Introduction

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

For software caveats that apply to the Cisco IOS Release 12.2(33)SCI 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 .

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

This chapter includes the following sections:

System Requirements

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

Memory Requirements

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

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.

The following table displays the memory recommendations for the Cisco uBR10012 universal broadband router with Cisco IOS Release 12.2(33)SCI feature sets.

Table 1: Memory Recommendations for the Cisco uBR10012 Router

Feature Set	Cisco uBR10012 Route Processor	Software Image	RecommendedFlash Memory[1]	RecommendedDRAM Memory[2]	RunsFrom
DOCSIS Base 3 DES image and Lawful Intercept for Cisco PRE4[3]	PRE4	ubr10k4-k9p6u2-mz	128 MB	4 GB	RAM
DOCSIS BPI and Lawful Intercept for Cisco PRE4	PRE4	ubr10k4-k8p6u2-mz	128 MB	4 GB	RAM
DOCSIS Base 3DES image and Lawful Intercept for Cisco PRE5	PRE5	urb10k5-k9p6u2-mz	4 GB	4 GB	RAM
DOCSIS BPI and Lawful Intercept for Cisco PRE5	PRE5	urb10k5-k8p6u2-mz	4 GB	4 GB	RAM

[1]   Recommended FLASH Memory refers to bootflash memory.

[2]   DRAM memory is not configurable on the Cisco uBR10012 router.

[3]   PRE = Processor Routing Engine

Hardware Supported

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

Cable Interface Line Cards Supported

The following table provides information about the supported cable interface line cards and processor engines in Cisco IOS Release 12.2(33)SCI.

Table 2: Supported Cable Interface Line Cards and Processor Engines

Supported Line Card	Supported Processor Engine
Cisco UBR-MC20X20—maximum 8	PRE4, PRE5
Cisco uBR-MC3GX60V—maximum 8	PRE4, PRE5

Other Hardware Supported

The following table provides information about other hardware supported in Cisco IOS Release 12.2SC.

Table 3: Other Hardware Supported in Cisco IOS Release 12.2SC

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 Release12.2(33)SCB
Cisco 3 Gbps Wideband Shared Port Adapter	Yes	Cisco IOS Release 12.2(33)SCH
Cisco 6 Gbps Wideband Shared Port Adapter	Yes	Cisco IOS Release 12.2(33)SCI

Determining 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)SCI, EXPERIMENTAL
IMAGE ENGINEERING WEEKLY BUILD, synced to V122_33_2_16_SCHCopyright (c) 1986-2014 by Cisco
```

```
    Systems, Inc.ROM: System Bootstrap, Version 12.2(20071113:194412) [shalpin-rom-1_2 101],
DEVELOPMENT SOFTWARE
```

Upgrading to a New Software Release

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/c/en/us/support/docs/ios-nx-os-software/ios-software-releases-121-t/15071-choosing-ios.html

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

https://tools.cisco.com/bugsearch

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)SCI is the ubr10k-fpd-pkg.122-33.SCI pkg file.

Table 4: Cisco IOS Release 12.2SC 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

Supported SPAs	FPD ID	FPD Component Name	FPD Component Version	Minimum Required Hardware Version
Cisco 3 Gbps Wideband Shared Port Adapter	1	WESTLAKE FPGA	0.41	0.0
Cisco 6 Gbps Wideband Shared Port Adapter	1	EASTLAKE FPGA	4096.56	0.0

IOS image upgrade does not upgrade the FPGA image automatically. You must manually upgrade the FPGA image. It is a one -hit upgrade.

For manual upgrade guidance for the FPGA image, see Upgrading SPA FPD Images section of the SIP and SPA Software Configuration Guide .

Upgrading from PRE2 to PRE4 Processors

Note   Starting with Cisco IOS Release 12.2(33)SCG, only PRE4 is supported.

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 Feature Navigator

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) and compare two Cisco IOS software releases.

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

Cisco CMTS User Documentation References for Cisco IOS Release 12.2SC

Table 5: Important Guides in Cisco IOS Release 12.2SC, on page 6 provides information about the important user guides in Cisco IOS Release 12.2SC.

Table 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

Guide	Description
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
Install and Upgrade Guides	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.
	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
Configuration Guides	Contains detailed, step-by-step instructions for configuring a Cisco CMTS, including software feature guides, configuration examples, network diagrams, and technical concepts.
	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-and-configuration-guides-list.html http://www.cisco.com/c/en/us/support/video/ubr10000-series-universal-broadband-routers/products-installation-and-configuration-guides-list.html
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/c/en/us/support/video/ubr10000-series-universal-broadband-routers/products-system-message-guides-list.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/c/en/us/support/video/ubr10000-series-universal-broadband-routers/products-troubleshooting-guides-list.html

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)SCI:

New Hardware Features in Cisco IOS Release 12.2(33)SCI3

There are no new hardware features in Cisco IOS Release 12.2(33)SCI3.

New Hardware Features in Cisco IOS Release 12.2(33)SCI2a

There are no new hardware features in Cisco IOS Release 12.2(33)SCI2a.

New Hardware Features in Cisco IOS Release 12.2(33)SCI2

There are no new hardware features in Cisco IOS Release 12.2(33)SCI2.

New Hardware Features in Cisco IOS Release 12.2(33)SCI1a

There are no new hardware features in Cisco IOS Release 12.2(33)SCI1a.

New Hardware Features in Cisco IOS Release 12.2(33)SCI1

Cisco 6 Gbps Wideband Shared Port Adapter

Effective with Cisco IOS Release 12.2(33)SCI1, new hardware with a new PID (SPA-UBR10-DS-6G) is introduced for the Cisco 6 Gbps Wideband Shared Port Adapter. The Cisco 6 Gbps Wideband Shared Port Adapter is a single-wide, half-height shared port adapter that provides DOCSIS network formatting to downstream data packets. It is used for only downstream data traffic. The Cisco 6 Gbps Wideband Shared Port Adapter is a key component for the Cisco IOS features, DOCSIS 3.0 Downstream Channel Bonding and DOCSIS M-CMTS network architecture. The base hostboard is the Cisco 10000 Series SPA Interface Processor-600. Each Cisco 10000 Series SPA Interface Processor-600 jacket can host four Cisco 6 Gbps Wideband Shared Port Adapter cards.

The first two Gigabit Ethernet ports on the SPA can be used as a 10 Gigabit Ethernet port (one active and one redundant). The Gigabit Ethernet ports are used to send traffic to one or more external edge QAM devices. The Cisco uBR10012 router can support up to two Cisco 10000 Series SPA Interface Processor-600 jackets and eight Cisco 6 Gbps Wideband Shared Port Adapter. In the one 10G mode, each Cisco 6 Gbps Wideband Shared Port Adapter supports up to 144 RF channels and hence a total of 1152 RF channels are supported with eight Cisco 6 Gbps Wideband Shared Port Adapters with some level of oversubscription.

For more information, see the Cisco uBR10012 Universal Broadband Router SIP and SPA Hardware Installation Guide at the following URL:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/install_upgrade/uBR10012/b_10k_sip_spa_hig.html

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/install_upgrade/uBR10012/b_10k_sip_spa_hig.html

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

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

New Software Features in Cisco IOS Release 12.2(33)SCI3

There are no new software features in Cisco IOS Release 12.2(33)SCI3.

New Software Features in Cisco IOS Release 12.2(33)SCI2a

There are no new software features in Cisco IOS Release 12.2(33)SCI2a.

New Software Features in Cisco IOS Release 12.2(33)SCI2

Battery Backup 1x1 Mode

Cisco CMTS supports downgrading the channel bonding for cable modems and media terminal adapters (MTAs) in battery backup mode. When this feature is enabled and the cable modem enters the battery backup mode, channel bonding is downgraded to one downstream and one upstream channels (battery backup 1x1 mode). This feature reduces the power usage when the cable modem is running on battery backup. When the cable modem returns to the AC power mode, the channel bonding is returned to its original configuration.

The following commands were introduced:

- **cable reduction-mode mta-battery**
- **show cable modem reduction-mode mta-battery**

For more information about this feature, see 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_010110.html

Cisco MC3GX60V Line Card and SPA Support for docsIfCmtsDownChannelCounterTable

Effective with Cisco IOS Release 12.2(33)SCI2, the MIB object docsIfCmtsDownChannelCounterTable in the DOCS-IF-MIB supports the Cisco MC3GX60V Line Card and Shared Port Adapters (SPA) for RF monitoring.

SNMP Caching Table Enhancement

SNMP caching mechanism resolves snmp polling latency by reducing IPC usage.

The following command was introduced:

- **cable cache-snmp active**

Toaster IRAM Double Failure Protection

Effective with Cisco IOS Release 12.2(33)SCI2, the Cisco uBR10012 router supports Toaster IRAM Double Failure Protection. This feature starts a process in standby PRE and performs IRAM check periodically. The PXF is reloaded automatically in standby PRE when parity error is found.

New Software Features in Cisco IOS Release 12.2(33)SCI1a

There are no new software features in Cisco IOS Release 12.2(33)SCI1a.

New Software Features in Cisco IOS Release 12.2(33)SCI1

This section describes the new cable software features in the Cisco IOS Release 12.2(33)SCI1.

IPV6 Remote Query

Effective from Cisco IOS Release 12.2(33)SCI1, the show cable modem docsis device-class command displays the device class details for IPv6 single stack cable modems.

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

IPv6 Device Class Reporting

IPv6 device class reporting can be usually done by the CMTS using the DHCP options for Customer Premises Equipment (CPE) and cable modems. Effective with Cisco IOS Release 12.2(33)SCI1, the show cable modem cpe command displays the device class of IPv6 single stack CPEs and cable modems.

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

DHCPv6 Client Link-Layer Address Option (RFC 6939)

Effective with Cisco IOS Release 12.2(33)SCI1, DHCPv6 Client Link-Layer Address Option (RFC 6939) is supported. It defines an optional mechanism and the related DHCPv6 option to allow first-hop DHCPv6 relay agents (relay agents that are connected to the same link as the client) to provide the client's link-layer address in the DHCPv6 messages being sent towards the server.

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

http://www.cisco.com/c/en/us/td/docs/cable/cmts/config_guide/b_CMTS_Router_Layer3_BundleInterface/b_CMTS_Router_Layer3_BundleInterface_chapter_01.html

Downstream ToS Overwrite

Effective with Cisco IOS Release 12.2(33)SCI1, Downstream ToS Overwrite is supported in DOCSIS 1.1. It can be used in IPv4 and IPv6 environment. Use cable service class class-index tos-overwrite and-mask or-mask command or the cable modem configuration file to configure the Downstream ToS Overwrite feature.

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

Automatic Upgrade and Downgrade of FPD Images on HD SPA

Effective with Cisco IOS Release 12.2(33)SCI1, automatic upgrade and downgrade of the FPD images can be configured on the high density DOCSIS SPA cards (Cisco 3 Gbps Wideband Shared Port Adapter and Cisco 6 Gbps Wideband Shared Port Adapter).

The following command was introduced:

- cable sip slot fpd-auto

For more information, see the Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide at the following URL:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/b_10k_sip_spa_scg.html

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

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

Cisco 6 Gbps Wideband Shared Port Adapter

Effective with Cisco IOS Release 12.2(33)SCI, the support for the Cisco 6 Gbps Wideband Shared Port Adapter is introduced. The Cisco 6 Gbps Wideband Shared Port adapter uses the same hardware as the Cisco 3 Gbps Wideband Shared Port Adapter with an upgraded field-programmable device (FPD) image. The Cisco 6 Gbps Wideband Shared Port Adapter has six controllers. It supports only the 1 x 10G mode.

The following commands were introduced:

- **cable sip cir-scale**
- **cable sip ib-stats**
- **show ib statistic**
- **upgrade hw-module subslot idprom**
- **upgrade hw-module subslot rma**

For more information, see the Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide at the following URL:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/b_10k_sip_spa_scg.html

D30 Dynamic Load Balancing

Effective with Cisco IOS Release 12.2(33) SCI, the DOCSIS 3.0 dynamic load balancing can be activated on the downstream channels using the **cable load-balance docsis30-dynamic-enable** command. The DOCSIS 3.0 dynamic load balancing is based on the utilization method. It is used to balance the traffic across the QAM channels per load balance interval.

The following commands were introduced or modified:

- **cable load-balance docsis30-dynamic-enable**

- **clear cable load-balance error-statistics**

- **show cable load-balance docsis-group**

- **show cable load-balance**

For more information, see the *Load Balancing, Dynamic Channel Change, and Dynamic Bonding Change 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_01010.html

Bidirectional Forwarding Detection

Effective with Cisco IOS Release 12.2(33) SCI, the Bidirectional Forwarding Detection (BFD) functionality is supported on the Cisco uBR10012 router.

BFD is a detection protocol designed to provide fast forwarding path failure detection times for all media types, encapsulations, topologies, and routing protocols. BFD also provides a consistent failure detection method for network administrators. Because the network administrator can use BFD to detect forwarding path failures at a uniform rate, rather than the variable rates for different routing protocol hello mechanisms, network profiling and planning is easier, and re-convergence time is consistent and predictable.

The Cisco uBR10012 router has the following restrictions for BFD:

- BFD supports only four sessions on the Cisco PRE5. The performance of the PRE5 is affected, if more than four BFD sessions are configured.

- On Cisco uBR10012 router, when multiple Intermediate System-to-Intermediate System (IS-IS) BFD sessions are configured on the interface and if all the interfaces are down at the same time, the IS-IS does not work as expected and the traffic loss is more than five seconds. This is because the adjacency on the Cisco uBR10012 router is rebuilt slowly and takes more than five seconds to send packets.

- During PRE HA, OIR, PRE crash, or switchover, the performance of the Cisco uBR10012 router cannot be maintained, if the BFD is configured on the Cisco 5-Port Gigabit Ethernet SPA or Cisco 1-Port 10-Gigabit Ethernet SPA instead of Backhaul (BH) interface.

- If the default interface x/y/z is configured immediately after the BFD sessions are removed using the **no bfd template** command, there could be some issues, as the **no bfd template** command may not sync with the standby PRE quickly.Cisco recommends that you have a time delay of more than two seconds before you configure the BFD sessions again.

- The Cisco uBR10012 does not identify BFD echo packets when the RPF is enabled. If you configure the RPF on the interface, the BFD sessions are blocked and the packets are dropped.

- On the Cisco uBR10012 router, BFD does not support the MIB objects.

- On the Cisco uBR10012 router, BFD does not support multi-hop session.

- For non-ECMP routes, the traffic is delayed by more than 10 seconds, if you perform the OIR of an active PRE. The current active PRE should recalculate the routes after the interfaces are up. In such cases, Cisco recommends that you perform the PRE switchover before performing the OIR of the active PRE.

- The BGP network does not support NSR. Therefore, during the PRE HA, OIR, PRE crash, the BFD sessions might be down and would impact the traffic by more than two seconds.

For detailed information about this feature, see the *Cisco Bidirectional Forwarding Detection feature* document at the following URL:

http://www.cisco.com/c/en/us/td/docs/ios/12_0s/feature/guide/fs_bfd.html

Features Integrated in Cisco IOS Release 12.2(33)SCI3

There are no features integrated in to Cisco IOS Release 12.2(33)SCI3.

Features Integrated in Cisco IOS Release 12.2(33)SCI2a

There are no features integrated in to Cisco IOS Release 12.2(33)SCI2a.

Features Integrated in Cisco IOS Release 12.2(33)SCI2

There are no features integrated into Cisco IOS Release 12.2(33)SCI2.

Features Integrated in Cisco IOS Release 12.2(33)SCI1a

There are no features integrated in to Cisco IOS Release 12.2(33)SCI1a.

Features Integrated in Cisco IOS Release 12.2(33)SCI1

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

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

Features Integrated in Cisco IOS Release 12.2(33)SCI

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

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

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

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCI3

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCI3.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCI2a

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCI2a.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCI2

The following MIB was changed in Cisco IOS Release 12.2(33)SCI2:

- DOCS-IF-MIB

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCI1a

There are no new or changed MIBs in Cisco IOS Release 12.2(33)SCI1a.

New and Changed MIB Information in Cisco IOS Release 12.2(33)SCI1

The following MIB changed in Cisco IOS Release 12.2(33)SCI1:

- CISCO-CABLE-IRON-BUS-STAT-MIB

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

The following MIB changed in Cisco IOS Release 12.2(33)SCI:

- CISCO-DOCS-EXT-MIB

Limitations and Restrictions

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

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 3.0 Load Balancing

Note Effective with Cisco IOS Release 12.2(33)SCG1, the Cisco uBR-MC3GX60V line card and up to five Cisco Wideband SPAs can be configured to the same LBG.

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.

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 workaround 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 uBR10012 routers:

Important Notes for Cisco IOS Release 12.2(33)SCI2

An FPGA fix CSCut52400 is integrated into this Cisco IOS Release 12.2(33)SCI2. A manual FPGA upgrade is needed for the fix to take effect. For detailed information about the upgrade, see Upgrading SPA FPD Images at the following URL:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/b_10k_sip_spa_scg/field-programmable-devices.html#concept_FF4D840347FC4DC78D5ACACD9FE60192

Important Notes for Cisco IOS Release 12.2(33)SCI

Effective with Cisco IOS Release 12.2(33)SCI, the output of the **show cable multicast statistics pool** command is modified to display the downstream service identifier (DSID) allocation information.

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 .

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed . The RSS feeds are a free service.