.

Command Default

The delta threshold value is set to 0 and 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **delta** command sets the delta falling or rising threshold to the specified value when the object sampling method is delta. The **delta rising event owner** command specifies the event to be invoked when the delta rising threshold is triggered. Similarly, the **delta falling event owner** specifies the event to be invoked when the delta falling threshold is triggered.

Examples

The following example shows how to specify a delta falling threshold:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test threshold
Router(config-event-trigger-threshold)# delta falling 20
Router(config-event-trigger-threshold)# end
```

Related Commands

Command	Description
test	Specifies the type of test to perform during an event trigger.

delta interval

To specify an interval for the delta sampling of objects used while evaluating an expression, use the **delta interval** command in expression configuration mode. To disable the configured settings, use the **no** form of this command.

delta interval *seconds*
no delta interval

Syntax Description

seconds	Number of seconds for the delta sampling interval. The default is 0.

Command Default

The default delta sampling interval is 0.

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

If there are no objects configured for the delta sampling method, the **delta interval** command does not configure the interval.

Examples

The following example shows how to set the delta interval to 60 seconds:

```
Router(config)# snmp mib expression owner owner1 name expressionA
Router(config-expression)# delta interval 60
Router(config-expression)# end
```

Related Commands

Command	Description
snmp mib expression owner	Specifies the owner of an expression.

description (event)

To describe the function and use of an event, use the **description** command in event configuration mode. To remove the description, use the **no** form of this command.

description *event-description*
no description

Syntax Description

event-description	Description of the function and use of an event. • The description text string can be up to 256 characters in length. If the string contains embedded blanks, enclose it in double quotation marks.

Command Default

By default, events are not described.

Command Modes

Event configuration (config-event)

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **description** command configures a free-text description of the function and use of an event.

Examples

The following example shows how to describe an event:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# description "EventA is an RMON event"
Router(config-event)# end
```

Related Commands

Command	Description
snmp mib event owner	Specifies an event owner for a management event.

description (expression)

To provide a description of the use of an expression, use the **description** command in expression configuration mode. To remove the description, use the **no** form of this command.

description *expression-description*
no description

Syntax Description

expression-description	Description of the function and use of an expression. The description text string can be up to 256 characters in length.

Command Default

By default, no expression is described.

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **description** command configures a free-text description of the function and use of an expression.

Examples

The following example shows how to describe an expression:

```
Router(config)# snmp mib expression owner owner1 name expressionA
Router(config-expression)# description expressionA is created for the sysLocation MIB object
Router(config-expression)# end
```

Related Commands

Command	Description
snmp mib expression owner	Specifies the owner for an expression.

description (trigger)

To provide a description of the function and use of an event trigger, use the **description** command in the event trigger configuration mode. To remove the description, use the **no** form of this command.

description *trigger-description*
no description

Syntax Description

trigger-description	Description of the function and use of a trigger. • The description text string can be up to 256 characters in length.

Command Default

By default, no trigger is described.

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **description** command configures a free-text description of the function and use of an event trigger.

Examples

The following example shows how to describe an event trigger:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# description triggerA is configured for network management
events
Router(config-event-trigger)# end
```

Related Commands

Command	Description
snmp mib event trigger owner	Specifies the event trigger owner while configuring management event trigger information.

discontinuity object (expression)

To define the discontinuity properties for an object, use the **discontinuity object** command in expression object configuration mode. To disable the configuration settings, use the **no** form of this command.

discontinuity object *discontinuity-object-id* [**wildcard**] [**type** {**timeticks** | **timestamp** | **date-and-time**}]
no discontinuity object

Syntax Description

discontinuity-object-id	Discontinuity object identifier to identify discontinuity in a counter. • The default object identifier is sysUpTime.0.
wildcard	(Optional) Specifies whether an object identifier is to be wildcarded or fully specified. • By default, the object identifier is fully specified.
type	(Optional) Specifies the type of discontinuity in a counter. • The default value for the discontinuity type is timeticks.
timeticks	(Optional) Specifies timeticks for discontinuity in a counter.
timestamp	(Optional) Specifies the time stamp for discontinuity in a counter.
date-and-time	(Optional) Specifies the date and time of discontinuity in a counter.

Command Default

The default discontinuity object identifier is sysUpTime.0.

Command Modes

Expression object 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **discontinuity object** command configures discontinuity properties of an object when the object sampling type is delta or changed.

Examples

The following example shows how to configure discontinuity properties for an object:

```
Router(config)# snmp mib expression owner owner1 name ExpressionA
Router(config-expression)# object 43
Router(config-expression-object)# discontinuity object 0.7
Router(config-expression-object)# end
```

The following example shows how to enable wildcarded search for discontinuity object identifiers:

```
Router(config-expression-object)# discontinuity object 0.7 wildcard
Router(config-expression-object)# end
```

The following example shows how to specify the type for discontinuity in a counter:

```
Router(config-expression-object)# discontinuity object 0.7 type timeticks
Router(config-expression-object)# end
```

Related Commands

Command	Description
snmp mib expression owner	Specifies the owner for an expression.

enable (bulk statistics)

To begin the bulk statistics data collection and transfer process for a specific bulk statistics configuration, use the **enable** command in Bulk Statistics Transfer configuration mode. To disable the bulk statistics data collection and transfer process for a specific bulk statistics configuration, use the **no** form of this command.

enable
no enable

Syntax Description

This command has no arguments or keywords.

Command Default

Bulk statistics transfer is disabled.

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

Specific bulk statistics configurations are identified with a name, as specified in the **snmp mib bulkstat transfer** command. The **enable** command (in Bulk Statistics Transfer configuration mode) begins the periodic MIB data collection and transfer process.

Collection (and subsequent file transfer) will start only if this command is used. Conversely, the **no enable**command will stop the collection process. Subsequently, issuing the **enable**command will start the operations again.

Each time the collection process is started using the **enable** command, data is collected into a new bulk statistics file. When the **no enable** command is used, the transfer process for any collected data will immediately begin (in other words, the existing bulk statistics file will be transferred to the specified management station).

To successfully enable a bulk statistics configuration, at least one schema with a non-zero number of objects must be configured.

Examples

The following example shows the bulk statistics transfer configuration named bulkstat1 as enabled:

```
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)# enable
Router(config-bulk-tr)# exit
```

Related Commands

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

enable (event)

To enable an event or event trigger, use the **enable** command in event or event trigger configuration mode, respectively. To disable the event, use the **no** form of this command.

enable
no enable

Syntax Description

This command has no arguments or keywords.

Command Default

No event is enabled by default.

Command Modes

Event configuration (config-event)

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

If an event is not enabled, it is not executed when triggered.

Examples

The following example shows how to enable an event:

```
Router(config)# snmp mib event owner owner1 name EventA
Router(config-event)# enable
Router(config-event)# end
```

The following example shows how to enable an event trigger:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# enable
Router(config-event-trigger)# end
```

Related Commands

Command	Description
snmp mib event owner	Specifies an owner for a management event.
snmp mib event trigger owner	Specifies an event trigger owner while configuring management event trigger information.

enable (expression)

To enable an expression, use the **enable** command in expression configuration mode. To disable an expression, use the **no** form of this command.

enable
no enable

Syntax Description

This command has no arguments or keywords.

Command Default

No expression is enabled 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **enable** command enables the expression for evaluation.

Examples

The following example shows how to enable an expression:

```
Router(config)# snmp mib expression owner owner1 name ExpressionA
Router(config-expression)# enable
Router(config-expression)# end
```

Related Commands

Command	Description
snmp mib expression owner	Specifies an expression.

event owner

To specify the event owner for an event trigger according to the trigger type and status of the trigger, use the **event owner** command in event trigger existence or event trigger boolean configuration mode. To disable the configuration and set default parameters, use the **no** form of this command.

event owner *event-owner* **name** *event-name*
no event owner

Syntax Description

event-owner	Owner of the event.
name	Indicates the name of the event.
event-name	Unique name of the event.

Command Default

The event owner and event name are not specified.

Command Modes

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

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

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The event is identified by *event-owner* and *event-name* values and is configured by using the **snmp mib event** command. Events are enabled by using the **enable** command.

Examples

The following example shows how to specify an event owner for the existence trigger test:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test existence
Router(config-event-trigger-existence)# event owner owner2 name event2
Router(config-event-trigger-existence)# end
```

The following example shows how to specify an event owner for the Boolean trigger test:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test boolean
Router(config-event-trigger-boolean)# event owner owner2 name event2
Router(config-event-trigger-boolean)# end
```

Related Commands

Command	Description
snmp mib event trigger owner	Specifies an event trigger owner while configuring management event trigger information.

Command	Description
test boolean	Configures parameters for the Boolean trigger test.
test existence	Configures parameters for the existence trigger test.

expression

To specify an expression for evaluation, use the **expression** command in expression configuration mode. To disable the configured settings, use the **no** form of this command.

expression *expression*
no expression

Syntax Description

expression	Expression to be evaluated.

Command Default

By default, no expression is configured.

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The expressions are in the ANSI C syntax except for the variable names. Variables are expressed as $ (dollar sign) and integers that correspond to the object number. An example of an expression is ($1-$5)*100.

Examples

The following example shows how to specify an expression:

```
Router(config)# snmp mib expression owner owner1 name expressionA
Router(config-expression)# expression ($1+$2)*800/$3
Router(config-expression)# end
```

Related Commands

Command	Description
snmp mib expression owner	Specifies an expression owner.

falling (test threshold)

To specify a falling threshold value for the threshold trigger test, use the **falling** command in event trigger threshold configuration mode. To disable the specified threshold, use the **no** form of this command.

falling {*threshold-value* | **event owner** *event-owner* **name** *event-name*}
no falling

Syntax Description

threshold-value	Numerical value for falling threshold. The default value is 0.
event	Specifies the event.
owner	Specifies the event owner.
event-owner	Name of the event owner.
name	Indicates the name of an event.
event-name	Name of an event.

Command Default

The default falling 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The falling threshold value you specify is verified when the threshold trigger is active. If the sample value is equal to or less than the value you specify and greater than the value at the last sampling interval, a corresponding trigger is generated.

The **falling event owner** command specifies the event to be invoked when the falling threshold is triggered. 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 a falling threshold value of 12:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# test threshold
Router(config-event-trigger-threshold)#  falling 12
Router(config-event-trigger-threshold)# end
```

Related Commands

Command	Description
test	Enables a trigger test.

format (bulk statistics)

To specify the format to be used for the bulk statistics data file, use the **format** command in Bulk Statistics Transfer configuration mode. To disable a previously configured format specification and return to the default, use the **no** form of this command.

format {**bulkBinary** | **bulkASCII** | **schemaASCII**}
no format

Syntax Description

bulkBinary	Binary format.
bulkASCII	ASCII (human-readable) format.
schemaASCII	ASCII format with additional bulk statistics schema tags. This is the default.

Command Default

The default bulk statistics transfer format is schemaASCII.

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

Note In Cisco IOS Release 12.0(24)S, only the schemaASCII format is supported. This command will not change the file format in that release.

The bulk statistics data file (VFile) contains two types of fields: tags and data. Tags are used to set off data to distinguish fields of the file. All other information is in data fields.

For the bulkASCII and bulkBinary formats, periodic polling enables data for a single data group (object list) to be collected more than once in the same VFile. Each such instance of a data group can be treated as a different “table” type.

Every object and table tag contains an additional sysUpTime field. Similarly each row tag contains the value of the sysUpTime when the data for that row was collected. The sysUpTime provides a time stamp for the data.

For additional information about the structures of the bulk statistics data file formats, see the definitions in the CISCO-DATA-COLLECTION-MIB.

Examples

In the following example, the bulk statistics data file is set to schemaASCII:

```
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)# format schemaASCII

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

Related Commands

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

frequency (event trigger)

To specify an interval between trigger samples, use the **frequency** command in event trigger configuration mode. To disable the configured interval, use the **no** form of this command.

frequency *seconds*
no frequency

Syntax Description

seconds	Number of seconds between two trigger samples. The default is 600.

Command Default

The interval between the trigger samples is set to the default value.

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **frequency** command configures the waiting time between trigger samples. By default, the frequency of object sampling is 600 seconds.

Examples

The following example shows how to specify an interval of 360 seconds for sampling:

```
Router(config)# snmp mib event trigger owner owner1 name triggerA
Router(config-event-trigger)# frequency 360
Router(config-event-trigger)# end
```

Related Commands

Command	Description
snmp mib event trigger owner	Specifies an event trigger owner while configuring management event trigger information.

id (expression)

To configure the object identifier, use the **id** command in expression object configuration mode. To disable the configuration, use the **no** form of this command.

id *object-oid*
no id

Syntax Description

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

Command Default

By default, the object identifier for an object is not configured.

Command Modes

Expression object configuration mode (config-expression-object)

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.
15.0(1)S	This command was integrated into Cisco IOS Release 15.0(1)S.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Examples

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

```
Router(config)# snmp mib expression owner owner1 name expressionA
Router(config-expression)# object 3
Router(config-expression-object)# id 2.2
```

instance (MIB)

To configure the MIB object instances to be used in a bulk statistics schema, use the **instance**command in Bulk Statistics Schema configuration mode. To remove a Simple Network Management Protocol (SNMP) bulk statistics object list, use the **no** form of this command.

instance {**exact** | **wild**} {**interface** *interface-id* [**sub-if**] | **oid** *oid*}
no instance

Syntax Description

exact	Indicates that the specified instance (interface, controller, or object identifier [OID]), when appended to the object list, is the complete OID to be used in this schema.
wild	Indicates that all instances that fall within the specified interface, controller, or OID range should be included in this schema.
interface	Specifies a specific interface or group of interfaces for the schema.
interface-id	Interface name and number for a specific interface or group of interfaces.
sub-if	(Optional) Specifies that the object instances should be polled for all subinterfaces of the specified interface or controller in addition to the object instances for the main interface.
oid	Indicates that an OID is specified.
oid	Object ID that, when appended to the object list, specifies the complete (or wildcarded) OID for the objects to be monitored.

Command Default

By default, MIB object instances to be used in bulk statistics schema are not configured.

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 **instance** command specifies the instance information for objects in the schema being configured. The specific instances of MIB objects for which data should be collected are determined by appending the value

of the **instance** command to the objects specified in the associated object list. In other words, the schema **object-list** when combined with the schema **instance** specifies a complete MIB object identifier.

The **instance exact** command indicates that the specified instance, when appended to the object list, is the complete OID.

The **instance wild** command indicates that all subindices of the specified OID belong to this schema. In other words, the **wild** keyword allows you to specify a partial, wildcarded instance.

Instead of specifying an OID, you can specify a specific interface. The **interface** *interface-id* keyword and argument allow you to specify an interface name and number (for example, FastEthernet 0) instead of specifying the ifIndex OID for the interface.

The optional **sub-if** keyword, when added after specifying an interface or controller, includes the ifIndexes for all subinterfaces of the interface you specified.

Only one **instance** command can be configured per schema.

Examples

The following example shows how to configure the router to collect bulk statistics for the ifInOctets object (from the IF-MIB) for Fast Ethernet interface 3/0. In this example, 3 is the ifIndex instance for Fast Ethernet interface 3/0. The instance (3) when combined with the object list (ifIndex; 1.3.6.1.2.1.2.2.1.1) translates to the OID 1.3.6.1.2.1.2.2.1.1.3.

```
Router# configure terminal
Router(config)# snmp mib bulkstat object-list E0InOctets
! The following command specifies the object 1.3.6.1.2.1.2.2.1.1.3 (ifIndex)
Router(config-bulk-objects)# add ifIndex
Router(config-bulk-objects)# exit
Router(config)# snmp mib bulkstat schema E0
Router(config-bulk-sc)# object-list E0InOctets
! The following command is equivalent to "instance exact oid 3".
Router(config-bulk-sc)# instance exact interface FastEthernet 3/0
Router(config-bulk-sc)# exit
Router(config)# snmp mib bulkstat transfer bulkstat1
Router(config-bulk-tr)# schema E0
Router(config-bulk-tr)# url primary ftp://user:password@host/ftp/user/bulkstat1
Router(config-bulk-tr)# url secondary tftp://user@host/tftp/user/bulkstat1
Router(config-bulk-tr)# format schemaASCII
Router(config-bulk-tr)# transfer-interval 30
Router(config-bulk-tr)# retry 5
Router(config-bulk-tr)# enable
Router(config-bulk-tr)# exit
Router(config)# do copy running-config startup-config
```

Related Commands

Command	Description
object-list	Configures the bulk statistics object list to be used in the bulk statistics schema.
snmp mib bulkstat schema	Names an SNMP bulk statistics schema and enters Bulk Statistics Schema configuration mode.

instance range

To specify the range of instances to collect for a given data group, use the **instance range**command in Bulk Statistics Schema configuration mode. To delete a previously configured instance range, use the **no** form of this command.

instance range start *oid* **end** *oid*
no instance range start *oid* **end** *oid*

Syntax Description

start	Indicates the beginning of the range.
oid	The object ID to be monitored for the specific range.
end	Indicates the end of the range.

Command Default

No instance range is configured.

Command Modes

Bulk Statistics Schema configuration (config-bulk-sc)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
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

When used in conjunction with the **snmp mib bulkstat schema** command, the **instance range** command can be used to configure a range of instances on which to collect data.

Examples

The following example shows the collection of data for all instances starting with instance 1 and ending with instance 2:

```
snmp mib bulkstat object-list ifmib
  add ifInOctets
  add ifOutOctets
  exit
!
snmp mib bulkstat schema IFMIB
 object-list ifmib
 poll-interval 1
 instance range start 1 end 2
 exit
!
snmp mib bulkstat transfer bulkstat1
 schema IFMIB
 url primary tftp://202.153.144.25/pcn/bulkstat1
 format schemaASCII
 transfer-interval 5
 retry 5
 buffer-size 1024
```

```
retain 30
enable
end
```

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.

instance repetition

To configure data collection to begin at a particular instance of a MIB object and to repeat for a given number of instances, use the **instance repetition** command in Bulk Statistics Schema configuration mode. To delete a previously configured repetition of instances, use the **no** form of this command.

instance repetition *oid-instance* **max** *repeat-number*
no instance repetition

Syntax Description

oid-instance	Object ID of the instance to be monitored.
max *repeat-number*	Specifies the number of times the instance should repeat.

Command Default

No instance repetition is configured.

Command Modes

Bulk Statistics Schema configuration (config-bulk-sc)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

When used in conjunction with the **snmp mib bulkstat schema** command, the **instance repetition** command can be used to configure data collection to repeat for a certain number of instances of a MIB object.

Examples

The following example shows how to start data collection at the first instance and repeat for four instances of the indicated MIB object:

```
snmp mib bulkstat object-list ifmib
 add ifOutOctets
 add ifInOctets
snmp mib bulkstat schema IFMIB
 object-list ifmib
 poll-interval 1
 instance repetition 1 max 4
snmp mib bulkstat transfer bulkstat1
 schema IFMIB
 transfer-interval 5
 retain 30
 retry 5
 buffer-size 1024
 enable
```

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.

no snmp-server

To disable Simple Network Management Protocol (SNMP) agent operation, use the **no snmp-server** command in global configuration mode.

no snmp-server

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

This command disables all running versions of SNMP (SNMPv1, SNMPv2C, and SNMPv3) on the device.

Examples

The following example disables the current running version of SNMP:

```
Router(config)# no snmp-server
```

object (expression)

To specify the objects to be used 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The *object-number* argument associates 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, and the variable is $1. The **object** command can be used multiple times to define multiple objects or variables in an expression.

Examples

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

```
Router(config)# snmp mib expression owner owner1 name expression1
Router(config-expression)# object 10
Router(config-expression)# end
```

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 notification, event action set, or event trigger configuration mode. 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

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)# end
```

The following example shows how to set the object identifier to 2.2 in event 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)# end
```

The following example shows how to set the object identifier to 2.2 in event 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)# end
```

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)# end
```

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 id (event trigger)

To specify the object identifier of an object, use the **object id** command in event trigger configuration mode.

object id *object-identifier*

Syntax Description

object-identifier	Object identifier of an object.

Command Default

This command is enabled by default.

Command Modes

Event trigger configuration (config-event-trigger).

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **object id** command specifies object identifier of the object configured for an event trigger. The default value of the object identifier is **0.0**.

Examples

The following example shows how to specify the object identifier by using the **object id** command:

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

Related Commands

Command	Description
snmp mib event trigger owner	Specifies the name of the event trigger owner. This command also enables the event trigger 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

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

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)# end
```

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)# end
```

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)# end
```

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)# end
```

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)# end
```

Related Commands

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

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.

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

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 (bulk statistics)

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	Specifies the event.
owner	Specifies the owner of the event.
event-owner	Owner of an event.
name	Specifies 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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

The **rising** command specifies the event to be invoked when the rising threshold is triggered. An event is identified by the owner and name and is configured 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)# end
```

Related Commands

Command	Description
test	Enables a trigger test.