



Managing Devices

Table 1: Feature History

Feature Name	Release information	Description
Modernized and Refreshed Inventory page UI	Cisco Smart PHY 22.2	

Feature Name	Release information	Description
		Modifications in the Inventory Management Smart PHY UI: • Main menu navigation path. • Import of bulk inventory data for CCAP core and remote smart PHY devices. • Add tag to the devices. • Support to delete devices in bulk. • Filtering options based on device types or device management. • Addition of Credential profile information for the device. • Consolidation of managed CCAP actions to fetch SSH keys and enable maintenance mode for a device. • Export device data (single or bulk) in the UI. • Enhancement in table settings to edit the table columns and table appearance, and arrange the table columns as per requirement. • Enhanced search facility to search based on device parameters.
Delete RPD from Offline or under Maintenance cBR-8	Cisco Smart PHY, Release 22.4	Smart PHY allows you to delete RPDs when cBR8 is in maintenance or offline mode. Records get deleted only from Smart PHY, no transaction is performed on the CCAP device.
Added a dedicated 360° View action	Cisco Smart PHY, Release 23.1	You can use the View 360° operation in the Inventory page to open CCAP 360° or RPD 360° view. You can also click on the Device Name hyperlink to open up the corresponding 360°.

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Inventory and Device Management

Table 2: Feature History

Feature Name	Release Information	Description
Push Latitude and Longitude coordinates to cBR-8 routers	Cisco Smart PHY, Release 23.3	You can push latitude and longitude coordinates to all cBR-8 devices running Cisco IOS XE Dublin 17.12.1w or later, during RPD provisioning (for Principal and Aux Cores).

The **Inventory** page helps you manage, monitor, and organize Remote PHY and CCAP Core inventory. You can quickly view inventory details such as Device Name, Device IP address, MAC address, Product Type, RPD Software version, Tags, and so on. CCAP can be both managed and unmanaged; Non-Cisco RPDs, if supported by Cisco cBR-8, can also be added in Smart PHY.

Cisco Smart PHY supports 50,000 RPDs on a 3-node cluster. Because the number of RPDs provisioned by the Cisco Smart PHY scales into such huge numbers, we recommend that the Operators work on Cisco Smart PHY programmatically using its REST API.

The Following fields are available in the **Inventory** page.

Name	Description
Status	Status of the CCAP or RPD. The Status options are <i>resumingOp</i> , <i>fetchingKey</i> , <i>maintMode</i> , <i>offline</i> , <i>unknown</i> , <i>runningReconciliation</i> , <i>online</i> , <i>Defined</i> , <i>Maintenance</i> , <i>Processing</i> , <i>GCP</i> , <i>Warning</i> , or <i>Errored</i> .
Device Name	Host name of the device.
IP Address	IP address of the CCAP Core.
MAC Address	MAC address of the RPD.
Product Type	Product type of the device.
Software Version	Software version of the device.
Credential Profile	Credential profile used in CCAP.
Model Number	Model number of the device.
Tags	Tags associated with the device.
Creation Date	Date and Time when the device was created.

Name	Description
Last Modified Date	Date and Time when the device was updated.

- Optional parameters for CCAP Cores: When adding a CCAP Core, you may add Device Name, Device description, Tags, latitude, longitude, and location information.
- Optional parameters for Remote PHY devices: When adding a Remote PHY device, you may add Device name, management IP, Tags, Smart PHY SSD profile, latitude, longitude, and location information. You may also enable/disable the selected SSD profile.

An administrator can perform the following operations from the Smart PHY inventory page.

Operation Name	Description
Add CCAP	Adding CCAP Core.
Add RPD	Adding RPD.
Edit	Editing parameters of an existing CCAP Core or RPD.
View	Opens CCAP 360° or RPD 360° view.
Remove	Remove a CCAP or RPD.
Refresh RPD State	Refresh the state of an RPD.
Fetch SSH Key	Fetches the latest SSH Key from a CCAP Core.
Enable Maintenance Mode	Moves a CCAP Core manually to Maintenance mode during a maintenance window.
Resume Normal Operation	Restores the normal mode of operation for a CCAP Core.
Import	Import Inventory data for CCAP Core(s) and RPD(s).
Export	Export Inventory data for CCAP Core(s) and RPD(s).

Figure 1: Inventory

The screenshot displays the 'Smart PHY - Inventory' page in the Cisco Operations Hub. The main content area is titled 'Remote PHY Devices & CCAP Cores' and features a table with the following data:

Status	Device Name	IP Address	MAC Address	Product Type	Version
Online	HD_shelf_s12_n3	10.203.1.100	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713
Online	HD_shelf_s12_n4	10.203.1.102	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713
Online	HD_shelf_s12_n1	10.203.1.99	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713
Online	HD_shelf_s12_n5	10.203.1.98	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713
Online	HD_shelf_s12_n2	10.203.1.103	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713
Online	HD_shelf_s12_n6	10.203.1.101	[Redacted]	SHELF_7200_LC-6X12	hdshelf_V1.4_20210618154713

The interface includes a sidebar with navigation links (Overview, Inventory, Service Definitions, RPD Associations, Profiles, Credential Profiles, RF Power Adjust Profiles, SETTINGS, Global Configuration, GCP Redirect Configuration, Software Compatibility Rules, ADMINISTRATION, Database Operations) and a top navigation bar with 'Cisco Operations Hub' and 'Smart PHY - Inventory'. The table has a search bar and filters for 'Status Categories' (Unknown, Defined, Maintenance, Processing, GCP, Online, Warning, Errored) and 'CCAP' (Managed, Unmanaged). Action buttons include 'Add', 'Edit', 'Remove', 'Refresh RPD State', and 'Managed CCAP Actions'. The bottom of the page indicates '57 Records' and 'Show Records: 25' with pagination controls.

Credential Profiles

Credential profiles are collections of device credentials to Telnet or SSH to cBR8 devices. When you add or import devices, you specify the credential profile the devices you want to use. You can apply same or different credential profiles across devices.

For information regarding Credential Management, see [Credential Profiles](#).

**Note**

- We recommend that you add RPDs through Cisco Smart PHY RPD Association page and not through the Inventory page. The RPD Association page creates an inventory record automatically. For more information see, [Creating an RPD Association](#).
- If you are adding a Cisco cBR-8 router running Cisco IOS XE Dublin 17.12.1 or above, then you must run the **ip ssh server algorithm mac hmac-sha2-512** command on the cBR-8 router before adding it to Smart PHY. The cBR-8 router does not appear online, if you fail to run this command successfully.

Adding Devices Through GUI

Table 3: Feature History

Feature Name	Release Information	Description
Configuring Device Meta data	Cisco Smart PHY, Release 23.3	Smart PHY maintains and exposes meta data about Device Inventory additions and modifications as well as RPD Association creations and modifications. Inventory meta data can be seen in the Overview tab of the CCAP 360° view and RPD 360° view panels. Association meta data can be seen in the Associations tab of the RPD 360° view panels.

Use the following procedure to add a device.

Procedure

Step 1 Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**

The **Remote PHY Devices & CCAP Cores** page displays.

Step 2 Click **Add** and choose either **CCAP Core** or **Remote PHY Device**.

Step 3 Enter the values for:

- **Managed CCAP Core:**

- Management IP Address: Management IP address on the Cisco cBR-8 router that is reachable from the Smart PHY cluster.
- Credential Profile: Specify the credential profile. Devices with the same credentials can use the same credential profile.
- (Optional): Device Name

- (Optional): Device Description
 - (Optional): Tags
 - (Optional): Location: Latitude, Longitude, and Location Name.
- **Unmanaged CCAP Core:**
 - CIN IP Address: IP address on the unmanaged Core that provides services to RPDs.
 - (Optional): Device Name
 - (Optional): Device Description
 - (Optional): Tags
 - (Optional): Location: Latitude, Longitude, and Location Name.
- **Remote PHY Device:**
 - MAC Address: MAC Address of the RPD.
 - Product Type: Specify the RPD type. (Node, Shelf, Virtual, etc.)
 - (Optional): Device Name
 - (Optional): Management IP Address: Management IP address of the RPD.
 - (Optional): Device Description
 - (Optional): Tags
 - (Optional): Location: Latitude, Longitude, and Location Name.
 - (Optional): Exempt from Smart PHY initiated SSD operations
 - (Optional): Smart PHY SSD Profile

Step 4 Click **Add**.

Note

- Meta data about a Device including the date it was added to Smart PHY's inventory, the user who added it, the date of its last modification, and the user who last modified it can be seen in the Meta Data section of the **Overview** tab on the **Device 360° view** panel.
 - If you wish to add devices in bulk, see [Importing Devices in Bulk](#).
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Accessing Device 360° Panel

Table 4: Feature History

Feature Name	Release information	Description
Device 360° Panel Enhancements	Cisco Smart PHY, Release 23.1	An Overview tab has been added to the RPD 360° View. An Uptime KPI has been added to the CCAP 360° View Overview tab.

Once a device is added, clicking on its name opens the **Device 360°** panel. The **Device 360°** panel provides you with a quick overview of the device, its state transitions and meta data such as create time, last updated time, and information about the user who added or modified the device. The **Device 360°** panel is available for both CCAP cores and RPDs.

CCAP 360°

- *Overview*: Information about the current CCAP State, Uptime, Vendor, Product Type, Software Version, Associated RPDs and Tags.
- *RPD Associations*: Information on the associated RPDs namely RPD Name, RPD status, RPD MAC Address and IP address.
- *Status History*: State transition details for the CCAP Core.



Note For Unmanaged CCAP Cores, Smart PHY only maintains information about Tags associated with the core.

RPD 360°

- *Overview*: Information about the RPD state, Hardware and Software Versions, Associated CCAP core(s) and RPD Location.
- *Association*: Information about RPD configuration parameters along with the associated Principal and Auxiliary Cores.
- *Status History*: History of all the RPD state transitions.
- *RPD Config History*: Historical list of cBR-8 CLI commands used by Smart PHY during RPD Configuration.

Importing Devices in Bulk

You can add devices to Smart PHY's Inventory by importing a CSV file. If you do not have a sample Inventory CSV file, click **Export** to create an empty Inventory CSV.

Procedure

Step 1 Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**.

The **Remote PHY Devices & CCAP Cores** page displays.

Step 2 Click **Import**.

The **Import Devices** window displays.

Step 3 Click **Choose a file**, select the CSV file, and click **Import**.

Save the edited file in CSV format.

Note

Smart PHY allows importing a maximum of 500 devices at a time using the CSV file.

Exporting Devices in Bulk

You can use the export functionality in Smart PHY to save all device information to a CSV file and download it to your PC. The generated Inventory CSV file lists all device details including: Device Name, IP Address, MAC Address, Product Type, Credential Profile, Device Location, Software Version, and so on.

Procedure

Step 1 Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**

The **Remote PHY Devices & CCAP Cores** page displays.

Step 2 Click **Export**.

Note

You can export device information in one of the following ways.

- Click **Export** to include all devices.
 - Select the check boxes for the device that you want to export, and then click **Export** to include the selected devices.
 - Filter the list of devices by entering text in the Search field, and then click **Export** to include the filtered list of devices.
-

Removing a Device from the Inventory

Procedure

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- Step 1** At the main menu, click **Smart PHY > Inventory**.
The **Inventory** page displays.
- Step 2** If your device isn't visible in **Remote PHY Devices & CCAP Cores** inventory table, you can use the **Search Table** field to locate it.
- Step 3** Check the box that corresponds to your device, then click **Remove**.
- Step 4** Review the confirmation dialog box, and then click **Remove** to proceed.
-

What to do next



Note

- By default, only RPDs without CCAP cores associations can be removed from Smart PHY's Inventory. When RPDs without CCAP core associations are removed, Smart PHY also deletes the RPD's association record.
 - If the RPD you plan to remove from Inventory is associated with one or more CCAP cores, then you must first clear or delete the association record before proceeding with the inventory removal. You can view, clear, and delete RPD association records from the **RPD Associations** page.
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Fetching SSH Keys from Cisco cBR-8

Use this procedure to fetch SSH keys.

1. Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**.
The **Remote PHY Devices & CCAP Cores** page displays.
2. Select the check boxes of one or more cBR-8 routers as required.
3. Select **Fetch SSH Keys** in the **Managed CCAP Actions** drop-down list.
 - During the key fetch, the cBR-8 router's status appears as `SSHKEYFETCH_PROGRESS`.
 - The following pop-up message appears when the key fetch is successful:
`Successfully fetched SSH keys from the selected cBR-8(s)`

Fetch SSH Keys Using REST API

Use the following asynchronous API to Fetch the SSH keys:

```

rpd-service-manager/rpdorch/v1/core-topology/fetch-ssh-key

```

You can fetch the SSH keys for all Cisco cBR-8 routers in the Cisco Smart PHY application, by setting the `allCore` parameter to `true` in the request message of

```

rpd-service-manager/rpdorch/v1/core-topology/fetch-ssh-key.

```

```

{
  "allCore": true,
  "ipAddressList": [
    "192.0.2.1", "192.0.2.100"
  ]
}

```

Check the status of fetching the SSH keys using the following API:

```

inventory-manager/inventory/v1/device/query-device-list

```

Limitations for Fetching SSH Keys

Smart PHY prohibits SSH key fetches for a cBR-8 router when:

- An SSH Key Fetch operation is already underway for a selected cBR-8 router.
- The status of the selected cBR-8 router is `Unknown`.



- Note**
1. Cisco Smart PHY 3.1.4 and later, supports fetching SSH keys from both online and offline Cisco cBR-8 routers.
 2. Cisco Smart PHY 3.1.3 and earlier, supports fetching SSH keys only from online Cisco cBR-8 routers.

Disabling Southbound Communication to Cisco cBR-8 Router

During normal operation, Smart PHY periodically checks the managed cBR-8 routers for liveliness and configuration sync. You can disable those checks and GCP redirects to select cBR-8 routers by placing them in Maintenance Mode. Disabling the southbound communications allows the selected cBR-8 routers to undergo maintenance without interference from Smart PHY.

Setting Maintenance Mode

Use this procedure to set a cBR-8 router to maintenance mode:

1. Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**.
The **Remote PHY Devices & CCAP Cores** page displays.
2. Check the check box of cBR-8 routers as required.
3. From the **Managed CCAP Actions** drop-down list, click **Enable Maintenance Mode**.

When a cBR-8 router is in the maintenance mode:

- The status of the router in the UI is `Maintenance Mode`.
- You are blocked from making any configuration changes through Smart PHY's UI or its V2 API.

- RPDs associated with the cBR-8 router are not GCP redirected.



Note Smart PHY does not block Version 1 (V1) of its RPD-pairing REST API when a cBR-8 router is in the maintenance mode. Smart PHY only blocks V2 API calls.

Resuming Normal Operation

Use this procedure to resume normal operation on a cBR-8 router:

1. Click the main menu at the top-left of the home page, and select **Smart PHY > Inventory**.
The **Remote PHY Devices & CCAP Cores** page displays.
2. Select the check boxes of one or more cBR-8 routers that are in the maintenance mode.
3. From the **Managed CCAP Actions** drop-down list, click **Resume Maintenance Mode..**
4. Review the Warning message, and then click **Resume Normal Operation**.

The consistency checks that Smart PHY performs when returning a cBR-8 router to normal operation often take several minutes to complete. While the checks are running the cBR-8 router's state displays as `NORMALOPS_PROGRESS`. Once the check is complete, the state of the router updates to reflect the results: `Online` or `Offline`

Restricted Cisco Smart PHY Operations

When Cisco Smart PHY detects a Cisco cBR-8 router as offline, Cisco Smart PHY does not allow you to do the following:

- Provision RPDs
- Fetch Details
- Import

However, you can edit, export, or delete the devices from the Inventory page.

