



## DOCSIS3.1 Downstream Resiliency for RPHY

This document describes how to configure the DOCSIS3.1 Downstream Resiliency on the Cisco Remote PHY Device.

### Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://tools.cisco.com/ITDIT/CFN/>. An account on <http://www.cisco.com/> is not required.

- [Hardware Compatibility Matrix for Cisco Remote PHY Device](#), on page 1
- [Information about DOCSIS3.1 Downstream Resiliency for RPHY](#), on page 2
- [Configure DOCSIS3.1 Downstream Resiliency for RPHY](#), on page 3
- [Feature Information for DOCSIS3.1 Downstream Resiliency for RPHY](#), on page 4

## Hardware Compatibility Matrix for Cisco Remote PHY Device



**Note** Unless otherwise specified, the hardware components introduced in a given Cisco Remote PHY Device Software Release are supported in all subsequent releases.

*Table 1: Hardware Compatibility Matrix for the Cisco Remote PHY Device*

Cisco HFC Platform	Remote PHY Device
Cisco GS7000 Super High Output Node	Cisco 1x2 / Compact Shelf RPD Software 2.1 and Later Releases

Cisco HFC Platform	Remote PHY Device
Cisco GS7000 Super High Output Intelligent Node (iNode)	Cisco 1x2 / Compact Shelf RPD Software 4.1 and Later Releases  Cisco Intelligent Remote PHY Device 1x2 <ul style="list-style-type: none"> <li>• PID—iRPD-1X2=</li> <li>• PID—iRPD-1X2-PKEY=</li> </ul>



**Note** The -PKEY suffix in the PID indicates units that enable the SCTE-55-2 Out-of-Band protocol support.

## Information about DOCSIS3.1 Downstream Resiliency for RPHY

When DOCSIS3.1 cable modem reports non-primary RF channel failure for SCQAM or OFDM channel, actions performed by downstream resiliency is the same as DOCSIS3.0 cable modem. In other words, if RF channel impairment is below the resiliency threshold, CM's service flows are moved to Resiliency Bonding Group (RBG) or Narrow Band (NB) interface. If RF channel impairment is above the resiliency threshold, the impaired RF channel is temporarily removed from the bonding group.

The following table summarizes the CM-STATUS events for OFDM channel, and the action taken by the downstream resiliency module:

**Table 2: CM-STATUS events for OFDM channel**

Event Type Code	Event Description	DS Resiliency Action
1	MDD timeout	Move CM's service flows to RBG/NB or suspend RF from BG.
2	FEC lock failure	Move CM's service flows to RBG/NB or suspend RF from BG.
4	MDD recovery	Move CM's service flows back to original BG.
5	FEC lock recovery	Move CM's service flows back to original BG.
16	DS OFDM profile failure. A loss of FEC lock on one of the assigned downstream OFDM profiles of a channel.	DS OFDM Profile Manager will handle this event and take action.
20	NCP profile failure. Loss of FEC lock on NCP.	Move CM's service flows to RBG/NB or suspend RF from BG.
21	Loss of FEC lock on the PLC.	Move CM's service flows to RBG/NB or suspend RF from BG.

Event Type Code	Event Description	DS Resiliency Action
22	NCP profile recovery.	Move CM's service flows back to original BG.
23	FEC recovery on PLC channel.	Move CM's service flows back to original BG.
24	FEC recovery on OFDM profile.	Recovery of impairment reported by event 16. DS OFDM Profile Manager will handle this event and take action.

## Configure DOCSIS3.1 Downstream Resiliency for RPHY

### Configuring DOCSIS3.1 Downstream Resiliency for RPHY

User must configure the command **cable rf-change-trigger percent value count number** to enable the downstream resiliency functionality.

To configure the trigger thresholds specific to OFDM RF impairment, follow the steps below:

**enable**

**configure terminal**

**cable ofdm-rf-change-trigger percent value counter number [no-ncp-plc]**

Trigger thresholds *value* and *number* apply globally to the non-primary OFDM RF channels. If this command is not configured, the trigger thresholds configured by the command **cable rf-change-trigger percent value count number** will be used for the non-primary OFDM channels.

With **no-ncp-plc** configured in the command, this feature will not take any action when CM reports CM-STATUS-EVENT 20 or 21.



**Note** The **cable rf-change-trigger percent value count number** command is optional and the configured trigger thresholds apply to non-primary OFDM channels only.

### Displaying OFDM Specific CM-STATUS Events

To display the statistics of the OFDM specific CM-STATUS events, use the **show cable modem wideband rcs-status** command as shown in the example below:

```
router#show cable modem 4800.33ea.7072 wideband rcs-status verbose
CM : 4800.33ea.7072
RF : 3/0/0 0
  Status                : UP
  FEC/QAM Failure       : 0
  Dup FEC/QAM Failure   : 0
  FEC/QAM Recovery      : 0
  Dup FEC/QAM Recovery  : 0
  MDD Failure           : 0
```

```

Dup MDD Failure           : 0
MDD Recovery             : 0
Dup MDD Recovery         : 0
Flaps                    : 0
Flap Duration            : 00:00
RF : 3/0/0 159
Status                   : UP
FEC/QAM Failure          : 0
Dup FEC/QAM Failure      : 0
FEC/QAM Recovery        : 0
Dup FEC/QAM Recovery     : 0
MDD Failure              : 0
Dup MDD Failure          : 0
MDD Recovery             : 0
Dup MDD Recovery         : 0
NCP PROF Failure        : 2           May 8 15:14:24
Dup NCP PROF Failure     : 0
NCP PROF Recovery       : 1           May 8 15:15:18
Dup NCP PROF Recovery    : 0
PLC Lock Recovery       : 1           May 8 15:15:46
Dup PLC Lock Recovery    : 0
Flaps                    : 0
Flap Duration            : 00:00
OFDM Profile Id : 2
Status                   : UP
Profile Failure          : 1           May 8 15:16:18
DUP Profile Failure      : 0
Profile Recovery         : 1           May 8 15:16:44
DUP Profile Recovery     : 0

```

## Feature Information for DOCSIS3.1 Downstream Resiliency for RPHY

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**Note** The below table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

**Table 3: Feature Information for DOCSIS3.1 Downstream Resiliency for RPHY**

Feature Name	Releases	Feature Information
DOCSIS3.1 Downstream Resiliency for RPHY	Cisco 1x2 / Compact Shelf RPD Software 4.1	This feature was introduced on the Cisco Remote PHY Device.