System Monitoring Command Reference for Cisco NCS 5000 Series Routers

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CONTENTS

Preface

This preface contains these sections:

Changes to This Document

This table lists the technical changes made to this document since it was first released.

Table 1: Changes to This Document

Date	Summary
June 2016	Initial release of this document.
November 2016	Republished with documentation updates for Release 6.1.2.
September 2017	Republished with documentation updates for Release 6.3.1.

Communications, Services, and Additional Information

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Alarm Management and Logging Correlation Commands

This module describes the commands used to manage alarms and configure logging correlation rules for system monitoring on the router.

For detailed information about alarm management and logging correlation concepts, configuration tasks, and examples, see the *Implementing and Monitoring Alarms and Logging Correlation* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

For system logging commands, see the *Logging Services Commands* module.

For system logging concepts, see the *Implementing Logging Services* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

alarm

To specify a type of alarm to be suppressed by a logging suppression rule, use the **alarm** command in logging suppression rule configuration mode.

alarm *msg-category group-name msg-code*

Syntax Description

msg-category	Message category of the root message.
group-name	Group name of the root message.
msg-code	Message code of the root message.

Command Default

No alarm types are configured by default.

Command Modes

Logging suppression rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to configure the logging suppression rule “commit” to suppress alarms whose root message are “MBGL”, with group name “commit” and message code “succeeded”:

```
RP/0/RP0/CPU0:router(config)# logging suppress rule commit
RP/0/RP0/CPU0:router(config-suppr-rule)# alarm MBGL COMMIT SUCCEEDED
```

all-alarms

To configure a logging suppression rule to suppress all types of alarms, use the **all-alarms** command in logging suppression rule configuration mode.

all-alarms

Syntax Description

This command has no keywords or arguments.

Command Default

No alarm types are configured by default.

Command Modes

Logging suppression rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to configure the logging suppression rule commit to suppress all alarms:

```
RP/0/RP0/CPU0:router(config)# logging suppress rule commit
RP/0/RP0/CPU0:router(config-suppr-rule)# all-alarms
```

all-of-router

To apply a logging suppression rule to alarms originating from all locations on the router, use the **all-of-router** command in logging suppression apply rule configuration mode.

all-of-router

Syntax Description

This command has no keywords or arguments.

Command Default

No scope is configured by default.

Command Modes

Logging suppression apply rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to apply the logging suppression rule “commit” to all locations on the router:

```
RP/0/RP0/CPU0:router(config)# logging suppress apply rule commit
RP/0/RP0/CPU0:router(config-suppr-apply-rule)# all-of-router
```

clear logging correlator delete

To delete all messages or messages specified by a correlation ID from the logging correlator buffer, use the **clear logging correlator delete** command in XR EXEC mode.

clear logging correlator delete {**all-in-buffer***correlation-id*}

Syntax Description

all-in-buffer	Clears all messages in the logging correlator buffer.
correlation-id	Correlation event record ID. Up to 14 correlation IDs can be specified, separated by a space. Range is 0 to 4294967294.

Command Default

No messages are automatically deleted unless buffer capacity is reached.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the show logging correlator buffer, on page 45 command to confirm that records have been cleared.

Use the logging correlator buffer-size, on page 17 command to configure the capacity of the logging correlator buffer.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to clear all records from the logging correlator buffer:

```
RP/0/RP0/CPU0:router# clear logging correlator delete all-in-buffer
```

clear logging events delete

To delete messages from the logging events buffer, use the **clear logging events delete** command in XR EXEC mode.

clear logging events delete

Syntax Description

admin-level-only	Deletes only events at the administrative level.
all-in-buffer	Deletes all event IDs from the logging events buffer.
bistate-alarms-set	Deletes bi-state alarms in the SET state.
category *name*	Deletes events from a specified category.
context *name*	Deletes events from a specified context.
event-hi-limit *event-id*	Deletes events with an event ID equal to or lower than the event ID specified with the *event-id* argument. Range is 0 to 4294967294.
event-lo-limit *event-id*	Deletes events with an event ID equal to or higher than the event ID specified with the *event-id* argument. Range is 0 to 4294967294.
first *event-count*	Deletes events, beginning with the first event in the logging events buffer. For the *event-count* argument, enter the number of events to be deleted.
group *message-group*	Deletes events from a specified message group.
last *event-count*	Deletes events, beginning with the last event in the logging events buffer. For the *event-count* argument, enter the number of events to be deleted.
location *node-id*	Deletes messages from the logging events buffer for the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.
message *message-code*	Deletes events with the specified message code.
severity-hi-limit	Deletes events with a severity level equal to or lower than the severity level specified with the *severity* argument.

severity	Severity level. Valid values are: • **alerts** • **critical** • **emergencies** • **errors** • **informational** • **notifications** • **warnings** **Note** Settings for the severity levels and their respective system conditions are listed under the "Usage Guidelines" section for the **logging events level** command. Events of lower severity level represent events of higher importance.
severity-lo-limit	Deletes events with a severity level equal to or higher than the severity level specified with the *severity* argument.
timestamp-hi-limit	Deletes events with a time stamp equal to or lower than the specified time stamp.

hh **:** *mm* **:** *ss* [*month*] [*day*] [*year*]	Time stamp for the **timestamp-hi-limit** or **timestamp-lo-limit** keyword. The *month*, *day*, and *year* arguments default to the current month, day, and year, if not specified. Ranges for the *hh* **:** *mm* **:** *ss month day year* arguments are as follows: • *hh* **:**—Hours. Range is 00 to 23. You must insert a colon after the *hh* argument. • *mm* **:**—Minutes. Range is 00 to 59. You must insert a colon after the *mm* argument. • *ss*—Seconds. Range is 00 to 59. • *month*—(Optional) The month of the year. The values for the *month* argument are: • january • february • march • april • may • june • july • august • september • october • november • december • *day*—(Optional) Day of the month. Range is 01 to 31. • *year*—(Optional) Year. Enter the last two digits of the year (for example, **04** for 2004). Range is 01 to 37.
timestamp-lo-limit	Deletes events with a time stamp equal to or higher than the specified time stamp.

Command Default

No messages are automatically deleted unless buffer capacity is reached.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command is used to delete messages from the logging events buffer that match the keywords and arguments that you specify. The description is matched if all of the conditions are met.

Use the show logging events buffer, on page 52 command to verify that events have been cleared from the logging events buffer.

Use the logging events buffer-size, on page 21 command to configure the capacity of the logging events buffer.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to delete all messages from the logging events buffer:

```
RP/0/RP0/CPU0:router# clear logging events delete all-in-buffer
```

clear logging events reset

To reset bi-state alarms, use the **clear logging events reset** command in XR EXEC mode.

clear logging events reset {**all-in-buffer***event-id*}

Syntax Description

all-in-buffer	Resets all bi-state alarm messages in the event logging buffer.
event-id	Event ID. Resets the bi-state alarm for an event or events. Up to 32 event IDs can be specified, separated by a space. Range is 0 to 4294967294.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command clears bi-state alarms messages from the logging events buffer. Bi-state alarms are generated by state changes associated with system hardware, such as a change of interface state from active to inactive, or a change in component temperature.

Use the show logging events buffer, on page 52 command to display messages in the logging events buffer.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to reset all bi-alarms in the logging events buffer:

```
RP/0/RP0/CPU0:router# clear logging events reset all-in-buffer
```

context-correlation

To enable context-specific correlation, use the **context-correlation** command in either stateful or nonstateful correlation rule configuration mode. To disable correlation on context, use the **no** form of this command.

context-correlation
no context-correlation

Syntax Description

This command has no keywords or arguments.

Command Default

Correlation on context is not enabled.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command enables context-specific correlation for each of the contexts in which a given rule is applied. For example, if the rule is applied to two contexts (context1 and context2), messages that have context "context1" are correlated separately from those messages with context "context2".

Use the show logging correlator rule, on page 48 command to show the current setting for the context-correlation flag.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to enable correlation on context for a stateful correlation rule:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule stateful_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# context-correlation
```

logging correlator apply rule

To apply and activate a correlation rule and enter correlation apply rule configuration mode, use the **logging correlator apply rule** command in XR Config mode. To deactivate a correlation rule, use the **no** form of this command.

logging correlator apply rule *correlation-rule* [{**all-of-router** | **context** *name* | **location** *node-id*}]
no logging correlator apply rule *correlation-rule* [{**all-of-router** | **context** *name* | **location** *node-id*}]

Syntax Description

correlation-rule	Name of the correlation rule to be applied.
all-of-router	(Optional) Applies the correlation rule to the entire router.
context *name*	(Optional) Applies the correlation rule to the specified context. Unlimited number of contexts. The *name* string is limited to 32 characters.
location *node-id*	(Optional) Applies the correlation rule to the specified node. The *node-id* argument is entered in the *rack/slot/module* notation. Unlimited number of locations.

Command Default

No correlation rules are applied.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The **logging correlator apply rule** command is used to either add or remove apply settings for a given rule. These settings then determine which messages are correlated for the affected rules.

If the rule is applied to **all-of-router**, then correlation occurs for only those messages that match the configured cause values for the rule to be correlated, regardless of the context or location setting of that message.

If a rule is applied to a specific set of contexts or locations, then correlation occurs for only those messages that match both the configured cause values for the rule and at least one of those contexts or locations.

Use the show logging correlator rule, on page 48 command to show the current apply settings for a given rule.

Tip When a rule is applied (or if a rule set that contains this rule is applied), then the rule definition cannot be modified through the configuration until the rule or rule set is once again unapplied.

Tip It is possible to configure apply settings at the same time for both a rule and zero or more rule sets that contain the rule. In this case, the apply settings for the rule are the union of all the apply configurations.

The **logging correlator apply rule** command allows you to enter submode (config-corr-apply-rule) to apply and activate rules:

```
RP/0/RP0/CPU0:router(config)# logging correlator apply rule stateful1
RP/0/RP0/CPU0:router(config-corr-apply-rule)#?

  all-of-router  Apply the rule to all of the router
  clear          Clear the uncommitted configuration
  clear          Clear the configuration
  commit         Commit the configuration changes to running
  context        Apply rule to specified context
  describe       Describe a command without taking real actions
  do             Run an exec command
  exit           Exit from this submode
  location       Apply rule to specified location
  no             Negate a command or set its defaults
  pwd            Commands used to reach current submode
  root           Exit to the XR Config mode
  show           Show contents of configuration
RP/0/RP0/CPU0:router(config-corr-apply-rule)#
```

While in the submode, you can negate keyword options:

```
RP/0/RP0/CPU0:router(config-corr-apply-rule)# no all-of-router
RP/0/RP0/CPU0:router(config-corr-apply-rule)# no context
RP/0/RP0/CPU0:router(config-corr-apply-rule)# no location
```

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to apply a predefined correlator rule to a location:

```
RP/0/RP0/CPU0:router(config)# logging correlator apply rule rule1
RP/0/RP0/CPU0:router(config-corr-apply-rule)# location 0/RP0/CPU0
```

logging correlator apply ruleset

To apply and activate a correlation rule set and enter correlation apply rule set configuration mode, use the **logging correlator apply ruleset** command in XR Config mode. To deactivate a correlation rule set, use the **no** form of this command.

logging correlator apply ruleset *correlation-ruleset* [{**all-of-router** | **context name** | **location** *node-id*}]
no logging correlator apply ruleset *correlation-ruleset* [{**all-of-router** | **context name** | **location** *node-id*}]

Syntax Description

correlation-ruleset	Name of the correlation rule set to be applied.
all-of-router	(Optional) Applies the correlation rule set to the entire router.
context *name*	(Optional) Applies the correlation rule set to the specified context. Unlimited number of contexts. The *name* string is limited to 32 characters.
location *node-id*	(Optional) Applies the correlation rule to the specified node. The *node-id* argument is entered in the *rack/slot/module* notation. Unlimited number of locations.

Command Default

No correlation rule sets are applied.

Command Modes

XR Config mode

Command History

location *node-id*	(Optional) Displays location information for the specified node ID.

Usage Guidelines

The **logging correlator apply ruleset** command is used to either add or remove apply settings for a given rule set. These settings then determine which messages are correlated for the affected rules.

If the rule set is applied to **all-of-router**, then correlation occurs for only those messages that match the configured cause values for the rule to be correlated, regardless of the context or location setting of that message.

If a rule set is applied to a specific set of contexts or locations, then correlation occurs for only those messages that match both the configured cause values for the rule and at least one of those contexts or locations.

Use the show logging correlator ruleset, on page 50 command to show the current apply settings for a given rule set.

Tip When a rule is applied (or if a rule set that contains this rule is applied), then the rule definition cannot be modified through the configuration until the rule or rule set is once again unapplied.

Tip It is possible to configure apply settings at the same time for both a rule and zero or more rule sets that contain the rule. In this case, the apply settings for the rule are the union of all the apply configurations.

The **logging correlator apply ruleset** command allows you to enter the submode (config-corr-apply-ruleset) to apply and activate rule sets:

```
RP/0/RP0/CPU0:router(config)# logging correlator apply ruleset ruleset1
RP/0/RP0/CPU0:router(config-corr-apply-ruleset)#?
  all-of-router  Apply the rule to all of the router
  clear          Clear the uncommitted configuration
  clear          Clear the configuration
  commit         Commit the configuration changes to running
  context        Apply rule to specified context
  describe       Describe a command without taking real actions
  do             Run an exec command
  exit           Exit from this submode
  location       Apply rule to specified location
  no             Negate a command or set its defaults
  pwd            Commands used to reach current submode
  root           Exit to the XR Config mode
  show           Show contents of configuration
RP/0/RP0/CPU0:router(config-corr-apply-ruleset)#
```

While in the submode, you can negate keyword options:

```
RP/0/RP0/CPU0:router(config-corr-apply-ruleset)# no all-of-router
RP/0/RP0/CPU0:router(config-corr-apply-ruleset)# no context
RP/0/RP0/CPU0:router(config-corr-apply-ruleset)# no location
```

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to apply a predefined correlator rule set to the entire router:

```
RP/0/RP0/CPU0:router(config)# logging correlator apply ruleset ruleset1
RP/0/RP0/CPU0:router(config-corr-apply-rule)# all-of-router
```

logging correlator buffer-size

To configure the logging correlator buffer size, use the **logging correlator buffer-size** command in XR Config mode. To return the buffer size to its default setting, use the **no** form of this command.

logging correlator buffer-size *bytes*
no logging correlator buffer-size *bytes*

Syntax Description

bytes	The size, in bytes, of the logging correlator buffer. Range is 1024 to 52428800 bytes.

Command Default

bytes: 81920 bytes

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The **logging correlator buffer-size** command configures the size of the correlation buffer. This buffer holds all the correlation records as well as the associated correlated messages. When the size of this buffer is exceeded, older correlations in the buffer are replaced with the newer incoming correlations. The criteria that are used to recycle these buffers are:

- First, remove the oldest nonstateful correlation records from the buffer.
- Then, if there are no more nonstateful correlations present; remove the oldest stateful correlation records.

Use the show logging correlator info, on page 47 command to confirm the size of the buffer and the percentage of buffer space that is currently used. The show logging events buffer, on page 52 **all-in-buffer** command can be used to show the details of the buffer contents.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the logging correlator buffer size to 90000 bytes:

```
RP/0/RP0/CPU0:router(config)# logging correlator buffer-size 90000
```

logging correlator rule

To define the rules for correlating messages, use the **logging correlator rule** command in XR Config mode. To delete the correlation rule, use the **no** form of this command.

logging correlator rule *correlation-rule* **type** {**stateful** | **nonstateful**}
no logging correlator rule *correlation-rule*

Syntax Description

correlation-rule	Name of the correlation rule to be applied.
type	Specifies the type of rule.
stateful	Enters stateful correlation rule configuration mode.
nonstateful	Enters nonstateful correlation rule configuration mode.

Command Default

No rules are defined.

Command Modes

XR Config mode

Syntax Description

location *node-id*	(Optional) Displays location information for the specified node ID.

Usage Guidelines

The **logging correlator rule** command defines the correlation rules used by the correlator to store messages in the logging correlator buffer. A rule must, at a minimum, consist of three elements: a root-cause message, one or more non-root-cause messages, and a timeout.

When the root-cause message, or a non-root-cause message is received, the timer is started. Any non-root-cause messages are temporarily held, while the root-cause is sent to syslog. If, after the timer has expired, the root-cause and at least one non-root-cause message was received, a correlation is created and stored in the correlation buffer.

A rule can be of type stateful or nonstateful. Stateful rules allow non-root-cause messages to be sent from the correlation buffer if the bi-state root-cause alarm clears at a later time. Nonstateful rules result in correlations that are fixed and immutable after the correlation occurs.

Below are the rule parameters that are available while in stateful correlation rule configuration mode:

```
RP/0/RP0/CPU0:router(config-corr-rule-st)# ?

  context-correlation  Specify enable correlation on context
  nonrootcause         nonrootcause alarm
  reissue-nonbistate   Specify reissue of non-bistate alarms on parent clear
  reparent             Specify reparent of alarm on parent clear
  rootcause            Specify root cause alarm: Category/Group/Code combos
  timeout              Specify timeout
  timeout-rootcause    Specify timeout for root-cause

RP/0/RP0/CPU0:router(config-corr-rule-st)#
```

Below are the rule parameters that are available while in nonstateful correlation rule configuration mode:

```
RP/0/RP0/CPU0:router(config-corr-rule-nonst)# ?

  context-correlation  Specify enable correlation on context
  nonrootcause         nonrootcause alarm
  rootcause            Specify root cause alarm: Category/Group/Code combos
  timeout              Specify timeout
  timeout-rootcause    Specify timeout for root-cause
RP/0/RP0/CPU0:router(config-corr-rule-nonst)#
```

Note A rule cannot be deleted or modified while it is applied, so the **no logging correlator apply** command must be used to unapply the rule before it can be changed.

Note The name of the correlation rule must be unique across all rule types and is limited to a maximum length of 32 characters.

Use the show logging correlator buffer, on page 45 to display messages stored in the logging correlator buffer.

Use the show logging correlator rule, on page 48 command to verify correlation rule settings.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to enter stateful correlation rule configuration mode to specify a collection duration period time for correlator messages sent to the logging events buffer:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# timeout 50000
```

logging correlator ruleset

To enter correlation rule set configuration mode and define a correlation rule set, use the **logging correlator ruleset** command in XR Config mode. To delete the correlation rule set, use the **no** form of this command.

logging correlator ruleset *correlation-ruleset* **rulename** *correlation-rulename*
no logging correlator ruleset *correlation-ruleset*

Syntax Description

correlation-ruleset	Name of the correlation rule set to be applied.
rulename	Specifies the correlation rule name.
correlation-rulename	Name of the correlation rule name to be applied.

Command Default

No rule sets are defined.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The **logging correlator ruleset** command defines a specific correlation rule set. A rule set name must be unique and is limited to a maximum length of 32 characters.

To apply a logging correlator rule set, use the logging correlator apply ruleset, on page 15 command.

Examples

This example shows how to specify a logging correlator rule set:

```
RP/0/RP0/CPU0:router(config)# logging correlator ruleset ruleset_1
RP/0/RP0/CPU0:router(config-corr-ruleset)# rulename state_rule
RP/0/RP0/CPU0:router(config-corr-ruleset)# rulename state_rule2
```

logging events buffer-size

To configure the size of the logging events buffer, use the **logging events buffer-size** command in XR Config mode. To restore the buffer size to the default value, use the **no** form of this command.

logging events buffer-size *bytes*
no logging events buffer-size *bytes*

Syntax Description

bytes	The size, in bytes, of the logging events buffer. Range is 1024 to 1024000 bytes. The default is 43200 bytes.

Command Default

bytes: 43200

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Note The logging events buffer automatically adjusts to a multiple of the record size that is lower than or equal to the value configured for the *bytes* argument.

Use the show logging events info, on page 56 command to confirm the size of the logging events buffer.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to increase the logging events buffer size to 50000 bytes:

```
RP/0/RP0/CPU0:router(config)# logging events buffer-size 50000
```

logging events display-location

To enable the alarm source location display field for bistate alarms in the output of the **show logging** and **show logging events buffer** command, use the **logging events display-location** command in XR Config mode.

logging events display-location
no logging events display-location

Syntax Description

This command has no keywords or arguments.

Command Default

The alarm source location display field in **show logging** output is not enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The output of the **show logging** command for bistate alarms has been enhanced. Previously, the alarm source field in the output displayed the location of the process that logged the alarm. Use the **logging events display-location** command to configure the output of the **show logging** command to include an additional source field that displays the actual source of the alarm. The alarm source is displayed in a format that is consistent with alarm source identification in other platforms and equipment. The new alarm source display field aids accurate identification and isolation of the source of a fault.

By default, the output of the **show logging** command does not include the new alarm source identification field. If you enable the alarm source location display field in the **show logging** output, the same naming conventions are also used to display hardware locations in the **show diag** and **show inventory** command output.

Note Customer OSS tools may rely on the default output to parse and interpret the alarm output.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows the **show logging** command output for bistate alarms before and after enabling the alarm source location display field:

```
RP/0/RP0/CPU0:router# show logging | inc Interface

Wed Aug 13 01:30:58.461 UTC
LC/0/2/CPU0:Aug 12 01:20:54.073 : ifmgr[159]: %PKT_INFRA-LINK-5-CHANGED : Interface
```

```
GigabitEthernet0/2/0/0, changed state to Administratively Down
LC/0/2/CPU0:Aug 12 01:20:59.450 : ifmgr[159]: %PKT_INFRA-LINK-3-UPDOWN : Interface
GigabitEthernet0/2/0/0, changed state to Down
LC/0/2/CPU0:Aug 12 01:20:59.451 : ifmgr[159]: %PKT_INFRA-LINEPROTO-5-UPDOWN : Line protocol
 on Interface GigabitEthernet0/2/0/0, changed state to Down
RP/0/RP0/CPU0:Aug 12 01:22:11.496 : ifmgr[202]: %PKT_INFRA-LINK-5-CHANGED : Interface
MgmtEth0/RP0/CPU0/0, changed state to Administratively Down
RP/0/RP0/CPU0:Aug 12 01:23:23.842 : ifmgr[202]: %PKT_INFRA-LINK-3-UPDOWN : Interface
MgmtEth0/RP0/CPU0/0, changed state to Down
RP/0/RP0/CPU0:Aug 12 01:23:23.843 : ifmgr[202]: %PKT_INFRA-LINEPROTO-5-UPDOWN : Line protocol
 on Interface MgmtEth0/RP0/CPU0/0, changed state to Down
RP/0/RP0/CPU0:Aug 12 01:23:23.850 : ifmgr[202]: %PKT_INFRA-LINK-3-UPDOWN : Interface
MgmtEth0/RP0/CPU0/0, changed state to Up
RP/0/RP0/CPU0:Aug 12 01:23:23.856 : ifmgr[202]: %PKT_INFRA-LINEPROTO-5-UPDOWN : Line protocol
 on Interface MgmtEth0/RP0/CPU0/0, changed state to Up

RP/0/RP0/CPU0:router# config
Wed Aug 13 01:31:32.517 UTC

RP/0/RP0/CPU0:router(config)# logging events display-location

RP/0/RP0/CPU0:router(config)# commit

RP/0/RP0/CPU0:router(config)# exit

RP/0/RP0/CPU0:router# show logging | inc Interface

Wed Aug 13 01:31:48.141 UTC
LC/0/2/CPU0:Aug 12 01:20:54.073 : ifmgr[159]: %PKT_INFRA-LINK-5-CHANGED : Interface
GigabitEthernet0/2/0/0, changed state to Administratively Down
LC/0/2/CPU0:Aug 12 01:20:59.450 : ifmgr[159]: %PKT_INFRA-LINK-3-UPDOWN : interface
GigabitEthernet0/2/0/0: Interface GigabitEthernet0/2/0/0, changed state to Down
LC/0/2/CPU0:Aug 12 01:20:59.451 : ifmgr[159]: %PKT_INFRA-LINEPROTO-5-UPDOWN : interface
GigabitEthernet0/2/0/0: Line protocol on Interface GigabitEthernet0/2/0/0, changed state
to Down
RP/0/RP0/CPU0:Aug 12 01:22:11.496 : ifmgr[202]: %PKT_INFRA-LINK-5-CHANGED : Interface
MgmtEth0/RP0/CPU0/0, changed state to Administratively Down
RP/0/RP0/CPU0:Aug 12 01:23:23.842 : ifmgr[202]: %PKT_INFRA-LINK-3-UPDOWN : interface
MgmtEth0/RP0/CPU0/0: Interface MgmtEth0/RP0/CPU0/0, changed state to Down
RP/0/RP0/CPU0:Aug 12 01:23:23.843 : ifmgr[202]: %PKT_INFRA-LINEPROTO-5-UPDOWN : interface
MgmtEth0/RP0/CPU0/0: Line protocol on Interface MgmtEth0/RP0/CPU0/0, changed state to Down

RP/0/RP0/CPU0:Aug 12 01:23:23.850 : ifmgr[202]: %PKT_INFRA-LINK-3-UPDOWN : interface
MgmtEth0/RP0/CPU0/0: Interface MgmtEth0/RP0/CPU0/0, changed state to Up
RP/0/RP0/CPU0:Aug 12 01:23:23.856 : ifmgr[202]: %PKT_INFRA-LINEPROTO-5-UPDOWN : interface
MgmtEth0/RP0/CPU0/0: Line protocol on Interface MgmtEth0/RP0/CPU0/0, changed state to Up
```

logging events level

To specify a severity level for logging alarm messages, use the **logging events level** command in XR Config mode. To return to the default value, use the **no** form of this command.

logging events level *severity*
no logging events level

Syntax Description

severity	Severity level of events to be logged in the logging events buffer, including events of a higher severity level (numerically lower). Table 2: Alarm Severity Levels for Event Logging, on page 24lists severity levels and their respective system conditions.

Command Default

All severity levels (from 0 to 6) are logged.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command specifies the event severity necessary for alarm messages to be logged. Severity levels can be specified by the severity level description (for example, **warnings**). When a severity level is specified, events of equal or lower severity level are also written to the logging events buffer.

Note Events of lower severity level represent events of higher importance.

This table lists the system severity levels and their corresponding numeric values, and describes the corresponding system condition.

Table 2: Alarm Severity Levels for Event Logging

Severity Level Keyword	Numeric Value	Logged System Messages
emergencies	0	System is unusable.
alerts	1	Critical system condition exists requiring immediate action.
critical	2	Critical system condition exists.
errors	3	Noncritical errors.
warnings	4	Warning conditions.
notifications	5	Notifications of changes to system configuration.
informational	6	Information about changes to system state.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the severity level for notification to warnings (level 4):

```
RP/0/RP0/CPU0:router(config)# logging events level warnings
```

logging events threshold

To specify the logging events buffer threshold that, when surpassed, generates an alarm, use the **logging events threshold** command in XR Config mode. To return to the default value, use the **no** form of this command.

logging events threshold *percent*
no logging events threshold

Syntax Description

percent	Minimum percentage of buffer capacity that must be allocated to messages before an alarm is generated. Range is 10 to 100. The default is 80 percent.

Command Default

percent: 80 percent

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command can be configured to generate an alarm when 10 percent or more of the event buffer capacity is available.

The logging events buffer is circular; that is, when full it overwrites the oldest messages in the buffer. Once the logging events buffer reaches full capacity, the next threshold alarm is generated when the number of overwritten events surpasses the percentage of buffer capacity allocated to messages.

Use the show logging events info, on page 56 command to display the current threshold setting.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to configure the threshold setting to 95 percent of buffer capacity:

```
RP/0/RP0/CPU0:router(config)# logging events threshold 95
```

logging suppress apply rule

To apply and activate a logging suppression rule, use the **logging suppress apply rule** command in XR Config mode. To deactivate a logging suppression rule, use the **no** form of this command.

logging suppress apply rule *rule-name* [{**all-of-router** | **source location** *node-id*}]
no logging suppress apply rule *rule-name* [{**all-of-router** | **source location** *node-id*}]

Syntax Description

rule-name	Name of the logging suppression rule to activate.
all-of-router	(Optional) Applies the specified logging suppression rule to alarms originating from all locations on the router.
source location *node-id*	(Optional) Applies the specified logging suppression rule to alarms originating from the specified node. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No logging suppression rules are applied.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to apply a predefined logging suppression rule to the entire router:

```
RP/0/RP0/CPU0:router(config)#logging suppress apply rule infobistate
RP/0/RP0/CPU0:router(config-suppr-apply-rule)# all-of-router
```

logging suppress rule

To create a logging suppression rule and enter the configuration mode for the rule, use the **logging suppress rule** command in the XR Config mode. To remove a logging suppression rule, use the **no** form of this command.

logging suppress rule *rule-name* [{**alarm** *msg-category group-name msg-code* | **all-alarms**}]
no logging suppress rule *rule-name*

Syntax Description

rule-name	Name of the rule.
alarm	(Optional) Specifies a type of alarm to be suppressed by the logging suppression rule.
msg-category	Message category of the root message.
group-name	Group name of the root message.
msg-code	Message code of the root message.
all-alarms	(Optional) Specifies that the logging suppression rule suppresses all types of alarms.

Command Default

No logging suppression rules exist by default.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

If you use the **logging suppress rule** command without specifying a non-root-cause alarm, you can do so afterwards, by entering the **alarm** keyword at the prompt.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to create a logging suppression rule called infobistate:

```
RP/0/RP0/CPU0:router(config)# logging suppress rule infobistate
RP/0/RP0/CPU0:router(config-suppr-rule)#
```

nonrootcause

To enter the non-root-cause configuration mode and specify a non-root-cause alarm, use the **nonrootcause** command in stateful or nonstateful correlation rule configuration modes.

nonrootcause alarm *msg-category group-name msg-code*
no nonrootcause

Syntax Description

alarm	Non-root-cause alarm.
msg-category	(Optional) Message category assigned to the message. Unlimited messages (identified by message category, group, and code) can be specified, separated by a space.
group-name	(Optional) Message group assigned to the message. Unlimited messages (identified by message category, group, and code) can be specified, separated by a space.
msg-code	(Optional) Message code assigned to the message. Unlimited messages (identified by message category, group, and code) can be specified, separated by a space.

Command Default

Non-root-cause configuration mode and alarm are not specified.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command is used to enter the non-root-cause configuration mode to configure one or more non-root-cause alarms associated with a particular correlation rule.

Use the show logging events info, on page 56 command to display the current threshold setting.

If you use the **nonrootcause** command without specifying a non-root-cause alarm, you can do so afterwards, by entering the **alarm** keyword at the prompt.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to enter non-root-cause configuration mode and display the commands that are available under this mode:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# nonrootcause
 (config-corr-rule-st-nonrc)# ?
```

```
alarm     Specify non-root cause alarm: Category/Group/Code combos
clear     Clear the uncommitted configuration
clear     Clear the configuration
commit    Commit the configuration changes to running
describe  Describe a command without taking real actions
do        Run an exec command
exit      Exit from this submode
no        Negate a command or set its defaults
pwd       Commands used to reach current submode
root      Exit to the XR Config mode
show      Show contents of configuration
```

reissue-nonbistate

To reissue non-bistate alarm messages (events) from the correlator log after the root-cause alarm of a stateful rule clears, use the **reissue-nonbistate** command in stateful or nonstateful correlation rule configuration modes. To disable the reissue-nonbistate flag, use the **no** form of this command.

reissue-nonbistate
no reissue-nonbistate

Syntax Description

This command has no keywords or arguments.

Command Default

Non-bistate alarm messages are not reissued after their root-cause alarm clears.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

By default, when the root-cause alarm of a stateful correlation is cleared, any non-root-cause, bistate messages being held for that correlation are silently deleted and are not sent to syslog. If the non-bistate messages should be sent, use the **reissue-nonbistate** command for the rules where this behavior is required.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to reissue nonbistate alarm messages:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# reissue-nonbistate
```

reparent

To reparent non-root-cause messages to the next highest active rootcause in a hierarchical correlation when their immediate parent clears, use the **reparent** command in stateful correlation rule configuration mode. To disable the reparent flag, use the **no** form of this command.

reparent
no reparent

Syntax Description

This command has no keywords or arguments.

Command Default

A non-root-cause alarm is sent to syslog after a root-cause parent clears.

Command Modes

Stateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **reparent** command to specify what happens to non-root-cause alarms in a hierarchical correlation after their root-cause alarm clears. The following scenario illustrates why you may want to set the reparent flag.

Rule 1 with rootcause A and non-rootcause B

Rule 2 with rootcause B and non-rootcause C

(Alarm B is a non-rootcause for Rule 1 and a rootcause for Rule 2. For the purpose of this example, all the messages are bistate alarms.)

If both Rule 1 and Rule 2 each trigger a successful correlation, then a hierarchy is constructed that links these two correlations. When alarm B clears, alarm C would normally be sent to syslog, but the operator may choose to continue suppression of alarm C (hold it in the correlation buffer); because the rootcause that is higher in the hierarchy (alarm A) is still active.

The reparent flag allows you to specify non-root-cause behavior—if the flag is set, then alarm C becomes a child of rootcause alarm A; otherwise, alarm C is sent to syslog.

Note Stateful behavior, such as reparenting, is supported only for bistate alarms. Bistate alarms are associated with system hardware, such as a change of interface state from active to inactive.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the reparent flag for a stateful rule:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# reparent
```

rootcause

To specify the root-cause alarm message, use the **rootcause** command in stateful or nonstateful correlation rule configuration modes.

rootcause *msg-category group-name msg-code*
no rootcause

Syntax Description

msg-category	Message category of the root message.
group-name	Group name of the root message.
msg-code	Message code of the root message.

Command Default

Root-cause alarm is not specified.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command is used to configure the root-cause message for a particular correlation rule. Messages are identified by their message category, group, and code. The category, group, and code each can contain up to 32 characters. The root-cause message for a stateful correlation rule should be a bi-state alarm.

Use the show logging events info, on page 56 command to display the root-cause and non-root-cause alarms for a correlation rule.

Task ID

Task ID	Operations
logging	read, write

show alarms

To display alarms related to System Monitoring, use the **show alarms** command in the System Monitoring mode.

show alarms

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

System Monitoring EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

Use the show alarms brief, on page 40 to view the router alarms in brief.

Use the show alarms detail, on page 42 to view the router alarms in detail.

Task ID

Task ID	Operations
logging	read

This example displays the output of the **show alarms** command:

```
RP/0/RSP0/CPU0:router#show alarms
------------------------------------------------------------------------
Active Alarms (Brief) for 1/0
------------------------------------------------------------------------
Location    Severity   Group     Set time               Description

------------------------------------------------------------------------
0/1/CPU0   Critical   Fabric   11/11/2022 10:34:22 IST  LC Bandwidth Insufficient To Support
 Line Rate Traffic
1/0/CPU0    Major    Software  11/11/2022 10:43:36 IST   Optics1/0/0/20 - hw_optics:  RX
LOS LANE-0 ALARM
1/0/CPU0    Major    Software  11/11/2022 10:43:36 IST   Optics1/0/0/20 - hw_optics:  RX
LOS LANE-1 ALARM
------------------------------------------------------------------------------------
History Alarms (Brief) for 1/0
------------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------------
Suppressed Alarms (Brief) for 1/0
------------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------------
Conditions (Brief) for 1/0
```

```
------------------------------------------------------------------------------
No entries.
------------------------------------------------------------------------------
System Scoped Active Alarms (Brief)
------------------------------------------------------------------------------
Location    Severity    Group     Set Time                 Description

------------------------------------------------------------------------------
D1           Major      Environ   11/16/2022 11:37:41 IST  Power Group redundancy lost.

D1/PM1       Major      Environ   11/16/2022 11:37:41 IST  Power Module Output Disabled
(PM_OUTPUT_EN_PIN_HI).
------------------------------------------------------------------------------
System Scoped History Alarms (Brief)
------------------------------------------------------------------------------
Location   Severity     Group       Set Time                 Description

                                    Clear Time
------------------------------------------------------------------------------
7/0        Major        Fabric      07/14/2022 11:51:38 IST  7/0/1/6 - hw_optics:  RX LOS
LANE-0 ALARM
7/0        Major        Fabric      07/18/2022 12:29:02 IST
                                    07/14/2022 11:51:38 IST  7/0/1/6 - hw_optics:  RX LOS
LANE-1 ALARM
7/0/CPU0  Critical      Fabric      09/13/2022 11:40:53 IST
                                    09/09/2022 21:50:13 IST  LC Bandwidth Insufficient To
Support Line Rate Traffic
------------------------------------------------------------------------------
Active Alarms (Brief) for EDT
------------------------------------------------------------------------------
Location   Severity     Group        Set Time                   Description

------------------------------------------------------------------------------
D1         Major     Environ      11/16/2022 11:37:41 IST    Power Group redundancy lost.

D1/PM1     Major     Environ      11/16/2022 11:37:41 IST    Power Module Output Disabled
 (PM_OUTPUT_EN_PIN_HI).
E0         Major     Environ      11/16/2022 11:37:42 IST    Power Group redundancy lost.

------------------------------------------------------------------------------
Active Alarms (Brief) for EDT
------------------------------------------------------------------------------
Location   Severity     Group         Set Time                   Description


------------------------------------------------------------------------------
D1          Major       Environ       11/16/2022 11:37:41 IST    Power Group redundancy
lost.

D1/PM1     Major      Environ      11/16/2022 11:37:41 IST    Power Module Output Disabled
 (PM_OUTPUT_EN_PIN_HI).
E0          Major       Environ       11/16/2022 11:37:42 IST    Power Group redundancy
lost.
------------------------------------------------------------------------------
History Alarms (Detail) for 1/0
------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------
Suppressed Alarms (Detail) for 1/0
------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------
```

```
Conditions (Detail) for 1/0
---------------------------------------------------------------------------------
No entries.

---------------------------------------------------------------------------------
Clients for 1/0
---------------------------------------------------------------------------------
Agent Name:              optics_fm.xml
Agent ID:                196678
Agent Location:          1/0/CPU0
Agent Handle:            93827323237168
Agent State:             Registered
Agent Type:              Producer
Agent Filter Display:    false
Agent Subscriber ID:     0
Agent Filter Severity:   Unknown
Agent Filter State:      Unknown
Agent Filter Group:      Unknown
Agent Connect Count:     1
Agent Connect Timestamp: 11/16/2022 20:40:18 IST
Agent Get Count:         0
Agent Subscribe Count:   0
Agent Report Count:      8
---------------------------------------------------------------------------------
Statistics for 1/0
---------------------------------------------------------------------------------
Alarms Reported:               9
Alarms Dropped:                0
Active (bi-state set):         9
History (bi-state cleared):    0
Suppressed:                    0
Dropped Invalid AID:           0
Dropped No Memory:             0
Dropped DB Error:              0
Dropped Clear Without Set:     0
Dropped Duplicate:             0
Cache Hit:                     0
Cache Miss:                    0
Active Alarms (Detail) for 7/0
---------------------------------------------------------------------------------
Description:             LC Bandwidth Insufficient To Support Line Rate Traffic


Location:                7/0/CPU0
AID:                     XR_FABRIC/SW_MISC_ERR/18
Tag String:              FAM_FAULT_TAG_HW_FIA_LC_BANDWIDTH
Module Name:             N/A
EID:                     MODULE/MSC/1:MODULE/SLICE/1:MODULE/PSE/1
Reporting Agent ID:      524365
Pending Sync:            false
Severity:                Critical
Status:                  Set
Group:                   Fabric
Set Time:                11/16/2022 20:42:41 IST
Clear Time:              -
Service Affecting:       NotServiceAffecting
Transport Direction:     NotSpecified
Transport Source:        NotSpecified
Interface:               N/A
Alarm Name:              LC-BW-DEG
---------------------------------------------------------------------------------
History Alarms (Detail) for 7/0
---------------------------------------------------------------------------------
No entries.
```

```
------------------------------------------------------------------------------
Suppressed Alarms (Detail) for 7/0
------------------------------------------------------------------------------
No entries.
------------------------------------------------------------------------------
Conditions (Detail) for 7/0
------------------------------------------------------------------------------
No entries.
------------------------------------------------------------------------------
Clients for 7/0
------------------------------------------------------------------------------
Agent Name:              optics_fm.xml
Agent ID:                196678
Agent Location:          7/0/CPU0
Agent Handle:            94180835316528
Agent State:             Registered
Agent Type:              Unknown
Agent Filter Display:    false
Agent Subscriber ID:     0
Agent Filter Severity:   Unknown
Agent Filter State:      Unknown
Agent Filter Group:      Unknown
Agent Connect Count:     1
Agent Connect Timestamp: 11/16/2022 20:40:11 IST
Agent Get Count:         0
Agent Subscribe Count:   0
Agent Report Count:      0
------------------------------------------------------------------------------
Agent Name:              fia_fm.xml
Agent ID:                524365
Agent Location:          7/0/CPU0
Agent Handle:            94180835313792
Agent State:             Registered
Agent Type:              Producer
Agent Filter Display:    false
Agent Subscriber ID:     0
Agent Filter Severity:   Unknown
Agent Filter State:      Unknown
Agent Filter Group:      Unknown
Agent Connect Count:     1
Agent Connect Timestamp: 11/16/2022 20:39:59 IST
Agent Get Count:         0
Agent Subscribe Count:   0
Agent Report Count:      1
Statistics for 7/0
------------------------------------------------------------------------------
Alarms Reported:               1
Alarms Dropped:                0
Active (bi-state set):         1
History (bi-state cleared):    0
Suppressed:                    0
Dropped Invalid AID:           0
Dropped No Memory:             0
Dropped DB Error:              0
Dropped Clear Without Set:     0
Dropped Duplicate:             0
Cache Hit:                     0
Cache Miss:                    0
```

Related Commands

Command	Description
show alarms brief, on page 40	Displays router alarms in brief.

Command	Description
show alarms detail, on page 42	Displays router alarms in detail.

show alarms brief

To display alarms related to System Monitoring, use the **show alarms brief** command in the System Monitoring mode.

show alarms brief [**aid** [**active** { * }] | **card** [**location** *location-ID* [**active** | **conditions** | **history** | **suppressed**]] | **system** [**active** | **conditions** | **history** | **suppressed**]]

Syntax Description

brief	Displays alarms in brief.
aid	Displays system scope alarms related data.
card	Displays card scope alarms related data.
system	Displays brief system scope related data.
active	Displays the active alarms at this scope.
conditions	Displays the conditions present at this scope.
history	Displays the history alarms at this scope.
suppressed	Displays the suppressed alarms at this scope.

Command Default

None

Command Modes

System Monitoring EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read

This example displays the output of the **show alarms brief** command:

```
RP/0/RSP0/CPU0:router#show alarms brief

------------------------------------------------------------------------
Active Alarms for 1/0
------------------------------------------------------------------------
Location    Severity   Group     Set time              Description

------------------------------------------------------------------------
```

```
0/1/CPU0   Critical   Fabric   11/11/2022 10:34:22 IST  LC Bandwidth Insufficient To Support
 Line Rate Traffic
1/0/CPU0    Major    Software  11/11/2022 10:43:36 IST   Optics1/0/0/20 - hw_optics:  RX
LOS LANE-0 ALARM
1/0/CPU0    Major    Software  11/11/2022 10:43:36 IST   Optics1/0/0/20 - hw_optics:  RX
LOS LANE-1 ALARM
------------------------------------------------------------------------------
History Alarms for 1/0
------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------
Suppressed Alarms for 1/0
------------------------------------------------------------------------------
No entries.

------------------------------------------------------------------------------
Conditions for 1/0
------------------------------------------------------------------------------
No entries.
```

Related Commands

Command	Description
show alarms, on page 35	Displays router alarms in brief and detail.
show alarms detail, on page 42	Displays router alarms in detail.

show alarms detail

To display alarms related to System Monitoring, use the **show alarms detail** command in the System Monitoring mode.

show alarms detail [**aid** [**active** { * }] | **card** [**location** *location-ID* [**active** | **conditions** | **history** | **suppressed**]] | **system** [**active** | **clients** | **conditions** | **history** | **stats** | **suppressed**]]

Syntax Description

detail	Displays alarms in detail.
aid	Displays system scope alarms related data.
card	Displays card scope alarms related data.
system	Displays system scope alarms related data.
active	Displays the active alarms at this scope.
clients	Displays the clients associated with this service.
conditions	Displays the conditions present at this scope.
history	Displays the history alarms at this scope.
stats	Displays the service statistics.
suppressed	Displays the suppressed alarms at this scope.

Command Default

None

Command Modes

System Monitoring EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read

This example displays the output of the **show alarms detail** command:

```
RP/0/RSP0/CPU0:router#show alarms detail

------------------------------------------------------------------------
```

```
Active Alarms for 1/0
------------------------------------------------------------------------
Description:             LC Bandwidth Insufficient To Support Line Rate Traffic


Location:                1/0/CPU0
AID:                     XR_FABRIC/SW_MISC_ERR/18
Tag String:              FAM_FAULT_TAG_HW_FIA_LC_BANDWIDTH
Module Name:             N/A
EID:                     MODULE/MSC/1:MODULE/SLICE/1:MODULE/PSE/1
Reporting Agent ID:      524365
Pending Sync:            false
Severity:                Critical
Status:                  Set
Group:                   Fabric
Set Time:                11/11/2022 10:34:22 IST
Clear Time:              -
Service Affecting:       NotServiceAffecting
Transport Direction:     NotSpecified
Transport Source:        NotSpecified
Interface:               N/A
Alarm Name:              LC-BW-DEG
------------------------------------------------------------
History Alarms for 1/0
--------------------------------------------------------------------------------
No entries.

--------------------------------------------------------------------------------
Suppressed Alarms for 1/0
--------------------------------------------------------------------------------
No entries.

--------------------------------------------------------------------------------
Conditions for 1/0
--------------------------------------------------------------------------------
No entries.
------------------------------------------------------------
Clients for 1/0
------------------------------------------------------------
Agent Name:              optics_fm.xml
Agent ID:                196678
Agent Location:          1/0/CPU0
Agent Handle:            94374612126576
Agent State:             Registered
Agent Type:              Producer
Agent Filter Display:    false
Agent Subscriber ID:     0
Agent Filter Severity:   Unknown
Agent Filter State:      Unknown
Agent Filter Group:      Unknown
Agent Connect Count:     1
Agent Connect Timestamp: 11/11/2022 10:30:04 IST
Agent Get Count:         0
Agent Subscribe Count:   0
Agent Report Count:      8
------------------------------------------------------------
Statistics for 1/0
------------------------------------------------------------
Alarms Reported:               9
Alarms Dropped:                0
Active (bi-state set):         9
History (bi-state cleared):    0
Suppressed:                    0
Dropped Invalid AID:           0
```

```
Dropped No Memory:              0
Dropped DB Error:               0
Dropped Clear Without Set:      0
Dropped Duplicate:              0
Cache Hit:                      0
Cache Miss:                     0
```

Related Commands

Command	Description
show alarms, on page 35	Displays router alarms in brief and detail.
show alarms brief, on page 40	Displays router alarms in brief.

show logging correlator buffer

To display messages in the logging correlator buffer, use the **show logging correlator buffer** command in XR EXEC mode.

show logging correlator buffer {**all-in-buffer** [**ruletype** [{**nonstateful** | **stateful**}]] | [**rulesource** [{**internal** | **user**}]] | **rule-name** *correlation-rule1 . . . correlation-rule14* | **correlationID** *correlation-id1 . . correlation-id14*}

Syntax Description

all-in-buffer	Displays all messages in the correlation buffer.
ruletype	(Optional) Displays the ruletype filter.
nonstateful	(Optional) Displays the nonstateful rules.
stateful	(Optional) Displays the stateful rules.
rulesource	(Optional) Displays the rulesource filter.
internal	(Optional) Displays the internally defined rules from the rulesource filter.
user	(Optional) Displays the user-defined rules from the rulesource filter.
rule-name *correlation-rule1...correlation-rule14*	Displays a messages associated with a correlation rule name. Up to 14 correlation rules can be specified, separated by a space.
correlationID *correlation-id1..correlation-id14*	Displays a message identified by correlation ID. Up to 14 correlation IDs can be specified, separated by a space. Range is 0 to 4294967294.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command displays messages from the logging correlator buffer that match the correlation ID or correlation rule name specified. When the **all-in-buffer** keyword is entered, all messages in the logging correlator buffer are displayed.

If the ruletype is not specified, then both stateful and nonstateful rules are displayed.

if the rulesource is not specified, then both user and internal rules are displayed.

Task ID

Task ID	Operations
logging	read

Examples

This is the sample output from the **show logging correlator buffer** command:

```
RP/0/RP0/CPU0:router# show logging correlator buffer all-in-buffer

#C_id.id:Rule Name:Source :Context: Time : Text
#14.1 :Rule1:RP/0/RP0/CPU0: :Aug 22 13:39:13.693 2007:ifmgr[196]: %PKT_INFRA-LINK-3-UPDOWN
 : Interface MgmtEth0/RP0/CPU0/0, changed state to Down
#14.2 :Rule1:RP/0/RP0/CPU0: :Aug 22 13:39:13.693 2007:ifmgr[196]:
%PKT_INFRA-LINEPROTO-3-UPDOWN : Line protocol on Interface MgmtEth0/RP0/CPU0/0, changed
state to Down
```

This table describes the significant fields shown in the display.

Table 3: show logging correlator buffer Field Descriptions

Field	Description
C_id.	Correlation ID assigned to a event that matches a logging correlation rule.
id	An ID number assigned to each event matching a particular correlation rule. This event number serves as index to identify each individual event that has been matched for a logging correlation rule.
Rule Name	Name of the logging correlation rule that filters messages defined in a logging correlation rule to the logging correlator buffer.
Source	Node from which the event is generated.
Time	Date and time at which the event occurred.
Text	Message string that delineates the event.

show logging correlator info

To display the logging correlator buffer size and the percentage of the buffer occupied by correlated messages, use the **show correlator info** command in XR EXEC mode.

show logging correlator info

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command displays the size of the logging correlator buffer and the percentage of the buffer allocated to correlated messages.

Use the logging correlator buffer-size, on page 17 command to set the size of the buffer.

Task ID

Task ID	Operations
logging	read

Examples

In this example, the **show logging correlator info** command is used to display remaining buffer size and percentage allocated to correlated messages:

```
RP/0/RP0/CPU0:router# show logging correlator info

Buffer-Size     Percentage-Occupied
      81920                   0.00
```

show logging correlator rule

To display defined correlation rules, use the **show logging correlator rule** command in XR EXEC mode.

show logging correlator rule {**all** | **correlation-rule1 . . . correlation-rule14**} [**context context1 . . . context 6**] [**location node-id1 . . . node-id6**] [**rulesource** {**internal** | **user**}] [**ruletype** {**nonstateful** | **stateful**}] [{**summary** | **detail**}]

Syntax Description

all	Displays all rule sets.
correlation-rule1...correlation-rule14	Rule set name to be displayed. Up to 14 predefined correlation rules can be specified, separated by a space.
context *context1...context 6*	(Optional) Displays a list of context rules.
location *node-id1...node-id6*	(Optional) Displays the location of the list of rules filter from the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.
rulesource	(Optional) Displays the rulesource filter.
internal	(Optional) Displays the internally defined rules from the rulesource filter.
user	(Optional) Displays the user defined rules from the rulesource filter.
ruletype	(Optional) Displays the ruletype filter.
nonstateful	(Optional) Displays the nonstateful rules.
stateful	(Optional) Displays the stateful rules.
summary	(Optional) Displays the summary information.
detail	(Optional) Displays detailed information.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

If the ruletype is not specified, then both stateful and nonstateful rules are displayed as the default.

If the rulesource is not specified, then both user and internally defined rules are displayed as the default.

If the summary or detail keywords are not specified, then detailed information is displayed as the default.

Task ID

Task ID	Operations
logging	read

show logging correlator ruleset

To display defined correlation rule set names, use the **show logging correlator ruleset** command in XR EXEC mode.

show logging correlator ruleset {**all** | *correlation-ruleset1 . . . correlation-ruleset14*} [{**detail** | **summary**}]

Syntax Description

all	Displays all rule set names.
correlation-rule1...correlation-rule14	Rule set name to be displayed. Up to 14 predefined rule set names can be specified, separated by a space.
detail	(Optional) Displays detailed information.
summary	(Optional) Displays the summary information.

Command Default

Detail is the default, if nothing is specified.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

If the ruletype is not specified, then both stateful and nonstateful rules are displayed as the default.

If the rulesource is not specified, then both user and internally defined rules are displayed as the default.

If the summary or detail options are not specified, then detailed information is displayed as the default.

Task ID

Task ID	Operations
logging	read

Examples

This is the sample output from the **show logging correlator ruleset** command:

```
RP/0/RP0/CPU0:router# show logging correlator RuleSetOne RuleSetTwo

Rule Set Name : RuleSetOne
Rules: Rule1 : Applied
Rule2 : Applied
Rule3 : Applied
Rule Set Name : RuleSetTwo
Rules: Rule1 : Applied
Rule5 : Not Applied
```

This is the sample output from the **show logging correlator ruleset** command when the **all** option is specified:

```
RP/0/RP0/CPU0:router# show logging correlator ruleset all

Rule Set Name : RuleSetOne
Rules: Rule1 : Applied
Rule2 : Applied
Rule3 : Applied
Rule Set Name : RuleSetTwo
Rules: Rule1 : Applied
Rule5 : Not Applied
Rule Set Name : RuleSetThree
Rules: Rule2 : Applied
Rule3 : Applied
```

This is sample output from the **show logging correlator ruleset** command when the **all** and **summary** options are specified:

```
RP/0/RP0/CPU0:router# show logging correlator ruleset all summary
RuleSetOne
RuleSetTwo
RuleSetThree
```

This table describes the significant fields shown in the display.

Table 4: show logging correlator ruleset Field Descriptions

Field	Description
Rule Set Name	Name of the ruleset.
Rules	All rules contained in the ruleset are listed.
Applied	The rule is applied.
Not Applied	The rule is not applied.

show logging events buffer

To display messages in the logging events buffer, use the **show logging events buffer** command in XR EXEC mode.

show logging events buffer [**admin-level-only**] [**all-in-buffer**] [**bistate-alarms-set**] [**category name**] [**context name**] [**event-hi-limit event-id**] [**event-lo-limit event-id**] [**first event-count**] [**group message-group**] [**last event-count**] [**location node-id**] [**message message-code**] [**severity-hi-limit severity**] [**severity-lo-limit severity**] [**timestamp-hi-limit hh:mm:ss** [**month**] [**day**] [**year**] **timestamp-lo-limit hh:mm:ss** [**month**] [**day**] [**year**]]

Syntax Description

admin-level-only	Displays only the events that are at the adminstrative level.
all-in-buffer	Displays all event IDs in the events buffer.
bistate-alarms-set	Displays bi-state alarms in the SET state.
category *name*	Displays events from a specified category.
context *name*	Displays events from a specified context.
event-hi-limit *event-id*	Displays events with an event ID equal to or lower than the event ID specified with the *event-id* argument. Range is 0 to 4294967294.
event-lo-limit *event-id*	Displays events with an event ID equal to or higher than the event ID specified with *event-id* argument. Range is 0 to 4294967294.
first *event-count*	Displays events in the logging events buffer, beginning with the first event. For the *event-count* argument, enter the number of events to be displayed.
group *message-group*	Displays events from a specified message group.
last *event-count*	Displays events, beginning with the last event in the logging events buffer. For the *event-count* argument, enter the number of events to be displayed.
location *node-id*	Displays events for the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.
message *message-code*	Displays events with the specified message code.
severity-hi-limit	Displays events with a severity level equal to or lower than the specified severity level.

severity	Severity level. Valid values are: • **emergencies** • **alerts** • **critical** • **errors** • **warnings** • **notifications** • **informational** **Note** Settings for the severity levels and their respective system conditions are listed under the "Usage Guidelines" section for the **logging events level** command. Events of lower severity level represent events of higher importance.
severity-lo-limit	Displays events with a severity level equal to or higher than the specified severity level.
timestamp-hi-limit	Displays events with a time stamp equal to or lower than the specified time stamp.

hh **:** *mm* **:** *ss* [*month*] [*day*] [*year*]	Time stamp for the **timestamp-hi-limit** or **timestamp-lo-limit** keyword. The *month*, *day*, and *year* arguments default to the current month, day, and year if not specified. Ranges for the *hh* **:** *mm* **:** *ss month day year* arguments are as follows: • *hh* **:**—Hours. Range is 00 to 23. You must insert a colon after the *hh* argument. • *mm* **:**—Minutes. Range is 00 to 59. You must insert a colon after the *mm* argument. • *ss*—Seconds. Range is 00 to 59. • *month*—(Optional) The month of the year. The values for the *month* argument are: • january • february • march • april • may • june • july • august • september • october • november • december • *day*—(Optional) Day of the month. Range is 01 to 31. • *year*—(Optional) Year. Enter the last two digits of the year (for example, **04** for 2004). Range is 01 to 37.
timestamp-lo-limit	Displays events with a time stamp equal to or higher than the specified time stamp.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command displays messages from the logging events buffer matching the description. The description is matched when all of the conditions are met.

Task ID

Task ID	Operations
logging	read

Examples

This is the sample output from the **show logging events buffer all-in-buffer** command:

```
RP/0/RP0/CPU0:router# show logging events buffer all-in-buffer

#ID    :C_id:Source  :Time                :%CATEGORY-GROUP-SEVERITY-MESSAGECODE: Text

#1     :    :RP/0/RPO/CPU0:Jan  9 08:57:54 2004:nvram[66]: %MEDIA-NVRAM_PLATFORM-3-BAD_N
VRAM_VAR : ROMMON variable-value pair: '^['[19~CONFIG_FILE = disk0:config/startup, contains
 illegal (non-printable)characters
#2     :    :RP/0/RP0/CPU0:Jan  9 08:58:21 2004:psarb[238]: %PLATFORM-PSARB-5-GO_BID : Card

 is going to bid state.
#3     :    :RP/0/RP0/CPU0:Jan  9 08:58:22 2004:psarb[238]: %PLATFORM-PSARB-5-GO_ACTIVE :
Card is becoming active.
#4     :    :RP/0/RP0/CPU0:Jan  9 08:58:22 2004:psarb[238]: %PLATFORM-PSARB-6-RESET_ALL_LC_
CARDS : RP going active; resetting all linecards in chassis
#5     :    :RP/0/RP0/CPU0:Jan  9 08:58:22 2004:redcon[245]: %HA-REDCON-6-GO_ACTIVE : this
 card going active
#6     :    :RP/0/RP0/CPU0:Jan  9 08:58:22 2004:redcon[245]: %HA-REDCON-6-FAILOVER_ENABLED
 : Failover has been enabled by config
```

This table describes the significant fields shown in the display.

Table 5: show logging correlator buffer Field Descriptions

Field	Description
#ID	Integer assigned to each event in the logging events buffer.
C_id.	Correlation ID assigned to a event that has matched a logging correlation rule.
Source	Node from which the event is generated.
Time	Date and time at which the event occurred.
%CATEGORY-GROUP-SEVERITY-MESSAGECODE	The category, group name, severity level, and message code associated with the event.
Text	Message string that delineates the event.

show logging events info

To display configuration and operational information about the logging events buffer, use the **show logging events info** command in XR EXEC mode.

show logging events info

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This command displays information about the size of the logging events buffer, the maximum size of the buffer, the number of records being stored, the maximum allowable number of records threshold for circular filing, and message filtering.

Task ID

Task ID	Operations
logging	read

Examples

This is the sample output from the **show logging events info** command:

```
RP/0/RP0/CPU0:router# show logging events info

Size (Current/Max)      #Records       Thresh     Filter
16960     /42400          37             90        Not Set
```

This table describes the significant fields shown in the display.

Table 6: show logging events info Field Descriptions

Field	Description
Size (Current/Max)	The current and maximum size of the logging events buffer. The maximum size of the buffer is controlled by the logging events buffer-size, on page 21 command.
#Records	The number of event records stored in the logging events buffer.
Thresh	The configured logging events threshold value. This field is controlled by the logging events threshold, on page 26 command.
Filter	The lowest severity level for events that will be displayed. This field is controlled by the logging events level, on page 24 command.

show logging suppress rule

To display defined logging suppression rules, use the **show logging suppression rule** command in XR EXEC mode.

show logging suppress rule [{*rule-name1* [**. . .** [*rule-name14*]] | **all** [**detail**] [**summary**] [**source location** *node-id*]}]

Syntax Description

rule-name1 [...[*rule-name14*]]	Specifies up to 14 logging suppression rules to display.
all	Displays all logging suppression rules.
source location *node-id*	(Optional) Displays the location of the list of rules filter from the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.
detail	(Optional) Displays detailed information.
summary	(Optional) Displays the summary information.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	read

Examples

This example displays information about a logging suppression rule that has been configured but has not been activated:

```
RP/0/RP0/CPU0:router# show logging suppression rule test_suppression

Rule Name : test_suppression
Rule State: RULE_UNAPPLIED
Severities : informational, critical
Alarms :
     Category        Group           Message
     CAT_C           GROUP_C         CODE_C
     CAT_D           GROUP_D         CODE_D

 Apply Alarm-Locations:  PowerSupply-0/A/A0
 Apply Sources:          0/RP0/CPU0, 1/6/SP
```

```
Number of suppressed alarms : 0
```

This example displays information about all logging suppression rules applied to a specific source location on the router:

```
RP/0/RP0/CPU0:router# show logging suppress rule all source location 0/RP0/CPU0

Rule Name : test_suppression
Rule State: RULE_APPLIED_ALL
Severities : N/A
Alarms :
     Category        Group           Message
     CAT_E           GROUP_F         CODE_G

 Apply Alarm-Locations:  None
 Apply Sources:          0/RP0/CPU0

Number of suppressed alarms : 0
```

This example shows summary information about all logging suppression rules:

```
RP/0/RP0/CPU0:router# show logging suppression rule all summmary
Rule Name                                :Number of Suppressed Alarms
Mike1                                    0
Mike2                                    0
Mike3                                    0
Real1                                    4
```

show snmp correlator buffer

To display messages in SNMP correlator buffer, use the **show snmp correlator buffer** in XR EXEC mode.

show snmp correlator buffer [{**all** | **correlation** *ID* | **rule-name** *name*}]

Syntax Description

all	Displays all messages in the correlator buffer.
correlation *id*	Displays a message identified by correlation ID. Range is 0 to 4294967294. Up to 14 correlation rules can be specified, separated by a space.
rule-name *name*	Displays a messages associated with a SNMP correlation rule name. Up to 14 correlation rules can be specified, separated by a space.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
snmp	read

The sample shows an output from the **show snmp correlator buffer** command:

```
RP/0/RP0/CPU0:router# show snmp correlator buffer correlationID 10
    Correlation ID : 10
    Rule : ospf-trap-rule
    Rootcause: 1.3.6.1.6.3.1.1.5.3
    Time : Dec 14 02:32:05
    Varbind(s):
       ifIndex.17 = 17
       ifDescr.17 = tenGigE0/1/0/8
       ifType.17 = other(1)
       cieIfStateChangeReason.17 = down

        Nonroot : 1.3.6.1.2.1.14.16.2.2
        Time: Dec 14 02:32:04
        Varbind(s):
           ospfRouterId = 10.1.1.1
           ospfNbrIpAddr = 10.0.28.2
           ospfNbrAddressLessIndex = 0
           ospfNbrRtrId = 10.3.3.3
           ospfNbrState = down(1)
```

show snmp correlator info

To display the SNMP correlator buffer size and the percentage of the buffer occupied by correlated messages, use the **show snmp correlator info** command in XR EXEC mode.

show snmp correlator info

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
snmp	read

The sample shows an output that contains remaining buffer size and percentage allocated to correlated messages from the **show snmp correlator info** command:

```
RP/0/RP0/CPU0:router# show snmp correlator info

  Buffer-Size     Percentage-Occupied
      85720                   0.00
```

show snmp correlator rule

To display defined SNMP correlation rules, use the **show snmp correlator rule** command in XR EXEC mode.

show snmp correlator rule [{**all***rule-name*}]

Syntax Description

all	Displays all rule sets.
rule-name	Specifies the name of a rule. Up to 14 predefined SNMP correlation rules can be specified, separated by a space.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
snmp	read

This sample shows an output from the **show snmp correlator rule** command:

```
RP/0/RP0/CPU0:router# show snmp correlator rule rule_1
Rule Name : rule_1
    Time out  : 888                 Rule State: RULE_APPLIED_ALL
          Root:  OID   : 1.3.6.1.2.1.11.0.2
                 vbind : 1.3.6.1.2.1.2.2.1.2 value /3\.3\.\d{1,3}\.\d{1,3}/
                 vbind : 1.3.6.1.2.1.5.8.3   index val
       Nonroot:  OID   : 1.3.6.1.2.1.11.3.3
```

show snmp correlator ruleset

To display defined SNMP correlation rule set names, use the **show snmp correlator ruleset** command in XR EXEC mode.

show snmp correlator ruleset [{**all***ruleset-name*}]

Syntax Description

all	Displays all rule set names.
ruleset-name	Specifies the name of a rule set. Up to 14 predefined rule set names can be specified, separated by a space.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
snmp	read

This sample shows an output from the **show snmp correlator ruleset** command:

```
RP/0/RP0/CPU0:router# show snmp correlator ruleset test
 Rule Set Name :   test
   Rules: chris1                          : Not Applied
          chris2                          : Applied
```

source

To apply a logging suppression rule to alarms originating from a specific node on the router, use the **source** command in logging suppression apply rule configuration mode.

source location *node-id*
no source location *node-id*

Syntax Description

location *node-id*	Specifies a node. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No scope is configured by default.

Command Modes

Logging suppression apply rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to configure the logging suppression rule infobistate to suppress alarms from 0/RP0/CPU0:

```
RP/0/RP0/CPU0:router(config)# logging suppress apply rule infobistate
RP/0/RP0/CPU0:router(config-suppr-apply-rule)# source location 0/RP0/CPU0
```

timeout

To specify the collection period duration time for the logging correlator rule message, use the **timeout** command in stateful or nonstateful correlation rule configuration modes. To remove the timeout period, use the **no** form of this command.

timeout [*milliseconds*]
no timeout

Syntax Description

milliseconds	Range is 1 to 600000 milliseconds.

Command Default

Timeout period is not specified.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Each correlation rule that is applied must have a timeout value, and only those messages captured within this timeout period can be correlated together.

The timeout begins when the first matching message for a correlation rule is received. If the root-cause message is received, it is immediately sent to syslog, while any non-root-cause messages are held.

When the timeout expires and the rootcause message has not been received, then all the non-root-cause messages captured during the timeout period are reported to syslog. If the root-cause message was received during the timeout period, then a correlation is created and placed in the correlation buffer.

Note The root-cause alarm does not have to appear first. It can appear at any time within the correlation time period.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to define a logging correlation rule with a timeout period of 60,000 milliseconds (one minute):

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# timeout 60000
```

timeout-rootcause

To specify an optional parameter for an applied correlation rule, use the **timeout-rootcause** command in stateful or nonstateful correlation rule configuration modes. To remove the timeout period, use the **no** form of this command.

timeout-rootcause [*milliseconds*]
no timeout-rootcause

Syntax Description

milliseconds	Range is 1 to 600000 milliseconds. Range is 1 to 7200000 milliseconds.

Command Default

Root-cause alarm timeout period is not specified.

Command Modes

Stateful correlation rule configuration

Nonstateful correlation rule configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

When a root-cause timeout is configured and a non-root-cause message is received first, the following occurs:

- When a root-cause timeout is configured and a non-root-cause message is received first, the following occurs:

  When the root-cause message arrives before the root-cause timeout expires, then the correlation continues as normal using the remainder of the main rule timeout.
- When the root-cause message is not received before the root-cause timeout expires, then all the non-root-cause messages held during the root-cause timeout period are sent to syslog and the correlation is terminated.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to configure a timeout period for a root cause alarm:

```
RP/0/RP0/CPU0:router(config)# logging correlator rule state_rule type stateful
RP/0/RP0/CPU0:router(config-corr-rule-st)# timeout-rootcause 50000
```

Embedded Event Manager Commands

This module describes the commands that are used to set the Embedded Event Manager (EEM) operational attributes and monitor EEM operations.

The Cisco IOS XR software EEM functions as the central clearing house for the events detected by any portion of Cisco IOS XR software High Availability Services. The EEM is responsible for fault detection, fault recovery, and process the reliability statistics in a system. The EEM is policy driven and enables you to configure the high-availability monitoring features of the system to fit your needs.

The EEM monitors the reliability rates achieved by each process in the system. You can use these metrics during testing to identify the components that do not meet their reliability or availability goals, which in turn enables you to take corrective action.

For detailed information about the EEM concepts, configuration tasks, and examples, see the *Configuring and Managing Embedded Event Manager Policies* module in *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

event manager directory user

To specify a directory name for storing user library files or user-defined Embedded Event Manager (EEM) policies, use the **event manager directory user** command in XR Config mode. To disable the use of a directory for storing user library files or user-defined EEM policies, use the **no** form of this command.

event manager directory user {**library** *path* | **policy** *path*}
no event manager directory user {**library** *path* | **policy** *path*}

Syntax Description

library	Specifies a directory name for storing user library files.
path	Absolute pathname to the user directory on the flash device.
policy	Specifies a directory name for storing user-defined EEM policies.

Command Default

No directory name is specified for storing user library files or user-defined EEM policies.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Cisco IOS XR software supports only the policy files that are created by using the Tool Command Language (TCL) scripting language. The TCL software is provided in the Cisco IOS XR software image when the EEM is installed on the network device. Files with the .tcl extension can be EEM policies, TCL library files, or a special TCL library index file named tclindex. The tclindex file contains a list of user function names and library files that contain the user functions (procedures). The EEM searches the user library directory when the TCL starts to process the tclindex file.

User Library

A user library directory is needed to store user library files associated with authoring EEM policies. If you do not plan to write EEM policies, you do not have to create a user library directory.

To create user library directory before identifying it to the EEM, use the **mkdir** command in XR EXEC mode. After creating the user library directory, use the **copy** command to copy the .tcl library files into the user library directory.

User Policy

A user policy directory is essential to store the user-defined policy files. If you do not plan to write EEM policies, you do not have to create a user policy directory. The EEM searches the user policy directory when you enter the **event manager policy** *policy-name* **user** command.

To create a user policy directory before identifying it to the EEM, use the **mkdir** command in XR EXEC mode. After creating the user policy directory, use the **copy** command to copy the policy files into the user policy directory.

Task ID

Task ID	Operations
eem	read, write

Examples

This example shows how to set the pathname for a user library directory to /usr/lib/tcl on disk0:

```
RP/0/RP0/CPU0:router(config)# event manager directory user library disk0:/usr/lib/tcl
```

This example shows how to set the location of the EEM user policy directory to /usr/fm_policies on disk0:

```
RP/0/RP0/CPU0:router(config)# event manager directory user policy disk0:/usr/fm_policies
```

event manager environment

To set an Embedded Event Manager (EEM) environment variable, use the **event manager environment** command in XR Config mode. To remove the configuration, use the **no** form of this command.

event manager environment *var-name* [*var-value*]
no event manager environment *var-name*

Syntax Description

var-name	Name assigned to the EEM environment configuration variable.
var-value	(Optional) Series of characters, including embedded spaces, to be placed in the environment variable *var-name*.

Command Default

None

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Environment variables are available to EEM policies when you set the variables using the **event manager environment** command. They become unavailable when you remove them with the **no** form of this command.

By convention, the names of all the environment variables defined by Cisco begin with an underscore character (_) to set them apart, for example, _show_cmd.

Spaces can be used in the *var-value* argument. This command interprets everything after the *var-name* argument uptil the end of the line in order to be a part of the *var-value* argument.

Use the event manager environment, on page 70 command to display the name and value of all EEM environment variables before and after they have been set using the **event manager environment** command.

Task ID

Task ID	Operations
eem	read, write

Examples

This example shows how to define a set of EEM environment variables:

```
RP/0/RP0/CPU0:router(config)# event manager environment _cron_entry 0-59/2 0-23/1 * * 0-7
RP/0/RP0/CPU0:router(config)# event manager environment _show_cmd show eem manager policy
registered
RP/0/RP0/CPU0:router(config)# event manager environment _email_server alpha@cisco.com
RP/0/RP0/CPU0:router(config)# event manager environment _email_from beta@cisco.com
RP/0/RP0/CPU0:router(config)# event manager environment _email_to beta@cisco.com
RP/0/RP0/CPU0:router(config)# event manager environment _email_cc
```

event manager policy

To register an Embedded Event Manager (EEM) policy with the EEM, use the **event manager policy** command in XR Config mode. To unregister an EEM policy from the EEM, use the **no** form of this command.

event manager policy *policy-name* **username** *username* [{**persist-time** [{*seconds* | **infinite**}] | **type** {**system** | **user**}}]
no event manager policy *policy-name* [**username** *username*]

Syntax Description

policy-name	Name of the policy file.
username *username*	Specifies the username used to run the script. This name can be different from that of the user who is currently logged in, but the registering user must have permissions that are a superset of the username that runs the script. Otherwise, the script is not registered, and the command is rejected. In addition, the username that runs the script must have access privileges to the commands issued by the EEM policy being registered.
persist-time [*seconds* | **infinite**]	(Optional) The length of the username authentication validity, in seconds. The default time is 3600 seconds (1 hour). The *seconds* range is 0 to 4294967294. Enter 0 to stop the username authentication from being cached. Enter the **infinite** keyword to stop the username from being marked as invalid.
type	(Optional) Specifies the type of policy.
system	(Optional) Registers a system policy defined by Cisco.
user	(Optional) Registers a user-defined policy.

Command Default

The default persist time is 3600 seconds (1 hour).

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The EEM schedules and runs policies on the basis of an event specification that is contained within the policy itself. When the **event manager policy** command is invoked, the EEM examines the policy and registers it to be run when the specified event occurs. An EEM script is available to be scheduled by the EEM until the **no** form of this command is entered.

Note AAA authorization (such as the **aaa authorization** command with the **eventmanager** and **default** keywords) must be configured before the EEM policies can be registered. The **eventmanager** and **default** keywords must be configured for policy registration. See the *Configuring AAA Services* module of *System Security Configuration Guide for Cisco NCS 5000 Series Routers* for more information on AAA authorization configuration.

Username

Enter the username that should execute the script with the **username** *username* keyword and argument. This name can be different from the user who is currently logged in, but the registering user must have permissions that are a superset of the username that runs the script. Otherwise, the script will not be registered, and the command will be rejected. In addition, the username that runs the script must have access privileges to the commands issued by the EEM policy being registered.

Persist-time

When a script is first registered, the configured **username** for the script is authenticated. If authentication fails, or if the AAA server is down, the script registration fails.

After the script is registered, the username is authenticated each time a script is run.

If the AAA server is down, the username authentication can be read from memory. The **persist-time** determines the number of seconds this username authentication is held in memory.

- If the AAA server is down and the **persist-time** has not expired, the username is authenticated from memory, and the script runs.
- If the AAA server is down, and the **persist-time** has expired, user authentication fails, and the script does not run.

Note EEM attempts to contact the AAA server and refresh the username reauthenticate whenever the configured **refresh-time** expires. See the event manager refresh-time, on page 74 command for more information.

These values can be used for the **persist-time**:

- The default **persist-time** is 3600 seconds (1 hour). Enter the **event manager policy** command without the **persist-time** keyword to set the **persist-time** to 1 hour.
- Enter zero to stop the username authentication from being cached. If the AAA server is down, the username is not authenticated and the script does not run.
- Enter **infinite** to stop the username from being marked as invalid. The username authentication held in the cache will not expire. If the AAA server is down, the username is authenticated from the cache.

Type

If you enter the **event manager policy** command without specifying the **type** keyword, the EEM first tries to locate the specified policy file in the system policy directory. If the EEM finds the file in the system policy directory, it registers the policy as a system policy. If the EEM does not find the specified policy file in the system policy directory, it looks in the user policy directory. If the EEM locates the specified file in the user policy directory, it registers the policy file as a user policy. If the EEM finds policy files with the same name in both the system policy directory and the user policy directory, the policy file in the system policy directory takes precedence, and the policy file is registered as a system policy.

Task ID

Task ID	Operations
eem	read, write

Examples

This example shows how to register a user-defined policy named cron.tcl located in the user policy directory:

```
RP/0/RP0/CPU0:router(config)# event manager policy cron.tcl username joe
```

event manager refresh-time

To define the time between user authentication refreshes in Embedded Event Manager (EEM), use the **event manager refresh-time** command in XR Config mode. To restore the system to its default condition, use the **no** form of this command.

event manager refresh-time *seconds*
no event manager refresh-time *seconds*

Syntax Description

seconds	Number of seconds between user authentication refreshes, in seconds. Range is 10 to 4294967295.

Command Default

The default refresh time is 1800 seconds (30 minutes).

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

EEM attempts to contact the AAA server and refresh the username reauthentication whenever the configured **refresh-time** expires.

Task ID

Task ID	Operations
eem	read, write

Examples

This example shows how to set the refresh time:

```
RP/0/RP0/CPU0:router(config)# event manager refresh-time 1900
```

event manager run

To manually run an Embedded Event Manager (EEM) policy, use the **event manager run** command in XR EXEC mode.

event manager run *policy* [*argument* [**...** [*argument15*]]]

Syntax Description

policy	Name of the policy file.
[*argument*[...[*argument15*]]]	Argument that you want to pass to the policy. The maximum number of arguments is 15.

Command Default

No registered EEM policies are run.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

EEM usually schedules and runs policies on the basis of an event specification that is contained within the policy itself. The **event manager run** command allows policies to be run manually.

You can query the arguments in the policy file by using the **TCL** command *event_reqinfo* , as shown in this example:

```
array set arr_einfo [event_reqinfo] set argc $arr_einfo(argc) set arg1
          $arr_einfo(arg1)
```

Use the event manager run, on page 75 command to register the policy before using the **event manager run** command to run the policy. The policy can be registered with none as the event type.

Task ID

Task ID	Operations
eem	read

Examples

This example of the **event manager run** command shows how to manually run an EEM policy named policy-manual.tcl:

```
RP/0/RP0/CPU0:router# event manager run policy-manual.tcl parameter1 parameter2 parameter3

RP/0/RP0/CPU0:Sep 20 10:26:31.169 : user-plocy.tcl[65724]: The reqinfo of arg2 is parameter2.

RP/0/RP0/CPU0:Sep 20 10:26:31.170 : user-plocy.tcl[65724]: The reqinfo of argc is 3.
RP/0/RP0/CPU0:Sep 20 10:26:31.171 : user-plocy.tcl[65724]: The reqinfo of arg3 is parameter3.

RP/0/RP0/CPU0:Sep 20 10:26:31.172 : user-plocy.tcl[65724]: The reqinfo of event_type_string
 is none.
RP/0/RP0/CPU0:Sep 20 10:26:31.172 : user-plocy.tcl[65724]: The reqinfo of event_pub_sec is
```

```
 1190283990.
RP/0/RP0/CPU0:Sep 20 10:26:31.173 : user-plocy.tcl[65724]: The reqinfo of event_pub_time
is 1190283990.
RP/0/RP0/CPU0:Sep 20 10:26:31.173 : user-plocy.tcl[65724]: The reqinfo of event_id is 3.
RP/0/RP0/CPU0:Sep 20 10:26:31.174 : user-plocy.tcl[65724]: The reqinfo of arg1 is parameter1.

RP/0/RP0/CPU0:Sep 20 10:26:31.175 : user-plocy.tcl[65724]: The reqinfo of event_type is 16.

RP/0/RP0/CPU0:Sep 20 10:26:31.175 : user-plocy.tcl[65724]: The reqinfo of event_pub_msec
is 830
```

event manager scheduler suspend

To suspend the Embedded Event Manager (EEM) policy scheduling execution immediately, use the **event manager scheduler suspend** command in XR Config mode. To restore a system to its default condition, use the **no** form of this command.

event manager scheduler suspend
no event manager scheduler suspend

Syntax Description

This command has no keywords or arguments.

Command Default

Policy scheduling is active by default.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **event manager scheduler suspend** command to suspend all the policy scheduling requests, and do not perform scheduling until you enter the **no** form of this command. The **no** form of this command resumes policy scheduling and runs pending policies, if any.

It is recommended that you suspend policy execution immediately instead of unregistering policies one by one, for the following reasons:

- Security—If you suspect that the security of your system has been compromised.
- Performance—If you want to suspend policy execution temporarily to make more CPU cycles available for other functions.

Task ID

Task ID	Operations
eem	read, write

Examples

This example shows how to disable policy scheduling:

```
RP/0/RP0/CPU0:router(config)# event manager scheduler suspend
```

This example shows how to enable policy scheduling:

```
RP/0/RP0/CPU0:router(config)# no event manager scheduler suspend
```

show event manager directory user

To display the current value of the EEM user library files or user-defined Embedded Event Manager (EEM) policies, use the **show event manager directory user** command in XR EXEC mode.

show event manager directory user {**library** | **policy**}

Syntax Description

library	Specifies the user library files.
policy	Specifies the user-defined EEM policies.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show event manager directory user** command to display the current value of the EEM user library or policy directory.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager directory user** command:

```
RP/0/RP0/CPU0:router# show event manager directory user library
disk0:/fm_user_lib_dir

RP/0/RP0/CPU0:router# show event manager directory user policy
disk0:/fm_user_pol_dir
```

show event manager environment

To display the names and values of the Embedded Event Manager (EEM) environment variables, use the **show event manager environment** command in XR EXEC mode.

show event manager environment [{**all***environment-name*}]

Syntax Description

all	(Optional) Specifies all the environment variables.
environment-name	(Optional) Environment variable for which data is displayed.

Command Default

All environment variables are displayed.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show event manager environment** command to display the names and values of the EEM environment variables.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager environment** command:

```
RP/0/RP0/CPU0:router# show event manager environment

No.  Name                           Value
1    _email_cc
2    _email_to                      mosnerd@cisco.com
3    _show_cmd                      show event manager policy registered
4    _cron_entry                    0-59/2 0-23/1 * * 0-7
5    _email_from                    mosnerd@cisco.com
6    _email_server                  zeta@cisco.com
```

This table describes the significant fields in the display.

Table 7: show event manager environment Field Descriptions

Field	Description
No.	Number of the EEM environment variable.
Name	Name of the EEM environment variable.

Field	Description
Value	Value of the EEM environment variable.

show event manager metric hardware

To display the Embedded Event Manager (EEM) reliability data for the processes running on a particular node, use the **show event manager metric hardware** command in XR EXEC mode.

show event manager metric hardware location {*node-id* | **all**}

Syntax Description

location	Specifies the location of the node.
node-id	EEM reliability data for the specified node. The *node-id* argument is entered in the *rack/slot/module* notation.
all	Specifies all the nodes.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager metric hardware** command:

```
RP/0/RP0/CPU0:router# show event manager metric hardware location 0/RP0/CPU0

===================================

node: 0/RPO/CPU0

Most recent online: Mon Sep 10 21:45:02 2007
Number of times online: 1
Cumulative time online: 0 days, 09:01:07

Most recent offline: n/a
Number of times offline: 0
Cumulative time offline: 0 days, 00:00:00
```

This table describes the significant fields shown in the display.

Table 8: show event manager metric hardware location Field Descriptions

Field	Description
node	Node with processes running.
Most recent online	The last time the node was started.
Number of times online	Total number of times the node was started.
Cumulative time online	Total amount of time the node was available.
Most recent offline	The last time the process was terminated abnormally.
Number of times offline	Total number of times the node was terminated.
Cumulative time offline	Total amount of time the node was terminated.

show event manager metric process

To display the Embedded Event Manager (EEM) reliability metric data for processes, use the **show event manager metric process** command in XR EXEC mode.

show event manager metric process {**all***job-idprocess-name*} **location** {**all***node-id*}

Syntax Description

all	Specifies all the processes.
job-id	Process associated with this job identifier. The value ranges from 0-4294967295.
process-name	Process associated with this name.
location	Specifies the location of the node.
all	Displays hardware reliability metric data for all the nodes.
node-id	Hardware reliability metric data for a specified node. Displays detailed Cisco Express Forwarding information for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The system maintains a record of when processes start and end. This data is used as the basis for reliability analysis.

Use the **show event manager metric process** command to obtain availability information for a process or group of processes. A process is considered available when it is running.

Task ID

Task ID	Operations
eem	read

Examples

This is sample output from the **show event manager metric process** command:

```
RP/0/RP0/CPU0:router# show event manager metric process all location all

====================================
job id: 88, node name: 0/4/CPU0
process name: wd-critical-mon, instance: 1
--------------------------------
last event type: process start
recent start time: Wed Sep 19 13:31:07 2007
```

```
recent normal end time: n/a
recent abnormal end time: n/a
number of times started: 1
number of times ended normally: 0
number of times ended abnormally: 0
most recent 10 process start times:
--------------------------
Wed Sep 19 13:31:07 2007
--------------------------

most recent 10 process end times and types:

cumulative process available time: 21 hours 1 minutes 31 seconds 46 milliseconds
cumulative process unavailable time: 0 hours 0 minutes 0 seconds 0 milliseconds
process availability:  1.000000000
number of abnormal ends within the past 60 minutes (since reload): 0
number of abnormal ends within the past 24 hours (since reload): 0
number of abnormal ends within the past 30 days (since reload): 0
====================================
job id: 54, node name: 0/4/CPU0
process name: dllmgr, instance: 1
--------------------------------
last event type: process start
recent start time: Wed Sep 19 13:31:07 2007
recent normal end time: n/a
recent abnormal end time: n/a
number of times started: 1
number of times ended normally: 0
number of times ended abnormally: 0
most recent 10 process start times:
--------------------------
Wed Sep 19 13:31:07 2007
--------------------------

most recent 10 process end times and types:

cumulative process available time: 21 hours 1 minutes 31 seconds 41 milliseconds
cumulative process unavailable time: 0 hours 0 minutes 0 seconds 0 milliseconds
process availability:  1.000000000
number of abnormal ends within the past 60 minutes (since reload): 0
number of abnormal ends within the past 24 hours (since reload): 0
number of abnormal ends within the past 30 days (since reload): 0
```

This table describes the significant fields shown in the display.

Table 9: show event manager metric process Field Descriptions

Field	Description
job id	Number assigned as the job identifier.
node name	Node with the process running.
process name	Name of the process running on the node.
instance	Instance or thread of a multithreaded process.
comp id	Component of which the process is a member.
version	Specific software version or release of which the process is a member.

Field	Description
last event type	Last event type on the node.
recent end type	Most recent end type.
recent start time	Last time the process was started.
recent normal end time	Last time the process was stopped normally.
recent abnormal end time	Last time the process was terminated abnormally.
recent abnormal end type	Reason for the last abnormal process termination. For example, the process was terminated or crashed.
number of times started	Number of times the process has been started.
number of times ended normally	Number of times the process has been stopped normally.
number of times ended abnormally	Number of times the process has stopped abnormally.
most recent 10 process start times	Times of the last ten process starts.
cumulative process available time	Total time the process has been available.
cumulative process unavailable time	Total time the process has been out of service due to a restart, termination, communication problems, and so on.
process availability	Uptime percentage of the process (time running—the duration of any outage).
number of abnormal ends within the past 60 minutes	Number of times the process has stopped abnormally within the last 60 minutes.
number of abnormal ends within the past 24 hours	Number of times the process has stopped abnormally within the last 24 hours.
number of abnormal ends within the past 30 days	Number of times the process has stopped abnormally within the last 30 days.

show event manager policy available

To display Embedded Event Manager (EEM) policies that are available to be registered, use the **show event manager policy available** command in XR EXEC mode.

show event manager policy available [{**system** | **user**}]

Syntax Description

system	(Optional) Displays all the available system policies.
user	(Optional) Displays all the available user policies.

Command Default

If this command is invoked with no optional keywords, it displays information for all available system and user policies.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show event manager policy available** command to find out what policies are available to be registered just prior to using the **event manager policy** command to register policies.

This command is also useful if you forget the exact name of a policy that is required for the **event manager policy** command.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager policy available** command:

```
RP/0/RP0/CPU0:router# show event manager policy available

No.  Type    Time Created                 Name
1    system  Tue Jan 12 09:41:32 2004     pr_sample_cdp_abort.tcl
2    system  Tue Jan 12 09:41:32 2004     pr_sample_cdp_revert.tcl
3    system  Tue Jan 12 09:41:32 2004     sl_sample_intf_down.tcl
4    system  Tue Jan 12 09:41:32 2004     tm_sample_cli_cmd.tcl
5    system  Tue Jan 12 09:41:32 2004     tm_sample_crash_hist.tcl
6    system  Tue Jan 12 09:41:32 2004     wd_sample_proc_mem_used.tcl
7    system  Tue Jan 12 09:41:32 2004     wd_sample_sys_mem_used.tcl
```

This table describes the significant fields shown in the display.

Table 10: show event manager policy available Field Descriptions

Field	Description
No.	Number of the policy.
Type	Type of policy.
Time Created	Time the policy was created.
Name	Name of the policy.

show event manager policy registered

To display the Embedded Event Manager (EEM) policies that are already registered, use the **show event manager policy registered** command in XR EXEC mode.

show event manager policy registered[**event-type** *type*] [{**system** | **user**}] [{**time-ordered** | **name-ordered**}]

Syntax Description

event-type *type*	(Optional) Displays the registered policies for a specific event type, where the valid *type* options are as follows: • **application**—Application event type • **cli**—CLI event type • **config**—Conf event type • **counter**—Counter event type • **hardware**—Hardware event type • **none**—None event type • **oir**—Online insertion and removal (OIR) event type • **process-abort**—Event type for abnormal termination of process • **process-start**—Process start event type • **process-term**—Process termination event type • **process-user-restart**—Process user restart event type • **process-user-shutdown**—Process user shutdown event type • **snmp**—SNMP event type • **snmp-proxy**—SNMP PROXY event type • **statistics**—Statistics event type • **syslog**—Syslog event type • **timer-absolute**—Absolute timer event type • **timer-countdown**—Countdown timer event type • **timer-cron**—Clock daemon (cron) timer event type • **timer-watchdog**—Watchdog timer event type • **track**—Track event type • **wdsysmon**—Watchdog system monitor event type
system	(Optional) Displays the registered system policies.
user	(Optional) Displays the registered user policies.
time-ordered	(Optional) Displays the policies according to registration time.
name-ordered	(Optional) Displays the policies in alphabetical order according to policy name.

Command Default

If this command is invoked with no optional keywords or arguments, it displays the registered EEM policies for all the event types. The policies are displayed according to the registration time.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The output of the **show event manager policy registered** command is most beneficial if you are writing and monitoring the EEM policies. The output displays registered policy information in two parts. The first line in each policy description lists the index number assigned to the policy, policy type (system or user), type of event registered, time at which the policy was registered, and name of the policy file. The remaining lines of each policy description display information about the registered event and how the event is to be handled, and come directly from the Tool Command Language (TCL) command arguments that make up the policy file.

Registered policy information is documented in the Cisco publication *Writing Embedded Event Manager Policies Using Tcl*.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager policy registered** command:

```
RP/0/RP0/CPU0:router# show event manager policy registered

No.       Type    Event Type          Time Registered               Name
1         system  proc abort          Wed Jan 16 23:44:56 2004      test1.tcl
 version 00.00.0000 instance 1 path {cdp}
 priority normal maxrun_sec 20 maxrun_nsec 0
2         system  timer cron          Wed Jan 16 23:44:58 2004      test2.tcl
 name {crontimer1}
 priority normal maxrun_sec 20 maxrun_nsec 0
3         system  proc abort          Wed Jan 16 23:45:02 2004      test3.tcl
 path {cdp}
 priority normal maxrun_sec 20 maxrun_nsec 0
4         system  syslog              Wed Jan 16 23:45:41 2004      test4.tcl
 occurs 1 pattern {test_pattern}
 priority normal maxrun_sec 90 maxrun_nsec 0
5         system  timer cron          Wed Jan 16 23:45:12 2004      test5.tcl
 name {crontimer2}
 priority normal maxrun_sec 30 maxrun_nsec 0
6         system  wdsysmon            Wed Jan 16 23:45:15 2004      test6.tcl
 timewin_sec 120 timewin_nsec 0 sub1 mem_tot_used {node {localhost} op gt
 val 23000}
 priority normal maxrun_sec 40 maxrun_nsec 0
7         system  wdsysmon            Wed Jan 16 23:45:19 2004      test7.tcl
 timewin_sec 120 timewin_nsec 0 sub1 mem_proc {node {localhost} procname
 {wdsysmon} op gt val 80 is_percent FALSE}
 priority normal maxrun_sec 40 maxrun_nsec 0
```

This table describes the significant fields displayed in the example.

Table 11: show event manager policy registered Field Descriptions

Field	Description
No.	Number of the policy.

Field	Description
Type	Type of policy.
Event Type	Type of the EEM event for which the policy is registered.
Time Registered	Time at which the policy was registered.
Name	Name of the policy.

show event manager refresh-time

To display the time between the user authentication refreshes in the Embedded Event Manager (EEM), use the **show event manager refresh-time** command in XR EXEC mode.

show event manager refresh-time

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The output of the **show event manager refresh-time** command is the refresh time, in seconds.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager refresh-time** command:

```
RP/0/RP0/CPU0:router# show event manager refresh-time
Output:
1800 seconds
```

show event manager statistics-table

To display the currently supported statistic counters maintained by the Statistic Event Detector, use the **show event manager statistics-table** command in XR EXEC mode.

show event manager statistics-table {*stats-name* | **all**}

Syntax Description

stats-name	Specific statistics type to be displayed. There are three statistics types: • generic (ifstats-generic) • interface table (ifstats-iftable) • data rate (ifstats-datarate)
all	Displays the possible values for the *stats-name* argument. Displays the output for all the statistics types.

Command Default

None

Command Modes

XR EXEC mode

Usage Guidelines

Use the **show event manager statistics-table all** command to display the output for all the statistics types.

Task ID

Task ID	Operations
eem	read

Examples

This is a sample output of the **show event manager statistics-table all** command:

```
RP/0/RP0/CPU0:router# show event manager statistics-table all

Name                     Type      Description
ifstats-generic          bag       Interface generic stats
ifstats-iftable          bag       Interface iftable stats
ifstats-datarate         bag       Interface datarate stats
```

This is a sample output providing more detailed information on the ifstats-iftable interface statistics table:

```
RP/0/RP0/CPU0:router# show event manager statistics-table ifstats-iftable

Name                     Type      Description
PacketsReceived          uint64    Packets rcvd
BytesReceived            uint64    Bytes rcvd
PacketsSent              uint64    Packets sent
BytesSent                uint64    Bytes sent
MulticastPacketsReceived uint64    Multicast pkts rcvd
BroadcastPacketsReceived uint64    Broadcast pkts rcvd
MulticastPacketsSent     uint64    Multicast pkts sent
BroadcastPacketsSent     uint64    Broadcast pkts sent
OutputDropsCount         uint32    Total output drops
```

```
InputDropsCount          uint32    Total input drops
InputQueueDrops          uint32    Input queue drops
RuntPacketsReceived      uint32    Received runt packets
GiantPacketsReceived     uint32    Received giant packets
ThrottledPacketsReceived uint32    Received throttled packets
ParityPacketsReceived    uint32    Received parity packets
UnknownProtocolPacketsReceiveduint32    Unknown protocol pkts rcvd
InputErrorsCount         uint32    Total input errors
CRCErrorCount            uint32    Input crc errors
InputOverruns            uint32    Input overruns
FramingErrorsReceived    uint32    Framing-errors rcvd
InputIgnoredPackets      uint32    Input ignored packets
InputAborts              uint32    Input aborts
OutputErrorsCount        uint32    Total output errors
OutputUnderruns          uint32    Output underruns
OutputBufferFailures     uint32    Output buffer failures
OutputBuffersSwappedOut  uint32    Output buffers swapped out
Applique                 uint32    Applique
ResetCount               uint32    Number of board resets
CarrierTransitions       uint32    Carrier transitions
AvailabilityFlag         uint32    Availability bit mask
NumberOfSecondsSinceLastClearCountersuint32    Seconds since last clear counters
LastClearTime            uint32    SysUpTime when counters were last cleared (in seconds)
```

This table describes the significant fields displayed in the example.

Table 12: show event manager statistics-table Field Descriptions

Field	Description
Name	Name of the statistic. When the **all** keyword is specified, there are three types of statistics displayed: • ifstats-generic • ifstats-iftable • ifstats-datarate When a statistics type is specified, the statistics for the statistic type are displayed.
Type	Type of statistic.
Description	Description of the statistic.

Logging Services Commands

This module describes the Cisco IOS XR software commands to configure system logging (syslog) for system monitoring on the router.

For detailed information about logging concepts, configuration tasks, and examples, see the *Implementing Logging Services* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

For alarm management and logging correlation commands, see the *Alarm Management and Logging Correlation Commands* module in the *System Monitoring Command Reference for Cisco NCS 5000 Series Routers*.

For detailed information about alarm and logging correlation concepts, configuration tasks, and examples, see the *Implementing Alarm Logs and Logging Correlation* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

archive-length

To specify the length of time that logs are maintained in the logging archive, use the **archive-length** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

archive-length *weeks*
no archive-length

Syntax Description

weeks	Length of time (in weeks) that logs are maintained in the archive. Range is 0 to 4294967295.

Command Default

weeks: 4 weeks

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **archive-length** command to specify the maximum number of weeks that the archive logs are maintained in the archive. Any logs older than this number are automatically removed from the archive.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the log archival period to 6 weeks:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# archive-length 6
```

archive-size

To specify the amount of space allotted for syslogs on a device, use the **archive-size** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

archive-size *size*
no archive-size

Syntax Description

size	Amount of space (in MB) allotted for syslogs. The range is 0 to 2047.

Command Default

size: 20 MB

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **archive-length** command to specify the maximum total size of the syslog archives on a storage device. If the size is exceeded, then the oldest file in the archive is deleted to make space for new logs.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the allotted space for syslogs to 50 MB:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# archive-size 50
```

clear logging

To clear system logging (syslog) messages from the logging buffer, use the **clear logging** command in XR EXEC mode.

clear logging

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **clear logging** command to empty the contents of the logging buffer. When the logging buffer becomes full, new logged messages overwrite old messages.

Use the logging buffered, on page 107 command to specify the logging buffer as a destination for syslog messages, set the size of the logging buffer, and limit syslog messages sent to the logging buffer based on severity.

Use the show logging, on page 138 command to display syslog messages stored in the logging buffer.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to clear the logging buffer:

```
RP/0/RP0/CPU0:router# clear logging

Clear logging buffer [confirm] [y/n] :y
```

device

To specify the device to be used for logging syslogs, use the **device** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

device {**disk0** | **disk1** | **harddisk**}
no device

Syntax Description

disk0	Uses disk0 as the archive device.
disk1	Uses disk1 as the archive device.
harddisk	Uses the harddisk as the archive device.

Command Default

None

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **device** command to specify where syslogs are logged. The logs are created under the directory <device>/var/log. If the device is not configured, then all other logging archive configurations are rejected. Similarly, the configured device cannot be removed until the other logging archive configurations are removed.

It is recommended that the syslogs be archived to the harddisk because it has more capacity.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to specify disk1 as the device for logging syslog messages:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# device disk1
```

file-size

To specify the maximum file size for a log file in the archive, use the **file-size** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

file-size *size*
no file-size

Syntax Description

size	Maximum file size (in MB) for a log file in the logging archive. The range is 1 to 2047.

Command Default

size: 1 MB

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **file-size** command to specify the maximum file size that a single log file in the archive can grow to. Once this limit is reached, a new file is automatically created with an increasing serial number.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the maximum log file size to 10 MB:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# file-size 10
```

frequency (logging)

To specify the collection period for logs, use the **frequency** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

frequency {**daily** | **weekly**}
no frequency

Syntax Description

daily	Logs are collected daily.
weekly	Logs are collected weekly.

Command Default

Logs are collected daily.

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **frequency** command to specify if logs are collected daily or weekly.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to specify that logs are collected weekly instead of daily:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# frequency weekly
```

logging

To specify a system logging (syslog) server host as the recipient of syslog messages, use the **logging** command in XR Config mode. To remove the **logging** command from the configuration file and delete a syslog server from the list of syslog server hosts, use the **no** form of this command.

logging { *ip-address hostname* | { **vrf** *vrf_name* } } { **archive** | **buffered** | **console** | **correlator** | **disable** | **events** | **facility** | **history** | **hostnameprefix** | **localfilesize** | **monitor** | **source-interface** | **suppress** | **trap** | **severity** }
no logging { *ip-address hostname* | { **vrf** *vrf_name* } } { **archive** | **buffered** | **console** | **correlator** | **disable** | **events** | **facility** | **history** | **hostnameprefix** | **localfilesize** | **monitor** | **source-interface** | **suppress** | **trap** | **severity** }

Syntax Description

ip-address | *hostname*	IP address or hostname of the host to be used as a syslog server.
vrf *vrf-name*	Name of the VRF. Maximum length is 32 alphanumeric characters.
archive	Specifies logging to a persistent device(disk/harddisk).
buffered	Sets buffered logging parameters.
console	Sets console logging.
correlator	Configures properties of the event correlator
disable	Disables console logging.
events	Configures event monitoring parameters.
facility	Modifies message logging facilities.
history	Sets history logging.
hostnameprefix	Adds the hostname prefix to messages on servers.
localfilesize	Sets size of the local log file.
monitor	Sets monitor logging
source-interfac	Specifies interface for source address in logging transactions.
suppress	Configures properties for the event suppression.
trap	Sets trap logging.
severity	Set severity of messages for particular remote host/vrf.

{**all**|**none**} [**port** *number*] [**vrf** *name*]	All or no severity logs are logged to the syslog server, respectively. This set of options is added under **severity**. • **port** *number* - For the *number* argument, you can use **default** option or the port number.

Command Default

No syslog server hosts are configured as recipients of syslog messages.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.
Release 7.4.1	The **all** and **none** keywords were added under the **logging severity** command form.

Usage Guidelines

Use the **logging** command to identify a syslog server host to receive messages. By issuing this command more than once, you build a list of syslog servers that receive messages.

When syslog messages are sent to a syslog server, the Cisco IOS XR software includes a numerical message identifier in syslog messages. The message identifier is cumulative and sequential. The numerical identifier included in syslog messages sent to syslog servers provides a means to determine if any messages have been lost.

Use the logging trap, on page 130 command to limit the messages sent to snmp server.

Amongst other options, **all** and **none** are provided under the **logging severity** command form. If you enable **all** or **none**, all or no severity logs are logged to the syslog server, respectively. This configuration persists even when you enable a specific operator type.

Examples

This example shows how to log messages to a host named host1:

```
RP/0/RP0/CPU0:router(config)# logging host1

RP/0/RP0/CPU0:router(config)#logging A.B.C.D
  severity  Set severity of  messages for particular remote host/vrf
  vrf       Set VRF option

RP/0/RP0/CPU0:router(config)#logging A.B.C.D
RP/0/RP0/CPU0:router(config)#commit
Wed Nov 14 03:47:58.976 PST

RP/0/RP0/CPU0:router(config)#do show run logging
Wed Nov 14 03:48:10.816 PST
logging A.B.C.D vrf default severity info
```

Note Default level is severity info.

logging archive

To configure attributes for archiving syslogs, use the **logging archive** command in XR Config mode. To exit the **logging archive** submode, use the **no** form of this command.

logging archive
no logging archive

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging archive** command to configure attributes for archiving syslogs. This command enters logging archive configuration mode and allows you to configure the commands in the table:

Note The configuration attributes must be explicitly configured in order to use the logging archive feature.

Table 13: Configuring Command Attributes For Archiving Syslogs

Command	Range	Description	Recommended Setting
archive-length	<0-4294967295>	Number of weeks	4 weeks
archive-size	<1-2047>	Size in MB	20 MB
device	<disk0 | disk1 | harddisk>	Use configured devices as the archive device.	harddisk
file-size	<1-2047>	Size in MB	1 MB
frequency	<daily | weekly>		daily
severity	<alerts | critical | debugging | emergencies | errors | informational | notifications | warnings>		informational

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to enter logging archive configuration mode and change the device to be used for logging syslogs to disk1:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# device disk1
```

logging buffered

To specify the logging buffer as a destination for system logging (syslog) messages, use the **logging buffered** command in XR Config mode. To remove the **logging buffered** command from the configuration file and cancel the use of the buffer, use the **no** form of this command.

logging buffered {*sizeseverity*}
no logging buffered {*sizeseverity*}

Syntax Description

size	Size of the buffer, in bytes. Range is 307200 to 125000000 bytes. The default is 307200 bytes.
severity	Severity level of messages that display on the console. Possible severity levels and their respective system conditions are listed under the table in the "Usage Guidelines" section. The default is **debugging**.

Command Default

size: 307200 bytes

severity: **debugging**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging buffered** command to copy messages to the logging buffer. The logging buffer is circular, so newer messages overwrite older messages after the buffer is filled. This command is related to the **show logging buffer** command, which means that when you execute a **logging buffered warnings** command, it enables the logging for all the levels below the configured level, including log for LOG_ERR, LOG_CRIT, LOG_ALERT, LOG_EMERG, and LOG_WARNING messages. Use the **logging buffer size** to change the size of the buffer.

The value specified for the *severity* argument causes messages at that level and at numerically lower levels to be displayed on the console terminal. See the table for a list of the possible severity level keywords for the *severity* argument.

This table describes the acceptable severity levels for the *severity* argument.

Table 14: Severity Levels for Messages

Level Keywords	Level	Description	Syslog Definition
emergencies	0	Unusable system	LOG_EMERG
alerts	1	Need for immediate action	LOG_ALERT
critical	2	Critical condition	LOG_CRIT
errors	3	Error condition	LOG_ERR

Level Keywords	Level	Description	Syslog Definition
warnings	4	Warning condition	LOG_WARNING
notifications	5	Normal but significant condition	LOG_NOTICE
informational	6	Informational message only	LOG_INFO
debugging	7	Debugging message	LOG_DEBUG

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the severity level of syslog messages logged to the buffer to **notifications**:

```
RP/0/RP0/CPU0:router(config)# logging buffered notifications
```

logging console

To enable logging of system logging (syslog) messages logged to the console by severity level, use the **logging console** command in XR Config mode. To return console logging to the default setting, use the **no** form of this command.

logging console {*severity* | **disable**}
no logging console

Syntax Description

severity	Severity level of messages logged to the console, including events of a higher severity level (numerically lower). The default is **informational**. Settings for the severity levels and their respective system conditions are listed in the table under the "Usage Guidelines" section for the logging buffered, on page 107 command.
disable	Removes the **logging console** command from the configuration file and disables logging to the console terminal.

Command Default

By default, logging to the console is enabled.

severity: **informational**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging console** command to prevent debugging messages from flooding your screen.

The **logging console** is for the console terminal. The value specified for the *severity* argument causes messages at that level and at numerically lower levels (higher severity levels) to be displayed on the console.

Use the **logging console disable** command to disable console logging completely.

Use the **no logging console** command to return the configuration to the default setting.

Use the show logging, on page 138 command to display syslog messages stored in the logging buffer.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to change the level of messages displayed on the console terminal to **alerts** (1), which means that **alerts** (1) and **emergencies** (0) are displayed:

```
RP/0/RP0/CPU0:router(config)# logging console alerts
```

This example shows how to disable console logging:

```
RP/0/RP0/CPU0:router(config)# logging console disable
```

This example shows how to return console logging to the default setting (the console is enabled, *severity*: **informational**):

```
RP/0/RP0/CPU0:router# no logging console
```

logging console disable

To disable logging of system logging (syslog) messages logged to the console, use the **logging console disable** command in XR Config mode. To return logging to the default setting, use the **no** form of this command.

logging consoledisable
no logging consoledisable

Syntax Description

This command has no keywords or arguments.

Command Default

By default, logging is enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging console disable** command to disable console logging completely.

Use the **no logging console disable** command to return the configuration to the default setting.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to disable syslog messages:

```
RP/0/RP0/CPU0:router(config)# logging console disable
```

logging events link-status

To enable the logging of link-status system logging (syslog) messages for logical and physical links, use the **logging events link-status** command in XR Config mode. To disable the logging of link status messages, use the **no** form of this command.

logging events link-status {**disable** | **software-interfaces**}
no logging events link-status [{**disable** | **software-interfaces**}]

Syntax Description

disable	Disables the logging of link-status messages for all interfaces, including physical links.
software-interfaces	Enables the logging of link-status messages for logical links as well as physical links.

Command Default

The logging of link-status messages is enabled for physical links.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

When the logging of link-status messages is enabled, the router can generate a high volume of link-status up and down system logging messages.

Use the **no logging events link-status** command to enable the logging of link-status messages for physical links only, which is the default behavior.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to disable the logging of physical and logical link-status messages:

```
RP/0/RP0/CPU0:router(config)# logging events link-status disable
```

logging events link-status (interface)

To enable the logging of link-status system logging (syslog) messages on a specific interface for virtual interfaces and subinterfaces, use the **logging events link-status** command in the appropriate interface or subinterface mode. To disable the logging of link status messages, use the **no** form of this command.

logging events link-status
no logging events link-status

Syntax Description

This command has no keywords or arguments.

Command Default

The logging of link-status messages is disabled for virtual interfaces and subinterfaces.

Command Modes

Interface configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

When the logging of link-status messages is enabled, the router can generate a high volume of link-status up and down system logging messages. The **logging events link-status** command enables messages for virtual interfaces and subinterfaces only.

The **logging events link-status** command allows you to enable and disable logging on a specific interface for bundles, and VLANs.

Use the **no logging events link-status** command to disable the logging of link-status messages.

Note Enabling the **logging events link-status** command on a specific interface overrides the global configuration set using the **logging events link-status** command described in this section.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows the results of turning on logging for a bundle interface:

```
RP/0/RP0/CPU0:router(config)# int bundle-GigabitEthernet 1
RP/0/RP0/CPU0:router(config-if)# logging events link-status
RP/0/RP0/CPU0:router(config-if)# no shutdown
RP/0/RP0/CPU0:router(config-if)# commit

LC/0/4/CPU0:Jun 29 12:51:26.887 : ifmgr[142]:
%PKT_INFRA-LINK-3-UPDOWN : Interface GigabitEthernet0/4/0/0, changed state to Up

LC/0/4/CPU0:Jun 29 12:51:26.897 : ifmgr[142]:
```

```
%PKT_INFRA-LINEPROTO-6-UPDOWN : Line protocol on Interface GigabitEthernet0/4/0/0, changed
 state to Up

RP/0/RP0/CPU0:router(config-if)#
RP/0/RP0/CPU0:router(config-if)# shutdown
RP/0/RP0/CPU0:router(config-if)# commit

LC/0/4/CPU0:Jun 29 12:51:32.375 : ifmgr[142]:
%PKT_INFRA-LINK-3-UPDOWN : Interface GigabitEthernet0/4/0/0, changed state to Down

LC/0/4/CPU0:Jun 29 12:51:32.376 : ifmgr[142]:
%PKT_INFRA-LINEPROTO-6-UPDOWN : Line protocol on Interface GigabitEthernet0/4/0/0, changed
 state to Down
```

This example shows the same process for a subinterface:

```
RP/0/RP0/CPU0:router(config)# int gigabitEthernet 0/5/0/0.1
RP/0/RP0/CPU0:router(config-subif)# commit
RP/0/RP0/CPU0:router(config-subif)# shutdown
RP/0/RP0/CPU0:router(config-subif)# commit
RP/0/RP0/CPU0:router(config-subif)# no shutdown
RP/0/RP0/CPU0:router(config-subif)# commit
RP/0/RP0/CPU0:router(config-subif)# logging events link-status
RP/0/RP0/CPU0:router(config-subif)# commit
RP/0/RP0/CPU0:router(config-subif)# shutdown
RP/0/RP0/CPU0:router(config-subif)# commit

LC/0/5/CPU0:Jun 29 14:06:46.710 : ifmgr[142]:
%PKT_INFRA-LINEPROTO-6-UPDOWN : Line protocol on Interface GigabitEthernet0/5/0/0.1, changed
 state to Administratively Down

LC/0/5/CPU0:Jun 29 14:06:46.726 : ifmgr[142]:
%PKT_INFRA-LINK-3-UPDOWN : Interface GigabitEthernet0/5/0/0.1, changed state to
Administratively Down

RP/0/RP0/CPU0:router(config-subif)# no shutdown
RP/0/RP0/CPU0:router(config-subif)# commit

LC/0/5/CPU0:Jun 29 14:06:52.229 : ifmgr[142]:
%PKT_INFRA-LINK-3-UPDOWN : Interface GigabitEthernet0/5/0/0.1, changed state to Up


LC/0/5/CPU0:Jun 29 14:06:52.244 : ifmgr[142]:
%PKT_INFRA-LINEPROTO-6-UPDOWN : Line protocol on Interface GigabitEthernet0/5/0/0.1, changed
 state to Down
```

logging facility

To configure the type of syslog facility in which system logging (syslog) messages are sent to syslog servers, use the **logging facility** command in XR Config mode. To remove the **logging facility** command from the configuration file and disable the logging of messages to any facility type, use the **no** form of this command.

logging facility [*type*]
no logging facility

Syntax Description

type (Optional) Syslog facility type. The default is **local7**. Possible values are listed under Table 1 in the "Usage Guidelines" section.

Command Default

type: **local7**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

This table describes the acceptable options for the *type* argument.

Table 15: Facility Type Descriptions

Facility Type	Description
auth	Authorization system
cron	Cron/at facility
daemon	System daemon
kern	Kernel
local0	Reserved for locally defined messages
local1	Reserved for locally defined messages
local2	Reserved for locally defined messages
local3	Reserved for locally defined messages
local4	Reserved for locally defined messages
local5	Reserved for locally defined messages
local6	Reserved for locally defined messages
local7	Reserved for locally defined messages

Facility Type	Description
lpr	Line printer system
mail	Mail system
news	USENET news
sys9	System use
sys10	System use
sys11	System use
sys12	System use
sys13	System use
sys14	System use
syslog	System log
user	User process
uucp	UNIX-to-UNIX copy system

Use the #unique_77 command to specify a syslog server host as a destination for syslog messages.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to configure the syslog facility to the **kern** facility type:

```
RP/0/RP0/CPU0:router(config)# logging facility kern
```

logging format bsd

To send system logging messages to a remote server in Berkeley Software Distribution (BSD) format, use the **logging format bsd** command in XR Config mode. To return console logging to the default setting, use the **no** form of this command.

logging format bsd

Syntax Description

format	Specifies the format of the syslog messages sent to the server.
bsd	Configures the format of the syslog messages according to the BSD format.

Command Default

By default, this feature is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.1.2	This command was introduced.

Usage Guidelines

None.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to log messages to a server, in the BSD format:

```
Router(config)#logging 209.165.200.225 vrf default severity info
Router(config)#logging format bsd
Router(config)#commit

Router(config)#do show run logging
logging format bsd
logging 209.165.200.225 vrf default severity info
```

logging history

To change the severity level of system logging (syslog) messages sent to the history table on the router and a Simple Network Management Protocol (SNMP) network management station (NMS), use the **logging history** command in XR Config mode. To remove the **logging history** command from the configuration and return the logging of messages to the default level, use the **no** form of this command.

logging history *severity*
no logging history

Syntax Description

severity	Severity level of messages sent to the history table on the router and an SNMP NMS, including events of a higher severity level (numerically lower). Settings for the severity levels and their respective system conditions are listed under the Usage Guidelines section for the **logging buffered** command.

Command Default

severity: **warnings**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Logging of messages to an SNMP NMS is enabled by the **snmp-server enable traps** command. Because SNMP traps are inherently unreliable and much too important to lose, at least one syslog message, the most recent message, is stored in a history table on the router.

Use the **logging history** command to reflect the history of last 500 syslog messages. For example, when this command is issued, the last 500 syslog messages with severity less than warning message are displayed in the output of **show logging history** command.

Use the show logging history, on page 143 command to display the history table, which contains table size, message status, and message text data.

Use the logging history size, on page 120 command to change the number of messages stored in the history table.

The value specified for the *severity* argument causes messages at that severity level and at numerically lower levels to be stored in the history table of the router and sent to the SNMP NMS. Severity levels are numbered 0 to 7, with 1 being the most important message and 7 being the least important message (that is, the lower the number, the more critical the message). For example, specifying the level critical with the **critical** keyword causes messages at the severity level of **critical** (2), **alerts** (1), and **emergencies** (0) to be stored in the history table and sent to the SNMP NMS.

The **no logging history** command resets the history level to the default.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to change the level of messages sent to the history table and to the SNMP server to **alerts** (1), which means that messages at the severity level of **alerts** (1) and **emergencies** (0) are sent:

```
RP/0/RP0/CPU0:router(config)# logging history alerts
```

logging history size

To change the number of system logging (syslog) messages that can be stored in the history table, use the **logging history size** command in XR Config mode. To remove the **logging history size** command from the configuration and return the number of messages to the default value, use the **no** form of this command.

logging history size *number*
no logging history *number*

Syntax Description

number	Number from 1 to 500 indicating the maximum number of messages that can be stored in the history table. The default is 1 message.

Command Default

number: 1 message

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging history size** command to change the number of messages that can be stored in this history table. When the history table is full (that is, when it contains the maximum number of messages specified with the command), the oldest message is deleted from the table to allow the new message to be stored.

Use the logging history, on page 118 command to change the severity level of syslog messages stored in the history file and sent to the SNMP server.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the number of messages stored in the history table to 20:

```
RP/0/RP0/CPU0:router(config)# logging history size 20
```

logging hostnameprefix

To append a hostname prefix to system logging (syslog) messages logged to syslog servers, use the **logging hostnameprefix** command in XR Config mode. To remove the **logging hostnameprefix** command from the configuration file and disable the logging host name prefix definition, use the **no** form of this command.

logging hostnameprefix *hostname*
no logging hostnameprefix

Syntax Description

hostname	Hostname that appears in messages sent to syslog servers.

Command Default

No hostname prefix is added to the messages logged to the syslog servers.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging hostnameprefix** command to append a hostname prefix to messages sent to syslog servers from the router. You can use these prefixes to sort the messages being sent to a given syslog server from different networking devices.

Use the #unique_77 command to specify a syslog server host as a destination for syslog messages.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to add the hostname prefix host1 to messages sent to the syslog servers from the router:

```
RP/0/RP0/CPU0:router(config)# logging hostnameprefix host1
```

logging ipv4/ipv6

To configure the differentiated services code point (DSCP) or the precedence value for the IPv4 or IPv6 header of the syslog packet in the egress direction, use the **logging** {**ipv4** | **ipv6**} command in XR EXEC mode. To remove the configured DSCP or precedence value, use the **no** form of this command.

logging {**ipv4** | **ipv6**}{**dscp** *dscp-value* | **precedence** {*numbername*}}
no logging {**ipv4** | **ipv6**}{**dscp** *dscp-value* | **precedence** {*numbername*}}

Syntax Description

ipv4 / **ipv6**	Sets the DSCP or precedence bit for IPv4 or IPv6 packets.
dscp *dscp-value*	Specifies differentiated services code point value or per hop behavior values (PHB). For more information on PHB values, see Usage Guideline section below. The range is from 0 to 63. The default value is 0.
precedence {*number* | *name*}	Sets Type of Service (TOS) precedence value. You can specify either a precedence number or name. The range of argument *number* is between 0 to 7. The *name* argument has following keywords: • routine—Match packets with routine precedence (0) • priority—Match packets with priority precedence (1) • immediate—Match packets with immediate precedence (2) • flash—Match packets with flash precedence (3) • flash-override—Match packets with flash override precedence (4) • critical—Match packets with critical precedence (5) • internet—Match packets with internetwork control precedence (6) • network—Match packets with network control precedence (7)

Command Default

None.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

By specifying PHB values you can further control the format of locally generated syslog traffic on the network.

You may provide these PHB values:

- af11—Match packets with AF11 DSCP (001010)
- af12—Match packets with AF12 dscp (001100)

- af13—Match packets with AF13 dscp (001110)
- af21— Match packets with AF21 dscp (010010)
- af22—Match packets with AF22 dscp (010100)
- af23—Match packets with AF23 dscp (010110)
- af31—Match packets with AF31 dscp (011010)
- af32—Match packets with AF32 dscp (011100)
- af33—Match packets with AF33 dscp (011110)
- af41—Match packets with AF41 dscp (100010)
- af42—Match packets with AF42 dscp (100100)
- af43— Match packets with AF43 dscp (100110)
- cs1—Match packets with CS1(precedence 1) dscp (001000)
- cs2—Match packets with CS2(precedence 2) dscp (010000)
- cs3—Match packets with CS3(precedence 3) dscp (011000)
- cs4—Match packets with CS4(precedence 4) dscp (100000)
- cs5—Match packets with CS5(precedence 5) dscp (101000)
- cs6—Match packets with CS6(precedence 6) dscp (110000)
- cs7—Match packets with CS7(precedence 7) dscp (111000)
- default—Match packets with default dscp (000000)
- ef—Match packets with EF dscp (10111)

Assured Forwarding (AF) PHB group is a means for a provider DS domain to offer different levels of forwarding assurances for IP packets. The Assured Forwarding PHB guarantees an assured amount of bandwidth to an AF class and allows access to additional bandwidth, if obtainable.

For example AF PHB value af11 - Match packets with AF11 DSCP (001010), displays the DSCP values as 10 and 11. The DSCP bits are shown as 001010 and 001011 .

AF11 stands for:

- Assured forwarding class 1 (001)
- Drop priority 100 (1)
- Dropped last in AF1 class

Similarly AF PHB value af12 - Match packets with AF12 dscp (001100), displays the DSCP values as 12 and 13. The DSCP bits are shown as 001100 and 001101.

AF12 stands for:

- Assured forwarding class 1 (001)
- Drop priority 100 (2)

- Dropped second in AF1 class

Class Selector (CS) provides backward compatibility bits,

CS PHB value cs1 - Match packets with CS1(precedence 1) dscp (001000)

CS1 stands for:

- CS1 DSCP bits are displayed as 001000 and 001001
- priority stated as 1

Expedited Forwarding (EF) PHB is defined as a forwarding treatment to build a low loss, low latency, assured bandwidth, end-to-end service. These characteristics are suitable for voice, video and other realtime services.

EF PHB Value ef - Match packets with EF dscp (101110) - this example states the recommended EF value (used for voice traffic).

Task ID

Task ID	Operation
logging	read, write

Example

This example shows how to configure DSCP value as 1 for IPv4 header of syslog packet.

```
RP/0/RP0/CPU0:router(config)#logging ipv4 dscp 1
```

This example shows how to configure DSCP value as 21 for IPv6 header of syslog packet.

```
RP/0/RP0/CPU0:router(config)#logging ipv6 dscp 21
```

This example shows how to configure precedence value as 5 for IPv6 header of syslog packet.

```
RP/0/RP0/CPU0:router(config)#logging ipv6 precedence 5
```

logging localfilesize

To specify the size of the local logging file, use the **logging localfilesize** command in XR Config mode. To remove the **logging localfilesize** command from the configuration file and restore the system to the default condition, use the **no** form of this command.

logging localfilesize *bytes*
no logging localfilesize *bytes*

Syntax Description

bytes	Size of the local logging file in bytes. Range is 0 to 4294967295. Default is 32000 bytes.

Command Default

bytes: 32000 bytes

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging localfilesize** command to set the size of the local logging file.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the local logging file to 90000 bytes:

```
RP/0/RP0/CPU0:router(config)# logging localfilesize 90000
```

logging monitor

To specify terminal lines other than the console terminal as destinations for system logging (syslog) messages and limit the number of messages sent to terminal lines based on severity, use the **logging monitor** command in XR Config mode. To remove the **logging monitor** command from the configuration file and disable logging to terminal lines other than the console line, use the **no** form of this command.

logging monitor [*severity*]
no logging monitor

Syntax Description

severity	(Optional) Severity level of messages logged to the terminal lines, including events of a higher severity level (numerically lower). The default is **debugging**.

Command Default

severity: **debugging**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The **logging monitor** is for the terminal monitoring. Use the **logging monitor** command to restrict the messages displayed on terminal lines other than the console line (such as virtual terminals). The value set for the *severity* argument causes messages at that level and at numerically lower levels to be displayed on the monitor.

Use the terminal monitor, on page 145 command to enable the display of syslog messages for the current terminal session.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to set the severity level of messages logged to terminal lines to errors:

```
RP/0/RP0/CPU0:router(config)# logging monitor errors
```

logging source-interface

To set all system logging (syslog) messages being sent to syslog servers to contain the same IP address, regardless of which interface the syslog message uses to exit the router, use the **logging source-interface** command in XR Config mode. To remove the **logging source-interface** command from the configuration file and remove the source designation, use the **no** form of this command.

logging source-interface *type interface-path-id*
no logging source-interface

Syntax Description

type	Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No source IP address is specified.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Normally, a syslog message contains the IP address of the interface it uses to leave the networking device. Use the **logging source-interface** command to specify that syslog packets contain the IP address of a particular interface, regardless of which interface the packet uses to exit the networking device.

Use the #unique_77 command to specify a syslog server host as a destination for syslog messages.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to specify that the IP address for TenGigE interface 0/1/0/0 be set as the source IP address for all messages:

```
RP/0/RP0/CPU0:router(config)# logging source-interface TenGigE interface 0/1/0/0
```

logging suppress deprecated

To prevent the logging of messages to the console to indicate that commands are deprecated, use the **logging suppress deprecated** command in XR Config mode. To remove the **logging suppress deprecated** command from the configuration file, use the **no** form of this command.

logging suppress deprecated
no logging suppress deprecated

Syntax Description

This command has no keywords or arguments.

Command Default

Console messages are displayed when deprecated commands are used.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

The **logging suppress deprecated** command affects messages to the console only.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to suppress the consecutive logging of deprecated messages:

```
RP/0/RP0/CPU0:router(config)# logging suppress deprecated
```

logging suppress duplicates

To prevent the consecutive logging of more than one copy of the same system logging (syslog) message, use the **logging suppress duplicates** command in XR Config mode. To remove the **logging suppress duplicates** command from the configuration file and disable the filtering process, use the **no** form of this command.

logging suppress duplicates
no logging suppress duplicates

Syntax Description

This command has no keywords or arguments.

Command Default

Duplicate messages are logged.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

If you use the **logging suppress duplicates** command during debugging sessions, you might not see all the repeated messages and could miss important information related to problems that you are attempting to isolate and resolve. In such a situation, you might consider disabling this command.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to suppress the consecutive logging of duplicate messages:

```
RP/0/RP0/CPU0:router(config)# logging suppress duplicates
```

logging trap

To specify the severity level of messages logged to snmp server, use the **logging trap** command in XR Config mode. To restore the default behavior, use the **no** form of this command.

logging trap [*severity*]
no logging trap

Syntax Description

severity	(Optional) Severity level of messages logged to the snmp server, including events of a higher severity level (numerically lower). The default is **informational**. Settings for the severity levels and their respective system conditions are listed under Table 1 in the "Usage Guidelines" section for the **logging buffered** command.

Command Default

severity: **informational**

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **logging trap** command to limit the logging of messages sent to snmp servers to only those messages at the specified level.

Table 14: Severity Levels for Messages, on page 107 under the "Usage Guidelines" section for the logging buffered, on page 107 command lists the syslog definitions that correspond to the debugging message levels.

Use the #unique_77 command to specify a syslog server host as a destination for syslog messages.

The **logging trap disable** will disable the logging of messages to both snmp server and syslog servers.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to restrict messages to **notifications** (5) and numerically lower levels.

```
RP/0/RP0/CPU0:router(config)# logging trap notifications
```

process shutdown pam_manager

To disable platform automated monitoring (PAM) by shutting down the required process agents, use the **process shutdown pam_manager** command in XR EXEC mode.

process shutdown pam_manager [**location** {*node-id* | **all**}]

Syntax Description

location all	Disables PAM agents for all RPs.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.1.2	This command was introduced.

Usage Guidelines

Because PAM tool process (pam_manager) is not a mandatory process, it does not restart automatically if it was manually disabled (unless in the case of a system reload). You can re-enable PAM using the **process start pam_manager** command.

If you use **process shutdown pam_manager** without any keywords, it disables PAM agents for the local RP.

Task ID

Task ID	Operation
network	read, write

This example shows how to disable PAM for all RPs:

```
RP/0/RP0/CPU0:router# process shutdown pam_manager location all
```

Related Commands

Command	Description
process start pam_manager, on page 132	Re-enables platform automated monitoring (PAM) by restarting the required process agents.

process start pam_manager

To re-enable platform automated monitoring (PAM) by restarting the required process agents, use the **process start pam_manager** command in XR EXEC mode.

process start pam_manager [**location** {*node-id* | **all**}]

Syntax Description

location all	Restarts PAM agents for all RPs.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.1.2	This command was introduced.

Usage Guidelines

If you use **process start pam_manager** without any keywords, it restarts PAM agents for the local RP.

You can use these commands to check if PAM is installed in the router:

- **show processes pam_manager location all** (from Cisco IOS XR command line interface):
- **run ps auxw | egrep perl** (from router shell prompt)

Task ID

Task ID	Operation
network	read, write

This example shows how to re-enable PAM for all RPs:

```
RP/0/RP0/CPU0:router# process start pam_manager location all
```

Related Commands

Command	Description
process shutdown pam_manager, on page 131	

service timestamps

To modify the time-stamp format for system logging (syslog) and debug messages, use the **service timestamps** command in XR Config mode. To revert to the default timestamp format, use the **no** form of this command.

service timestamps [[{**debug** | **log**}] {**datetime** [**localtime**] [**msec**] [**show-timezone**] | **disable** | **uptime**}]
no service timestamps [[{**debug** | **log**}] {**datetime** [**localtime**] [**msec**] [**show-timezone**] | **disable** | **uptime**}]

Syntax Description

debug	(Optional) Specifies the time-stamp format for debugging messages.
log	(Optional) Specifies the time-stamp format for syslog messages.
datetime	(Optional) Specifies that syslog messages are time-stamped with date and time.
localtime	(Optional) When used with the **datetime** keyword, includes the local time zone in time stamps.
msec	(Optional) When used with the **datetime** keyword, includes milliseconds in the time stamp.
show-timezone	(Optional) When used with the **datetime** keyword, includes time zone information in the time stamp.
disable	(Optional) Causes messages to be time-stamped in the default format.
uptime	(Optional) Specifies that syslog messages are time-stamped with the time that has elapsed since the networking device last rebooted.

Command Default

Messages are time-stamped in the month day hh:mm:ss by default.

The default for the **service timestamps log datetime localtime** and **service timestamps debug datetime localtime** forms of the command with no additional keywords is to format the time in the local time zone, without milliseconds and time zone information.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Time stamps can be added to either debugging or syslog messages independently. The **uptime** keyword adds time stamps in the format hhhh:mm:ss, indicating the elapsed time in hours:minutes:seconds since the networking device last rebooted. The **datetime** keyword adds time stamps in the format mmm dd hh:mm:ss, indicating the date and time according to the system clock. If the system clock has not been set, the date and time are preceded by an asterisk (*), which indicates that the date and time have not been set and should be verified.

The **no** form of the **service timestamps** command causes messages to be time-stamped in the default format.

Entering the **service timestamps** form of this command without any keywords or arguments is equivalent to issuing the **service timestamps debug uptime** form of this command.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to enable time stamps on debugging messages, which show the elapsed time since the networking device last rebooted:

```
RP/0/RP0/CPU0:router(config)# service timestamps debug uptime
```

This example shows how to enable time stamps on syslog messages, which show the current time and date relative to the local time zone, with the time zone name included:

```
RP/0/RP0/CPU0:router(config)# service timestamps log datetime localtime show-timezone
```

severity

To specify the filter level for logs, use the **severity** command in logging archive configuration mode. To return to the default, use the **no** form of this command.

severity {*severity*}
no severity

Syntax Description

severity	Severity level for determining which messages are logged to the archive. Possible severity levels and their respective system conditions are listed under Table 14: Severity Levels for Messages, on page 107 in the "Usage Guidelines" section. The default is **informational**.

Command Default

Informational

Command Modes

Logging archive configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **severity** command to specify the filter level for syslog messages. All syslog messages higher in severity or the same as the configured value are logged to the archive.

Table 14: Severity Levels for Messages, on page 107 describes the acceptable severity levels for the *severity* argument.

Task ID

Task ID	Operations
logging	read, write

Examples

This example shows how to specify that warning conditions and higher-severity messages are logged to the archive:

```
RP/0/RP0/CPU0:router(config)# logging archive
RP/0/RP0/CPU0:router(config-logging-arch)# severity warnings
```

show health sysdb

To display the abstract view of the overall health of the system database (SysDB), use the **show health sysdb** command in XR EXEC mode.

XML schema is supported for the CLI commands.

- SysDB
  - ConfigurationSpace
  - IPCSpace
  - CPU
  - Memory
- SysdbConnections
  - NodeTable
  - Node

show health sysdb | **location** <*node-id*> | **memory** | **cpu** | **ipc** | **config** | **conn location** <*node-id*>

Syntax Description

location *node-id*	Displays the SysDB health information for a specified node. The *node-id* argument is entered in the *rack/slot/module* notation.
memory	Displays the amount of memory consumed by the SysDB processes.
cpu	Displays the health of CPU consumed by the SysDB processes.
ipc	Displays an abstract view of the health of SysDB interprocess communication (IPC) operational space.
config	Displays an abstract view of the health of SysDB configurational space.
con location <*node-id*>	Displays an internal breakdown of Lightweight Messaging (LWM) connections for the node.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
cisco-support	read
interface	read

Examples

The following is sample output from the **show health sysdb** command to display the health of the SysDB:

```
RP/0/RP0/CPU0:router# show health sysdb location 0/2/cpu0
sysdb memory is 32MB, memory is healthy
sysdb cpu time is 0%, cpu is healthy
sysdb operational space is healthy
sysdb configuration space is healthy
```

show logging

To display the contents of the logging buffer, use the **show logging** command in XR EXEC mode.

show logging [{[**alarm-location location** *location*] | [**correlator** *options*] | **local location** *node-id* | [**location** *node-id*] [**start** *month day hh* **:** *mm* **:** *ss*] [**process** *name*] [**string** *string*] [**end** *month day hh* **:** *mm* **:ss**][**events** *options*][**history**][**last** *entries*][**suppress rule** {*rule_name* | **all**}]}]

Syntax Description

alarm-location trace *location*	(Optional) Displays the alarm-location information. The **trace** option shows trace data for the alarm location components.
correlator*options*	(Optional) Displays the content and information about correlation buffer. The various options available are: • buffer: Displays the content of the correlation buffer. • info: Displays information about event correlation. • trace: Displays trace data for the alarm_logger component.

end *month day hh* **:** *mm* **:** *ss*	(Optional) Displays syslog messages with a time stamp equal to or lower than the time stamp specified with the *monthday hh* **:** *mm* **:** *ss* argument. The ranges for the *month day hh* **:** *mm* **:** *ss* arguments are as follows: • *month*—The month of the year. The values for the *month* argument are: • january • february • march • april • may • june • july • august • september • october • november • december • *day*—Day of the month. Range is 01 to 31. • *hh* **:**—Hours. Range is 00 to 23. You must insert a colon after the *hh* argument. • *mm* **:**—Minutes. Range is 00 to 59. You must insert a colon after the *mm* argument. • *ss*—Seconds. Range is 00 to 59.
events *options*	Displays the content and information about event buffer.The various options available are: • buffer: Displays the content of the event buffer. • info: Displays information about events buffer. • rule: Displays specified rules. • ruleset: Displays rulesets. • trace: Displays trace data for the correlation component.
history	Displays the contents of logging history.
last *entries*	Displays last <n> entries. The number of entries can range from 1 to 500.

local location *node-id*	(Optional) Displays system logging (syslog) messages from the specified local buffer. The *node-id* argument is entered in the *rack/slot/modul e* notation.
location *node-id*	(Optional) Displays syslog messages from the designated node. The *node-id* argument is entered in the *rack/slot/modul e* notation.
start *month day hh* **:** *mm* **:** *ss*	(Optional) Displays syslog messages with a time stamp equal to or higher than the time stamp specified with the *month day mm* **:** *hh* **:** *ss* argument. The ranges for the *month day hh* **:** *mm* **:** *ss* arguments are as follows: • *month*—The month of the year. The values for the *month* argument are: • january • february • march • april • may • june • july • august • september • october • november • december • *day*—Day of the month. Range is 01 to 31. • *hh* **:**—Hours. Range is 00 to 23. You must insert a colon after the *hh* argument. • *mm* **:**—Minutes. Range is 00 to 59. You must insert a colon after the *mm* argument. • *ss*—Seconds. Range is 00 to 59.
process *name*	(Optional) Displays syslog messages related to the specified process.
string *string*	(Optional) Displays syslog messages that contain the specified string.
suppress rule{*rule_name*|**all**}	Displays the content and information about log suppression. The **rule** option shows specified rules.

Command Default None

Command Modes XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines Use the **show logging** command to display the state of syslog error and event logging on the processor console. The information from the command includes the types of logging enabled and the size of the buffer.

Task ID

Task ID	Operations
logging	read

Examples This is the sample output from the **show logging** command with the **process** keyword and *name* argument. Syslog messages related to the init process are displayed in the sample output.

```
RP/0/RP0/CPU0:router# show logging process init

Syslog logging: enabled (24 messages dropped, 0 flushes, 0 overruns)
Console logging: level, 59 messages logged
Monitor logging: level debugging, 0 messages logged
Trap logging: level informational, 0 messages logged
Buffer logging: level debugging, 75 messages logged

Log Buffer (16384 bytes):

LC/0/1/CPU0:May 24 22:20:13.043 : init[65540]: %INIT-7-INSTALL_READY : total time 47.522
seconds
SP/0/1/SP:May 24 22:18:54.925 : init[65541]: %INIT-7-MBI_STARTED : total time 7.159 seconds

SP/0/1/SP:May 24 22:20:16.737 : init[65541]: %INIT-7-INSTALL_READY : total time 88.984
seconds
SP/0/SM1/SP:May 24 22:18:40.993 : init[65541]: %INIT-7-MBI_STARTED : total time 7.194 seconds

SP/0/SM1/SP:May 24 22:20:17.195 : init[65541]: %INIT-7-INSTALL_READY : total time 103.415
seconds
SP/0/2/SP:May 24 22:18:55.946 : init[65541]: %INIT-7-MBI_STARTED : total time 7.152 seconds

SP/0/2/SP:May 24 22:20:18.252 : init[65541]: %INIT-7-INSTALL_READY : total time 89.473
seconds
```

This is the sample output from the **show logging** command using both the **process***name* keyword argument pair and **location** *node-id* keyword argument pair. Syslog messages related to the “init” process emitted from node 0/RP0/CPU0 are displayed in the sample output.

```
RP/0/RP0/CPU0:router# show logging process init location 0/RP0/CPU0

Syslog logging: enabled (24 messages dropped, 0 flushes, 0 overruns)
Console logging: level, 59 messages logged
Monitor logging: level debugging, 0 messages logged
Trap logging: level informational, 0 messages logged
Buffer logging: level debugging, 75 messages logged
```

```
Log Buffer (16384 bytes):
LC/0/1/CPU0:May 24 22:20:13.043 : init[65540]: %INIT-7-INSTALL_READY : total time 47.522
seconds
```

This table describes the significant fields shown in the display.

Table 16: show logging Field Descriptions

Field	Description
Syslog logging	If enabled, system logging messages are sent to a UNIX host that acts as a syslog server; that is, the host captures and saves the messages.
Console logging	If enabled, the level and the number of messages logged to the console are stated; otherwise, this field displays “disabled.”
Monitor logging	If enabled, the minimum level of severity required for a log message to be sent to the monitor terminal (not the console) and the number of messages logged to the monitor terminal are stated; otherwise, this field displays “disabled.”
Trap logging	If enabled, the minimum level of severity required for a log message to be sent to the syslog server and the number of messages logged to the syslog server are stated; otherwise, this field displays “disabled.”
Buffer logging	If enabled, the level and the number of messages logged to the buffer are stated; otherwise, this field displays “disabled.”

show logging history

To display information about the state of the system logging (syslog) history table, use the **show logging history** command in XR EXEC mode mode.

show logging history

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show logging history** command to display information about the syslog history table, such as the table size, the status of messages, and the text of messages stored in the table. Simple Network Management Protocol (SNMP) configuration parameters and protocol activity also are displayed.

Use the logging history, on page 118 command to change the severity level of syslog messages stored in the history file and sent to the SNMP server.

Use the logging history size, on page 120 to change the number of syslog messages that can be stored in the history table.

Task ID

Task ID	Operations
logging	read

Examples

This is the sample output from the **show logging history** command:

```
RP/0/RP0/CPU0:router# show logging history

Syslog History Table: '1' maximum table entries
saving level 'warnings' or higher
137 messages ignored, 0 dropped, 29 table entries flushed
SNMP notifications disabled
```

This table describes the significant fields shown in the display.

Table 17: show logging history Field Descriptions

Field	Description
maximum table entries	Number of messages that can be stored in the history table. Set with the **logging history size** command.

Field	Description
saving level	Level of messages that are stored in the history table and sent to the SNMP server (if SNMP notifications are enabled). Set with the **logging history** command.
messages ignored	Number of messages not stored in the history table because the severity level is greater than that specified with the **logging history** command.
SNMP notifications	Status of whether syslog traps of the appropriate level are sent to the SNMP server. Syslog traps are either enabled or disabled through the **snmp-server enable** command.

terminal monitor

To enable the display of debug command output and system logging (syslog) messages for the current terminal session, use the **terminal monitor** command in XR EXEC mode.

terminal monitor [**disable**]

Syntax Description

disable	(Optional) Disables the display of syslog messages for the current terminal session.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **terminal monitor** command to enable the display of syslog messages for the current terminal session.

Note Syslog messages are not sent to terminal lines unless the logging monitor, on page 126 is enabled.

Use the **terminal monitor disable** command to disable the display of logging messages for the current terminal session. If the display of logging messages has been disabled, use the **terminal monitor** command to re-enable the display of logging messages for the current terminal session.

The **terminal monitor** command is set locally, and does not remain in effect after a terminal session has ended; therefore, you must explicitly enable or disable the **terminal monitor** command each time that you would like to monitor a terminal session.

Task ID

Task ID	Operations
logging	execute

Examples

This example shows how to enable the display syslog messages for the current terminal session:

```
RP/0/RP0/CPU0:router# terminal monitor
```

Onboard Failure Logging Commands

This module describes the Cisco IOS XR software commands used to configure onboard failure logging (OBFL) for system monitoring on the router. OBFL gathers boot, and environmental factors failure data for field-replaceable units (FRUs), and stores the information in the nonvolatile memory of the FRU. This information is used for troubleshooting, testing, and diagnosis if a failure or other error occurs.

Because OBFL is on by default, data is collected and stored as soon as the card is installed. If a problem occurs, the data can provide information about historical environmental conditions, uptime, downtime, errors, and other operating conditions.

Caution OBFL is activated by default in all cards and should not be deactivated. OBFL is used to diagnose problems in FRUs and to display a history of FRU data.

Related Documents

For detailed information about OBFL concepts, configuration tasks, and examples, see the *Onboard Failure Logging Services* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

For detailed information about logging concepts, configuration tasks, and examples, see the *Implementing Logging Services* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

For alarm management and logging correlation commands, see the *Alarm Management and Logging Correlation Commands* module in the *System Monitoring Command Reference for Cisco NCS 5000 Series Routers*.

For detailed information about alarm and logging correlation concepts, configuration tasks, and examples, see the *Implementing Alarm Logs and Logging Correlation* module in the *System Monitoring Configuration Guide for Cisco NCS 5000 Series Routers*.

show logging onboard

To display the onboard failure logging (OBFL) messages, use the **show logging onboard** command in System Admin EXEC mode.

show logging onboard {**diag_log** | **diag_result** | **fabric** | **fmea** | **fpd** | **inventory** | **temperature** | **uptime** | **voltage**}[**location** *node-id*] [**verbose**]

Syntax Description

diag_log	Displays the OBFL diag logs data information.
diag_result	Displays the OBFL diag test results information.
fabric	Displays the OBFL fabric data information.
fmea	Displays the OBFL FMEA data information.
fpd	Displays the OBFL FPD data information.
inventory	Displays the OBFL inventory data information.
temperature	Displays temperature information.
uptime	Displays the OBFL uptime.
voltage	Displays voltage information.

Command Default

None

Command Modes

System Admin EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show logging onboard** command to display all logging messages for OBFL.

To narrow the output of the command, enter the **show logging onboard** command with one of the keyword.

Use the **location** *node-id* keyword and argument to display OBFL messages for a specific node.

Task ID

Task ID	Operations
logging	read

Examples

This example displays uptime information from the OBFL feature:

```
sysadmin-vm:0_RP0# show logging onboard uptime location 0/RP0/CPU0
```

Statistics Service Commands

This module describes the Cisco IOS XR software commands related to the collection of interface statistics (StatsD) for system monitoring on the router. Interface statistics on the router are found in hardware (most of the time) and software (exception packets). The counters are always local (relative to the CPU) to the node on which the interface is homed. The Cisco IOS XR software provides an efficient mechanism to collect these counters from various application-specific integrated circuits (ASICs) or NetIO and assemble an accurate set of statistics for an interface. After the statistics are produced, they can be exported to interested parties (command-line interface [CLI], Simple Network Management Protocol [SNMP], and so forth).

The Cisco IOS XR software statistics collection system provides a common framework to be used by all interface owners to export the statistics for interfaces they own. The system also defines a common set of statistics that are relevant to all interfaces and thereby provides a consistent and constant set of counters that are always associated and maintained with any interface on the router.

The statistics collection system includes the statistics manager, the statistics server, one or more statistics collectors, and the necessary libraries. Each node on a router houses one statistics server.

In addition to the statistics server, each node (that has interfaces) has one or more statistics collectors. Statistics collectors are platform specific and can obtain various hardware and software counters to satisfy requests from the statistics server.

The statistics manager does not attempt to produce statistics for interfaces for which no statistics collector has registered. Requests for statistics on interfaces for which no statistics collector has registered results in an error returned to the requestor by the statistics manager.

clear counters

To clear the interface counters, use the **clear counters** command in XR EXEC mode.

clear counters [{**all** | *type interface-path-id*}]

Syntax Description

all	(Optional) Clears counters on all interfaces.
type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	(Optional) Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

Counters for all interfaces are cleared.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **clear counters** command to clear all the statistics counters displayed by the **show interfaces** command. If no optional arguments are supplied or if the **all** keyword is specified, then the counters for all interfaces are cleared. If an interface type is specified, then only the counters for that interface are cleared.

The **clear counters** command with the **all** option clears counters on all interfaces. When you enter this command, the system prompts you for confirmation. You must then press Enter or the *y* key for the **clear counters** command to take effect.

Note This command does not clear counters retrieved using Simple Network Management Protocol (SNMP), but only those counters displayed with the **show interfaces** command.

Task ID

Task ID	Operations
interface	execute

Examples

This example shows how to clear counters on all interfaces:

```
RP/0/RP0/CPU0:router# clear counters all
```

```
Clear "show interface" counters on all interfaces [confirm]
```

load-interval

To specify the interval for load calculation of an interface, use the **load-interval** command in interface configuration mode. To reset the load interval to the default setting, use the **no** form of this command.

load-interval *seconds*
no load-interval *seconds*

Syntax Description

seconds	Number of seconds for load calculation of an interface. The value range is from 0 to 600 seconds and in increments of 30 (such as 30, 60, 90, and so on). The default is 300 seconds.

Command Default

seconds: 300 seconds (5 minutes)

Command Modes

Interface configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

When load interval is set to zero, load calculation is disabled. If you set the load interval, you must use a multiple of 30 (up to 600 seconds).

Task ID

Task ID	Operations
interface	read/write

Examples

This example shows how to configure the load interval to 30 seconds:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# load-interval 30
```

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