Secure Software Download

This document describes how to upgrade software from RPD and Cisco cBR by using Secure Software Download feature.

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Hardware Compatibility Matrix for Cisco Remote PHY Device

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

Table 1: Hardware Compatibility Matrix for the Cisco Remote PHY Device

Cisco HFC Platform	Remote PHY Device
Cisco GS7000 Super High Output Node	Cisco 1x2 / Compact Shelf RPD Software 2.1 and Later Releases
Cisco GS7000 Super High Output Intelligent Node (iNode)	Cisco 1x2 / Compact Shelf RPD Software 4.1 and Later Releases Cisco Intelligent Remote PHY Device 1x2 • PID—iRPD-1X2= • PID—iRPD-1X2-PKEY=

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

Information About Secure Software Download

The secure software download (SSD) feature allows you to authenticate the source of a code file and verify the downloaded code file before using it in your system. The SSD is applicable to Remote PHY (R-PHY) devices installed in unsecure locations.

The Remote PHY architecture allows RPDs to download code. Hence, authenticating the source and checking the integrity of the downloaded code is important.

To authenticate and verify downloading of the code, SSD helps in verifying the manufacturer signature and the operator signature, if any. The manufacturer signature affirms the source and integrity of the code file to the RPD. If an additional signature is available from the operator, the RPD verifies both signatures with a certificate chain before accepting a code file.

Prerequisites for Upgrading Software using SSD

The following prerequisites are applicable to upgrading RPD software using SSD:

- The R-PHY node supports downloading software initiated through the GCP message sent from Cisco cBR.
- RPD supports a secure software download initiated using SSH and CLI directly on the RPD.
- R-PHY uses TFTP or HTTP to access the server to retrieve the software update file.

How to Upgrade Software from RPD and Cisco cBR Using SSD

Note To know more about the commands referenced in this module, see the Cisco IOS Master Command List.

Initiating RPD Software Upgrade from Cisco cBR

The RPD software upgrade can be initiated from Cisco cBR-8 Router. Use the following commands for initiating the upgrade:

```
cable rpd {all|oui|slot|RPD IP|RPD MAC} ssd server_IP {
            tftp|http} file_name [c-cvc-c|m-cvc-c]
                [CVC Chain File Name]
```

Initiating Software Upgrade from RPD Using SSD

If you want to initiate the software upgrade from RPD, set the SSD parameters on RPD. Use the following commands.

Setting the value for SSD CVC (Manufacturer's and Co-signer Code Validation Certificates) parameter is optional.

Configure the values for the following parameters

- SSD server IP address
- Filename
- Transport method

```
ssd set server server_IP filename file_name transport {tftp|http}
ssd set cvc {manufacturer|co-signer} cvc_chain_file_name
ssd control start
```

Verifying Software Upgrade Using SSD Configuration

To display the RPD SSD status, use the **cable rpd [all|oui|slot|RPD IP|RPD MAC] ssd status** command as given in the following example.

```
Router# cable rpd all ssd status
RPD-ID         ServerAddress Protocol Status            Filename
0004.9f00.0591 192.0.2.0     TFTP     ImageDownloading
image/RPD_seres_rpd_20170216_010001.itb.SSA
0004.9f00.0861 192.0.2.2     TFTP     CodeFileVerified
userid/RPD_seres_rpd_20170218_010001.itb.SSA
0004.9f03.0091 192.0.2.1    TFTP    ImageDownloadFail chuangli/openwrt-seres-rpd-rdb.itb.SSA
```

The available statuses are the following:

- CVCVerified
- CVCRejected
- CodeFileVerified
- CodeFileRejected
- ImageDownloading
- ImageDownloadSucceed
- ImageDownloadFail
- MissRootCA

Examples for Upgrading HA RPHY Software

See examples for the software upgrade from cBR-8 and FCC or Primary eRPD.

Example: HA RPHY Software Upgrade from Cisco cBR

```
Router# upgrade set server 203.0.113.1 filename bundle/test.itb.sign transport http
Router# upgrade control show config

file path: bundle/test.itb.sign
server: 203.0.113.1
transport: HTTP
Router# upgrade control start
Router# upgrade control show status.
```

```
Downloading image on FCC.


Router# cable rpd group all upgrade 203.0.113.2 http bundle/test.itb.sign
Router# cable rpd group all upgrade status
This group 0027.900a.4c1a is not HA-Shelf group.
GROUP-ID: 7abd.44a1.0000
ServerAddress: 203.0.113.2
Protocol: HTTP
Status: Image downloading on RPDLC
Filename: bundle/test.itb.sign
```

Example: HA RPHY Software Upgrade from FCC or Primary eRPD

```
Router# upgrade set server 203.0.113.2 filename bundle/test.itb.sign transport http
Router# upgrade control start
Router# upgrade control show status
Downloading image on FCC.
Router# upgrade control abort
Abort software upgrade process successfully.
Router# upgrade control show status
Image download aborted.


Router# show cable rpd-upgrade group all status
GROUP-ID: 7abd.44a1.0000
ServerAddress: 203.0.113.2
Protocol: HTTP
Status: Idle
Filename: bundle/test.itb.sign
```

Feature Information for Secure Software Download

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 www.cisco.com/go/cfn 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 Secure Software Download

Feature Name	Releases	Feature Information
Upgrade Software Image	Cisco Smart PHY 7200	This feature was introduced on the Cisco Remote PHY Device.