



Configuring and Monitoring Alarm

This chapter describes monitoring alarms, alarms filtering support and configuring external alarms for fan tray alarm port.

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Monitoring Alarms

Once hardware is installed and operational, use alarms to monitor hardware status on a daily basis.

The routers are designed to send alarm notifications when problems are detected. Network administrators do not need to use show commands to poll devices on a routine basis and can monitor the network remotely. However, network administrators can perform onsite monitoring if they so choose.

Use **snmp-server enable traps alarms <severity>** command to enable the entity related Traps.

The default severity level is informational, which shows all alarms. Severity levels are defined as the following:

- 1—Critical. The condition affects service.
- 2—Major. Immediate action is needed.
- 3—Minor. Minor warning conditions.
- 4—Informational. No action is required. This is the default.

The entity notifications **ceAlarmAsserted** and **ceAlarmCleared** are used to report the condition for e.g. when a physical entity asserted or cleared an alarm.



Note

Effective from Cisco IOS XE Everest 16.6.1, on RSP3 module, alarm notification is enabled on 900 watts DC power supply. There are 2 input feeds for 900 watts DC power supply, if one of the input voltage is lesser than the operating voltage, critical alarm is generated for that particular feed and clears (stops) once the voltage is restored but the power supply state remains in OK state as the other power supply is operationally up.

Network Administrator Checks Console or Syslog for Alarm Messages

The network administrator can monitor alarm messages by reviewing alarm messages sent to the system console or to a syslog.

Enabling the Logging Alarm Command

The logging alarm command must be enabled for the system to send alarm messages to a logging device, such as the console or a syslog. This command is not enabled by default.

You can specify the severity level of alarm to log. All alarms at and above the specified threshold generate alarm messages. For example, the following command sends only critical alarm messages to logging devices:

```
Router(config)# logging alarm critical
```

If alarm severity is not specified, alarm messages for all severity levels are sent to logging devices.

Examples of Alarm Messages

The following alarm messages are examples of alarm messages that are sent to the console when a SPA is removed without first doing a graceful deactivation of the SPA. The alarm is cleared when the SPA is re-inserted.

SPA REMOVED

*May 18 14:50:48.540: %TRANSCEIVER-6-REMOVED: SIP0: iomd: Transceiver module removed from TenGigabitEthernet0/0/1

*May 18 14:50:49.471: %IOSXE_OIR-6-REMSPA: SPA removed from subslot 0/0, interfaces disabled

*May 18 14:50:49.490: %SPA_OIR-6-OFFLINECARD: SPA (A900-IMA2Z) offline in subslot 0/0

SPA RE-INSERTED

*May 18 14:52:11.803: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/0

*May 18 14:52:52.807: %SPA_OIR-6-ONLINECARD: SPA (A900-IMA2Z) online in subslot 0/0

*May 18 14:52:53.543: %TRANSCEIVER-6-INSERTED: SIP0: iomd: transceiver module inserted in TenGigabitEthernet0/0/0

*May 18 14:52:53.551: %TRANSCEIVER-6-INSERTED: SIP0: iomd: transceiver module inserted in TenGigabitEthernet0/0/1

*May 18 14:52:54.780: %LINK-3-UPDOWN: Interface TenGigabitEthernet0/0/0, changed state to down

*May 18 14:52:54.799: %LINK-3-UPDOWN: Interface TenGigabitEthernet0/0/1, changed state to down

*May 18 14:53:06.578: %LINEPROTO-5-UPDOWN: Line protocol on Interface TenGigabitEthernet0/0/1, changed state to up

*May 18 14:53:08.482: %LINK-3-UPDOWN: Interface TenGigabitEthernet0/0/1, changed state to up

ALARMS for Router

To view the alarms on router, use the show facility-alarm status command. The example shows a critical alarm for Power supply along with the description:

SPA Removed

```
Router# show facility-alarm status
```

```
System Totals Critical: 22 Major: 0 Minor: 0
```

Source	Time	Severity	Description [Index]
subslot 0/0	May 18 2016 14:50:49	CRITICAL	Active Card Removed OIR
Alarm [0]			
GigabitEthernet0/1/0	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/1	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/2	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/5	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/6	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/7	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
xcvr container 0/2/0 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/2/2 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
GigabitEthernet0/2/3	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
xcvr container 0/2/4 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/2/5 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
GigabitEthernet0/2/6	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
SONET 0/3/0 State Down [36]	May 11 2016 18:54:25	INFO	Physical Port Administrative
xcvr container 0/3/1	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/3/2	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/3/3	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/4/0 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/1 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/2 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
GigabitEthernet0/4/3	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
xcvr container 0/4/4 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/5 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/6 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/7 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
TenGigabitEthernet0/4/8 [35]	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down

SPA Re-Inserted

```
Router# show facility-alarm status
```

```
System Totals Critical: 22 Major: 0 Minor: 0
```

Source	Time	Severity	Description [Index]
TenGigabitEthernet0/0/0 [35]	May 18 2016 14:53:02	CRITICAL	Physical Port Link Down
GigabitEthernet0/1/0	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/1	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/2	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/5	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/6	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
GigabitEthernet0/1/7	May 11 2016 18:53:36	CRITICAL	Physical Port Link Down [1]
xcvr container 0/2/0 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/2/2 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link

GigabitEthernet0/2/3	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
xcvr container 0/2/4 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/2/5 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
GigabitEthernet0/2/6	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
SONET 0/3/0 State Down [36]	May 11 2016 18:54:25	INFO	Physical Port Administrative
xcvr container 0/3/1	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/3/2	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/3/3	May 11 2016 18:53:44	INFO	Transceiver Missing [0]
xcvr container 0/4/0 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/1 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/2 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
GigabitEthernet0/4/3	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down [1]
xcvr container 0/4/4 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/5 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/6 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
xcvr container 0/4/7 Down [1]	May 11 2016 18:54:25	CRITICAL	Transceiver Missing - Link
TenGigabitEthernet0/4/8 [35]	May 11 2016 18:54:25	CRITICAL	Physical Port Link Down

To view critical alarms specifically, use the show facility-alarm status critical command:

```
Router# show facility-alarm status critical
System Totals Critical: 22 Major: 0 Minor: 0
Source Time Severity Description [Index]
-----
TenGigabitEthernet0/0/0 May 18 2016 14:53:02 CRITICAL Physical Port Link Down
[35]
GigabitEthernet0/1/0 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
GigabitEthernet0/1/1 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
GigabitEthernet0/1/2 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
GigabitEthernet0/1/5 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
GigabitEthernet0/1/6 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
GigabitEthernet0/1/7 May 11 2016 18:53:36 CRITICAL Physical Port Link Down [1]
xcvr container 0/2/0 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
xcvr container 0/2/2 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
GigabitEthernet0/2/3 May 11 2016 18:54:25 CRITICAL Physical Port Link Down [1]
xcvr container 0/2/4 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
xcvr container 0/2/5 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
GigabitEthernet0/2/6 May 11 2016 18:54:25 CRITICAL Physical Port Link Down [1]
xcvr container 0/4/0 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
xcvr container 0/4/1 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
xcvr container 0/4/2 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
GigabitEthernet0/4/3 May 11 2016 18:54:25 CRITICAL Physical Port Link Down [1]
xcvr container 0/4/4 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
xcvr container 0/4/5 May 11 2016 18:54:25 CRITICAL Transceiver Missing - Link
Down [1]
```

```

xcvr container 0/4/6      May 11 2016 18:54:25  CRITICAL  Transceiver Missing - Link
Down [1]
xcvr container 0/4/7      May 11 2016 18:54:25  CRITICAL  Transceiver Missing - Link
Down [1]
TenGigabitEthernet0/4/8  May 11 2016 18:54:25  CRITICAL  Physical Port Link Down
[35]

```

To view the operational state of the major hardware components on the router, use the show platform diag command. This example shows the Power supply P0 has failed:

```

Router# show platform diag
Chassis type: ASR903
Slot: 1, A900-RSP2A-128
  Running state      : ok
  Internal state     : online
  Internal operational state : ok
  Physical insert detect time : 00:02:33 (00:57:31 ago)
  Software declared up time  : 00:03:41 (00:56:24 ago)
  CPLD version       : 15092360
  Firmware version   : 15.4(3r)S2
Sub-slot: 0/0, A900-IMA2Z
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:19 ago)
  Logical insert detect time  : 00:04:46 (00:55:19 ago)
Sub-slot: 0/1, A900-IMA8T
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:19 ago)
  Logical insert detect time  : 00:04:46 (00:55:19 ago)
Sub-slot: 0/2, A900-IMA8S
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:19 ago)
  Logical insert detect time  : 00:04:46 (00:55:19 ago)
Sub-slot: 0/3, A900-IMA4OS
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:18 ago)
  Logical insert detect time  : 00:04:46 (00:55:18 ago)
Sub-slot: 0/4, A900-IMA8S1Z
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:18 ago)
  Logical insert detect time  : 00:04:46 (00:55:18 ago)
Sub-slot: 0/5, A900-IMASER14A/S
  Operational status : ok
  Internal state     : inserted
  Physical insert detect time : 00:04:46 (00:55:19 ago)
  Logical insert detect time  : 00:04:46 (00:55:19 ago)
Slot: R0, A900-RSP2A-128
  Running state      : ok, standby
  Internal state     : online
  Internal operational state : ok
  Physical insert detect time : 00:24:37 (00:35:28 ago)
  Software declared up time  : 00:31:28 (00:28:36 ago)
  CPLD version       : 15092360
  Firmware version   : 15.4(3r)S2
Slot: R1, A900-RSP2A-128
  Running state      : ok, active
  Internal state     : online
  Internal operational state : ok
  Physical insert detect time : 00:02:33 (00:57:31 ago)
  Software declared up time  : 00:02:33 (00:57:31 ago)

```

```

    Became HA Active time      : 00:34:41 (00:25:23 ago)
    CPLD version               : 15092360
    Firmware version           : 15.4(3r)S2
Slot: F0,
    Running state              : ok, standby
    Internal state              : online
    Internal operational state  : ok
    Physical insert detect time : 00:24:37 (00:35:28 ago)
    Software declared up time   : 00:31:45 (00:28:20 ago)
    Hardware ready signal time  : 00:31:39 (00:28:25 ago)
    Packet ready signal time    : 00:33:25 (00:26:40 ago)
    CPLD version               : 15092360
    Firmware version           : 15.4(3r)S2
Slot: F1,
    Running state              : ok, active
    Internal state              : online
    Internal operational state  : ok
    Physical insert detect time : 00:02:33 (00:57:31 ago)
    Software declared up time   : 00:03:23 (00:56:42 ago)
    Hardware ready signal time  : 00:03:14 (00:56:51 ago)
    Packet ready signal time    : 00:04:19 (00:55:46 ago)
    Became HA Active time      : 00:33:25 (00:26:40 ago)
    CPLD version               : 15092360
    Firmware version           : 15.4(3r)S2
Slot: P0, Unknown
    State                       : N/A
    Physical insert detect time : 00:00:00 (never ago)
Slot: P1, A900-PWR550-A
    State                       : ok
    Physical insert detect time : 00:03:17 (00:56:48 ago)
Slot: P2, A903-FAN-E
    State                       : ok
    Physical insert detect time : 00:03:21 (00:56:44 ago)

```

Reviewing and Analyzing Alarm Messages

To facilitate the review of alarm messages, you can write scripts to analyze alarm messages sent to the console or syslog. Scripts can provide reports on events such as alarms, security alerts, and interface status.

Syslog messages can also be accessed through Simple Network Management Protocol (SNMP) using the history table defined in the CISCO-SYSLOG-MIB.

Configuring External Alarm Trigger

For Cisco ASR 902 Series Router, the fan tray includes an alarm port that maps to two (0 and 1) dry contact alarm inputs. For Cisco ASR 903 Series Router, the fan tray includes an alarm port that maps to four (0 - 3) dry contact alarm inputs.

The pins on the alarm port are passive signals and can be configured as Open (an alarm generated when current is interrupted) or Closed (an alarm is generated when a circuit is established) alarms. You can configure each alarm input as critical, major, or minor. An alarm triggers alarm LEDs and alarm messages. The relay contacts can be controlled through any appropriate third-party relay controller. The open/close configuration is an option controlled in IOS.

Approaches for Monitoring Hardware Alarms

Onsite Network Administrator Responds to Audible or Visual Alarms

An external element can be connected to a power supply using the DB-25 alarm connector on the power supply. The external element is a DC light bulb for a visual alarm and a bell for an audible alarm.

If an alarm illuminates the CRIT, MIN, or MAJ LED on the Cisco ASR 900 Series Route Processor (RP) faceplate, and a visual or audible alarm is wired, the alarm also activates an alarm relay in the power supply DB-25 connector. The bell rings or the light bulb flashes.

Clearing Audible and Visual Alarms

To clear an audible alarm, do one of the following:

- Press the Audible Cut Off button on the RP faceplate.

To clear a visual alarm, you must resolve the alarm condition. . For example, if a critical alarm LED is illuminated because an active SPA was removed without a graceful deactivation of the SPA, the only way to resolve that alarm is to replace the SPA.



Note The **clear facility-alarm** command is not supported. The **clear facility-alarm** command does not clear an alarm LED on the RP faceplate or turn off the DC lightbulb

How to Configure External Alarms

Procedure

	Command or Action	Purpose
Step 1	enable Example: <pre>Router> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
Step 3	alarm-contact <i>contact-number</i> <i>description string</i> Example: <pre>Router(config)#alarm-contact 2 description door sensor</pre>	(Optional) Configures a description for the alarm contact number. <ul style="list-style-type: none"> • The contact-number can be from 1 to 4. • The description string can be up to 80 alphanumeric characters in length and is included in any generated system messages

Example

	Command or Action	Purpose
Step 4	alarm-contact { <i>contact-number</i> all { severity { critical major minor } trigger { closed open }} Example: <pre>Router(config)#alarm-contact 2 severity major</pre>	Configures the trigger and severity for an alarm contact number or for all contact numbers. <ul style="list-style-type: none"> Enter a contact number (1 to 4) or specify that you are configuring all alarms. For severity, enter critical, major, or minor. If you do not configure a severity, the default is minor. For trigger, enter open or closed. If you do not configure a trigger, the alarm is triggered when the circuit is closed.
Step 5	exit Example: <pre>Router#exit</pre>	Exits the configuration mode.
Step 6	show facility-alarm status Example: <pre>Router#show facility-alarm status</pre>	Displays configured alarms status.

Example

```
Router>enable
Router#configure terminal
Router(config)#alarm-contact 2 description door sensor
Router(config)#alarm-contact 2 severity major
Router(config)#alarm-contact 2 trigger open
Router(config)#end
Router#show facility-alarm status
System Totals  Critical: 15  Major: 0  Minor: 0
```

Source	Time	Severity	Description [Index]
-----	-----	-----	-----
subslot 0/0	Sep 21 2016 15:19:55	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/1	Sep 21 2016 15:19:12	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/2	Sep 21 2016 15:16:59	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/3	Sep 21 2016 15:18:10	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/5	Sep 21 2016 15:16:11	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/6	Sep 21 2016 15:15:45	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/7	Sep 21 2016 15:14:22	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/8	Sep 21 2016 15:10:33	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/9	Sep 21 2016 12:00:43	CRITICAL	Active Card Removed OIR
Alarm [0]			
subslot 0/10	Sep 21 2016 15:11:49	CRITICAL	Active Card Removed OIR

Alarm [0]				
subslot 0/13	Sep 21 2016 14:56:35	CRITICAL	Active Card Removed OIR	
Alarm [0]				
subslot 0/14	Sep 21 2016 14:56:29	CRITICAL	Active Card Removed OIR	
Alarm [0]				
subslot 0/15	Sep 21 2016 14:56:33	CRITICAL	Active Card Removed OIR	
Alarm [0]				
Fan Tray Bay 0	Sep 21 2016 11:50:39	CRITICAL	Fan Tray Module Missing [0]	
Router(config)#				

**Note**

The external alarm trigger and syslog support configuration is supported from Cisco IOS XE Release 3.13.0S.

Alarm Filtering Support

The Alarm Filtering Support in the Cisco Entity Alarm MIB feature implements the alarm filter profile capability defined in CISCO-ENTITY-ALARM-MIB. Also implemented are configuration commands to control the severity of syslog messages and SNMP notifications triggered by the alarms.

Information About Alarm Filtering Support

Overview of Alarm Filtering Support

To configure alarm filtering in the Cisco Entity Alarm MIB, you should understand the following concepts:

CISCO-ENTITY-ALARM-MIB

The CISCO-ENTITY-ALARM-MIB provides a management client with the capability to monitor alarms generated by physical entities in a network that are identified in the entPhysicalTable of the Entity-MIB (RFC 2737). Examples of these physical entities are chassis, fans, modules, ports, slots, and power supplies. The management client interfaces with an SNMP agent to request access to objects defined in the CISCO-ENTITY-ALARM-MIB.

ceAlarmGroup

The ceAlarmGroup is a group in the CISCO-ENTITY-ALARM-MIB that defines objects that provide current statuses of alarms and the capability to instruct an agent to stop (cut off) signaling for any or all external audible alarms.

Following are the objects in ceAlarmGroup:

- ceAlarmCriticalCount
- ceAlarmMajorCount
- ceAlarmMinorCount
- ceAlarmCutoff
- ceAlarmFilterProfile
- ceAlarmSeverity
- ceAlarmList

ceAlarmFilterProfileTable

The ceAlarmFilterProfileTable filters alarms according to configured alarm lists. The filtered alarms are then sent out as SNMP notifications or syslog messages, based on the alarm list enabled for each alarm type. This table is defined in the CISCO-ENTITY-ALARM-MIB and implemented in the group ceAlarmGroup.

ceAlarmFilterProfile

An alarm filter profile controls the alarm types that an agent monitors and signals for a corresponding physical entity. The ceAlarmFilterProfile object holds an integer value that uniquely identifies an alarm filter profile associated with a corresponding physical entity. When the value is zero, the agent monitors and signals all alarms associated with the corresponding physical entity.

ceAlarmHistTable:

This table contains the history of ceAlarmAsserted and ceAlarmCleared traps generated by the agent.

Each entry to the table will have physical index from entPhysicalTable and the severity of the alarm.

The ceAlarmAsserted and ceAlarmCleared trap varbinds are mostly from this table and the description from ceAlarmDescrTable.

ceAlarmDescrTable:

This table contains a description for each alarm type defined by each vendor type employed by the system.

This table has the list of possible severity levels and the description for the physical entity, Object “ceAlarmDescrSeverity” indicates the severity of an alarm (1 to 4 as above).

ceAlarmTable:

This table specifies alarm control and status information related to each physical entity contained by the system, including the alarms currently being asserted by each physical entity capable of generating alarms.

Prerequisites for Alarm Filtering Support

- SNMP is configured on your routing devices.
- Familiarity with the ENTITY-MIB and the CISCO-ENTITY-ALARM-MIB.

Restrictions for Alarm Filtering Support

- The CISCO-ENTITY-ALARM-MIB supports reporting of alarms for physical entities only, including chassis, slots, modules, ports, power supplies, and fans. In order to monitor alarms generated by a physical entity, it must be represented by a row in the entPhysicalTable .

How to Configure Alarm Filtering for Syslog Messages and SNMP Notifications**Configuring Alarm Filtering for Syslog Messages**

This task describes how to configure the alarm severity threshold for generating syslog messages. When you use this command, the alarm severity threshold is included in the running configuration and automatically applied when the configuration is reloaded.

```
enable
configure terminal
```

```
logging alarm 2
show facility-alarm status
```

Configuring Alarm Filtering for SNMP Notifications

This task describes how to configure the alarm severity threshold for generating SNMP notifications. When you use this command, the alarm severity threshold is included in the running configuration and automatically applied when the configuration is reloaded.

```
enable
configure terminal
snmp-server enable traps alarms 2
show facility-alarm status
```

Configuration Examples for Alarm Filtering Support

Configuring Alarm Filtering for Syslog Messages: Example

The following example shows how to configure an alarm filter for syslog messages:

Configuring Alarm Filtering for SNMP Notifications: Example

The following example shows how to configure an alarm filter for SNMP notifications:

```
Router# enable
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# snmp-server enable traps alarms 2
Router(config)#
Router(config)# exit
Router# show facility-alarm status
System Totals  Critical: 2  Major: 1  Minor: 0
Source          Time          Severity      Description [Index]
-----
Power Supply Bay 0 Jun 07 2016 13:36:49 CRITICAL      Power Supply/FAN Module
Missing [0]
Fan Tray/Ext. ALARM: Jun 07 2016 13:36:55 MAJOR         Fan Tray/Fan 8 Failure [15]
xcvr container 0/5/0 Jun 07 2016 13:37:43 CRITICAL      Transceiver Missing - Link
Down [1]
xcvr container 0/5/1 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/2 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/3 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/4 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/5 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/6 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
xcvr container 0/5/7 Jun 07 2016 13:37:43 INFO          Transceiver Missing [0]
```

Facility Protocol Status Support

The routers report the protocol status using Syslog or Trap alarm notifications. Few Syslogs and Traps are not cleared when the router gets disconnected or reloaded. As a result, the alarms are not notified.

To avoid this, a new command, **show facility-protocol status**, is introduced that displays the output of the following routing protocols status at any interval of time:

- ISIS
- OSPF
- BGP
- TE Tunnels
- LDP
- Bundles
- PWs
- EVPN PWs
- CFM
- SYncE
- PTP
- HSRP
- BFD
- SensorThresholdViolations

show facility protocol status

The **show facility-protocol status** command helps to backup the protocols syslog information by capturing the current status of the protocols on the system.

Also, when you add a new device, the command can be used to generate a list of the outstanding protocol alarms from the device.

Restrictions

Only 14 routing protocols outputs can be displayed.

Routing Protocols Outputs

The following are the outputs of different routing protocols:

OSPF Output

#show facility-protocol status

Protocols	Pid	Ver	Interface	IP-address	Status	Adj-ID
Router-ID						
OSPF	22	V2	TenGigabitEthernet0/3/4	10.0.1.2	FULL	21.22.23.25
	15.88.15.89					
OSPF	100	V2	FortyGigabitEthernet0/8/1	192.168.1.1	DOWN	N/A
	100.100.100.100					

MPLS Output

#show facility-protocol status

Protocols	Name	Interface	Src-IP	LDP_Neigh_IP	Status
MPLS-LDP	LDP	TenGigabitEthernet0/3/4	10.0.1.2	N/A	DOWN
MPLS-LDP	LDP	FortyGigabitEthernet0/8/1	192.168.1.1	N/A	DOWN
MPLS-LDP	LDP	GigabitEthernet0/2/0	22.1.4.1	7.7.7.7:0	UP
MPLS-LDP	LDP	GigabitEthernet0/2/4	22.0.1.1	6.6.6.6:0	UP
MPLS-LDP	LDP	Tunnel2001	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2002	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2003	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2004	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2005	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2006	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2007	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2008	5.5.5.5	2.2.2.2:0	DOWN
MPLS-LDP	LDP	Tunnel2009	5.5.5.5	2.2.2.2:0	DOWN

ISIS Output

#show facility-protocol status

Protocols	Interface	ISIS-Type	Neigh-IP	Net-ID	Status
Sys-ID	Hold-Time				
ISIS	HundredGigE0/7/0	Level-1	NA	NA	DOWN
	NA	NA			
ISIS	HundredGigE0/7/0	Level-2	NA	NA	DOWN
	NA	NA			
ISIS	GigabitEthernet0/3/4	Level-2	10.147.158.2	0000.0000.0158	UP
	NCS4206-158	26			
ISIS	BDI72	Level-2	10.10.72.2	0000.0000.0162	UP
	NCS4K-101-162	29			
ISIS	BDI27	Level-2	10.10.27.2	0000.0000.0162	UP
	NCS4K-101-162	23			
ISIS	GigabitEthernet0/0/7	Level-2	NA	NA	UP
	0000.0000.0152	250			
ISIS	TenGigabitEthernet0/3/0	Level-2	38.206.1.3	0000.0000.0023	UP
	C101_A	28			
ISIS	GigabitEthernet0/2/3	Level-2	38.76.1.3	0000.0000.0007	UP
	ASR9K_CORE	23			
ISIS	Tunnel1315	Level-2	7.7.15.2	0000.0000.0007	UP
	ASR9K_CORE	28			

BGP Output

#show facility-protocol status

Protocols	LocalAS	RemoteAS	NeighborIP	Status	Up/Down Time
Remote-RID	VRF-Inst-Name				

```

BGP          123          123          21.22.23.25          DOWN          never
0.0.0.0      NA
BGP          123          123          66.66.66.23          DOWN          never
0.0.0.0      CustomerA
BGP          500          500          1.1.1.158           DOWN          never
0.0.0.0      NA
BGP          500          100          10.147.158.2         DOWN          1
0.0.0.0      SENTHIL
BGP          500                                DOWN          1
0.0.0.0

```

Pseudowire Output

```
#show facility-protocol status
```

```

=====
Protocols      Peer-IP              VC-ID      VC-Status      VC-Error
=====
PWs            1.1.1.146           2          ADMIN DOWN     NA
PWs            1.1.1.146           9          ADMIN DOWN     NA
PWs            1.1.1.146           10         ADMIN DOWN     NA
PWs            1.1.1.146           54         DOWN           NA
PWs            1.1.1.146           87         DOWN           NA
PWs            1.1.1.146           98         DOWN           NA

```

SYncE Output

```
#show facility-protocol status
```

```

=====
Protocols      Interface              Mode/QL     QL-IN      QL-Rx-Config  QL-Rx-Overridden
=====
SyncE          GigabitEthernet0/1/7   Sync/En    QL-DNU     -              QL-DNU
SyncE                               Sync/En    QL-DNU     -              QL-DNU
SyncE                               Sync/En    QL-DNU     -              QL-DNU
SyncE                               Sync/En    QL-DNU     -              QL-DNU

```

Bundles Output

```
#show facility-protocol status
```

```

=====
Protocols      Port-Channel          Bundle-Status  Bundled-Ports  Min-Bundle
=====
BUNDLES        Po48                  DOWN           0               2

```

PTP Output

```
#show facility-protocol status
```

```

=====
Protocols      Event                Interface      Role      Clock-port-Name  State
Master-IP
=====
PTP CLK_MASTER_PORT_SELECTED  NA              slave       tomaster         NA
UNKNOWN
PTP CLK_STATUS_UPDATE         Loopback1588    slave       NA               FREERUN
NA
PTP CLK_MASTER_PORT_SELECTED  NA              slave       slave            NA
21.21.21.21
PTP CLK_STATUS_UPDATE         Loopback0       slave       NA               ACQUIRING
NA

```

HSRP Output

#show facility-protocol status

Protocols	Interface	Group	State
HSRP	HundredGigE0/7/0	1	Init

TE Tunnels Output

#show facility-protocol status

Protocols	Tunnel-Interface	Status
MPLS-TE	Tunnel0	DOWN
MPLS-TE	Tunnel1	DOWN

BFD Output

#show facility-protocol status

Protocols	Interface Interface_index	Status	Neigh-Addr	Local-Discriminator
BFD	FortyGigabitEthernet0/8/1 22	DOWN	NA	NA
BFD	TenGigabitEthernet0/3/0 9	DOWN	NA	NA
BFD	GigabitEthernet0/5/4 15	DOWN	NA	NA
BFD	Tunnel1309 1601	DOWN	NA	NA

CFM Output

#show facility-protocol status

Protocols	Event Defect-Condition	Interface	L-mpid	Level	Dir	BD/VLAN/XCON	ID
CFM	ENTER_AIS_INT	GigabitEthernet0/0/4	NA	NA	Up	NA	NA AIS
CFM	ENTER_AIS	GigabitEthernet0/0/4	2	4	Up	XCON	NA AIS
CFM	ENTER_AIS_INT	GigabitEthernet0/3/6	NA	NA	Up	NA	NA AIS
CFM	ENTER_AIS	GigabitEthernet0/3/6	2	4	Up	XCON	NA AIS

Protocols	Event	R-mpid	Level	EVC-NAME	MA-NAME	Domain	MAC	Status	Event-Code
CFM	REMOTE_MEP_DOWN	1	NA	SEN_CFM	SEN_CFM	EVC	NA	UP	NA
CFM	REMOTE_MEP_UP	1	NA	SEN_CFM	SEN_CFM	EVC	NA	UP	NA
CFM	CROSSCHECK_MEP_UNKNOWN	1	NA	NA	SEN_CFM	EVC	0022.bdde.05be	NA	NA
CFM	CROSS_CONN_SERVICE	1	4	NA	SEN_CFM	EVC	0022.bdde.05be	NA	NA
CFM	CONFIG_ERROR	1	NA	NA	SEN_CFM	EVC	0022.bdde.05be	NA	NA

EVPN PWs Output

#show facility-protocol status

Protocols	EVPN-ID	Source	Target	Status
-----------	---------	--------	--------	--------

show facility-protocol status command

```
EVPN-PWs          100          41          30          DOWN
```

Sensory Threshold Violations

```
#show facility-protocol status
```

```
=====
Protocols PhyIndex SenValue SenType SenScale SenPrecision ThresIndex SenThrValue PhyEntryName
=====
SENSOR_THRESH 1211 -103 14 9 1 1 -120 subslot 0/2 transceiver 0 Rx Power Sensor
SENSOR_THRESH 1211 -103 14 9 1 2 -140 subslot 0/2 transceiver 0 Rx Power Sensor
SENSOR_THRESH 1253 -400 14 9 1 3 -310 subslot 0/2 transceiver 3 Rx Power Sensor
SENSOR_THRESH 1253 -400 14 9 1 4 -330 subslot 0/2 transceiver 3 Rx Power Sensor
SENSOR_THRESH 1267 -370 14 9 1 3 -296 subslot 0/2 transceiver 4 Rx Power Sensor
SENSOR_THRESH 1267 -370 14 9 1 4 -310 subslot 0/2 transceiver 4 Rx Power Sensor
SENSOR_THRESH 2001 73 6 9 0 1 0 subslot 0/4 power Sensor 0
```

show facility-protocol status command

To backup the protocols syslog information by capturing the current status of the protocols on the system, use the **show facility-protocol status** command.

Syntax Description **Syntax Description:**

There are no keywords.

Command Default **Command Default:**

There is no default.

Command Modes **Command Modes:**

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.1.x	Support for this command was introduced on ASR 900, ASR 920, and NCS 4200 Series.

Examples

```
Router# show facility-protocol status
```

```
=====
Protocols      Peer-IP          VC-ID      VC-Status      VC-Error
=====
PWS            1.1.1.146       2          ADMIN DOWN     NA
PWS            1.1.1.146       9          ADMIN DOWN     NA
PWS            1.1.1.146       10         ADMIN DOWN     NA
PWS            1.1.1.146       54         DOWN           NA
PWS            1.1.1.146       87         DOWN           NA
PWS            1.1.1.146       98         DOWN           NA
```