Cisco Remote PHY Video Configuration

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

Note The hardware components introduced in a given Cisco Remote PHY Device Software Release are supported in all subsequent releases unless otherwise specified.

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

Cisco HFC Plaform	Remote PHY Device
Cisco GS7000 Node	**Cisco 1x2 RPD Software 1.1 and Later Releases** Cisco Remote PHY Device 1x2 • PID—RPD-1X2= • RPD-1X2-PKEY=
Intelligent NODE (iNODE)	**Cisco 1x2 RPD Software 3.1 and Later Releases** Cisco Remote PHY Device 1x2 • IRPD-1X2= • IRPD-1X2-PKEY=

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

Hardware Compatibility Matrix for Cisco Remote PHY Device

Note The hardware components introduced in a given Cisco Remote PHY Device Software Release are supported in all subsequent releases unless otherwise specified.

Table 2: Hardware Compatibility Matrix for the Cisco Remote PHY Device

Cisco HFC Plaform	Remote PHY Device
Cisco GS7000 Node	**Cisco 1x2 RPD Software 1.1 and Later Releases** Cisco Remote PHY Device 1x2 • PID—RPD-1X2= • RPD-1X2-PKEY=
Intelligent NODE (iNODE)	**Cisco 1x2 RPD Software 3.1 and Later Releases** Cisco Remote PHY Device 1x2 • IRPD-1X2= • IRPD-1X2-PKEY=

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

Information About R-PHY Video Configuration

The controller profile specifies the RF channels that belong to this profile and their RF parameters. Profile can either be unicast or multicast.

Multicast profile is used for downstream sharing. Multiple Remote PHY Devices (RPDs) can be configured to receive the same downstream controller. The traffic is multicast to all RPDs configured to receive the downstream controller. Applications include Video on Demand (VOD), Switched Digital Video (SDV) and Broadcast Video.

There is one principal core interface, and up to four auxiliary core interfaces in the RPD configuration. Principal core specifies the DPIC interface with which RPD connects. Auxiliary cores specify external DPIC interfaces that can be used for downstream sharing. Auxiliary core is currently used for narrowcast video, broadcast video and out-of-band data signaling path (OOB) only.

How to Configure R-PHY Video

This section describes how to configure R-PHY video on Cisco cBR-8.

Configuring Downstream Controller Profile

To configure the donwstream controller profile, use the example below:

```
Router# configure terminal
Router(config)# cable depi multicast pool 20
Router(config-multicast-pool)# ip address 225.28.0.0  255.255.0.0
Router(config-multicast-pool)# exit
Router(config)# cable downstream controller-profile 1
Router(config-controller-profile)# multicast-pool 20
Router(config-controller-profile)# rf-chan 0 15
Router(config-prof-rf-chan)# type docsis
Router(config-prof-rf-chan)# frequency 111000000
Router(config-prof-rf-chan)# rf-output normal
Router(config-prof-rf-chan)# qam-profile 1
Router(config-prof-rf-chan)# docsis-channel-id 1
Router(config-prof-rf-chan)# exit
Router(config-controller-profile)# rf-chan 16 19
Router(config-prof-rf-chan)# type video sync
Router(config-prof-rf-chan)# frequency 699000000
Router(config-prof-rf-chan)# rf-output normal
Router(config-prof-rf-chan)# qam-profile 1
Router(config-prof-rf-chan)# exit
Router(config-controller-profile)# exit
Router(config)# cable downstream controller-profile 2
Router(config-controller-profile)# multicast-pool 1
Router(config-controller-profile)# rf-chan 20 47
Router(config-prof-rf-chan)# type video sync
Router(config-prof-rf-chan)# frequency 231000000
Router(config-prof-rf-chan)# rf-output normal
Router(config-prof-rf-chan)# qam-profile 4
```

In the above example,two profiles are configured, profile 1 is a mixed profile, profile 2 is a video only profile.

Configuring RPD

To configure the RPD to include the controller profile, follow the example below:

```
Router# configure terminal
Router(config)# cable rpd RPD01
Router(config-rpd)# identifier 0004.9f31.0455
Router(config-rpd)# core-interface Te3/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/0 profile 1
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/1 profile 2
Router(config-rpd-core)# rpd-us 0 upstream-cable 3/0/0 profile 1
Router(config-rpd-core)# exit
Router(config-rpd)# core-interface te6/1/0
Router(config-rpd-core)# rpd-ds 0 downstream-cable 6/0/0 profile 2
Router(config-rpd-core)# exit
Router(config-rpd)# r-dti 1
Router(config-rpd)# rpd-event profile 0
```

Note

- All channels within the profiles of a RPD must be unique, frequencies must not overlap each other.
- There must be at least one DOCSIS downstream profile in the principal core.
- Auxiliary core must only contain video and out-of-band profiles.
- A downstream controller can only be associated to one profile.

Configuring Downstream Sharing

Downstream sharing is used for multicast (MC) traffic. To configure downstream sharing, follow the example below:

```
Router# configure terminal
Router(config)# cable rpd RPD01
Router(config-rpd)# core-interface Te3/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/1 profile 2
Router(config-rpd-core)# exit
Router(config-rpd)# exit
Router(config)# cable rpd RPD02
Router(config-rpd)# core-interface te3/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/1 profile 2
Router(config-rpd-core)# exit
Router(config-rpd)# exit
Router(config)# cable rpd RPD03
Router(config-rpd)# core-interface te6/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 6/0/1 profile 3
Router(config-rpd-core)# exit
Router(config-rpd)# core-interface te3/1/0
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/1 profile 2
```

Note All RPDs in the same multicast group have the same controller and profile association.

Configuring Video

To configure Video, see Cisco Converged Broadband Routers Video Configuration Guide for Cisco IOS XE Everest 16.5.1.

Example: R-PHY Video Configuration

The following example shows how to configure Remote-PHY video:

```
Router# configure terminal
Router(config)# cable downstream qam-profile 7
Router(config-qam-prof)# annex B modulation 256
Router(config-qam-prof)# interleaver-depth I32-J4
Router(config-qam-prof)# symbol-rate 5361
Router(config-qam-prof)# spectrum-inversion off
Router(config-qam-prof)# description default-annex-b-256-qam
Router(config-qam-prof)# exit
Router(config)# cable depi multicast pool 20
Router(config-multicast-pool)# ip address 225.28.0.0 255.255.0.0
Router(config-multicast-pool)# exit
Router(config)# cable downstream controller-profile 1
Router(config-controller-profile)# multicast-pool 20
Router(config-controller-profile)# rf-channel 0 15
Router(config-prof-rf-chan)# type docsis
Router(config-prof-rf-chan)# frequency 111000000
Router(config-prof-rf-chan)# rf-output NORMAL
Router(config-prof-rf-chan)# qam-profile 7
Router(config-prof-rf-chan)# docsis-channel-id 1
Router(config-prof-rf-chan)# exit
Router(config-controller-profile)# exit
Router(config)# cable downstream controller-profile 2
Router(config-controller-profile)# multicast-pool 20
Router(config-controller-profile)# rf-channel 20 47
Router(config-prof-rf-chan)# type video sync
Router(config-prof-rf-chan)# frequency 231000000
Router(config-prof-rf-chan)# rf-output NORMAL
Router(config-prof-rf-chan)# qam-profile 7
Router(config-prof-rf-chan)# exit
Router(config-controller-profile)# exit
Router(config)# cable rpd RPD01
Router(config-rpd)# identifier 0004.9f31.0979
Router(config-rpd)# core-interface te6/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 6/0/0 profile 1
Router(config-rpd-core)# rpd-ds 0 downstream-cable 6/0/1 profile 2
Router(config-rpd-core)# rpd-us 0 upstream-cable 6/0/0 profile 1
Router(config-rpd-core)# exit
Router(config-rpd)# r-dti 6
Router(config-rpd)# rpd-event profile 0
Router(config-rpd)# exit
Router(config)# cable rpd RPD2
Router(config-rpd)# identifier 0004.9f31.1437
Router(config-rpd)# core-interface Te3/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 3/0/0 profile 1
Router(config-rpd-core)# rpd-us 0 upstream-cable 3/0/0 profile 1
Router(config-rpd-core)# exit
Router(config-rpd)# core-interface Te6/1/0
Router(config-rpd-core)# rpd-ds 0 downstream-cable 6/0/1 profile 2
```

```
Router(config-rpd-core)# exit
Router(config-rpd)# r-dti 3
Router(config-rpd)# rpd-event profile 0
Router(config-rpd)# exit
Router(config)# cable video
Router(config-video)# service-distribution-group RPD_SDG
Router(config-video-sdg)# rpd downstream-cable 6/0/1
Router(config-video-sdg)# exit
Router(config-video)# virtual-carrier-group RPC_VCG
Router(config-video-vcg)# rf-channel 20-47 tsid 20-47 output-port-number 20-47
Router(config-video-vcg)# exit
Router(config-video)# bind-vcg
Router(config-video-bd)# vcg RPC_VCG sdg RPD_SDG
Router(config-video-bd)# exit
Router(config-video)# logical-edge-device RPD_LED
Router(config-video-led)# protocol table-based
Router(config-video-led-protocol)# virtual-edge-input-ip 174.102.1.1 input-port-number 1
Router(config-video-led-protocol)# vcg RPD_VCG
Router(config-video-led-protocol)# active
Router(config-video-led-protocol)# table-based
Router(config-video-tb)# vcg RPD_VCG
Router(config-video-tb-vcg)# rf-channel 20-47
Router(config-video-tb-vcg-sess)# session tbsession-1 input-port 1 start-udp-port 49152
num-sessions-per-qam 20 processing-type remap start-program 1 bit-rate 1800000
```

Feature Information for Remote PHY Video

The following table provides release information about the feature or features described in this module. This 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.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 3: Feature Information for Remote PHY Video

Feature Name	Releases	Feature Information
RPHY Video PME VOD	Cisco 1x2 RPD Software 1.1	This feature was introduced on the Cisco Remote PHY Device.
RPHY Video Pre-Encrypted MPTS Pass-Thru Support	Cisco 1x2 RPD Software 1.1	This feature was introduced on the Cisco Remote PHY Device.
RPHY Pre-encrypted Broadcast Video Support	Cisco 1x2 / Compact Shelf RPD Software 2.1	This support was introduced on the Cisco Remote PHY Device 1x2.