



# DEPI/UEPI/L2TP integration with Cisco Remote PHY Device

This document describes how to configure the DEPI/UEPI/L2TP integration with RPD on the Cisco cBR Series Converged Broadband Router.

## Finding Feature Information

Your software release may not support all the features that are documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. The Feature Information Table at the end of this document provides information about the documented features and lists the releases in which each feature is supported.

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

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## 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 DEPI/UEPI/L2TP integration with RPD

### DEPI

Downstream External PHY Interface (DEPI) is the downstream interface between the CCAP Core and the RPD. R-DEPI is based on DEPI. More specifically, it is an IP pseudowire between the MAC and PHY in an MHA v2 system that contains both a data path for DOCSIS frames, video packets, and OOB packets, as well as a control path for setting up, maintaining, and tearing down sessions.

### UEPI

Upstream External PHY Interface (UEPI) is the upstream interface between the RPD and the CCAP Core. Like DEPI, it is an IP pseudowire between the PHY and MAC in an MHA v2 system that contains both a data path for DOCSIS frames, and a control path for setting up, maintaining, and tearing down sessions.

## How to Configure DEPI/UEPI/L2TP integration with RPD

This section describes how to configure DEPI/UEPI/L2TP integration with RPD.

### Configuring depi-class/l2tp-class Pair

It's not permitted to change the default l2tp-class configuration (rphy-l2tp-global-class) for R-DEPI by user, because the parameter values are fine tuned to accommodate most common cases.

If user wants to use parameter values other than the default ones, they can use manually defined depi-class/l2tp-class pair. To do so, follow the example below:

```
Router# configure terminal
Router(config)# l2tp-class l2tp_demo
Router(config-l2tp-class)#exit
Router(config)# depi-class depi_demo
Router(config-depi-class)#l2tp-class l2tp_demo
Router(config-depi-class)#exit
```

```
Router(config)#cable rpd node
Router(config-rpd)#core-interface Tel/1/7
Router(config-rpd-core)#depi depi_demo /* Be sure to configure when the RPD core is offline*/
Router(config-rpd-core)#end
```

## Verifying depi-class/l2tp-class Pair Configuration

To verifying depi-class/l2tp-class pair configuration, use the **show running-config** command as shown in the example below:

```
Router# show running-config | section rpd
alias exec scr show cable rpd
cable rpd node
identifier 0004.9f00.0901
core-interface Tel/1/7
  principal
  rpd-ds 0 downstream-cable 1/0/31 profile 155
  rpd-us 0 upstream-cable 1/0/63 profile 100
  depi depi_demo
r-dti 1
rpd-event profile 0
rpd-55dl-us-event profile 0
```

When the RPD core is online, use the **show l2tp tunnel** command as shown in the example below:

```
Router# show l2tp tunnel
LocTunID  RemTunID  Remote Name  State  Remote Address  Sessn L2TP Class/
Count  VPDN Group
2375973187 4191827509 OpenRPD      est    120.100.1.20   86    l2tp_demo
2982856686 2223617345 OpenRPD      est    120.100.1.20   86    l2tp_demo
```

## Verifying the RPD Status

To verify the RPD status, use the **show cable rpd** command as shown in the example below:

```
Router# show cable rpd
Load for five secs: 6%/1%; one minute: 5%; five minutes: 5%
No time source, *04:52:03.936 UTC Tue Jan 17 2017

MAC Address      IP Address      I/F      State      Role  HA   Name
0004.9f00.0901  91.0.10.10     Tel/1/0  init(l2tp)  Pri  Act  node
```

## Display DEPI Related Information

To display the Downstream External PHY Interface (DEPI) related information, use the command as shown in the following example:

```
Router#show cable rpd depi

DEPI Tunnel and Session Information Total tunnels 1 sessions 26
LocTunID  RemTunID  Remote Device  State  Remote Address  Sessn L2TP Class
Count
338514820 671581873  0004.9f00.0901 est    10.10.10.11    26    rphy-l2tp-gl...

LocID      RemID      Pseudowire      State  Last Chg Uniq ID  Type Mode RemSt
0x41040008 0x00000B02 US1/0/0:2(R)    est    00:34:57 21    P    PSP  UP
0x41010000 0x00000600 US1/0/0:0(D)    est    00:34:57 11    P    PSP  UP
0x00002006 0x00000405 DS1/0/0:5       est    00:34:57 6     P    PSP  UP
0x00002004 0x00000403 DS1/0/0:3       est    00:34:57 4     P    PSP  UP
```

```

0x4100000C 0x00000D03 US1/0/0:3 (M)    est    00:34:57 23      P    PSP  UP
0x00002002 0x00000401 DS1/0/0:1    est    00:34:57 2      P    PSP  UP
0x00002007 0x00000406 DS1/0/0:6    est    00:34:57 7      P    PSP  UP
0x00002008 0x00000407 DS1/0/0:7    est    00:34:57 8      P    PSP  UP
0x4101000C 0x00000603 US1/0/0:3 (D)    est    00:34:57 24     P    PSP  UP
0x41000004 0x00000D01 US1/0/0:1 (M)    est    00:34:57 15     P    PSP  UP
0x00002001 0x00000400 DS1/0/0:0    est    00:34:57 1      P    PSP  UP
0x41080008 0x00000F02 US1/0/0:2 (S)    est    00:34:57 22     P    PSP  UP
0x41010004 0x00000601 US1/0/0:1 (D)    est    00:34:57 16     P    PSP  UP
0x41020000 0x00000800 US1/0/0:0 (B)    est    00:34:57 12     P    PSP  UP
0x00002009 0x00000408 DS1/0/0:8    est    00:34:57 9      P    PSP  UP
0x41010008 0x00000602 US1/0/0:2 (D)    est    00:34:57 20     P    PSP  UP
0x41000008 0x00000D02 US1/0/0:2 (M)    est    00:34:57 19     P    PSP  UP
0x4108000C 0x00000F03 US1/0/0:3 (S)    est    00:34:57 26     P    PSP  UP
0x00002003 0x00000402 DS1/0/0:2    est    00:34:57 3      P    PSP  UP
0x41080000 0x00000F00 US1/0/0:0 (S)    est    00:34:57 14     P    PSP  UP
0x41040004 0x00000B01 US1/0/0:1 (R)    est    00:34:57 17     P    PSP  UP
0x41080004 0x00000F01 US1/0/0:1 (S)    est    00:34:57 18     P    PSP  UP
0x41000000 0x00000D00 US1/0/0:0 (M)    est    00:34:56 10     P    PSP  UP
0x00002005 0x00000404 DS1/0/0:4    est    00:34:56 5      P    PSP  UP
0x4104000C 0x00000B03 US1/0/0:3 (R)    est    00:34:56 25     P    PSP  UP
0x41040000 0x00000B00 US1/0/0:0 (R)    est    00:34:56 13     P    PSP  UP

```

```
outer#show cable rpd 0004.9f03.0214 te7/1/0 depi tunnel
```

```
Load for five secs: 7%/2%; one minute: 6%; five minutes: 6%
No time source, *12:41:44.228 CST Mon Mar 20 2017
```

```

LocTunID   RemTunID   Remote Device   State   Remote Address   Sessn L2TP Class
Count
3388764998 1054297851 0004.9f03.0214 est    10.10.10.11     29    rphy-l2tp-gl...

```

**Table 2: show cable rpd depi Field Descriptions**

Field	Description
LocID	Local session ID.
RemID	Remote session ID.
US1/0/0:2(R)	US means UEPI session, DS means DEPI session. This string means UEPI session on line card slot 1, controller 0, rf-channel 2.
est in State	Established state.
P in Type	On primary line card.

## Configuring DEPI Statistics Synchronization Interval

In Cisco cBR-8 router, the DEPI statistics is synchronized from cdman (us-scheduler) to IOSd. The previous synchronization interval is 15 seconds, which consumes extra CPU resources and may impact the overall cBR-8 system performance. Starting from Cisco IOS XE Amsterdam 17.3.1z, the default DEPI statistics synchronization interval is set to 60 seconds to reduce the CPU usage of the synchronization process. You can also configure the interval by using **cable rphy statistics session update-freq** command in global configuration mode to accommodate your specific needs. But Cisco recommends the default setting unless a change is requested by a Cisco service representative for a particular topology or use case. You must keep in mind that never use short interval in large scale deployment to avoid high CPU usage.

Use the following command to configure the DEPI statistics synchronization interval. This command is applied on all the CLC cards.

```
Router(config)#cable rphy statistics session update-freq 20
```

To verify the DEPI statistics synchronization interval configuration, use the following procedure as an example:

```
Router#sh run | in update-freq
cable rphy statistics session update-freq 20
```

## Feature Information for DEPI/UEPI/L2TP integration with RPD

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 <https://cfng.cisco.com/> 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 3: Feature Information for DEPI/UEPI/L2TP integration with RPD**

Feature Name	Releases	Feature Information
DEPI/UEPI/L2TP integration with RPD	Cisco 1x2 / Compact Shelf RPD Software 3.1	This feature was integrated into the Cisco Remote PHY Device.

