



Introduction

This release note contains information about downloading and installing Cisco IOS Release 12.2(33)SCH. It also provides new and changed information, hardware support, limitations and restrictions, and caveats for Cisco IOS Release 12.2(33)SCH.



Note

Cisco IOS Release 12.2(33)SCH is generally available for field deployment. However, we recommend that you validate and qualify Cisco IOS Release 12.2(33)SCH in a limited field trial with your specific network configuration requirements in order to ensure a smooth, faster, and successful field deployment.

For software caveats that apply to Cisco IOS Release 12.2(33)SCH on the Cisco uBR10012 routers, see the corresponding release notes for Cisco uBR10012 Routers.

We recommend that you view the field notices for this release to see if your software or hardware platforms are affected. If you have an account on Cisco.com, you can find field notices at http://www.cisco.com/en/US/customer/support/tsd_products_field_notice_summary.html.

If you do not have a Cisco.com login account, you can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html.

This chapter includes the following sections:

- [System Requirements, page 1-2](#)
- [New and Changed Information, page 1-7](#)
- [Management Information Base, page 1-16](#)
- [Limitations and Restrictions, page 1-18](#)
- [Important Notes, page 1-19](#)
- [Obtaining Documentation and Submitting a Service Request, page 1-20](#)

System Requirements

These sections describe the system requirements for Cisco IOS Release 12.2(33)SCH:

- [Memory Requirements, page 1-2](#)
- [Supported Hardware, page 1-3](#)
- [Verifying the Software Version, page 1-4](#)
- [Upgrading to a New Software Release, page 1-4](#)
- [Feature Support, page 1-4](#)

Memory Requirements

This section describes the memory requirements for Cisco IOS Release 12.2(33)SCH.


Note

Effective with Cisco IOS Release 12.2(33)SCC, the image size is greater than 65 MB and requires TFTP servers capable of downloading large images.

[Table 1-1](#) displays the memory recommendations for the Cisco uBR7200 series universal broadband routers with Cisco IOS Release 12.2SC feature sets. Cisco uBR7200 series routers are only available with 48 MB or 128 MB of flash memory on the I/O Controller cards. The NPE-G2 uses FlashDisks only.


Note

FlashDisks, an alternative to linear flash memory, are flash memory-based devices that can be used as file storage media in the PCMCIA card slots of the I/O controllers. Each I/O Controller has two PCMCIA slots and can be configured with up to 256 MB of FlashDisk memory.

Table 1-1 *Memory Recommendations for the Cisco uBR7200 Series Routers*

Feature Set	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
Two-Way Data/VoIP Images				
DOCSIS 2-Way 3DES for Cisco NPE-G2	ubr7200p-jk9su2	128 MB	1 GB DRAM	RAM
Boot Image				
UBR7200 Boot Image	ubr7200-kboot-mz	None	None	—
UBR7200 NPE-G2 Boot Image	ubr7200p-kboot-mz	None	None	—

The image subset legend for [Table 1-1](#) is as follows:

- j—IP routing, MPLS-VPN support, and non-cable interface bridging
- k9—AES/DES level of encryption. Greater than 64-bit encryption (on 12.2 and up)
- s—“Plus” features: Inter-Switch Link (ISL)

Supported Hardware

Cable Interface Line Cards and Route Processors

[Table 1-2](#) provides information about the cable interface line cards supported in Cisco IOS Release 12.2(33)SCH.

Table 1-2 Supported Cable Interface Line Cards and Route Processors

Platform	Supported Cable Interface Line Cards	Supported Route Processors
Cisco uBR7246VXR universal broadband router	<ul style="list-style-type: none"> • Cisco uBR-MC88V—maximum 4 	<ul style="list-style-type: none"> • NPE-G2
Cisco uBR7225VXR universal broadband router	<ul style="list-style-type: none"> • Cisco uBR-MC88V—maximum 2 	<ul style="list-style-type: none"> • NPE-G2



Note

The Cisco uBR-MC28U line card is not supported in Cisco IOS Release 12.2(33)SCH and later.

OIR of Cable Interface Line Cards on the Cisco uBR7200 Universal Broadband Router

The Cisco uBR7200 series universal broadband routers support online insertion and removal (OIR) or “hot swapping” of cable interface line cards only when exchanging cable interface line cards of the exact type. For example, exchanging a Cisco uBR-MC88V card for another Cisco uBR-MC88V line card. Under these conditions, no reload of the router is required. When you perform OIR of different types of cable interface line cards, you might not only have to reconfigure the interfaces, but also reload the router (recommended).



Caution

In the Cisco uBR7225VXR or Cisco uBR7246VXR router running Cisco IOS Release 12.2(33)SCD and later, the Cisco uBR-MC88V cable interface line card cannot be “hot swapped” with another type of line card. It cannot coexist with another type of line card in the same chassis.



Note

Port adapters are not supported by the Cisco uBR7200 series routers in Cisco IOS Release 12.2(33)SCH.

Verifying the Software Version

To verify the version of the Cisco IOS software running on your Cisco universal broadband router, log in to the router and enter the **show version EXEC** command:

```
Router# show version
```

```
Cisco IOS Software, 7200 Software (UBR7200P-JK9SU2-M), Version 12.2(33)SCH EXPERIMENTAL
IMAGE ENGINEERING C10K_WEEKLY BUILD, synced to MAYFLOWER_BASE_FOR_V122_33_SB_THROTTLE
Copyright (c) 1986-2012 by Cisco Systems, Inc.
```

```
ROM: System Bootstrap, Version 12.4(12.2r)T, RELEASE SOFTWARE (fc1)
```

Upgrading to a New Software Release

For information about selecting a new Cisco IOS software release, see "How to Choose a Cisco IOS Software Release" at the following location:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1834/products_tech_note09186a00800fb9d9.shtml

For information about upgrading the Cisco universal broadband routers, see the *Software Installation and Upgrade Procedures* document at the following location:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a0080094c07.shtml

For Cisco IOS upgrade ordering instructions, see the document at the following location:

http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957_pp.htm

To choose a new Cisco IOS software release based on information about defects that affect that software, use Bug Toolkit at the following location:

<http://tools.cisco.com/Support/BugToolKit/action.do?hdnAction=searchBugs>

Upgrading from Cisco IOS Release 12.3BC or Earlier

For more information, see the *Cisco uBR7200 Router Release Notes for Cisco IOS Release 12.2(33)SCA* at the following location:

http://www.cisco.com/en/US/products/hw/cable/ps2217/prod_release_notes_list.html

Feature Support

Cisco IOS software is packaged in feature sets that consist of software images that support specific platforms. The feature sets available for a specific platform depend on which Cisco IOS software images are included in a release. Each feature set contains a specific set of Cisco IOS features.



Caution

Cisco IOS images with strong encryption (including, but not limited to 168-bit [3DES] data encryption feature sets) are subject to U.S. government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of U.S. government regulations. When

applicable, the purchaser or user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

Cisco CMTS User Documentation References for Cisco IOS Release 12.2SC

The table below provides information about important user documents in Cisco IOS Release 12.2SC.

Table 1-3 Important User Documents in Cisco IOS Release 12.2SC

Guide	Description
Documentation Roadmap	<p>Describes a set of Cisco CMTS documents and contains links to the referenced documents.</p> <p>Go to the following link to access this document: http://www.cisco.com/en/US/docs/cable/cmts/ubr7200/roadmap/7200rdmp.html</p>
Command Reference	<p>Provides information about the software commands used to configure a Cisco CMTS. Includes command syntax, default value, value range, command mode, usage guidelines, and examples.</p> <p>Go to the following link to access this document: http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_book.html</p>
Design Guides	<p>Describes how to plan, install, and configure a Cisco CMTS. Contains information about the supported technologies, interfaces and protocols and can also contain special installation considerations, network diagrams, example applications, system design, and environmental recommendations.</p> <p>Go to the following link to access this document set: http://www.cisco.com/en/US/products/hw/cable/ps2217/tsd_products_support_design_technotes_list.html</p>
Install and Upgrade Guides	<p>Provides step-by-step instructions for installing or upgrading a Cisco CMTS. Also includes line card installation guides, shipping documents, safety information, and quick-start guides for experienced users.</p> <p>Go to the following link to access this document set: http://www.cisco.com/en/US/products/hw/cable/ps2217/prod_installation_guides_list.html</p> <p>Important guides in this section are:</p> <ul style="list-style-type: none"> • Cisco uBR7200 Series Universal Broadband Router Hardware Installation Guide • Upgrading to the Cisco uBR7246 VXR Universal Broadband Router
Configuration Guides	<p>Contains detailed, step-by-step instructions for configuring a Cisco CMTS, including software feature guides, configuration examples, network diagrams, and technical concepts.</p> <p>Go to the following link to access this document:</p> <ul style="list-style-type: none"> • Cisco IOS CMTS Cable Software Configuration Guide, Release 12.2SC

Guide	Description
Error and System Messages	Lists error and system messages for a Cisco CMTS, including any recommended user action for each message. Go to the following link to access this document: http://www.cisco.com/en/US/docs/cable/cmts/system/message/uberrmes.html
Troubleshooting Guides	Provides problem-solving techniques for a Cisco CMTS, including methods to identify problems based on symptoms and recommended actions for resolution. Go to the following link to access this document set: http://www.cisco.com/en/US/products/hw/cable/ps2217/prod_troubleshooting_guides_list.html

Cisco Feature Navigator

The Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or by feature set (software image). Under the release section, you can compare Cisco IOS software releases side-by-side to display both the features unique to each software release and the features that the releases have in common.

To access the Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check verifies that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password is e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<https://tools.cisco.com/RPF/register/register.do>

The Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

For frequently asked questions about the Cisco Feature Navigator, see the FAQs at the following URL:

<http://www.cisco.com/support/FeatureNav/FNFAQ.html>

Determining Which Software Images Support a Specific Feature

To identify the software images (feature sets) in Cisco IOS Release 12.2(33)SC that support a specific feature:

-
- Step 1** Go to the Cisco Feature Navigator home page. Enter your Cisco.com login.
 - Step 2** Click **Search by Feature**.
 - Step 3** To find a feature, use either **Filter by full or partial feature name** or search for available features in alphabetical order. Either a list of features that match the search criteria or a list of features that begin with the number or letter selected from the ordered list is displayed in the text box.
 - Step 4** Select a feature from the Available Features pane, and click **Add** to add a feature to the Selected Features pane.



Note To learn more about a feature in the list, click **Show Descriptions**.

Repeat this step to add additional features. A maximum of 20 features can be chosen for a single search.

- Step 5** Click **Continue** when you are finished selecting features.
 - Step 6** From the Major Release drop-down menu, choose **12.2SC**.
 - Step 7** From the Release drop-down menu, choose the appropriate maintenance release.
 - Step 8** From the Platform Family drop-down menu, select the appropriate hardware platform. The **Search Results** table lists all the software images (feature sets) that support the selected feature.
-

Determining Which Features Are Supported in a Specific Software Image

To determine the features supported in a specific software image (feature set) in Cisco IOS Release 12.2(33)SC:

-
- Step 1** Go to the Cisco Feature Navigator home page. Enter your Cisco.com login.
 - Step 2** Click **Compare Images**.
 - Step 3** From the Software drop-down menu in the **Select First Image Parameters** pane, choose **IOS**.
 - Step 4** From the Major Release drop-down menu, choose **12.2SC**.
 - Step 5** From the Release Number drop-down menu, choose the appropriate maintenance release.
 - Step 6** From the Platform Family drop-down menu, choose the appropriate hardware platform.
 - Step 7** From the Feature Set drop-down menu, choose the appropriate feature set. The **Search Results** table lists all the features that are supported by the selected feature set (software image).
-

New and Changed Information

The following sections list the new and modified hardware and software features supported on the Cisco uBR7200 routers in Cisco IOS Release 12.2(33)SCH:

- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH6, page 1-8](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH5, page 1-8](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH4, page 1-8](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH3, page 1-8](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH2a, page 1-8](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH2, page 1-9](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH1, page 1-9](#)
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCH, page 1-9](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH6, page 1-9](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH5, page 1-9](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH4, page 1-9](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH3, page 1-9](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH2a, page 1-9](#)

- [New Software Features in Cisco IOS Release 12.2\(33\)SCH2, page 1-10](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH1, page 1-11](#)
- [New Software Features in Cisco IOS Release 12.2\(33\)SCH, page 1-12](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH6, page 1-12](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH5, page 1-12](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH4, page 1-13](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH3, page 1-13](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH2a, page 1-13](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH2, page 1-13](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH1, page 1-13](#)
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCH, page 1-13](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH6, page 1-13](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH5, page 1-13](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH4, page 1-13](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH3, page 1-14](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH2a, page 1-14](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH2, page 1-14](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH1, page 1-14](#)
- [Features Integrated into Cisco IOS Release 12.2\(33\)SCH, page 1-15](#)

New Hardware Features in Cisco IOS Release 12.2(33)SCH6

There are no new hardware features in Cisco IOS Release 12.2(33)SCH6.

New Hardware Features in Cisco IOS Release 12.2(33)SCH5

There are no new hardware features in Cisco IOS Release 12.2(33)SCH5.

New Hardware Features in Cisco IOS Release 12.2(33)SCH4

There are no new hardware features in Cisco IOS Release 12.2(33)SCH4.

New Hardware Features in Cisco IOS Release 12.2(33)SCH3

There are no new hardware features in Cisco IOS Release 12.2(33)SCH3.

New Hardware Features in Cisco IOS Release 12.2(33)SCH2a

There are no new hardware features in Cisco IOS Release 12.2(33)SCH2a.

New Hardware Features in Cisco IOS Release 12.2(33)SCH2

There are no new hardware features in Cisco IOS Release 12.2(33)SCH2.

New Hardware Features in Cisco IOS Release 12.2(33)SCH1

There are no new hardware features in Cisco IOS Release 12.2(33)SCH1.

New Hardware Features in Cisco IOS Release 12.2(33)SCH

There are no new hardware features in Cisco IOS Release 12.2(33)SCH.

New Software Features in Cisco IOS Release 12.2(33)SCH6

There are no new software features in Cisco IOS Release 12.2(33)SCH6.

New Software Features in Cisco IOS Release 12.2(33)SCH5

Customizable iftype Value for Downstream Physical Channels

By default, the iftype for downstream physical channels is set as 1 on the Cisco CMTS router. Effective with Cisco IOS Release 12.2(33)SCH5, to change the iftype value to the IANA-defined value of 257, use the **cable snmp iftype ds-phy** command.

The following command was introduced:

- **cable snmp iftype ds-phy**

For more information, see the Cisco CMTS Cable Command Reference at the following URL:

http://www.cisco.com/c/en/us/td/docs/cable/cmts/cmd_ref/b_cmts_cable_cmd_ref.html

New Software Features in Cisco IOS Release 12.2(33)SCH4

There are no new software features in Cisco IOS Release 12.2(33)SCH4.

New Software Features in Cisco IOS Release 12.2(33)SCH3

There are no new software features in Cisco IOS Release 12.2(33)SCH3.

New Software Features in Cisco IOS Release 12.2(33)SCH2a

There are no new software features in Cisco IOS Release 12.2(33)SCH2a.

New Software Features in Cisco IOS Release 12.2(33)SCH2

24x8 Cable Modem Support

Effective with Cisco IOS Release 12.2(33)SCH2, the cable modems can come wideband online (w-online) with up to 24 downstream channels and 8 upstream channels. This feature is not supported on the Cisco uBR7200 series routers using NPE-G1.

The following command is modified:

- **show cable modem**

For more information, see the *CM Steering on the Cisco CMTS Routers* guide at the following URL:

http://www.cisco.com/c/en/us/td/docs/cable/cmts/config_guide/b_cmts_ds_us_features/b_cmts_ds_us_features_chapter_011.html

Layer 3 CPE Mobility

Effective with Cisco IOS Release 12.2(33)SCH2, Layer 3 CPE Mobility feature allows the CPEs to move from one cable modem to another.

The following commands were introduced or modified:

- **cable l3-mobility**
- **service divert-limit**
- **show cable bundle**

For more information, see the *Layer 3 CPE Mobility* guide at:

http://www.cisco.com/c/en/us/td/docs/ios/cable/configuration/guide/12_2sc/Cisco_CMTS_Layer3_Bundle_Interface/cmts_L3_CPE_mobility.html

Distribution of Traffic across all Channels in a USBG

The Distribution of Traffic across all Channels in a USBG feature balances the bandwidth utilization across upstream channels on one upstream bonding group. This feature balances the utilization only when upstream channel bonding is enabled and if there is one upstream channel bonding group configured per MAC domain.

The following command was introduced:

- **cable upstream balance-scheduler**

For more details, see the *Upstream Channel Bonding* guide at:

http://www.cisco.com/c/en/us/td/docs/ios/cable/configuration/guide/12_2sc/Cisco_Downstream_Upstream/ubr_uscb.html

New Software Features in Cisco IOS Release 12.2(33)SCH1

This section describes the new cable software features in Cisco IOS Release 12.2(33)SCH1.

16x4 Cable Modem Support

Effective with Cisco IOS Release 12.2(33)SCH1, the cable modems can come wideband online (w-online) with up to 16 downstream channels and 4 upstream channels. This feature is not supported on the Cisco uBR7200 series routers using NPE-G1.

The following command is modified:

- **show cable modem**

For more information, see the *CM Steering on the Cisco CMTS Routers* guide at the following URL:

http://www.cisco.com/c/en/us/td/docs/cable/cmts/config_guide/b_cmts_ds_us_features/b_cmts_ds_us_features_chapter_011.html

Disabling Upstream Load Balancing for DOCSIS 3.0 Modems

Effective with Cisco IOS Release 12.2(33)SCH1, load balancing can be activated only on downstream channels. This ensures that upstream load balancing is not activated, allowing maximum number of channels to be used to bring the upstream bonding cable modems online.

This feature is configured using the **downstream-only** keyword of the **cable load-balance docsis30-enable** command.

The following commands were modified:

- **cable load-balance docsis30-enable**
- **show cable load-balance**

For more details, see the *Load Balancing, Dynamic Channel Change, and Dynamic Bonding Change on the Cisco CMTS Routers* document at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_load-bal_dcc.html

TLV63 Support

Effective with Cisco IOS Release 12.2(33)SCH1, TLV63 is supported on the Cisco uBR7200 series routers. This feature provides the ability to limit the maximum number of IPv6 addresses per cable modem using the **cable modem v6-max-cpe-prefix** command.

The following commands were introduced or modified:

- **cable modem v6-max-cpe-prefix**
- **show cable modem**

For more information, see the *Maximum CPE and Host Parameters for the Cisco CMTS Routers* guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_max_cpe_hst.html

New Software Features in Cisco IOS Release 12.2(33)SCH

This section describes the new cable software features in Cisco IOS Release 12.2(33)SCH.

Downstream Classification Enhancement with MAC Addresses and Layer 3 Classifier Support

New combinations of downstream classifiers with a destination MAC address are supported in Cisco IOS Release 12.2(33)SCH and later. This enhancement enables service providers to effectively manage high priority service flows associated with a downstream classifier. For example, a single User Datagram Protocol (UDP) port can be shared by high priority and low priority traffic.

For more information about this feature, see the *DOCSIS 1.1 for the Cisco CMTS Routers feature guide* at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_docsis11.html

Upstream Channel Descriptor TLV for Ranging Hold-off

The Upstream Channel Descriptor (UCD) Type, Length, Value (TLV) for Ranging Hold-off feature enables the CMTS router to hold off a cable modem from initial ranging based on TLV 18 and 19 specified in the upstream channel descriptor (UCD) messages. The router can hold off a cable modem from initial ranging only for 5 minutes. This feature is supported with DOCSIS 2.0 and later cable modems using upstream logical channels.

The following commands were introduced or modified:

- **cable load-balance exclude**
- **cable upstream chan-class-id**
- **cable upstream rng-holdoff**
- **show cable modem verbose**

For more information about this feature, see the Cable Modem Steering on the Cisco CMTS Routers feature guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_cm_steer.html

Modified Software Features in Cisco IOS Release 12.2(33)SCH6

There are no modified software features in Cisco IOS Release 12.2(33)SCH6.

Modified Software Features in Cisco IOS Release 12.2(33)SCH5

IPDR Template Update

Effective with Cisco IOS Release 12.2(33)SCH5, a new IPDR template is defined for CM-STATUS to support the DOCSIS3.0 OSSI specification version I13. The old template is renamed as CM-STATUS-2008.

The following command was modified:

- **ipdr template**

For more information, see the Cisco CMTS Cable Command Reference at the following URL:
http://www.cisco.com/c/en/us/td/docs/cable/cmts/cmd_ref/b_cmts_cable_cmd_ref.html

Modified Software Features in Cisco IOS Release 12.2(33)SCH4

There are no modified software features in Cisco IOS Release 12.2(33)SCH4.

Modified Software Features in Cisco IOS Release 12.2(33)SCH3

There are no modified software features in Cisco IOS Release 12.2(33)SCH3.

Modified Software Features in Cisco IOS Release 12.2(33)SCH2a

There are no modified software features in Cisco IOS Release 12.2(33)SCH2a.

Modified Software Features in Cisco IOS Release 12.2(33)SCH2

There are no modified software features in Cisco IOS Release 12.2(33)SCH2.

Modified Software Features in Cisco IOS Release 12.2(33)SCH1

There are no modified software features in Cisco IOS Release 12.2(33)SCH1.

Modified Software Features in Cisco IOS Release 12.2(33)SCH

There are no modified software features in Cisco IOS Release 12.2(33)SCH.

Features Integrated into Cisco IOS Release 12.2(33)SCH6

There are no integrated features in Cisco IOS Release 12.2(33)SCH6.

Features Integrated into Cisco IOS Release 12.2(33)SCH5

There are no integrated features in Cisco IOS Release 12.2(33)SCH5.

Features Integrated into Cisco IOS Release 12.2(33)SCH4

There are no integrated features in Cisco IOS Release 12.2(33)SCH4.

Features Integrated into Cisco IOS Release 12.2(33)SCH3

There are no integrated features in Cisco IOS Release 12.2(33)SCH3.

Features Integrated into Cisco IOS Release 12.2(33)SCH2a

There are no integrated features in Cisco IOS Release 12.2(33)SCH2a.

Features Integrated into Cisco IOS Release 12.2(33)SCH2

There are no integrated features in Cisco IOS Release 12.2(33)SCH2.

Features Integrated into Cisco IOS Release 12.2(33)SCH1

MIB Enhancements for USCB Cable Modems

The MIB enhancements for upstream channel bonding group (USCB) cable modems is integrated into the Cisco IOS Release 12.2(33)SCH1. The MIB enhancement provides Transmit Channel Set (TCS) and service flow information. The following MIB tables are added to CISCO-DOCS-EXT-MIB:

- `cdxCmtsMtcCmTable`
- `cdxCmtsUscbSflowTable`

For more information, see the *Cisco CMTS Universal Broadband Router Series MIB Specifications Guide 12.2SC* at the following URL:

http://www.cisco.com/en/US/docs/cable/cmts/mib/12_2sc/reference/guide/ubrmibv5.html

Upstream Drop Classifier

A set of matching criteria is applied by the cable modems to packets to determine if a packet should be dropped. This set of matching criteria when applied to upstream traffic, is called the Upstream Drop Classifier (UDC). The CMTS only enables the UDC feature on the cable modems.

The UDC feature is integrated into the Cisco IOS Release 12.2(33)SCH1 and can be enabled for all cable modems on any interface.

The following commands were introduced or modified:

- `cable udc-capability`
- `show cable modem`

For more information on the UDC feature, see the *Configuring Upstream Cable Interface Features on the Cisco CMTS Routers* guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_upstrm_if.html

Features Integrated into Cisco IOS Release 12.2(33)SCH

Cable Modem System Description

The **show cable modem sysDescr** command, introduced in Cisco IOS Release 12.2(33)SCG2, provides the system description of a single cable modem without enabling remote query on the Cisco CMTS router. The **show cable modem sysDescr** command displays result for IPv4 cable modems only.

In Cisco IOS Release 12.2(33)SCG1 and earlier, you cannot view the system description of a single cable modem. Instead, you can view system descriptions of all cable modems after enabling remote query on the Cisco CMTS router using the **cable modem remote-query** command in global configuration mode. This might impact system performance because it queries all the cable modems connected to the Cisco CMTS router.

For more details about the **show cable modem sysDescr** command, see the *Cisco IOS CMTS Cable Command Reference* at:

http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_16_show_cable_m_to_show_cable_u.html

Copy and Paste Support for TDMA to ATDMA Upgrade

To have the 6400 kHz channel width accepted by pasting the configuration only once, Cisco IOS Release 12.2(33)SCG2 introduces the Copy and Paste Support for TDMA to A-TDMA Upgrade feature. If 6400 kHz is set as channel width in TDMA mode or mixed TDMA/A-TDMA mode, DOCSIS mode automatically changes to A-TDMA-only (DOCSIS 2.0) mode.

The following commands were modified:

- **cable upstream channel-width**
- **cable upstream docsis-mode**

For more information, see *Configuring Upstream Cable Interface Features on the Cisco CMTS Routers* configuration guide at:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_upstrm_if.html

DHCPv6 with Full 6VPE Support

The DHCPv6 with Full 6VPE Support feature introduced in Cisco IOS Release 12.2(33)SCF4 supports the following capabilities for IPv6 on the Cisco CMTS routers:

- Assignment of different prefixes to cable modem (CM) and customer premises equipment (CPE)
- DHCPv6 over Multiprotocol Label System-Virtual Private Network (MPLS-VPN)
- DHCPv6 relay Prefix Delegation (PD) VRF awareness

The following commands were modified:

- **clear ipv6 dhcp relay binding**
- **show ipv6 dhcp relay binding**

For more information about this feature, see the *IPv6 on Cable* feature guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_ipv6.html

Downstream Wideband Resiliency Trap

Downstream Wideband Resiliency Trap feature enables SNMP traps for Wideband Resiliency-related events and setting of the trap interval.

The following commands were introduced or modified:

- **cable resiliency traps-interval**
- **snmp-server enable traps docsis-resil**
- **snmp-server host traps docsis-resil**

For more information, see the *Wideband Modem Resiliency* feature guide at:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_wm_resiliency.html

Physical Channel Interface Mapping

This feature provides an SNMP interface to access information between the physical channel interface and the primary channel interface. The following MIB objects of the CISCO-DOCS-EXT-MIB object can be queried for information about the physical channel interface and the primary channel interface.

- `cdxRFtoPrimaryChannelMappingTable`
- `cdxPrimaryChanneltoRFMappingTable`

For more information, see *Cisco CMTS Universal Broadband Router Series MIB Specifications Guide 12.2SC* at:

http://www.cisco.com/en/US/docs/cable/cmts/mib/12_2sc/reference/guide/ubrmibv5.html

Management Information Base

To locate and download Management Information Base (MIBs) for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you forgot or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check verifies that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password is e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://tools.cisco.com/RPF/register/register.do>

For information about the MIBs supported by the Cisco universal broadband routers, see the *Cisco CMTS Universal Broadband Series Router MIB Specifications Guide*.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH6

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH6.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH5

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH5.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH4

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH4.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH3

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH3.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH2a

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH2a.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH2

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH2.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH1

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCH1.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCH

The Cisco universal broadband routers include or add support for the following MIBs in Cisco IOS Release 12.2(33)SCH:

- CISCO-ENTITY-ALARM-MIB
- CISCO-ENTITY-ASSET-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-ENTITY-VENDORTYPE-OID-MIB
- CISCO-ENVMON-MIB
- CISCO-FLASH-MIB
- ENTITY-MIB
- IF-MIB

Limitations and Restrictions

This section describes restrictions for the Cisco universal broadband routers in Cisco IOS Release 12.2(33)SCH.

Unsupported Hardware

For a list of unsupported hardware, see the End-of-Life and End-of-Sale Notices at the following URLs:

- http://www.cisco.com/en/US/products/hw/cable/ps2217/prod_eol_notices_list.html
- http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_eol_notices_list.html

Software Feature Restrictions

This section describes other important guidelines or restrictions to consider when running Cisco IOS Release 12.2SC that might not yet be documented in the supporting customer documentation.

DOCSIS

- You cannot configure an upstream connector on more than one fiber node.
- Multicast over DOCSIS L2VPN does not work for a DOCSIS 3.0-bonded cable modem (CM) when DOCSIS L2VPN is provisioned on a DOCSIS 3.0-bonded CM and downstream multicast traffic is sent over L2VPN. You can use a DOCSIS L2VPN classifier to classify multicast traffic on a secondary DS service flow with SF attributes (TLV 25.31/32) specifying primary DS for the CM. As a result, L2VPN multicast traffic uses the primary DS and L2VPN unicast traffic is forwarded over the primary bonding group. The service flow attribute feature is available in Cisco IOS Release 12.2SCB.

MIBs Restriction

- IP-MIB is implemented as read-only. Writing is not supported for `ipv6IPForwarding` or `ipv6IpDefaultHopLimit`.
- `docsIf3MdCfgMcastDsidFwdEnabled` object is implemented as read-only.
- `cdxBWQueueMaxDepth` object sometimes reports a value out of range. The supported range is from 0 to 64, but the object sometimes returns a value of 128 when queried.

PacketCable

Payload Header Suppression (PHS) is not supported on wideband Embedded Media Terminal Adapters (eMTAs) for dynamic downstream service flows.

Redundancy

- Although the software does not prevent it, pre-configuring commands on a protect line card is not supported.
- A dynamic service-flow for a PacketCable call is not deleted during a line card switchover.

- Although the Cisco CMTS router is initially configured only for global N+1 redundancy, the **show running-configuration** command displays both global and legacy interface-level Hot-Standby Connection-to-Connection Protocol (HCCP) configuration when you change redundancy mode configuration from SSO to RPR mode. If you switch back to SSO mode, both redundancy configurations are still shown.
- In very rare circumstances after an N+1 switchover, upstream traffic that is using Baseline Privacy Interface (BPI) encryption is not received properly by the CMTS router. Input errors are logged on the interface and the **debug cable error** command shows error messages similar to the following:

```
Cable5/1/4: Bad rx packet. JIB status code 0xA
```

The issue occurs on upstream channels that use a “shared” connector, where the other upstream channel using the same shared connector is on another downstream and is shutdown. To workaroud this issue, you can activate the downstream and other upstream channel using the same shared connector or temporarily unshare the upstream connector.

Wideband

If you configure a wideband interface with more than one MAC domain host sharing the committed information rate (CIR) bandwidth, then the total wideband interface CIR bandwidth gets fragmented among the MAC Domain hosts sharing the WB interface CIR bandwidth.

The WB interface CIR bandwidth can be shared by multiple MAC domain hosts, and these MAC domain hosts could potentially be on the same or different cable line cards. As admission control for WB interfaces happens on cable line cards, the available CIR bandwidth gets partitioned and given to the MD hosts causing the bandwidth fragmentation. However if a typical service flow CIR is very small compared to the total CIR of the wideband interface, then this fragmentation is not visible until the CIR usage reaches very high levels close to the total interface bandwidth.

With certain bandwidth percent configuration and traffic distribution, the overall link utilization of dynamic bandwidth sharing (DBS) can be 85%. For example, this can occur if the traffic rate on a wideband interface is smaller than its configured bandwidth percent, but the traffic rate on a modular-cable interface is much larger than its bandwidth percent. The packet drops happen only on the modular-cable interface which has a larger amount of traffic than its bandwidth-percent. To workaroud this scenario, configure a higher bandwidth percentage to the modular-cable interface, which is larger than or equal to its expected or average traffic rate.

Important Notes

The following sections list the important notes for the Cisco uBR7200 routers:

- [Important Notes for Cisco IOS Release 12.2\(33\)SCH6, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH5, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH4, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH3, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH2a, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH2, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH1, page 1-20](#)
- [Important Notes for Cisco IOS Release 12.2\(33\)SCH, page 1-20](#)

Important Notes for Cisco IOS Release 12.2(33)SCH6

There are no important notes for Cisco IOS Release 12.2(33)SCH6.

Important Notes for Cisco IOS Release 12.2(33)SCH5

There are no important notes for Cisco IOS Release 12.2(33)SCH5.

Important Notes for Cisco IOS Release 12.2(33)SCH4

There are no important notes for Cisco IOS Release 12.2(33)SCH4.

Important Notes for Cisco IOS Release 12.2(33)SCH3

- Effective with Cisco IOS Release 12.2(33)SCH3, the output of the show running-config all command is modified to display the SID cluster information configured using the **cable sid-cluster-group** command.
- Effective with Cisco IOS Release 12.2(33)SCH3, ensure that the DSG downstream configuration is disabled, before you remove a DSG tunnel group from a sub interface.

Important Notes for Cisco IOS Release 12.2(33)SCH2a

There are no important notes for Cisco IOS Release 12.2(33)SCH2a.

Important Notes for Cisco IOS Release 12.2(33)SCH2

There are no important notes for Cisco IOS Release 12.2(33)SCH2.

Important Notes for Cisco IOS Release 12.2(33)SCH1

There are no important notes for Cisco IOS Release 12.2(33)SCH1.

Important Notes for Cisco IOS Release 12.2(33)SCH

Effective with Cisco IOS Release 12.2(33)SCH, the **show cable modem sysDescr** command is modified to display system information for IPv6 cable modems.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: <http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation as an RSS feed and delivers content directly to your desktop using a reader application. The RSS feeds are a free service.

