



## **Cisco Remote PHY Device High Availability Configuration Guide for Cisco 1x2 / Compact Shelf RPD Software 3.1**

**First Published:** 2017-11-23

**Last Modified:** 2018-09-07

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883





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## CHAPTER 1

# Cisco Remote PHY Line Card and Supervisor Redundancy

### 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.

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## 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 Platform	Remote PHY Device
Cisco GS7000 Node	<b>Cisco 1x2 RPD Software 1.1 and Later Releases</b> Cisco Remote PHY Device 1x2 <ul style="list-style-type: none"><li>• PID—RPD-1X2=</li><li>• PID—RPD-1X2-PKEY=</li></ul>



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

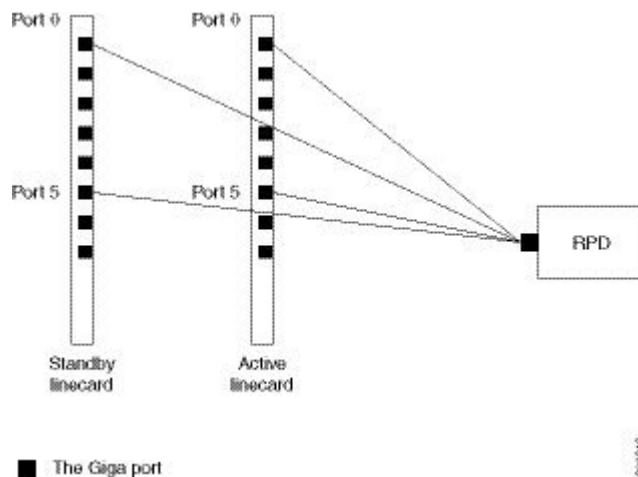
# Information About Remote PHY Line Card and Supervisor Redundancy

## Line Card Redundancy

In Remote PHY (R-PHY) configuration, RPDs connect to both active linecard and standby linecard, and have active connections to active linecard, standby connections to standby linecard. From RPD side, it connects to active core and standby core independently.

Each RPD has one principal core, and may have several auxiliary cores. LCHA needs to support multiple cores. These cores are on the same linecard or different linecards. The port on the standby linecard can protect all the same ports on the active linecards.

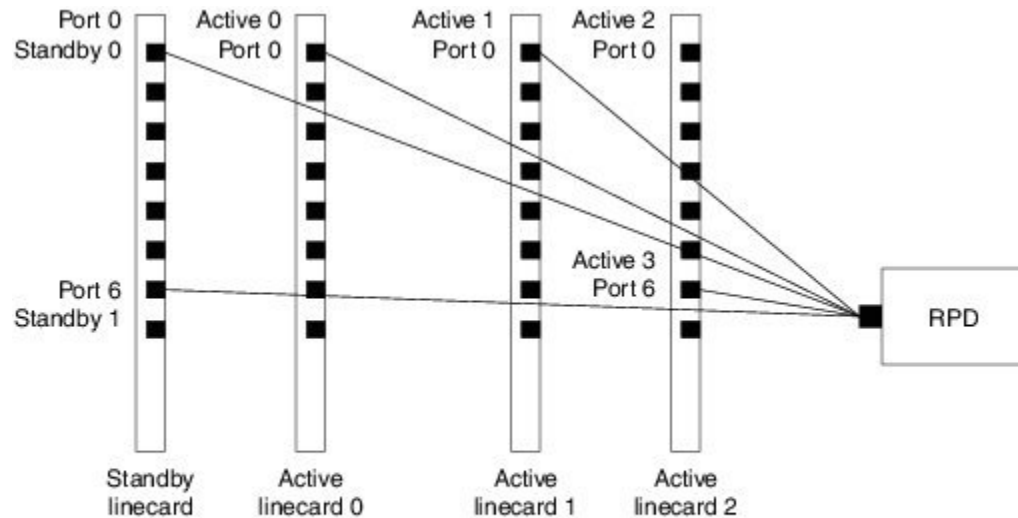
**Figure 1: Multiple cores on the same line card**



In the figure above, the RPD has multiple cores connected to the same active linecard. In order to support LCHA, RPD needs to connect to the same port on the standby linecard. In this way, RPD has several standby cores to protect the active cores. The standby core have the same resource as the active core.

When multiple cores connect to different active linecards, if they connect to different ports of the linecard, there will have different standby cores. If active core connects to the same port on different linecard, they share one standby core.

Figure 2: Multiple cores on different line cards



### ■ The Giga port

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In the figure above, RPD have two standby cores. One standby core connects to port 6 of the standby linecard, it can protect the active core which connects to port 6 of the active linecard 2. The other standby core connects to port 0 of the standby linecard, it can protect the active cores connect to port 0 of linecard 0 and linecard 1. So for the standby core 0, it contains the resource for both active core 0 and active core 1.

When active linecard 0 fails over to standby linecard, the standby core 1 will be deleted, the standby core 0 will bring the resource of active core 0 to active. When linecard 2 fails over to standby linecard, the standby core 0 will be deleted, and standby core 1 will become active for active core 3.

For more information about Line Card Redundancy, see [Line Card Redundancy](#).

## Supervisor Redundancy

Compared to the SUP high availability recover process in iCMTS configuration, the Remote PHY SUP high availability recover process has RPD status change as shown in the example below:

```
show cable rpd 0004.9f00.0625 lcha-cores
MAC Address      IP Address      I/F      State      Role  HA   Name
0004.9f00.0625   120.105.6.10   Te0/1/1   recovering  Pri   Act  node1
0004.9f00.0625   120.105.6.10   Te9/1/1   recovering  NA    Sby  node1

show cable rpd 0004.9f00.0625 lcha-cores
MAC Address      IP Address      I/F      State      Role  HA   Name
0004.9f00.0625   120.105.6.10   Te0/1/1   init(l2tp)  Pri   Act  node1
0004.9f00.0625   120.105.6.10   Te9/1/1   init(l2tp)  NA    Sby  node1

show cable rpd 0004.9f00.0625 lcha-cores
MAC Address      IP Address      I/F      State      Role  HA   Name
0004.9f00.0625   120.105.6.10   Te0/1/1   online      Pri   Act  node1
0004.9f00.0625   120.105.6.10   Te9/1/1   online      NA    Sby  node1
```

The status of the RPD changes from recovering to online, indicating that the SUP redundancy is working in the Remote PHY configuration.

For more information about SUP redundancy, see [Supervisor Redundancy](#).

# How to Configure Remote PHY Line Card Redundancy

This section describes how to configure Remote PHY (R-PHY) Line Card Redundancy on Cisco cBR-8.

## Configuring DPIC Ports

If the `cable fragment depi off` option is enabled on the Cisco cBR router, configure MTU as 2350 on routers between the Cisco cBR router and the RPDs. If the `cable fragment depi off` option is disabled, the MTU must be 1500 on the routers.



### Note

Sub-interfaces are not supported for DPIC interfaces on linecards in slots 0-3 and 6-9.

The following example shows how to configure DPIC port to support Remote PHY Line Card Redundancy:

```
Router# configure terminal
Router(config)# interface TenGigabitEthernet8/1/0
Router(config-if)# vrf forwarding te80
Router(config-if)# ip address 80.6.16.166 255.255.255.0
Router(config-if)# ip mtu 1500
Router(config-if)# exit
Router(config)# interface TenGigabitEthernet8/1/1
Router(config-if)# vrf forwarding te81
Router(config-if)# ip address 80.6.16.167 255.255.255.0
Router(config-if)# ip mtu 1500
Router(config-if)# exit
Router(config)# interface TenGigabitEthernet6/1/0
Router(config-if)# vrf forwarding te60
Router(config-if)# ip address 80.6.16.186 255.255.255.0
Router(config-if)# ip mtu 1500
Router(config-if)# exit
Router(config)# interface TenGigabitEthernet6/1/1
Router(config-if)# vrf forwarding te61
Router(config-if)# ip address 80.6.16.187 255.255.255.0
Router(config-if)# ip mtu 1500
```

## Configuring RPD

The following example shows how to configure RPD to support Remote PHY Line Card Redundancy:

```
Router# configure terminal
Router(config)# cable rpd node1
Router(config-rpd)# identifier 0004.9f03.0055
Router(config-rpd)# core-interface te8/1/0
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 8/1/0 profile 0
Router(config-rpd-core)# rpd-us 0 upstream-cable 8/1/0 profile 0
Router(config-rpd-core)# exit
Router(config-rpd)# core-interface te8/1/1
Router(config-rpd-core)# rpd-ds 0 downstream-cable 8/1/1 profile 0
Router(config-rpd-core)# rpd-us 0 upstream-cable 8/1/1 profile 0
Router(config-rpd-core)# exit
Router(config-rpd)# exit
Router(config)# cable rpd node2
```



```

Router(config-rpd)# identifier 0004.9f03.0163
Router(config-rpd)# core-interface te8/1/2
Router(config-rpd-core)# principal
Router(config-rpd-core)# rpd-ds 0 downstream-cable 8/0/1 profile 1
Router(config-rpd-core)# rpd-us 0 upstream-cable 8/0/2 profile 2

```

## Configuring Remote PHY Line Card Redundancy

The following example shows how to configure Remote PHY Line Card Redundancy:

```

Router# configure terminal
Router(config)# redundancy
Router(config-red)# mode sso
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:N
Router(config-red-lc)# member slot 8 primary
Router(config-red-lc)# member slot 6 secondary
Router(config-red-lc)# no revertive

```

## Verifying Remote PHY Line Card Redundancy Configuration

To verify the Remote PHY line card redundancy configuration, use the example below:

```

Router# show redundancy linecard all

```

Slot	Subslot	LC Group	My State	Peer State	Peer Slot	Peer Subslot	Role	Mode
8	-	0	Active	Stdby Warm	6	-	Active	Primary
6	-	0	-	-	Multiple	None	Standby	Secondary

```

Router# show cable rpd lcha-cores

```

MAC Address	IP Address	I/F	State	Core Role	HA Role
0004.9f03.0055	80.6.16.15	Te6/1/0	online	Principal	Standby
0004.9f03.0055	80.6.16.15	Te8/1/0	online	Principal	Active
0004.9f03.0163	80.6.16.16	Te6/1/1	online	Principal	Standby
0004.9f03.0163	80.6.16.16	Te8/1/1	online	Principal	Active

```

Router# show cable rpd

```

MAC Address	IP Address	I/F	State	Core Role	HA Role
0004.9f03.0055	80.6.16.15	Te6/1/0	online	Principal	Active
0004.9f03.0163	80.6.16.16	Te6/1/1	online	Principal	Active

## Feature Information for Remote PHY Line Card and Supervisor Redundancy

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

*Table 2: Feature Information for Remote PHY Line Card and Supervisor Redundancy*

Feature Name	Releases	Feature Information
Remote PHY LCHA	Cisco 1x2 / Compact Shelf RPD Software 3.1	This feature was integrated into the Cisco Remote PHY Device.
Remote PHY SUPHA	Cisco 1x2 / Compact Shelf RPD Software 3.1	This feature was integrated into the Cisco Remote PHY Device.