Cisco Remote PHY Fault Management

This document describes how to configure the events for fault management on the Cisco cBR Series Converged Broadband Router.

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Information About Fault Management

Fault management on RPD is required for remote monitoring, detection, diagnosis, reporting, and correcting the issues.

The Fault management module provides the following support:

- RPD can send events to the CCAP core
- CCAP core can get events from RPD
- Send RPD events using SNMP traps
- On the CCAP core, view log in to the CLI
- SNMP poll events are supported

RPD Event Reporting

An RPD logs events, generates asynchronous notifications that indicate malfunction situations, and notifies the operator about important events. The RPD event reporting includes two methods of reporting.

- During the initialization of RPD, CCAP core synchronizes events from the RPD.
- During run-time operations, RPD notifies the CCAP Core of the events

Restrictions for Configuring RPD Events

Following restrictions are applicable:

A maximum of 1000 events are retained on Cisco cBR. The RPD retains 1000 events locally and 1000 events in pending state.

How to Configure RPD Events

Note To know more about the commands referenced in this module, see the Cisco IOS Master Command List.

Configuring RPD Events

You can configure an event profile and apply it to RPD. Use the following commands to configure RPD events:

```
enable
configure terminal
cable profile rpd-event profile_id
priority {emergency|alert|critical|error|warning|notice|informational|debug}
{0x0|0x1|0x2|0x3}
enable-notify
```

- 0x0 - No log
- 0x1 - Save log in RPD local storage
- 0x2 - Report to Cisco cBR
- 0x3 - Save log in RPD local storage and report to Cisco cBR

You must enable-notifications for the RPD to report any event to the core.

Configuring 55-1 Upstream RPD Events

You can configure an event profile and apply it to RPD. The 55-1 US events can be viewed only using log. For more information, go through Viewing RPD Events Using Log, on page 5.

SUMMARY STEPS

1. Use the following commands to configure RPD 55-1 US events:

DETAILED STEPS

	Command or Action	Purpose

Step 1	Use the following commands to configure RPD 55-1 US events:	`configure terminal`
		`cable profile rpd-55d1-us-event <profile_id>`
		`corrected-cells-threshold <threshold value>`
		`high-power-threshold <threshold value>`
		`low-power-threshold <threshold value>`
		`total-cells-threshold <threshold value>`
		`uncorrectable-cells-threshold <threshold value>`

	Command or Action	Purpose
		• corrected-cells-threshold - <1-65535> US Excessive Corrected Cells Threshold. • high-power-threshold - <-16 - 16> High power threshold in dBmV. • low-power-threshold - <-16 - 16> Low power threshold in dBmV. • total-cells-threshold - <1-65535> US Excessive Total Cells Threshold. • uncorrectable-cells-threshold - <1-65535> US Excessive Uncorrectable Cells Threshold. Ensure that you have enabled notifications for the RPD to report any event to the core.

Applying the Event Profile to RPD

Use the following commands to apply the Event Profile to an RPD:

```
enable
configure terminal
cable rpd rpd_name
rpd-event profile profile_id
rpd-55d1-us-event profile profile_id
```

Note If RPD is online when changing the profile, ensure that you have reset the RPD after you change the profile.

Enable RPD Event Trap

You can enable RPD event traps to send RPD events using SNMP traps. Use the following commands to configure RPD event traps:

```
enable
configure terminal
snmp-server enable traps rpd-event priority
```

Priority can be 1-8, where:

- 1—Enable RPD event trap for emergency priority
- 2— Enable RPD event trap for alert priority
- 3—Enable RPD event trap for critical priority
- 4— Enable RPD event trap for error priority
- 5— Enable RPD event trap for warning priority
- 6— Enable RPD event trap for notice priority

- 7— Enable RPD event trap for informational priority
- 8— Enable RPD event trap for debug priority

The priority higher than the selected priority is also displayed.

Configure SNMP Trap Server

You can configure SNMP trap server on the cable modem using the following commands:

```
enable
cnfigure terminal
Router# snmp-server host ip_address traps version 2c public udp-port port_number
```

where,

- *ip_address*—IP address of the server
- *port_number*—UDP port number assigned to receive the SNMP traps. The same port number must also be configured on the SNMP server.

Getting RPD Events

To retrieve events from RPD, use the **cable rpd [RPD IP|RPD MAC|all] event {locallog|pending}** command, as given in the following example:

```
Router#cable rpd 30.84.2.111 event pending
```

Clearing All Events on Cisco cBR Database

To remove all Events on Cisco cBR, use the clear cable rpd all event command, as given in the following example:

```
Router#clear cable rpd all event
```

Viewing the RPD Events

To view all RPD Events, use the **show cable rpd [RPD IP|RPD MAC] event** command as given in the following example.

```
Router# show cable rpd 93.3.50.7 event
RPD            EventId    Level Count  LastTime       Message
0004.9f00.0861 66070204   Error  1     Feb21 12:11:06 GCP Connection Failure
CCAP-IP=30.85.33.2;RPD-ID=0004.9f00.0861;
0004.9f00.0861 2148074241 Error  1     Feb21 12:11:25 Session failed:connecting timeout,
@SLAVE: 93.3.50.7:None --> 30.85.33.2:8190;RPD-ID=0004.9f00.0861;
```

To view specific RPD event groups, use the **show cable rpd event group [RPD IP|RPD MAC] [fcc|slot]** command as shown in this example.

```
Router# show cab rpd event group 7abd.44a1.0000 fcc
RPD            EventId         Level Count  LastTime       Message
7abd.44a1.0040 66070303 Criti  2            Oct16 20:50:35 FCC event
example;GROUP-ID=7abd.44a1.0000;
```

```
                                                                SLOT-ID=FCC;RPD-ID=7abd.44a1.0040;


Router# show cab rpd event group 7abd.44a1.0000 slot 9
RPD            EventId         Level Count  LastTime         Message
7abd.44a1.0140 66070700 Notic  1           Oct16 17:20:34   RPD=7a:bd:44:a1:01:40 PTP clock
 synchronized to Master=10.90.3.93;GROUP-ID=7abd.44a1.0000;

SLOT-ID=LC9;RPD-ID=7abd.44a1.0140;
```

Viewing RPD Events Using Log

To view all RPD Events, use the show logging command, as given in the following example.

```
Router# show logging | include RPD-ID=0004.9f00.0861
004181: Feb 21 12:18:59.649 CST: %RPHYMAN-3-RPD_EVENT_ERROR:  CLC5: rphyman:
GCP Connection Failure CCAP-IP=30.85.33.2;RPD-ID=0004.9f00.0861;EVENT-ID=66070204;
FirstTime=2017-2-21,12:11:6.0;
LastTime=2017-2-21,12:11:6.0;
Count=1;PendingQueue;
004185: Feb 21 12:19:18.875 CST: %RPHYMAN-3-RPD_EVENT_ERROR:  CLC5: rphyman:
Session failed:connecting timeout, @SLAVE: 93.3.50.7:None --> 10.10.10.12:1190;
RPD-ID=0004.9f00.0861;
EVENT-ID=2148074241;
FirstTime=2017-2-21,12:11:25.0;
LastTime=2017-2-21,12:11:25.0;
Count=1;PendingQueue;
```

Configuration Examples

This section provides example for the fault management configuration on Cisco cBR-8.

Example: RPD Event Configuration

```
enable
configure terminal
cable profile rpd-event 6
    priority warning 0x3
    enable-notify
cable rpd node6
    identifier badb.ad13.5e08
    core-interface Te3/1/5
        principal
        rpd-ds 0 downstream-cable 3/0/17 profile 10
        rpd-us 0 upstream-cable 3/0/34 profile 13
    r-dti 16
    rpd-event profile 6
```

The following event reportings are supported:

- **alert**: Event reporting for alert priority.
- **critical**: Event reporting for critical priority.
- **debug**: Event reporting for debug priority.

- **emergency**: Event reporting for emergency priority.
- **error**: Event reporting for error priority.
- **informational**: Event reporting for informational priority.
- **notice**: Event reporting for notice priority.
- **warning**: Event reporting for warning priority.

Example: RPD 55-1 Upstream Event Configuration

```
cable profile rpd-event 6
  priority warning 0x3
  enable-notify

cable profile rpd-55d1-us-event 10
  corrected-cells-threshold 11
  high-power-threshold 7
  low-power-threshold 2
  total-cells-threshold 20
  uncorrectable-cells-threshold 8

  cable rpd node 6
    identifier badb.ad13.5e08
    core-interface Te3/1/5
      principal
      rpd-ds 0 downstream-cable 3/0/17 profile 10
      rpd-us 0 upstream-cable 3/0/34 profile 13
    r-dti 16
    rpd-event profile 6
    rpd-55d1-us-event profile 10
```

Feature Information for R-PHY Fault Management

Use Cisco Feature Navigator to find information about the platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to the www.cisco.com/go/cfn link. An account on the Cisco.com page is not required.

Note The following table lists the software release in which a given feature is introduced. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Table 1: Feature Information for R-PHY Fault Management

Feature Name	Releases	Feature Information
R-PHY Fault Management	Cisco 1x2 / Compact Shelf RPD Software 3.1	This feature was integated into the Cisco Remote PHY Device.