



Introduction

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

For software caveats that apply to the Cisco IOS Release 12.2(33)SCD on the Cisco uBR7200 series routers, see the corresponding release notes for Cisco uBR7200 Series 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.

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System Requirements

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

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- [Hardware Supported, page 2](#)
- [Verifying the Software Version, page 5](#)
- [Upgrading to a New Software Release, page 5](#)
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Memory Requirements

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


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 uBR10012 universal broadband router with Cisco IOS Release 12.2(33)SCD feature sets.

Table 1-1 Memory Recommendations for the Cisco uBR10012 Router

Feature Set	Cisco uBR10012 Route Processor	Software Image	Recommended Flash Memory	Recommended DRAM Memory ¹	Runs From
DOCSIS Base 3 DES image and Lawful Intercept for Cisco PRE2 ²	PRE2	ubr10k2-k9p6u2-mz	128 MB	1.0 GB	RAM
DOCSIS Base 3 DES image and Lawful Intercept for Cisco PRE4	PRE4	ubr10k4-k9p6u2-mz	128 MB	2.0 GB	RAM
DOCSIS BPI and Lawful Intercept for Cisco PRE4	PRE4	ubr10k4-k8p6u2-mz	128 MB	2.0 GB	RAM

1. DRAM memory is not configurable on the Cisco uBR10012 router.
2. PRE = Performance Routing Engine

Hardware Supported

The following sections list the hardware supported on various Cisco IOS Releases:

- [Cable Interface Line Cards Supported, page 2](#)
- [Microcode Software, page 6](#)
- [Other Hardware Supported, page 5](#)

Cable Interface Line Cards Supported

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

Table 1-2 Cable Interface Line Cards Supported in Cisco IOS Release 12.2(33)SCD

Supported Cable Interface Line Card	Minimum Cisco IOS Release Required	Processor Engine
Cisco uBR10-MC5X20U/H—maximum 8	Cisco IOS Release 12.2SCA	PRE2/PRE4
Cisco UBR-MC20X20V—maximum 8	Cisco IOS Release 12.2SCC	PRE2/PRE4

OIR of Cable Interface Line Cards on the Cisco uBR10012 Universal Broadband Router

The Cisco uBR10012 series universal broadband routers support online insertion and removal (OIR) of cable interface line cards only when exchanging cable interface line cards of the same type.

Effective with Cisco IOS Release 12.2(33)SCC, OIR compatibility between the Cisco uBR10-MC5X20 and the Cisco UBR-MC20X20V line cards is supported. The OIR compatibility procedure translates the configuration from one format to another during the OIR process.

Prerequisites for Performing OIR

- Save the line card configuration before starting the OIR.
- Perform OIR when the CMTS is up and running.
- Change the standby card (if available) to HOT state.
- Save the startup configuration file before any reload of the system (if there is a need to reload), after a successful OIR.

Restrictions During OIR Process

- OIR upgrade cannot be performed when the standby PRE is being loaded.
- OIR downgrade from the Cisco UBR-MC20X20V line card to the Cisco uBR10-MC5X20 line card may fail in certain scenarios when the frequency and RF power settings on the Cisco UBR-MC20X20V line card are incompatible with the Cisco uBR10-MC5X20 card.

Performing an OIR of a Cable Interface Line Card

- Step 1** In global configuration mode, enter the **cr10k card oir-compatibility** command for the cable interface line card to perform an OIR, as shown in the following example:

```
Router(config)# cr10k card 8/0 oir-compatibility
```

This command helps preserve the configuration and performs some internal synchronization to make sure that the OIR runs successfully.



Note Effective with Cisco IOS Release 12.2(33)SCC, OIR compatibility is automatically ON for all slots of the line cards.

- Step 2** Save the configuration to ensure the transition, as shown in the following example:

```
Router# copy running-config startup-config
```

- Step 3** Turn the power off to the line card using the **cable power off** command for the slot that is being replaced, as shown in the following example:

```
Router# cable power off 8/0  
Line Card 8/0 is POWERED OFF
```

This powers off the line card gracefully.

- Step 4** Before removing the card, verify that the proper grounding instructions have been followed for the card. For more information about preventing electrostatic discharge (ESD) damage, see:

<http://www.cisco.com/warp/public/109/cable-linecard-handling.pdf>

- Step 5** Remove the line card.

- Step 6** Replace it with the new line card in the slot.

Step 7 Enter the **cable power on** command to power up the line card, as shown in the following example:

```
Router# cable power on 8/0
```

Step 8 Enter the **show interface cable** command and verify that the card and line protocol is “up” as shown in the following example:

```
Router# show interface cable 8/0/0
```

```
Cable8/0/0 is up, line protocol is up
Hardware is BCM3210 ASIC, address is 000a.13e8.1ca8 (bia 000a.13e8.1a60)
Internet address is 10.1.1.3/24
MTU 1500 bytes, BW 27000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
Encapsulation, loopback not set, keepalive not set
ARP type: ARPA, ARP Timeout 04:00:00
Last input 4d07h, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queuing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 1834000 bits/sec, 2385 packets/sec
5 minute output rate 1982000 bits/sec, 2431 packets/sec
 24461542 packets input, 2348214388 bytes, 0 no buffer
Received 1979 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
24854257 packets output, 2536222931 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
```

Step 9 Enter the **show controllers cable** command and verify the hardware status, as shown in the following example:

```
Router# show controllers cable 8/0/0
Cable8/0/0 JIB hardware status:
  JIB Downstream port  Enabled
  JIB Upstream  port 0  Enabled
  JIB Upstream  port 1  Enabled
  JIB Upstream  port 2  Enabled
  JIB Upstream  port 3  Enabled
Cable8/0/0 Upconverter is Enabled Output is Enabled
Model: 74-3153-02 Serial Number: 0WAV090200A1 CLEI Code: FFFFFFFF
HW Rev: PC2D0109 SW Rev: 203, NVRAM Rev: 021 ECI numb
```



Note To verify the hardware status of the Cisco UBRMC20X20V cable line cards, it is recommended that you run the **show controller integrated-cable 8/0/0 brief** command instead of the **show controllers cable** command.

Step 10 Verify the configuration with the **show running-configuration** command.

Cisco uBR10012 Universal Broadband Router Line Cards Supported

The Cisco uBR10012 universal broadband router supports up to four network line cards with any combination of the following cards:

- Cisco Half-Height Gigabit Ethernet (HHGE) line card
- Cisco uBR10012 OC-48 DPT/POS interface module



Note Cisco HHGE line card is supported only with PRE2.

Other Hardware Supported

Table 1-3 provides information about other hardware supported in Cisco IOS Release 12.2(33)SCD.

Table 1-3 Other Hardware Supported in This Cisco IOS Release

Hardware	Cisco uBR10012 Router	Minimum Cisco IOS Release
Cisco Wideband SIP and Cisco Wideband SPA	Yes	Cisco IOS Release 12.2(33)SCA
Cisco uBR10012 universal broadband router DTCC card	Yes	Cisco IOS Release 12.2(33)SCB
Cisco uBR10012 universal broadband router TCC+ card	Yes	Cisco IOS Release 12.2(33)SCA
Cisco 10000 Series SIP-600 and WAN SPAs (5-Port Gigabit Ethernet and the 1-Port 10 Gigabit Ethernet SPAs)	Yes	Cisco IOS Release 12.2(33)SCB
Cisco 10000 Series SIP-600 with the Cisco Wideband SPA	Yes	Cisco IOS Release 12.2(33)SCB

Verifying the Software Version

To determine 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, 10000 Software (UBR10K4-K9P6U2-M), Version 12.2(33)SCD
EXPERIMENTAL IMAGE ENGINEERING C10K_WEEKLY BUILD, synced to
MAYFLOWER_BASE_FOR_V122_33_SB_THROTTLE
Copyright (c) 1986-2010 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:

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 URL:

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

Microcode Software

This section describes microcode software that is supported for the Cisco uBR10012 router.

SPA FPD Image Packages for the Cisco uBR10012

The field-programmable device (FPD) image packages are used to update the shared port adapter (SPA) FPD images. If a discrepancy exists between a SPA FPD image and the Cisco IOS image that is running on the router, the SPA is deactivated until this discrepancy is resolved.


Note

The maximum time to upgrade the FPD image on one SPA is 2 minutes. The total FPD upgrade time depends on the number of SPAs.


Note

The FPD image package that is used to upgrade SPAs on a router that runs Cisco IOS Release 12.2(33)SCD is the `ubr10k-fpd-pkg.122-33.SCD` pkg file.

Table 4 Shared Port Adapter FPD Image Package Contents

Supported SPAs	FPD ID	FPD Component Name	FPD Component Version	Minimum Required Hardware Version
5-Port Gigabit Ethernet SPA	1	I/O FPGA	1.10	0.0
1-Port 10-Gigabit Ethernet SPA	1	I/O FPGA	1.9	0.0
Cisco Wideband SPA	1	BLAZE FPGA	1285.1446	0.0

Upgrading from PRE2 to PRE4 Processors

A cold start of the router is required for an upgrade to a PRE4 from a PRE2 on a Cisco uBR10012 universal broadband router from a different release train, such as Cisco IOS Release 12.3(23)BC or other BC releases.

For more information, see *Cisco uBR10012 Universal Broadband Router Performance Routing Engine Module* at:

http://www.cisco.com/en/US/docs/interfaces_modules/cable/performance_routing_engine/installation/guide/pre5096.html

Upgrading from Cisco IOS Release 12.3BC or Earlier Cisco IOS Software Release

For more information, see the *Cisco uBR10012 Router Release Notes for Cisco IOS Release 12.2(33)SCA* at the following URL:

http://www.cisco.com/en/US/products/hw/cable/ps2209/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

Table 1-5 provides information about the important user guides in Cisco IOS Release 12.2SC.

Table 1-5 Important Guides in Cisco IOS Release 12.2SC

Guide	Description
Documentation Roadmap	Describes a set of Cisco CMTS documents and contains links to the referenced documents. Go to the following link to access this document: http://www.cisco.com/c/en/us/td/docs/cable/cmts/ubr10012/roadmap/u10krdmp.html
Command Reference	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. Go to the following link to access this document: http://www.cisco.com/c/en/us/td/docs/cable/cmts/cmd_ref/b_cmts_cable_cmd_ref.html
Design Guides	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. Go to the following link to access this document set: http://www.cisco.com/c/en/us/support/video/ubr10000-series-universal-broadband-routers/products-implementation-design-guides-list.html

Guide	Description
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/c/en/us/support/video/ubr10000-series-universal-broadband-routers/products-installation-guides-list.html</p> <p>Important guides in this section are:</p> <ul style="list-style-type: none"> • Cisco uBR10012 Universal Broadband Router Hardware Installation Guide • Cisco uBR10012 Universal Broadband Router SIP and SPA Hardware Installation Guide
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 set: http://www.cisco.com/en/US/products/hw/cable/ps2209/products_installation_and_configuration_guides_list.html</p> <p>Important guides in this section are:</p> <ul style="list-style-type: none"> • Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide • Cisco IOS CMTS Cable Software Configuration Guide, Release 12.2SC
Error and System Messages	<p>Lists error and system messages for a Cisco CMTS, including any recommended user action for each message.</p> <p>Go to the following link to access this document: http://www.cisco.com/en/US/docs/cable/cmts/system/message/uberrmes.html</p>
Troubleshooting Guides	<p>Provides problem-solving techniques for a Cisco CMTS, including methods to identify problems based on symptoms and recommended actions for resolution.</p> <p>Go to the following link to access this document set: http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_troubleshooting_guides_list.html</p> <p>Important guides in this section are:</p> <ul style="list-style-type: none"> • http://www.cisco.com/c/en/us/td/docs/cable/cmts/ubr10012/troubleshooting/guide_SC_HW/u10trbk_SC.html • Online Offline Diagnostics - Field Diagnostics on Cisco uBR10012 Router User's Guide

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 uBR10012 universal broadband routers in Cisco IOS Release 12.2(33)SCD:

- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD8](#), page 11
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD7](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD6](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD5](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD4](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD3](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD2](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD1](#), page 12
- [New Hardware Features in Cisco IOS Release 12.2\(33\)SCD](#), page 12
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD8](#), page 13
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD8](#), page 13
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD7](#), page 13
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD6](#), page 13
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD6](#), page 13
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD5](#), page 13
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD5](#), page 15
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD4](#), page 15
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD4](#), page 15
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD3](#), page 15
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD3](#), page 16
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD2](#), page 17
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD2](#), page 20
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD1](#), page 20
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD1](#), page 20
- [New Software Features in Cisco IOS Release 12.2\(33\)SCD](#), page 20
- [Modified Software Features in Cisco IOS Release 12.2\(33\)SCD](#), page 21

New Hardware Features in Cisco IOS Release 12.2(33)SCD8

There are no new hardware features in Cisco IOS Release 12.2(33)SCD8.

Features Integrated into Cisco IOS Release 12.2(33)SCD8

The following features introduced in an earlier Cisco IOS Release are now supported in Cisco IOS Release 12.2(33)SCD8:

New Fan Assembly Module

A new fan Assembly Module (UBR10012-FAN-PLUS=) is introduced on the Cisco uBR10012 router. This fan assembly has nine internal fans that draw cooling air into the front of the chassis and directs it across the internal components. This fan assembly module provides:

- Increased cooling capability
- Higher redundancy in case of a failure
- Repositioned thermal sensor that detects the ambient temperature of the facility and adjusts the variable fan speeds
- PRODUCT ID LED /switch that helps the Cisco IOS software to identify the fan assembly as UBR10012-FAN-PLUS=

**Note**

The PRODUCT ID LED /switch feature is supported starting Cisco IOS Release 12.2(33)SCC7 and later.

For more information, see [Cisco uBR10012 Universal Broadband Router Fan Assembly Module](#).

New 3300 W AC Power Entry Module (AC PEM)

A new 3300 W AC PEM module (UBR10-PWR-AC-PLUS=) is introduced on the Cisco uBR10012 router which provides a power output of 3300 W with dual AC-input power connections. This AC PEM module provides:

- Increased power to the chassis
- Load shared power to the chassis (under normal conditions)
- PRODUCT ID LED/switch that helps the Cisco IOS software to identify the AC PEM module as UBR10-PWR-AC-PLUS=.

**Note**

The PRODUCT ID LED /switch feature is supported starting Cisco IOS Release 12.2(33)SCC7 and later.

For more information, see [3300 W AC PEM Module for Cisco UBR10012 Broadband Router Chassis](#).

New 3300 W DC Power Entry Module (DC PEM)

A new 3300 W DC PEM module (UBR10-PWR-DC-PLUS=) is introduced on the Cisco uBR10012 router which provides a power output of 3300 W with dual DC-input power connections. This DC PEM module provides:

- Increased power to the chassis
- Load shared power to the chassis (under normal conditions)

- PRODUCT ID LED/switch that helps the Cisco IOS software to identify the DC PEM module as UBR10-PWR-DC-PLUS

**Note**

The PRODUCT ID LED /switch feature is supported starting Cisco IOS Release 12.2(33)SCC7 and later.

For more information, see [3300 W DC PEM Module for Cisco UBR10012 Broadband Router Chassis](#).

New Hardware Features in Cisco IOS Release 12.2(33)SCD7

There are no new hardware features in Cisco IOS Release 12.2(33)SCD7.

New Hardware Features in Cisco IOS Release 12.2(33)SCD6

There are no new hardware features in Cisco IOS Release 12.2(33)SCD6.

New Hardware Features in Cisco IOS Release 12.2(33)SCD5

There are no new hardware features in Cisco IOS Release 12.2(33)SCD5.

New Hardware Features in Cisco IOS Release 12.2(33)SCD4

There are no new hardware features in Cisco IOS Release 12.2(33)SCD4.

New Hardware Features in Cisco IOS Release 12.2(33)SCD3

There are no new hardware features in Cisco IOS Release 12.2(33)SCD3.

New Hardware Features in Cisco IOS Release 12.2(33)SCD2

There are no new hardware features in Cisco IOS Release 12.2(33)SCD2.

New Hardware Features in Cisco IOS Release 12.2(33)SCD1

There are no new hardware features in Cisco IOS Release 12.2(33)SCD1.

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

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

New Software Features in Cisco IOS Release 12.2(33)SCD8

There are no new software features in Cisco IOS Release 12.2(33)SCD8.

Modified Software Features in Cisco IOS Release 12.2(33)SCD8

There are no modified software features in Cisco IOS Release 12.2(33)SCD8.

New Software Features in Cisco IOS Release 12.2(33)SCD7

Configurable DFO Retry Count

The Downstream Frequency Override (DFO) feature enables cable modems to register on a specific primary RF channel. Because of RF failure conditions and some cable modem types, the cable modem takes more time to register on a specific primary RF channel. In Cisco IOS Release 12.2(33)SCD7, the **cable dfo-retry-count**, a global configuration command, is introduced to enable you to configure the DFO retry count to reduce the cable modem registration time.

For more information about this command, see the *Cisco IOS CMTS Cable Command Reference* at: http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_03_cable_d.html

New Software Features in Cisco IOS Release 12.2(33)SCD6

There are no new software features in Cisco IOS Release 12.2(33)SCD6.

Modified Software Features in Cisco IOS Release 12.2(33)SCD6

There are no modified software features in Cisco IOS Release 12.2(33)SCD6.

New Software Features in Cisco IOS Release 12.2(33)SCD5

This section lists the new features in Cisco IOS Release 12.2(33)SCD5. Some features may be new to Cisco IOS Release 12.2(33)SCD5 but were released in earlier Cisco IOS software releases.

Differential DHCP GIAddr Assignment

Starting with Cisco IOS Release 12.2(33)SCD5, a new **giaddr** option was added to the **cable dhcp-giaddr policy mta** command. This option changes the source IP address of the DHCP request so that the DHCP server can use different subnets to assign the right IP address depending on the types of CPE devices. This enables faster processing of IP addresses; and in case the IP address does not belong to the subnets on the DHCP server, there is minimal usage of CPU resources.

The following command was modified:

- **cable dhcp-giaddr policy mta**

For more information about this feature, see the *DHCP, ToD, and TFTP Services for the CMTS Routers* feature guide at:

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

DOCSIS 3.0 BPI+ Policy Enforcement

The DOCSIS 3.0 BPI+ Policy Enforcement feature was introduced in Cisco IOS Release 12.2(33)SCD5 to prevent cable modem MAC address cloning and theft of service. This feature enables a Cisco CMTS router to validate each cable modem MAC address. To enforce BPI+, configure one of the following enforcement policies for each MAC domain on the router:

- **1.1 Style Configuration File Parameters and Capability (Policy 1)**—The Cisco CMTS router enforces BPI+ on cable modems that register with a DOCSIS 1.1 configuration file with parameters indicating BPI+ is enabled with or without type, length, value (TLV) 29. The Privacy Support Modem Capability Modem TLV (type 5.6) in the configuration file must be set to BPI+ support.
- **1.1 Style Configuration File Parameters (Policy 2)**—The Cisco CMTS router enforces BPI+ on cable modems that register with a DOCSIS 1.1 style configuration file with parameters indicating BPI+ is enabled with or without TLV 29.
- **1.1 Style Configuration File (Policy 3)**—The Cisco CMTS router enforces BPI+ on cable modems that register with a DOCSIS 1.1 style configuration file. This means that if you provision a DOCSIS 1.1 configuration file with security disabled (privacy flag is not present in the configuration file), all DOCSIS 1.1 and 2.0 cable modems will be blocked. Only the DOCSIS 3.0 cable modems that have security enabled implicitly will pass this check if the privacy flag is not present in the configuration file.
- **Total (Policy 4)**—The Cisco CMTS router enforces BPI+ on all DOCSIS 1.0 and greater cable modems.

The following commands are new or modified:

- **cable privacy bpi-plus-policy**—This command replaced the cable privacy bpi-plus-enforce command in Cisco IOS Release 12.2(33)SCD5.
- **cable privacy bpi-plus-exclude**

For more information about this feature, see the *Cable Duplicate MAC Address Reject for the Cisco CMTS Router* feature guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_dup_macad_rj_ps2209_TSD_Products_Configuration_Guide_Chapter.html

DOCSIS 2.0 Multicast Enhancement for VDOC

This feature enables the customer to tune a DOCSIS 2.0 cable modem to a specific downstream and supports static multicast video forwarding on it.

The following commands are new or modified:

- **cable load-balance rule**

For more information about this feature, see the following guides:

Load Balancing and Dynamic Channel Change on the Cisco CMTS Routers at the following URL:

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

Restricted/General Load Balancing and Narrowband Dynamic Bandwidth Sharing with Downstream Dynamic Load Balancing at the following URL:

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

DSG Rule/Classifier Enhancement

A new option **ignore** was added to the **in-dcd** keyword of the **cable dsg cfr** command in Cisco IOS Release 12.2(33)SCD5 to exclude DSG classifier information from the DCD message and enable the DSG rule regardless of the tunnel MAC address.

The following commands are new or modified:

- **cable dsg cfr**
- **show cable dsg tg**
- **show interface cable dsg downstream tg**

For more information about the DSG Rule/Classifier Enhancement, see the *Advanced-Mode DOCSIS Set-Top Gateway 1.2 for the Cisco CMTS Routers* feature guide at:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_docsis_gw12.html

Upstream Minimum Reserved Traffic Rate Plus Excess Traffic Rate

Starting with Cisco IOS Release 12.2(33)SCD5, a service flow configured with the minimum reserved traffic rate, has a greater chance of receiving excess traffic rate bandwidth, if requested.

The following command was new:

- **cable rate-limit-algorithm min-plus-excess**

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

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

Modified Software Features in Cisco IOS Release 12.2(33)SCD5

There are no modified features in Cisco IOS Release 12.2(33)SCD5.

New Software Features in Cisco IOS Release 12.2(33)SCD4

There are no new software features in Cisco IOS Release 12.2(33)SCD4.

Modified Software Features in Cisco IOS Release 12.2(33)SCD4

There are no modified features in Cisco IOS Release 12.2(33)SCD4.

New Software Features in Cisco IOS Release 12.2(33)SCD3

This section lists the new features in Cisco IOS Release 12.2(33)SCD3. Some of the features that were released in earlier Cisco IOS software releases are now supported in Cisco IOS Release 12.2(33)SCD3.

RF-Power Delta

The RF-Power Delta feature introduced in Cisco IOS Release 12.2(33)SCC4 is now supported in Cisco IOS Release 12.2(33)SCD3.

The RF power adjustment feature enables compensation of the extra power loss in the protect path of the Cisco RF Switch. This feature has been enhanced in the Cisco IOS Release 12.2(33)SCC4:

- The support for keywords **hccp-delta** and **hccp-override** is removed from the **cable downstream rf-power** command.
- The member subslot command is modified to add support for RF Power adjustment in redundancy mode. The following keywords have been added to this command:

1. **rf-power**
2. **rf-connector**
3. **hccp-delta**
4. **hccp-override**

The following commands are new or modified for this feature:

- **cable downstream rf-power**
- **member subslot**

For more information about the **member subslot** command, see the Cisco IOS CMTS Cable Command Reference at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_13_i_to_p.html

Multicast DSID Forwarding Disabled Mode

For any application that needs the cable modem to perform IGMP Snooping, the Multicast DSID-based Forwarding (MDF) on the cable modem must be disabled. Cable modems registered in MDF-enable mode by the Cisco CMTS do not perform IGMP Snooping because MDF forwarding is based on the DSID filtering.

In Cisco IOS Release 12.2(33)SCD3, the **cable multicast mdf-disable** command is introduced in the global configuration mode to disable the MDF capability on the cable modem.

For more information about this feature, see the DOCSIS 3.0 Multicast Support on the CMTS Routers feature guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_d30_mcast_support_ps2209_TS_D_Products_Configuration_Guide_Chapter.html

Modified Software Features in Cisco IOS Release 12.2(33)SCD3

There are no modified software features in Cisco IOS Release 12.2(33)SCD3.

New Software Features in Cisco IOS Release 12.2(33)SCD2

CMTS Upstream Traffic Prioritization

With the CMTS Upstream Traffic Prioritization feature, you can now set the priority of the QoS profile-2 to a higher value. This higher priority ensures that the Cisco CMTS allows bandwidth request from an initializing cable modem to get precedence over those from online cable modems.

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

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

DOCSIS 3.0 OSS IPDR/SP

DOCSIS 3.0 certification is extended to IPDR/SP feature in Cisco CMTS routers. IPDR Streaming Protocol is designed to address the need for a reliable, fast, efficient, and flexible export process of high volume data records such as billing, performance and diagnostic data.

Using the **ipdr type** command, you can configure the IPDR session type. The IPDR session types that can be defined using this command are event type, time-interval type, and the ad hoc type.

For detailed information about this feature, see the *IPDR Streaming Protocol on the Cisco CMTS Routers* document at:

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

Dynamic Insertion of TFTP Server tlv for CM Firmware Upgrade

This feature describes how to upgrade firmware on cable modems by dynamically inserting the correct TLV values in the DOCSIS configuration file, which is downloaded by the cable modem. The **cable dynamic-secret tftp insert-upgrade-server** command was added to support dynamic insertion of the TFTP server address in the DOCSIS configuration file.

For detailed information about upgrading firmware on the cable modems, see the *Configuring a Dynamic Shared Secret for the Cisco CMTS* document at:

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

ISSU Single Step Upgrade Process

Single step upgrade process is the ability of the ISSU feature to upgrade the entire CMTS system using the new **issu changeversion** command. This process allows the networking device to inform the system that the networking device is performing a complete upgrade cycle automatically, and allows the state transitions to move to the next step automatically.

For detailed information about the ISSU single step upgrade process, see the *Cisco IOS In Service Software Upgrade Process* document at:

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

Power and Thermal Monitoring on the Cisco CMTS Routers

The power and thermal monitoring feature provides monitoring options for the thermal and power consumption of the Cisco UBR-MC20X20V cable interface line card. The power and thermal monitoring facility monitors the line card at several different points to see whether it is overheating or drawing too much power.

For more information on this feature, see *Power and Thermal Monitoring on the Cisco CMTS Routers* document at:

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

SAMIS Inactive Service Flow and Channel Utilization Interval CLIs

A new keyword, **full-records**, has been added to the **cable metering destination** and **cable metering filesystem** commands to provide information about both, active and idle service flow records.

A new command, **cable util-interval**, has been introduced to configure the interval of the channel utilization. This command can be used for both, cable line cards and the SPA channel.

For more information, see the *Usage-Based Billing for the Cisco CMTS Routers* document at:

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

Show Cable Modem Partial Mode

A new command, **show cable modem partial-mode**, was introduced in Cisco IOS Release 12.2(33)SCD2 to display information about the cable modems that are in upstream and downstream partial service mode.

For more information about this command, see the *Cisco IOS CMTS Cable Command Reference* at the following URL:

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

Subscriber Traffic Management version 1.3

The Subscriber Traffic Management (STM) feature allows the service provider to configure a maximum bandwidth threshold over a fixed time period, for a specific service-class (or QoS-profile). The subscribers who exceed this configured threshold are identified and allocated with a reduced QoS. STM works as a low CPU alternative to Network-Based Application Recognition (NBAR) and access control lists (ACLs), however, using STM does not mean that NBAR and ACLs have to be turned off; STM can be applied along with NBAR and ACLs. STM also works in conjunction with the Cisco Broadband Troubleshooter to support additional network management and troubleshooting functions in the Cisco CMTS.

Following are the enhancements in STM Version 1.3:

- Support for configuring minute-level peak time: Peak time can now be configured in the hh:mm format, which enables a user to pinpoint the exact time at which monitoring should start.
- Support for configuring minute-level penalty end time: Penalty end time can now be configured in the hh:mm format, which enables a user to pinpoint the exact time at which monitoring should stop.
- Ability to configure a unique penalty duration for weekdays and weekends.

- Ability to specify whether the monitoring should be turned on after the cable modem is released from the penalty.

The following SNMP objects have been added to the CISCO-CABLE-QOS-MONITOR-MIB:

- ccqmCmtsEnfRuleFirstPeakTimeMin
- ccqmCmtsEnfRuleSecondPeakTimeMin
- ccqmCmtsEnfRuleWkndFirstPeakTimeMin
- ccqmCmtsEnfRuleWkndSecondPeakTimeMin
- ccqmCmtsEnfRulePenaltyEndTimeMin
- ccqmCmtsEnfRuleWkPenaltyPeriod
- ccqmCmtsEnfRuleWkndPenaltyPeriod
- ccqmCmtsEnfRuleRelTimeMonitorOn

The following commands are new or modified:

- **duration**
- **peak-time1**
- **penalty-period**
- **show cable qos enforce-rule verbose**
- **weekend duration**
- **weekend peak-time1**

For more information about this feature, see the *Subscriber Traffic Management* feature guide at the following URL:

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

Upstream Weighted Fair Queuing

The upstream weighted fair queuing (WFQ) is a quality of service (QoS) feature that enables the Cisco CMTS router to allocate optimum bandwidth to upstream service flows based on the WFQ parameter configurations. To enable upstream WFQ, you must configure either the class-based or activity-based WFQ on a cable interface.

The following commands are new or modified:

- **cable upstream qos wfq**
- **show interface cable mac-scheduler**

For more information about this feature, see the *Upstream Channel Bonding* feature guide at the following URL:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_uscb_ps2209_TSD_Products_Configuration_Guide_Chapter.html

Modified Software Features in Cisco IOS Release 12.2(33)SCD2

CMTS Line Card Software Licensing

The UBR-MC20X20V cable interface line card additionally supports 10 downstream and 15 downstream licenses.

For more information, see the *Configuring the Cisco UBR-MC20X20V Cable Interface Line Card* document at:

http://www.cisco.com/en/US/docs/interfaces_modules/cable/broadband_processing_engines/ubr_mc20x20v/configuration/guide/mc20x20v_cfg.html

New Software Features in Cisco IOS Release 12.2(33)SCD1

There are no new software features in Cisco IOS Release 12.2(33)SCD1.

Modified Software Features in Cisco IOS Release 12.2(33)SCD1

There are no modified software features in Cisco IOS Release 12.2(33)SCD1.

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

New CLI for Displaying Cable Modems Detected as Clones

The **hotlist** keyword has been added to the **show interface cable privacy** command to display the cable modem detected as clones.

For more details, see the *Cisco IOS CMTS Cable Command Reference* and *DOCSIS 1.1 for the Cisco CMTS Routers* documents at:

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

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

New CLI for Clearing the RADIUS Server Entries

Incorrect RADIUS server entries can cause CMTS memory leak over an extended period of time. The **clear packetcable rks** command allows you to clear the record keeping server (RKS) entries when no calls are associated with it.

For more details, see the *Cisco IOS CMTS Cable Command Reference* and *PacketCable and PacketCable Multimedia for the Cisco CMTS Routers* documents at:

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

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

RF Channel Stacking for Cisco uBR-MC88V Downstream RF Interface Compliance

A new command, `rf-channel stacking`, was introduced in Cisco IOS Release 12.2(33)SCD to suppress a carrier or mute an RF channel on the Cisco uBR-MC88V line card. By default, the stacking number is configured as 4. If you change the default stacking number configuration, traffic loss may occur on the active channels. That is, if you change the stacking number from 4 to 2, traffic is interrupted on the RF channels 0 and 1.

For more details, see the *Cisco IOS CMTS Cable Command Reference* document at:

http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_14_q_to_sg.html

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

The following software features were modified to add support in Cisco IOS Release 12.2(33)SCD:

DOCSIS 3.0 Downstream Channel Bonding

For detailed information about this feature, see the *Cisco DOCSIS 3.0 Downstream Solution Design and Implementation Guide* document at:

http://www.cisco.com/en/US/docs/cable/cmts/wideband/solution/guide/release_2.0/ds_solu.html

Upstream Channel Bonding

For detailed information about this feature, see the *Upstream Channel Bonding* document at:

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

DOCSIS 3.0 Downstream Peak Traffic Rate TLV Support for ERBA

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

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_docsis11_ps2209_TSD_Products_Configuration_Guide_Chapter.html

Cisco IOS Software Activation

For detailed information about these commands, see the *Cisco IOS Software Activation Command Reference* document at:

<http://www.cisco.com/en/US/docs/ios-xml/ios/csa/command/csa-cr-book.html>

Dynamic Bandwidth Sharing

For more information on the DBS, see the *Dynamic Bandwidth Sharing on the Cisco CMTS Router* document at:

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

Wideband Modem Resiliency

For more information about this feature, see the *Wideband Modem Resiliency* document at:

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

DOCSIS 3.0 Downstream Bonding for Bronze Certification

For more information about this feature, see the *DOCSIS 3.0 Downstream Utility for Bronze Certification* document at:

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

S-CDMA and Logical Channel Support

For more details on this feature, refer to *SCDMA and Logical Channel Support on the Cisco CMTS Routers* at the following location:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_d30_scdma_lc.html

DOCSIS 3.0 Multicast Compliance

For more details on this feature, refer to *DOCSIS 3.0 Multicast Support on the CMTS Routers* at the following location:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_d30_mcast_support.html

Configurable DOCSIS Downstream Weight

For more details on this feature, refer to *DOCSIS WFQ Scheduler on the Cisco CMTS Routers* at the following location:

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

DOCSIS 3.0 Multicast Support

For detailed information about this feature, see the *DOCSIS 3.0 Multicast Support on the CMTS Routers* document at:

http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_d30_mcast_support.html

DOCSIS 3.0 CRL and OCSP

For more details on this feature, refer to *DOCSIS 3.0 CRL and OCSP on the Cisco CMTS Routers* at the following location:

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

DOCSIS WFQ Scheduler

For detailed information about this feature, see the *DOCSIS WFQ Scheduler on the Cisco CMTS Routers* document at:

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

Service Flow Admission Control for the Cisco CMTS Routers

For detailed information about this feature, see the *Service Flow Admission Control for the Cisco CMTS Routers* document at the following URL:

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

MIBs

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found 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 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:

<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)SCD

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

- CISCO-CABLE-WIDEBAND-MIB
- CISCO-CABLE-QOS-MONITOR-MIB
- DOCS-IF-MIB

Limitations and Restrictions

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

Unsupported Hardware

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

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 a US connector to 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.

DTI Card Configuration

The Cisco uBR10012 universal broadband router TCC card does not work as expected when the startup configuration contains the configuration for a Cisco uBR10012 universal broadband router TCC+ card. To fix this issue, use the **no card slot/subslot 2cable-tccplus** command and then configure the DTI card.

MIBs Restrictions

- 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.

PCMCIA

While performing an OIR of the PCMCIA disk on PRE2, the System Event Archive (SEA) application and other applications such as IPDR write details to the PCMCIA disk on PRE2.

Before performing the OIR, the multiple system operator (MSO) must disable the write access to the PCMCIA disk on PRE2 using the **cable filesystem [enable|disable]** command. For more information, see the [CSCsz77977](#).

PXF

Statistics for two different divert-rate limit (DRL) WAN-IP streams can momentarily overlap or collide and produce statistics that are lower than expected.

Redundancy

- Longer dropout times (about 6 seconds) can occur when you use the OIR method to trigger a cable line card switchover on the Cisco uBR10012 router. To repair or maintain a cable line card and get better switchover performance, use the **redundancy linecard-group switchover** command to trigger the line card switchover instead.
- Although the software does not prevent it, preconfiguring 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 the 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 workaround 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 (MD) hosts sharing the wideband 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 occurs on cable line cards, the available CIR bandwidth gets partitioned and is 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 percentage configuration and traffic distribution, the overall link utilization of dynamic bandwidth sharing (DBS) can be as low as 85 percent. For example, this can occur if the traffic rate on a wideband interface is smaller than its configured bandwidth percentage, but the traffic rate on a modular-cable interface is much larger than its bandwidth percentage. The packet drops occur only on the modular-cable interface which has a larger amount of traffic than its bandwidth-percentage. 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



Note

This section describes important changes in various Cisco IOS Releases that differ from support found in earlier software releases supported by the Cisco CMTS routers. This section is subject to change and is not intended to cover all changes found in the software. There may be other changes within the software that are not identified here, such as within the new and modified features. Closely read these release notes in their entirety, as well as review the related caveats documents for more information.

Table 6 identifies some of the key changes that you should consider when running Cisco IOS Release 12.2(33)SCD.

Table 6 Important Changes in Cisco IOS Release 12.2SC

Change Description	Release Introduced
Clearing Address Resolution Protocol (ARP) Entries Using the clear arp command can take about 15 seconds to remove all ARP table entries.	12.2(33)SCA
Reverse Path Forwarding RPF on the Cisco uBR10012 router requires configuration of the ip verify unicast source reachable-via rx allow-default command to properly interpret default routes.	12.2(33)SCA
Scheduling Engine The DOCSIS Weighted Fair Queuing (WFQ) Scheduler replaces the Versatile Traffic Management System (VTMS) scheduler operation on the Cisco uBR10012 router. For more information, see the feature documentation at: http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_docsis_wfq_sch.html	12.2(33)SCB
DOCSIS CM-STATUS messages are enabled by default.	12.2(33)SCB

Table 6 Important Changes in Cisco IOS Release 12.2SC (continued)

Change Description	Release Introduced
<p>SPA Interface Processor/Shared Port Adapters</p> <ul style="list-style-type: none"> New syntax is supported for the Cisco 10000 Series SIP-600 and shared port adapters (SPAs). In many commands, the <i>slot/subslot</i> indexes have been replaced by <i>slot/bay</i>. FPD images that might be loaded on a Cisco Wideband SPA from 12.3(21)BC-based software images are incompatible with Cisco IOS Release 12.2(33)SCA. The FPD images needed to support Cisco IOS Release 12.2(33)SCB must be loaded on the Cisco Wideband SPA for it to successfully load in Cisco IOS Release 12.2(33)SCB. If you should attempt to bring up a Cisco Wideband SPA in Cisco IOS Release 12.2(33)SCB without successfully updating the compatible FPD image for that release, the SPA fails to reload. If this is done with the Cisco Wideband SPA installed in a Cisco Wideband SIP, the SIP begins to upgrade the SPA and stops communicating with the PRE on the Cisco uBR10012 router. For more information, see the “Upgrading Field-Programmable Devices” chapter of the <i>Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide</i> at: http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/12.3_23_bc/10fpd.html 	12.2(33)SCB
<p>Spatial Reuse Protocol (SRP)</p> <p>The Spatial Reuse Protocol (SRP) for the Cisco uBR10012 OC-48 line card is not supported.</p>	12.2(33)SCB
<p>Modular QoS CLI Change Between Cisco IOS Release 12.3BC and Cisco IOS Release 12.2SC and the DOCSIS WFQ Implementation</p> <p>The priority command does not have any arguments. You must use the police command to specify a guaranteed bandwidth.</p>	12.2(33)SCC

Table 6 Important Changes in Cisco IOS Release 12.2SC (continued)

Change Description	Release Introduced
<p>Logical Channel Support</p> <p>To support logical channel feature, the ordering of the "channel-width" and "docsis-mode" parameters have changed in the cable upstream docsis-mode and cable upstream channel-width commands. Because "channel-width" is a physical channel level parameter, it must be configured before "docsis-mode", which is a logical channel level parameter.</p> <p>For more details on this feature, see the <i>SCDMA and Logical Channel Support on the Cisco CMTS Routers</i> at the following location:</p> <p>http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_d30_scdma_lc.html</p>	12.2(33)SCC
<p>Behavior Change in DOCSIS Set-top Gateway Tunnel</p> <p>When the DOCSIS Set-top Gateway (DSG) is configured to have a quality of service (QoS) for the DSG tunnel, ensure that the default multicast QoS (MQoS) is configured by using the following command:</p> <p>cable multicast group-qos default scn <i>service class name</i> aggregate</p> <p>where <i>service class name</i> is any service class name.</p> <p>Note that:</p> <ul style="list-style-type: none"> • If the last service class name is not configured with the DSG tunnel, you are prompted to remove the default MQoS, if it is not required. • If the service class name is configured with the DSG tunnel when no default MQoS exists, the configuration is rejected and you are prompted to configure the default MQoS. • If you are using an earlier Cisco IOS image, then while upgrading to the Cisco IOS Release 12.2(33)SCC1, during reload if the service class name is configured with the DSG tunnel and the default MQoS does not exist, the default MQoS is automatically configured. • The wideband interface is used to send multicast traffic when no MQoS is configured. After you configure the default MQoS, the primary downstream channel is used to forward the multicast traffic. However, the multicast session on the wideband interface is not deleted. This may cause duplicate traffic to be sent for the same multicast stream. Wait for 180 seconds for the old session to time out. <p>This behavior is observed only when you toggle (enable/disable) the default MQoS.</p>	12.2(33)SCC1

Documentation Updates

This section describes important topics that might not be available in the customer documentation.

Command-Line Interface Changes and Notes

The following command-line interface (CLI) changes in Cisco IOS Release 12.2(33)SCB may not be available in the customer documentation:

- **clear arp**—The **clear arp** command has been modified to issue a prompt to the router console requesting confirmation of execution of the command due to potentially serious impact to CMTS router performance. The following is an example of the console prompt:

```
Router# clear arp
```

You are about to delete all ARP cache entries!

Severe impact on CMTS performance and temporary outages may result.

Consider 'clear ip arp' instead. Continue? (yes/[no]): **no**
- **show cable modem primary-channel**—The word “local” is shown in the Downstream RFID output field to indicate that the Cisco uBR10-MC5X20S/U/H local downstream is being used as a primary channel.
- **show controllers modular-cable**—This command will not provide crash dump information for the Cisco 10000 series SIP-600. Use the **show diag 1/0 crashdump** command to obtain this information for the Cisco 10000 Series SIP-600.
- **show hccp detail**—The output for this command has been modified to add “CMTS interface pre-critical config.”
- **show hw-module bay counters rf-channel**—The output for this command has been modified to include RF channel frame rate “MPEG bps” and “MPEG Mbps” fields.
- **show policy-map interface cable output class**—The “pkts output” field is always 0 even when packets are in the queue.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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