Cisco Remote PHY Shelf 7200 Backhaul Port Mapping and Link Redundancy

This document describes how to configure the backhaul port mapping and link redundancy on the Cisco Remote PHY Shelf 7200 Software 1.1.

Hardware Compatibility Matrix for Cisco Remote PHY Shelf 7200

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Note Unless otherwise specified, the hardware components introduced in a given Cisco Remote PHY Shelf 7200 Software Release are supported in all subsequent releases.

*Table 1: Hardware Compatibility Matrix for the Cisco Remote PHY Shelf 7200*

Cisco CMTS Platform	Cisco Remote PHY Shelf 7200
Cisco cBR-8 Converged Broadband Router with Cisco IOS XE Gibraltar 16.10.1 and Later Releases	**Cisco Remote PHY Shelf 7200 Software 1.1 and Later Releases** Cisco Remote PHY Shelf 7200 • PID—HA-RPHY

Port Mapping and Redundancy

The HA RPHY Shelf has eight SFP+ ports. These ports can be configured in 4+4 or 6+2 modes. By default, redundancy is not configured.

In the 4+4 mode, four 10GE ports are available in a redundant configuration, where four 10GE ports are active and the corresponding four 10GE ports are redundant. For example, backhaul port 4 protects backhaul port 0 while backhaul port 5 protects backhaul port 1. This is the default port mapping in the 4+4 mode.
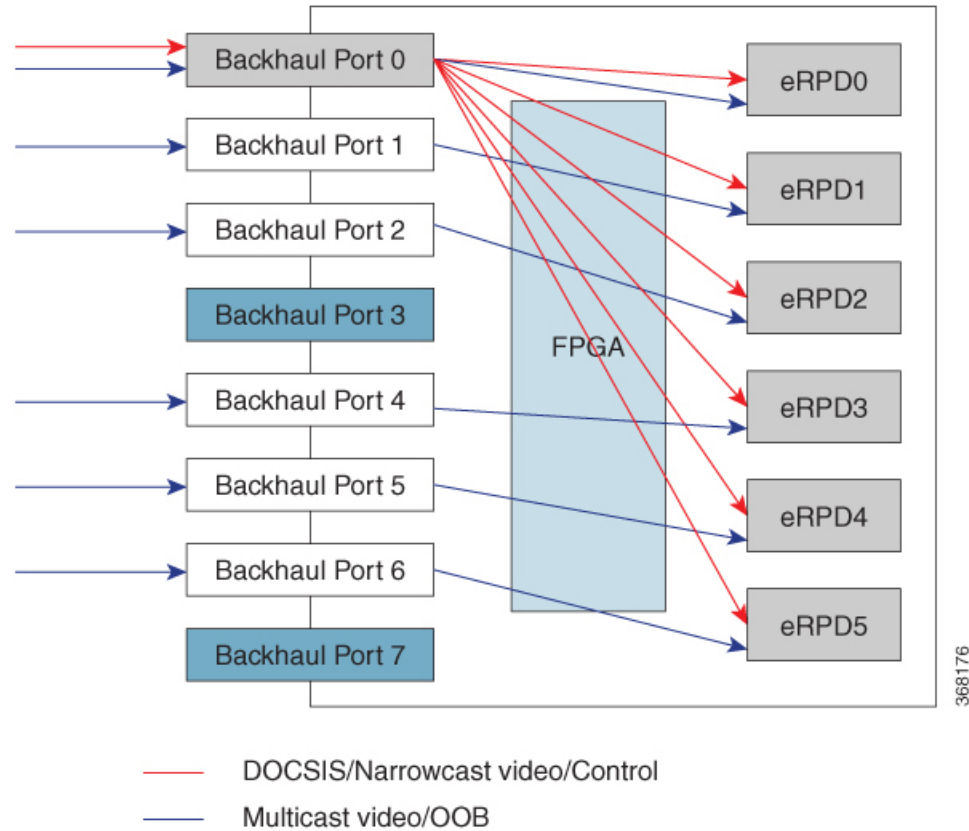
Figure 1: Default 4+4 Port Mapping
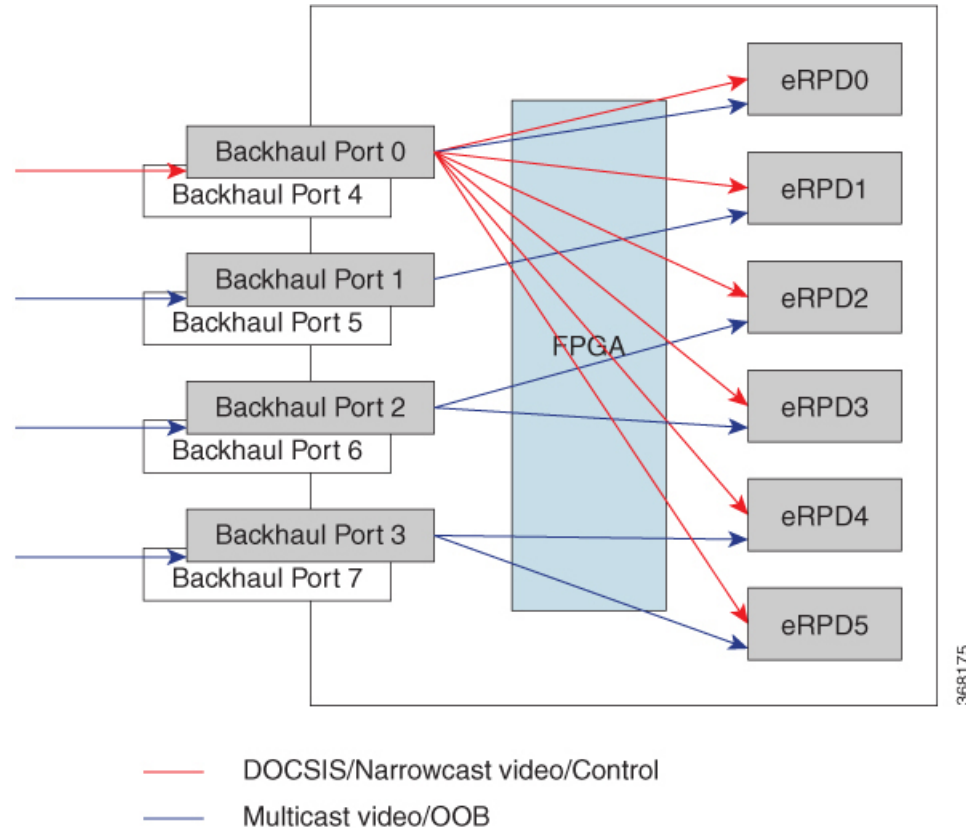
In the 4+4 mode, if all SFP+ ports are active and the default port mapping is configured, then each PHY device can receive up to 5Gbps unicast traffic and 4Gbps multicast traffic from the backhaul network.

In the 6+2 mode, for six active 10GE ports, two ports are redundant. In this mode, backhaul port 3 protects backhaul ports 4,5, and 6 while backhaul port 7 protects backhaul ports 0,1, and 2. This is the default port mapping in the 6+2 mode.

Figure 2: Default 6+2 Port Mapping

In this mode, if all SFP+ ports are active and the default port mapping is configured, then each PHY device can receive up to 10Gbps unicast traffic or 6Gbps unicast and 4Gbps multicast traffic from the backhaul network.

Based on bandwidth requirements, you can use any number of SFP+ ports. The mapping of ports can be configured using CLI commands. For example, when you want to use only one SFP+ port and all PHY devices, then you can map the ports like this.

Figure 3: Example of Port Mapping with One SFP+ Port
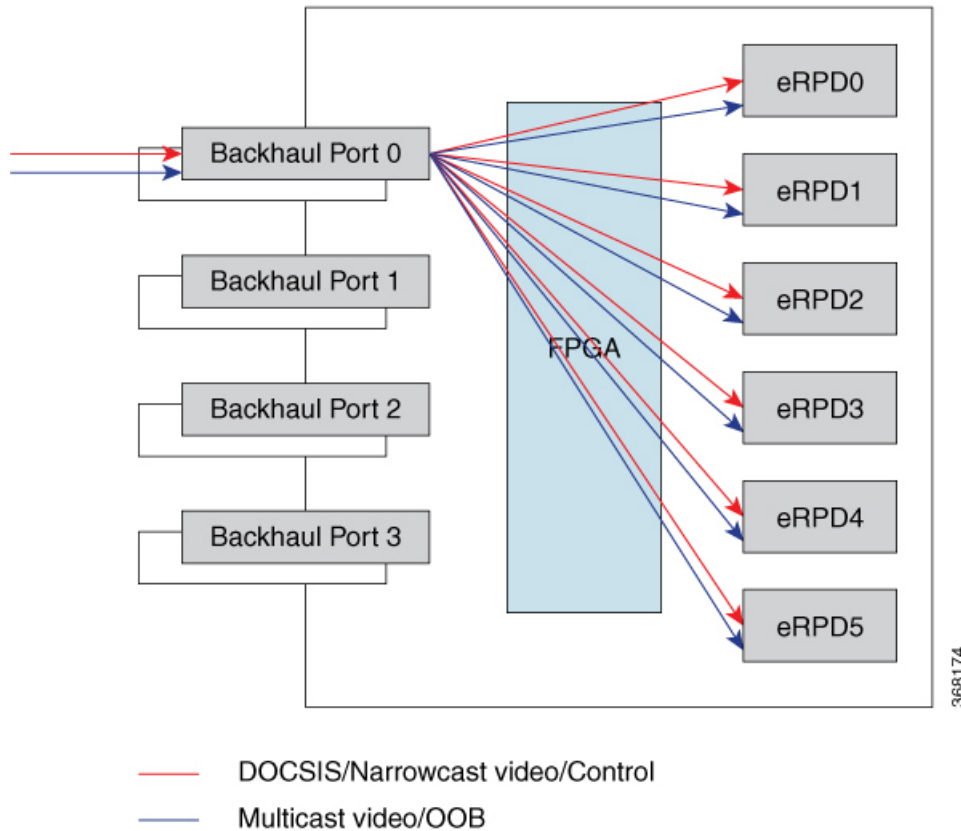
To switch between 4+4 mode and 6+2 mode, you can use backhaul mode switch or change using the command line interface.

Restrictions for Port Mapping

You can map any SFP+ ports to any PHY devices, but these restrictions apply.

- You cannot map redundant backhaul ports to eRPDs.

- For narrowcast, multicast DOCSIS, and control traffic, each PHY device receives DOCSIS and control data from only one 10GE SFP+ port.

- For video traffic, these restrictions apply.

   - Supports up to 96 QAM channels across eight SFP+ ports.

   - Supports a minimum of 64 narrowcast QAM channels per port.

   - Supports a maximum of 480 unique MPEG streams.

   - Each PHY device receives narrowcast video from only one 10GE SFP+ port.

Configure Port Mapping and Link Redundancy

This section describes how to configure port mapping and link redundancy on the Cisco Remote PHY Shelf 7200.

Map Ports to PHY Devices

Map the eight SFP+ ports with the six PHY devices, by following these steps.

```
enable
configure terminal
bh-erpd-mapping backhaul <0-7> erpd <0-5>
exit
show running-config bh-erpd-mapping
```

This is a sample configuration for mapping ports to PHY devices.

```
Router# enable
Router# configure terminal
Router(config)# bh-erpd-mapping backhaul 0 erpd 0
Router(config)# bh-erpd-mapping backhaul 0 erpd 1
Router(config)# bh-erpd-mapping backhaul 0 erpd 2
Router(config)# bh-erpd-mapping backhaul 0 erpd 3
Router(config)# bh-erpd-mapping backhaul 0 erpd 4
Router(config)# bh-erpd-mapping backhaul 0 erpd 5
Router(config)# exit
Router# show running-config bh-erpd-mapping
Building configuration...
bh-erpd-mapping backhaul 0 erpd 0
bh-erpd-mapping backhaul 0 erpd 1
bh-erpd-mapping backhaul 0 erpd 2
bh-erpd-mapping backhaul 0 erpd 3
bh-erpd-mapping backhaul 0 erpd 4
bh-erpd-mapping backhaul 0 erpd 5
```

Configure Link Redundancy

To configure link redundancy, follow these steps.

```
enable
configure terminal
link-redundancy mode [N/A | 6+2 | 4+4]
```

Modify Port Mapping

Modify port mapping configuration by following these steps.

```
enable
configure terminal
bh-erpd-mapping backhaul <0-7> erpd <0-5>
```

Verify Port Mapping

To view the port mapping configuration, follow these steps.

```
show bh-erpd-mapping slot number
```

This is an example of verifying port mapping.

```
Router# show bh-erpd-mapping slot 0
LC 0 :
backhaul0 <---> erpd0
backhaul0 <---> erpd1
backhaul0 <---> erpd2
backhaul0 <---> erpd3
backhaul0 <---> erpd4
backhaul0 <---> erpd5
```

Verify Link Redundancy

To view the link redundancy configuration, use this command.

```
show link-redundancy [slot number | all]
```

This is an example of verifying link redundancy. This configuration does not support link redundancy.

```
Router# show link-redundancy slot 0
LC 0 :

Backhaul |State   Role
---------|----------------
0        |Active  Primary
1        |Active  Primary
2        |Active  Primary
3        |Active  Primary
4        |Active  Primary
5        |Active  Primary
6        |Active  Primary
7        |Active  Primary
-------------------------
```

This configuration is 6+2 redundant configuration.

```
Router# show link-redundancy slot 0
LC 0 :

-------------------------
Backhaul |State   Role
---------|----------------
0        |Active  Primary
1        |Active  Primary
2        |Active  Primary
7        |Standby Secondary
---------|----------------
3        |Standby Secondary
4        |Active  Primary
5        |Active  Primary
6        |Active  Primary
-------------------------
```

This configuration is 4+4 redundant configuration.

```
Router# show link-redundancy slot 0
LC 0 :
```

```
--------------------------
Backhaul |State   Role
---------|----------------
0        |Active  Primary
4        |Standby Secondary
---------|----------------
1        |Active  Primary
5        |Standby Secondary
---------|----------------
2        |Active  Primary
6        |Standby Secondary
---------|----------------
3        |Active  Primary
7        |Standby Secondary
--------------------------
```

Feature Information for Port Mapping and Link Redundancy

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://cfnng.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 2: Feature Information for Port Mapping and Link Redundancy

Feature Name	Releases	Feature Information
Port Mapping and Link Redundancy	Cisco Remote PHY Shelf 7200 Software 1.x	This feature was introduced on the Cisco Remote PHY Shelf 7200 device.