





## Information about Cisco Smart PHY

The Cisco Smart PHY application is an integrated package for installing, configuring, monitoring and troubleshooting the Cisco Remote-PHY devices (RPD) connected to the Cisco CMTS. It is a micro-services platform for customers and partners to collaborate and build an application ecosystem around on-box innovation. It enables multiple use cases, including:

- Traffic engineering
- Network change automation
- Real-time key performance indicator (KPI) monitoring
- Predictive maintenance and impact analysis
- Security

These are some general instructions and information for using the Cisco Smart PHY:

Icon	Description
	<b>Information</b> button. Click this button to display more information.
	<b>Context Menu</b> button. Move the mouse over this button to display a context menu.

- [Benefits of Cisco Smart PHY, on page 1](#)
- [Dashboard, on page 2](#)
- [Inventory, on page 3](#)
- [Cable RPD Automation, on page 5](#)
- [Admin, on page 12](#)

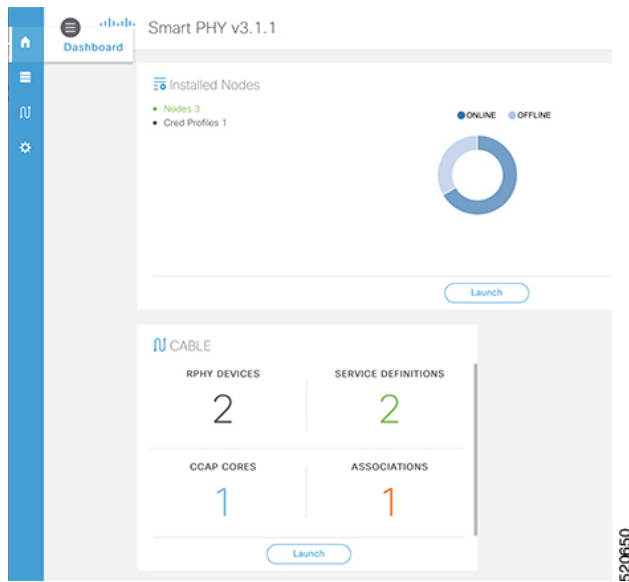
## Benefits of Cisco Smart PHY

Typically, 200 to 500 RPDs might be connected to a single Cisco CMTS and manual configuration and monitoring could pose a problem.

Following are some of the benefits of using the Cisco Smart PHY application:

- Initial RPD Zero-Touch Automation: Initial RPD installation and provisioning with Zero-touch of the Cisco CMTS.
- RPD Inventory: RPD inventory operations. For example, running inventory reports or searching for RPDs based on specific criteria and so on.
- RPD SW Management: RPD SW version management.

## Dashboard

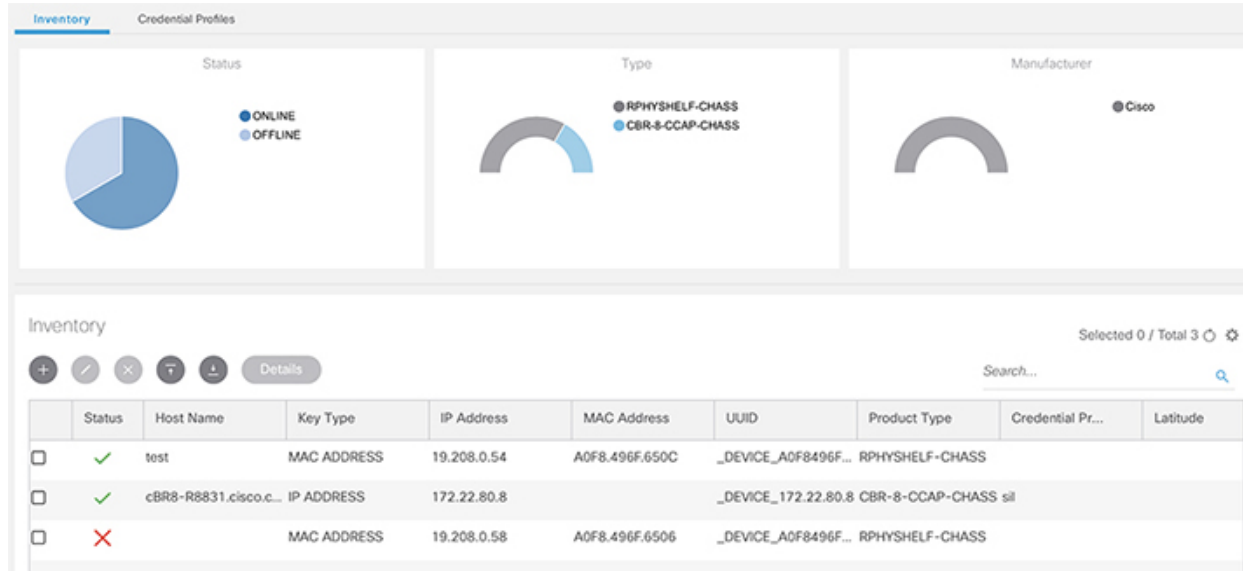


Following are the field descriptions:

Callout #	Name	Description
1	Dashboard	Snapshot view of all devices managed and monitored by the Cisco Smart PHY application.
2	Installed Nodes	Shows the number of nodes installed using the Cisco Smart PHY application. This panel also shows the number of Credential Profiles available in the application. The pie chart shows the offline and online nodes.
3	Launch	Takes you to the specific page view.
4	Cable	Shows the number of RPHY Devices, Service Definitions, CCAP Cores, and Associations configured and managed using the <b>Cable RPD Automation</b> page. Click the number to view more details. Click the <b>Launch</b> link to go to the <b>Cable RPD Automation</b> page.

# Inventory

Inventory has two tabs; Inventory and Credential Profiles.



## Inventory







The Inventory tab enables you to add, organize, and update information about the network devices. This includes non-Cable devices too and hence the information to be provided is more exhaustive than in the Cable RPD Automation view.



**Note** Add the RPDs through the Cable Pairing table in the Cisco Smart PHY application and not through the Inventory tab.

Following are the field descriptions for Inventory:

Name	Description
Status	Shows a graphical pie chart of all devices in the network, categorized by status: <ul style="list-style-type: none"> <li>• ONLINE</li> <li>• OFFLINE</li> </ul>
Host Name	Host name of the device.
Key Type	Two types: <ul style="list-style-type: none"> <li>• MAC ADDRESS</li> <li>• IP ADDRESS</li> </ul>
IP Address	IP address of the device.

Name	Description
MAC Address	MAC address of the device.
UUID	Universally unique identifier of the device.
Product Type	Product type of the device.
Credential Profile	Credential profile name.
Latitude	Latitude of the device.
Longitude	Longitude of the device.
Location	Location of the device.
Description	Description of the device.
Software Version	Software version of the device.
Model Number	Model number of the device.
	Adds a device to the existing inventory.
	Edits the device information.
	Deletes a device from the inventory.
	Exports device information to a CSV file.
	Imports devices by using a CSV file.
Details	Shows the details of the devices, such as Device Summary and Device State History
	Sets the columns in the device table.
Search	Allows you to search for and filter the network devices.
Devices table	Shows detailed information about each device in the network.

### Credential Profiles

Credential profiles are collections of device credentials for Telnet or SSH network devices. Using credential profiles lets you apply credential settings consistently across devices. When you add or import devices, you specify the credential profile the devices use. If you need to make a credential change, such as changing a device password, you can edit the profile to update the settings across all devices that use that profile.

Figure 1: Credential Profiles

Following are the field descriptions for Credential Profiles:

Name	Description
+ Create New	Allows you to add or edit a credential profile. <b>Note</b> Mandatory fields are marked with an asterisk.
New Profile	You can create a new profile by entering the required details and saving the profile.

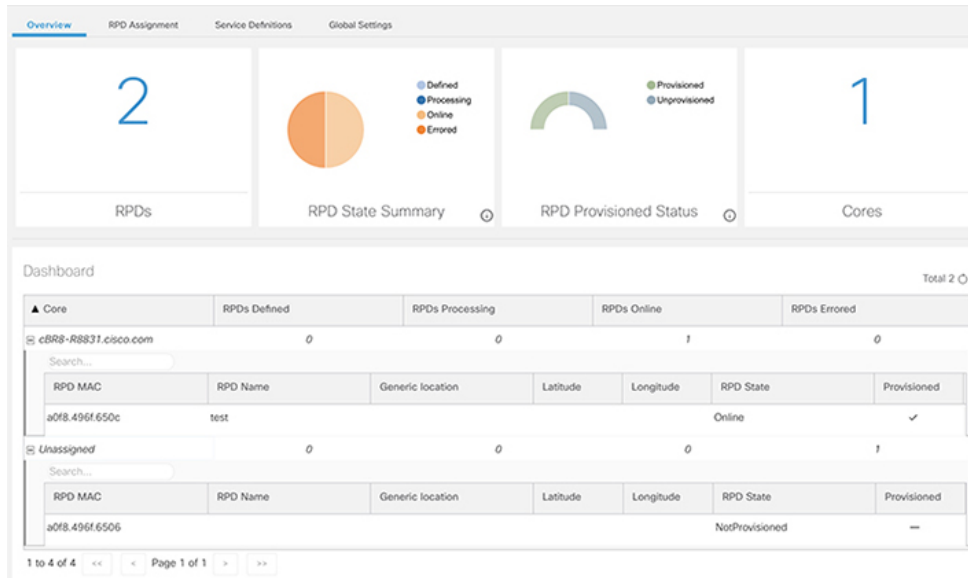
## Cable RPD Automation

The Cable RPD Automation page enables you to add, organize, and update information about CMTS and RPD devices in the network. The information to be provided in this view is less compared to that in the Inventory Manager view because this view is specific to Cable devices.

The Cable RPD Automation page has four tabs; Overview, RPD Assignment, Service Definitions, and Global Settings.

### Overview

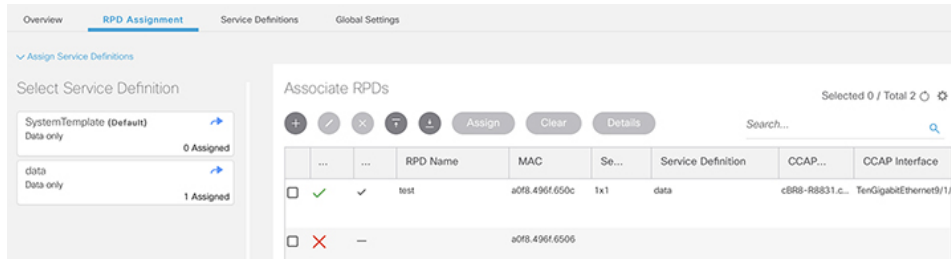
Provides a view of the number of RPDs, their status, and the number of Cores. Also, it provides a dashboard view of the Core and the RPDs in different states.



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### RPD Assignment





Allows you to add, edit, import, or export the details of RPD assignments. Search allows you to search for or filter the RPD information.



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Following are the menu options available on the RPD Assignment window:

Options	Description
	To assign an RPD for a specific RPD name or to add an RPD MAC address to the RPD Inventory. You can assign additional RPD information only after specifying a name for the RPD MAC address.
	To edit an existing RPD assignment. You can edit the name, the MAC address information, and so on.

Options	Description
	<p>To delete an RPD name and its RPD assignment information.</p> <p>When you delete the RPD Assignment information, the RPD MAC address assigned to the RPD name is moved back to the Inventory and is retained in the system.</p> <p>To delete the RPD MAC address, you should delete it from the main Inventory page.</p> <p>Similarly, deleting an RPD MAC address from the Inventory does not delete the RPD name and its assignment information in the RPD Assignment table. This deletion removes only the RPD MAC address from the RPD Assignment table.</p>
	Exports the details of RPD assignments to a CSV file.
	<p>Imports the details of RPD assignments using a CSV file.</p> <p>A sample of the CSV file is available when you click this icon.</p>
Assign	To assign the selected Service Definition to all the selected RPDs.
Clear	To clear the core and the service template assignment for a specific RPD name. This option does not clear the mapping between an RPD name and the MAC address.
Details	To get the details of the RPD, such as RPD Summary, RPD State History, and RPD CLI.
Search	Use any filtering option.
	Sets the required columns in the device table.

Following are the field descriptions in the Associate RPDs table:

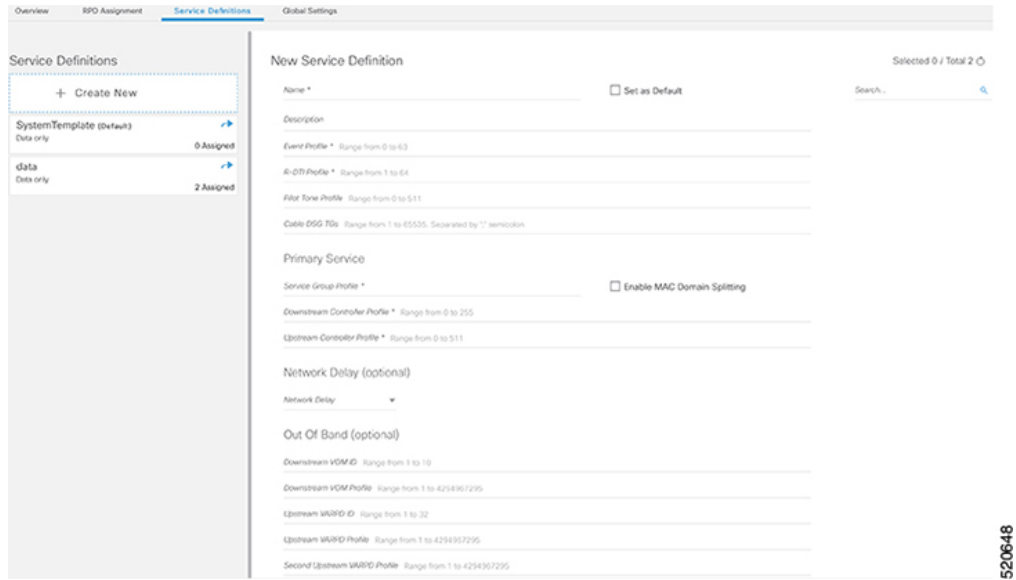
Field Name	Description
RPD Name	<p>Name for the RPD.</p> <p>This RPD name is also used in the <code>cable rpd</code> CLI command.</p>
RPD MAC Address	MAC address of the RPD.
Node Segmentation	Node segmentation of the RPD: 1x1, 1x2, or 2x2.
Service Definition	Service Definition as created in the <b>Service Definitions</b> tab.
CCAP Core	Cisco cBR-8 broadband router to which RPD must connect for data, video, out-of-band (OOB) SCTE 55-1, and narrowband digital forward (NDF)/narrowband digital return (NDR) services.
SSD Profile	Solid State Device (SSD) profile details for image storage.

Field Name	Description
Disable Network Delay	<p>The default is value is <b>No</b>.</p> <ul style="list-style-type: none"> <li>• No—Apply network delay from service definition to RPD.</li> <li>• Yes—Do not apply network delay from service definition to RPD.</li> </ul> <p>Changing this value to <code>yes</code> is service impacting, if the RPD's assigned Service Definition/Template has network-delay configured.</p>
CCAP Core Interface	Complete name of the TenGigabitEthernet DPIC Interface to be used for Data Service.
Video Interfaces	Complete names of the TenGigabitEthernet DPIC Interface to be used for Video Interfaces.
Out of Band Interface	Complete name of the TenGigabitEthernet DPIC Interface to be used for Out of Band 55-1
Downstream VOM ID	OOB 55-1 Downstream Virtual Out-of-Band Modulator (VOM) Identification (ID). If present, this value overrides the value from the Service Definition.
Downstream VOM Profile	OOB 55-1 Downstream VOM profile. If present, this value overrides the value from the Service Definition.
Upstream VARPD ID	OOB 55-1 Upstream Virtual Advanced Return Path Demodulator (VARPD) ID. If present, this value overrides the value from the Service Definition.
Upstream VARPD Profile	OOB 55-1 Upstream VARPD profile for first logical Downstream/Upstream (DS/US) pairing. If present, this value overrides the value from the Service Definition.
Second Upstream VARPD Profile	OOB 55-1 Upstream VARPD profile for second logical Downstream/Upstream (DS/US) pairing. If present, this value overrides the value from the Service Definition.
Cable DSG TGs	Semi-colon separated list of DOCSIS Set-Top Gateway (DSG) Tunnel Group (TG) identifications. If present, this list overrides the list from the Service Definition.
Additional Cores	Semi-colon separated list of additional cores to which the RPD must connect. For example, if an SCTE 55-2 OOB auxiliary core were needed, it would be listed here.
Latitude	Latitude of the RPD (GPS coordinates)
Longitude	Longitude of the RPD (GPS coordinates)
RPD Description	Description for the RPD

### Service Definitions

Allows you to add, edit, delete, or assign service templates. Fields that are not marked as optional are mandatory.





Following are the menu options descriptions:

Name	Description
+ Create New	Click this option to create a new service template.
<i>Name of the existing service definition</i>	Click the name of the existing service definition to edit the template.
New Service Definition	Enter the details in each field and click the <b>Save</b> button to create a new service template.
Search	Use this Search text field in upper right hand corner to filter service definition names.

### Global Settings

You can perform the following configurations from the Global Settings window.

- Database Backup
- Global Configuration
- Software Compatibility

### Database Backup

You can back up the database to a local server or a remote server.

Database Backup

Server

Username

Password

Directory

Filename (Import Only)

Database Backup Status

Operation	Start Time	End Time	Message
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The database backup file is a TAR.GZ file with the following naming convention:

smartphy\_backup\_YYYYHHMM\_022639.tar.gz. Enter the following details in the **Database Backup** window to back up the database.

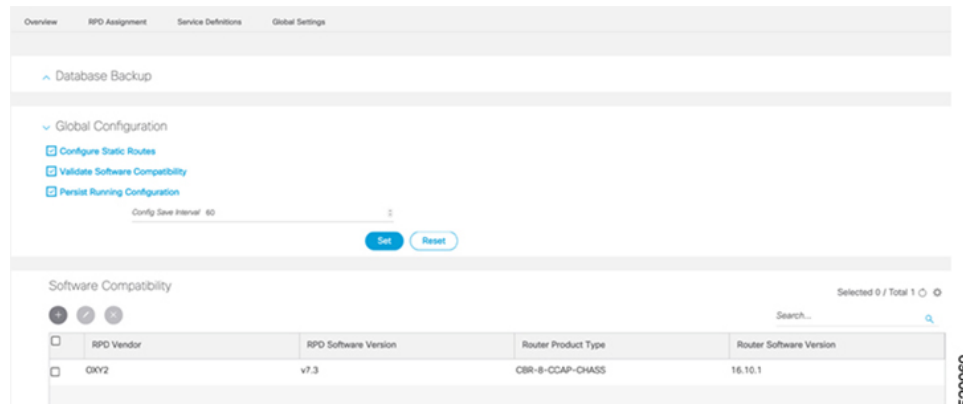
Field	Description
Server	<p>The location where you want to save the DB.</p> <ul style="list-style-type: none"> <li>Local backup—Enter <b>localhost</b>. Local backup files are saved to the <code>/var/smartphy/backup</code> directory on the local filesystem.</li> <li>Remote backup—Enter the IP address or the <code>hostname.domain.com</code>. For remote backup, the Cisco Smart PHY application uses SFTP to transfer files from Cisco Smart PHY instances.</li> </ul>
Username	<ul style="list-style-type: none"> <li>Local backup—Leave the field empty.</li> <li>Remote backup—Enter the username for the remote server access.</li> </ul>
Password	<ul style="list-style-type: none"> <li>Local backup—Leave the field empty.</li> <li>Remote backup—Enter the password for the remote server access.</li> </ul>
Directory	<ul style="list-style-type: none"> <li>Local backup—Leave the field empty.</li> <li>Remote backup—Enter the file path of the directory in the remote server.</li> </ul>
Filename (Import Only)	<p>Used exclusively for importing a database. Imported file should be in this format the following format:</p> <p>smartphy_InstanceName_backup_timestamp.tar.gz.</p> <p>Leave the field empty for both local and remote backup.</p>

Field	Description
Export	Click the <b>Export</b> button to perform local and remote backup.
Import	Click the <b>Import</b> button to import a DB.

### Global Configuration

The **Global Configuration** section under the **Global Settings** menu provides the following options for you to configure on RPDs. Choose the following functions according to your requirement.

- **Configure Static Routes**—If you enable this option, for interfaces with /31 (IPv4 networks) or /127 (IPv6 networks) configured on the DPIC, the Cisco Smart PHY application adds a static route configuration on the Cisco cBR-8 router per RPD.
- **Validate Software Compatibility**—If you enable this option, the Cisco Smart PHY application checks the compatibility between the RPD version and the Cisco cBR-8 router version specified in the table.
- **Persist Running Configuration**—If you enable this option, when the Cisco Smart PHY makes a change to the Cisco cBR-8 configuration, the Cisco Smart PHY makes the configuration persistent. This option allows you to make the changes persistent on the Cisco cBR-8 router at a specific interval.



### Static Route

To route traffic and for communication between an RPD and a Cisco cBR-8 router, static routes to the Cisco cBR router are created when you configure the RPDs.

Smart PHY automatically creates a static route for the RPD if the DPIC interface is configured with a /31 (IPv4 networks) or /127 (IPv6 networks) subnet. The static route is determined by calculating the gateway IP address and routing traffic through the gateway for the RPD.



#### Note

- The DPIC must be a /31 or /127 subnet.
- Wait for the RPD to push the static route configuration.

### Sample of a Cisco Smart PHY Generated Configuration

```

cable rpd <the name assigned to the RPD>
  identifier a0f8.496f.6506
  type shelf
  rpd-ds 0 base-power 25
  rpd-ds 1 base-power 25
  core-interface Te9/1/6
    principal
      rpd-ds 0 downstream-cable 9/0/16 profile 100
      rpd-us 0 upstream-cable 9/0/1 profile 4
    r-dti 2
  rpd-event profile 0
  rpd-55d1-us-event profile 0

cable fiber-node <next available fiber-node>
  downstream Downstream-Cable 9/0/16
  upstream Upstream-Cable 9/0/1
  downstream sg-channel 0 23 downstream-Cable 9/0/16 rf-channel 0 23
  upstream sg-channel 0 3 Upstream-Cable 9/0/1 us-channel 0 3
  service-group managed md 0 Cable 9/0/1
  service-group profile SG1

```

### Software Compatibility

Allows you to add, edit, or delete the software compatibility matrix. Fields that are not marked as optional are mandatory.


Software Compatibility—This window displays a compatibility matrix for the RPD software versions and the Cisco cBR software versions. The Smart PHY application detects the software incompatibility between an RPD and a Cisco cBR-8 router, and alerts you about the incompatibility. After the alert appears, you can either manually upgrade the RPD software version or upgrade it through the Smart PHY application.

**Table 1: Field Description for Software Compatibility Matrix**

Name	Description
RPD Vendor	Name of the RPD vendor.
RPD Software Version	Software version running on the RPD.
Router Product Type	Product type of the router from the Inventory. Example: CBR-8-CCAP-CHASS
Router Software Version	Software version of the router.

## Admin

The **Admin** menu option displays the **User List** window which lists all existing users in the Cisco Smart PHY application.

In this window, you can reset the user passwords by clicking the . The admin user can reset the passwords of all users. All other users can reset only their own passwords when logged in.