Cisco Smart PHY 7200 Bring Up

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 Smart PHY 7200

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

Table 1: Hardware Compatibility Matrix for the Cisco Smart PHY 7200

Cisco CMTS Platform	Cisco Smart PHY 7200
Cisco cBR-8 Converged Broadband Router with Cisco IOS XE Gibraltar 16.10.1 and Later Releases	**Cisco Smart PHY 7200 Software 1.x and Later Releases** Cisco Smart PHY 7200 • PID—HA-RPHY

Information about Bring Up

Bring up process is prerequisite to the operation of the remote PHY system, just like the cable modem bring up in a DOCSIS system.

How to Bring Up Cisco Smart PHY 7200

This section describes how to bring up Cisco Smart PHY 7200.

Configuring Cisco Smart PHY 7200

After powering up, user needs to configure host name, login password and management IP of the Cisco Smart PHY 7200. See the following examples:

```
HA-Shelf-FCC# configure terminal
HA-Shelf-FCC(config)# hostname prefix Shelf

Shlef(config)#login password Dp*14raR

Shlef(config)#mgmt ip 1.200.1.4 netmask 255.255.255.0 gateway 1.200.1.0
```

User also need to configure SFP+ port mode and eRPD trunk mode based on actual network topology. Refer to Backhaul Port Mapping and Link Redundancy and Cisco Remote PHY Shelf 7200 Trunk VLAN Configuration for more details.
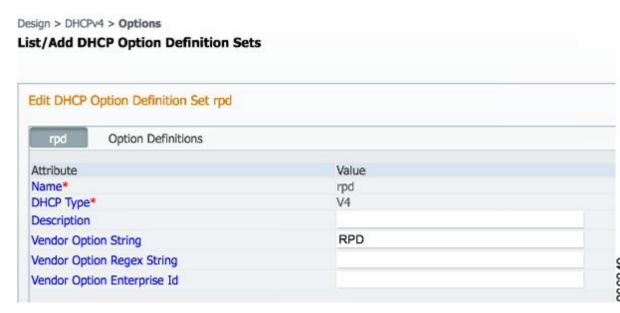
Configuring DHCP Server

You can choose to configure the DHCP server using any of the following methods.

Configuring DHCP Server using IPv4

To configure DHCP server using IPv4, follow the steps below:

1. Add option for CCAP-Core. Fill in the name, DHCP type, and vendor option string as shown in the figure below.
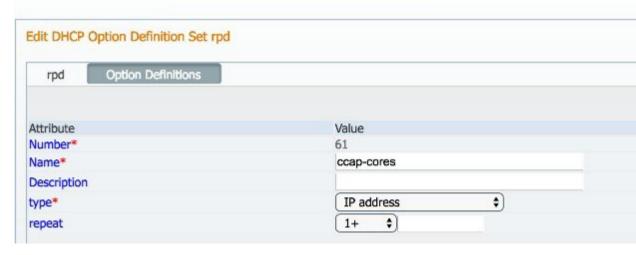
Design > DHCPv4 > **Options**

List/Add DHCP Option Definition Sets

Edit DHCP Option Definition Set rpd

| rpd | Option Definitions |

Attribute	Value
Name*	rpd
DHCP Type*	V4
Description	
Vendor Option String	RPD
Vendor Option Regex String	
Vendor Option Enterprise Id	

2. Define option. Fill in the option number and name as shown in the figure below.

Design > DHCPv4 > **Options**

List/Add DHCP Option Definition Sets

Edit DHCP Option Definition Set rpd

| rpd | Option Definitions |

List of Option Definitions for *rpd*

Number	Name
✖ ⊟43	rpd-option-43
✖ 2	device-type
✖ 61	ccap-cores

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3. Define suboption. Fill in the name, type and repeat of suboption 61 as shown in the following figure.

Design > DHCPv4 > **Options**

List/Add DHCP Option Definition Sets

Edit DHCP Option Definition Set rpd

| rpd | Option Definitions |

Attribute	Value
Number*	61
Name*	ccap-cores
Description	
type*	IP address
repeat	1+

4. Add the option into policy as shown in the following figure. Replace the IP address 120.102.15.1 in the figure to the DPIC port IP address.

⊟DHCPv4 Vendor Options	dhcp-cablelabs-config	Select	
	Name	Number	
Configured Options	✖ [43] (rpd)	rpd-option-43	(binary)

Configuring DHCP Server using IPv6 Stateless

The Cisco Remote PHY System supports the Stateless Address Auto Configuration (SLAAC). IPv6 address assignment of the RPD is governed by the configuration bits set in the ICMPv6 Router Advertisement (RA) message and the presence of a valid prefix in the Prefix Information Option (PIO). For more information about RPD IPv6 address assignment, refer to section 6.7 of Remote PHY Specification.

To configure DHCP server using IPv6 Stateless and enable SLAAC, follow the steps below:

1. Configure Prefix Type to "stateless" in CNR prefix.

2. Configure ICMPv6 Router RA message M Bit=0 and O Bit =1.

Note It is recommended that you follow the DHCP options listed in *Table 2 - Router Advertisement M Bit and O Bit Settings For SLAAC* of section 6.7.1 (CM-SP-R-PHY-I10) or 6.6.1 (CM-SP-R-PHY-I11) in the Remote PHY Specification.

To display the RPD get IPv6 address by SLAAC, use the **show dhcp** command.

```
R-PHY#show dhcp
Interface  IP-Address                     Subnet-Mask
vbh0       2001:93:3:58:1204:9fff:fec1:100  ffff:ffff:ffff:ffff::

Details:
-------------------------------------------------------------------------------
Interface:            vbh0
AddrType:             IPv6<Stateless>
TimeServers:          2001:20:1:1::33
TimeOffset:           28800
LogServers:           2001:20:1:1::33
CCAPCores:            2001:93:3:58::1
```

Configuring DHCP Server using IPv6 Stateful

To configure DHCP server using IPv6 Stateful, follow the steps below:

1. Configure Prefix Type to "dhcp" in CNR prefix. See the following image.

2. Configure ICMPv6 Router RA message M Bit=1.

To display the RPD get IPv6 address by Stateful method, use the **show dhcp** command.

```
R-PHY#show dhcp
Interface  IP-Address                     Subnet-Mask
```

```
vbh0        2001:93:3:58::d8   ffff:ffff:ffff:ffff::

Details:
-------------------------------------------------------------------------------
Interface:                    vbh0
AddrType:                     IPv6<Stateful>
TimeServers:                  2001:20:1:1::33
TimeOffset:                   28800
LogServers:                   2001:20:1:1::33
CCAPCores:                    2001:93:3:58::1
```

Configuring PTP

To configure PTP, use the following example as reference:

On cBR-8 router:

```
interface Loopback1588
  ip address 159.159.159.4 255.255.255.255
interface TenGigabitEthernet5/1/3   /* connect to ASR903 */
  ip address 192.104.10.4 255.255.255.0

ip route 10.90.3.93 255.255.255.255 192.104.10.93   /* route to ASR903 loopback ip */

ptp clock ordinary domain 0
  servo tracking-type R-DTI
  clock-port slave-from-903 slave
    delay-req interval -4
    sync interval -5
    sync one-step
    transport ipv4 unicast interface Lo1588 negotiation
    clock source 10.90.3.93   /* ASR903 loopback ip */

ptp r-dti 1
  ptp-domain 0   /* same domain number with ptp server */
  clock-port 1
    ethernet 1   /* default value is same index with clock-port index, for RPD, ethernet
1=vbh0, ethernet 2=vbh1 */
    clock-source 10.90.3.93 gateway 93.3.10.2   /* clock-source is ASR093 loopback ip,
gateway is ASR903 BDI ID for node */
```

On ASR903 router as PTP primary:

```
ptp clock ordinary domain 0
 clock-port Master-to-all-cBR8 master
  sync interval -5
  sync one-step
  transport ipv4 unicast interface Lo1588 negotiation

interface Loopback1588
 ip address 10.90.3.93 255.255.255.255

interface GigabitEthernet0/3/5
 no ip address
 negotiation auto
 cdp enable
 service instance 31 ethernet   /* 31 is vlan id */
  encapsulation dot1q 31
  rewrite ingress tag pop 1 symmetric
  bridge-domain 31
 service instance 32 ethernet
  encapsulation dot1q 32
```

```
  rewrite ingress tag pop 1 symmetric
  bridge-domain 32
interface BDI31   /* for cBR, SUP PIC */
 ip address 192.104.10.93 255.255.255.0
 no shut
interface BDI32   /* For RPD */
 ip address 93.3.10.2 255.255.255.0
 no shut

ip route 159.159.159.4 255.255.255.255 192.104.10.48   /* route to cbr-8 loopback ip */
```

Configuring cBR-8

To configure the cBR-8 to bring up the RPD, use the following example as reference:

```
/* D-PIC TenGiga interface config */
interface TenGigabitEthernet0/1/0
  ip address 93.3.10.1 255.255.255.0
  ip helper-address 20.1.0.33

/* Downstream/Upstream controller profile */
cable downstream controller-profile 1
rf-chan 0 95
  type DOCSIS
  frequency 381000000
  rf-output NORMAL
  qam-profile 1
  docsis-channel-id 1

cable upstream controller-profile 2
  us-channel 0 channel-width 6400000 6400000
  us-channel 0 docsis-mode atdma
  us-channel 0 minislot-size 4
  us-channel 0 modulation-profile 221
  no us-channel 1 shutdown

/* RPD configuration */
cable rpd node1
  identifier 0004.9f03.0061
  type shelf
  core-interface Te0/1/0
   rpd-ds 0 downstream-cable 7/0/0 profile 1
   rpd-us 0 upstream-cable 7/0/0 profile 2
   rpd-us 1 upstream-cable 7/0/8 profile 2
  r-dti 1
  rpd-event profile 0
```