Release Notes for Cisco uBR10012 Universal Broadband Router for Cisco IOS Release 12.2 CY

February 4, 2003

Cisco IOS Release 12.2(11)CY

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These release notes for the Cisco uBR10012 universal broadband router describe the enhancements provided in Cisco IOS Release 12.2(11)CY. This release is based on Cisco IOS Release 12.2(11)BC1b, which in turn is based on Cisco IOS Release 12.2(11)T. These release notes are updated as needed.

The Cisco IOS Release 12.2(11)BC1b train is an interim release train that provides DOCSIS 1.1 two-way support, along with support for selected new features. Cisco IOS Release 12.2(11)BC1b provides a migration path from the earlier 12.2 XF releases.

For a list of the software caveats that apply to Cisco IOS Release 12.2(11)CY, see the "Caveats" section on page 22. See also *Caveats for Cisco IOS Release 12.2 T*, which is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* located on Cisco.com and the Documentation CD-ROM.

Cisco recommends 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/warp/public/tech_tips/index/fn.html. If you do not have a Cisco.com login account, you can find field notices at http://www.cisco.com/warp/customer/tech_tips/index/fn.html.

Note Cisco IOS Release 12.2(11)CY does not include support for telco-return images.

Contents

These release notes describe the following topics:

Inheritance Information

Cisco IOS Release 12.2(11)CY is based on Cisco IOS Release 12.2(11)BC1b, an early deployment release, which in turn is based on Cisco IOS Release 12.2(11)T. All features in Cisco IOS Release 12.2(11)BC1b and Cisco IOS Release 12.2(11)T are in Cisco IOS Release 12.2(11)CY.

Table 1   References for the Cross-Platform Release Notes for Cisco IOS Release 12.2 T and Cisco IOS Release 12.2(11)BC1b

Topic	Location
• Determining the Software Version • Upgrading to a New Software Release	To view information about the topics in the left-hand column, click **Cross-Platform System Requirements** at: http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/xprn122t/122treqs.htm
• New and Changed Information (Feature Descriptions) • MIBs • Important Notes	To view information about the topics in the left-hand column. For Cisco IOS Release 12.2 T, go to: http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/xprn122t/122tnewf.htm Scroll down and click **New Software Features in Cisco IOS Release 12.2(11)T**, or **MIBs**, or **Important Notes**. For Cisco IOS Release 12.2(11)BC1b, go to: http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/ubr10000/u10k8bc1.htm Scroll down and click **New and Changed Information**, or **MIBs**, or **Important Notes**.
• Related Documentation • Obtaining Documentation • Obtaining Technical Assistance	To view information about the topics in the left-hand column, go to: http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/xprn122t/122tdocs.htm

Introduction

For information on new features supported by Cisco IOS Release 12.2(11)CY, see the "New and Changed Information" section on page 15.

Cisco IOS Release 12.2(11)CY supports the Cisco uBR10012 universal broadband router, which provides a high-capacity, high-throughput cable modem termination system (CMTS), optimized for aggregating traffic at the edge of the cable network. Designed for cable operators and service providers, the platform connects residential subscribers via cable modems, digital set-top boxes, or IP telephony cable modems for high-speed data, broadband entertainment, and IP telephony solutions.

The Cisco uBR10012 router uses the industry-proven Parallel eXpress Forwarding (PXF) technology, derived from the Cisco ESR10000 edge services router, to provide consistent, high-performance throughput, even as software features are added and additional services are deployed.

In addition, it supports a variety of broadband access technologies, including Data-over-Cable Service Interface Specification (DOCSIS), gigabit ethernet, and optical. With support for multiple standards, operators can choose the appropriate services and devices to optimize their capital investment with a single CMTS platform. With access to current and future software enhancements, the Cisco uBR10012 also ensures investment protection as standards and customer needs continue to evolve.

Cable companies and Internet service providers (ISPs) can allocate radio frequency (RF) channel capacity for Internet access or high priority services using a hybrid fiber/coax (HFC) or an all-coax cable plant. Cisco currently provides three router-based DOCSIS CMTS solutions that offer a wider feature set and better manageability than bridge-based systems.

Cisco uBR10012 Universal Broadband Router

The Cisco uBR10012 universal broadband router brings the powerful performance and proven reliability of the industry-leading, DOCSIS-qualified Cisco uBR7200 series universal broadband router product line to the next level of performance, capacity, and throughput. The Cisco uBR10012 platform provides a complete, easy-to-use, integrated router and cable modem termination system (CMTS) package, with feature-rich software and unparalleled customer service and support. With access to current and future software enhancements, the Cisco uBR10012 routers also ensure investment protection as standards evolve.

The Cisco uBR10012 router supports up to eight cable interface line cards for connection to subscriber cable modems (CMs) and set-top boxes (STBs). Cisco IOS Release 12.2(11)CY supports the Cisco uBR-LCP2-MC16S Spectrum Management Card, Cisco uBR-LCP2-MC16C, Cisco uBR-LCP2-MC16E, Cisco uBR-LCP2-MC28C, Cisco uBR-LCP2-MC28C-B, and Cisco uBR10-MC5X20S cable interface line cards.

For connection to the Internet and other networks, the Cisco uBR10012 router supports up to four network uplink line cards, each of which can support connections as fast as 1Gb/s (Gigabit Ethernet). Cisco IOS Release 12.2(11)CY supports OC-12 POS, OC-12/STM-4 SRP, and Gigabit Ethernet connectivity.

Note For detailed descriptions of the Cisco uBR10012 router chassis and components, see the hardware documents listed in the *"Related Documentation" section on page 24*.

Cisco uBR10012 Router Cable Interface

The cable interface in the Cisco uBR10012 router serves as the RF cable TV interface, supporting downstream and upstream signals. The downstream is output as an IF signal suitable for use with an external upconverter. Your cable plant, combined with your planned and installed subscriber base, service offering, and external network connections, determines what combination of Cisco uBR10012 cable interfaces, network uplink line cards, and other components that you should use.

Cisco IOS Release 12.2(11)CY supports the following cable interface line cards, which can be installed in the Cisco uBR10012 chassis in any combination:

- Cisco uBR10-MC5X20S-D/F (dense connectors or F-connectors) cable interface line card, designed for the Cisco uBR10012 router to provide the highest port density, contains five downstream ports and twenty upstream ports, with DOCSIS MAC management and spectrum management capabilities.

- Cisco uBR-LCP2-MC16S Spectrum Management Card with advanced spectrum management features with one downstream and six upstreams.

- Cisco uBR-LCP2-MC16C cable interface line card, based on the existing Cisco uBR-MC16C line card, with one downstream and six upstreams.

- Cisco uBR-LCP2-MC16E cable interface line card, based on the existing Cisco uBR-MC16E line card, with one downstream and six upstreams.

- Cisco uBR-LCP2-MC28C cable interface line card, based on the existing Cisco uBR-MC28C line card, with two downstreams and eight upstreams divided into two domains. This provides the ability to support a large volume of cable modem subscribers using only one chassis.

- Cisco uBR-LCP2-MC28C-B cable interface line card, based on the existing Cisco uBR-MC28C-B line card, with two downstreams and eight upstreams divided into two domains. This line card is identical to the Cisco uBR-LCP-MC28C line card except that it uses BNC connectors instead of F-connectors to connect the downstream and upstream cables.

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Note   Unless otherwise indicated, all references to the Cisco uBR-LCP2-MC28C in this document refer to both the Cisco uBR-LCP2-MC28C and Cisco uBR-LCP2-MC28C-B versions of the card.

All cable interface line cards, except for the Cisco uBR-LCP2-MC16E, support the Data-over-Cable Service Interface Specifications (DOCSIS). DOCSIS supports the 6 MHz North American channel plans using the ITU J.83 Annex B RF standard. The downstream uses a 6 MHz channel width in the 85 to 860 MHz frequency range, and the upstream supports the 5 to 42 MHz frequency range.

The Cisco uBR-LCP2-MC16E cable interface line card supports the European Data-over-Cable Service Interface Specifications (EuroDOCSIS). EuroDOCSIS supports the 8 MHz Phase Alternating Line (PAL) and Systeme Electronique Couleur Avec Memoire (SECAM) channel plans using the ITU J.112 Annex A RF standard. The downstream uses an 8 MHz channel width in the 85 to 860 MHz frequency range, and the upstream supports multiple channel widths in the 5 to 65 MHz frequency range.

Early Deployment Releases

These release notes describe Cisco IOS Release 12.2(11)CY for the Cisco uBR10012 universal broadband router. Cisco IOS Release 12.2(11)CY is an early deployment (ED) release based on Release 12.2 T, which serves as the train's starting point. Early deployment releases contain fixes to software caveats as well as support for new Cisco hardware and software features. Feature support is cumulative from release to release, unless otherwise noted.

Table 2 lists any features supported by the Cisco uBR10012 router in Cisco IOS Release 12.2(11)CY. For complete feature information, see the *Cisco uBR10012 Universal Broadband Router Hardware Installation Guide*, the *Field Replaceable Units (FRUs)* documents, and the *Cisco uBR10012 Universal Broadband Router Software Configuration Guide*.

Table 2   Early Deployment (ED) Releases for the Cisco uBR10012 Router

ED Release	Additional Software Features[1] and MIBs[2]	Additional Hardware Features	Hardware Availability
Cisco IOS Release 12.2(11)CY	• PBR support for Cisco uBR10012 • VLAN support for Cisco uBR10012	• Support for Cisco uBR10-MC5X20S Cable Interface Line Card	Now

1.   Only major features are listed.

2.   MIB = Management Information Base

System Requirements

This section describes the system requirements for Cisco IOS Release 12.2(11)CY and includes the following sections:

- Memory Recommendations, page 5
- Supported Hardware, page 6
- Determining Your Software Release, page 7
- Upgrading to a New Software Release, page 7
- Feature Set Tables, page 7

Memory Recommendations

Table 3 displays the memory recommendations of the Cisco IOS feature sets for the Cisco uBR10012 universal broadband router for Cisco IOS Release 12.2(11)CY. Cisco uBR10012 universal broadband routers are available with a 48-MB or 128-MB Type II PCMCIA Flash memory card or 128 MB Flash Disk card.

Table 3   Memory Recommendations for the Cisco uBR10012 Routers, Cisco Release 12.2(11)CY Feature Sets

Feature Set	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
DOCSIS IP Plus	ubr10k-p6-mz	40 MB Flash	128 MB DRAM	RAM
DOCSIS BPI IP Plus	ubr10k-k8p6-mz	40 MB Flash	128 MB DRAM	RAM

Supported Hardware

For detailed descriptions of the new hardware features, see the "New and Changed Information" section on page 15. Cisco IOS Release 12.2(11)CY supports the following hardware on Cisco uBR10012 routers:

Table 4   Cisco uBR10012 Universal Broadband Router Overview

Cable Interface Line cards	Up to eight of the following cable interface line cards can be housed in a chassis in any combination: • Cisco uBR10-MC5X20S-D/F • Cisco uBR-LCP2-MC16S spectrum management card • Cisco uBR-LCP2-MC16C • Cisco uBR-LCP2-MC16E • Cisco uBR-LCP2-MC28C • Cisco uBR-LCP2-MC28C-B
Network Uplink Line Cards	Up to four line cards with any combination of the following WAN choices: • uBR10-1GE Gigabit Ethernet (GigE) uplink line card • uBR10-1OC12/P-SMI OC-12 POS uplink line card • uBR10-SRP-OC12SML Dynamic Packet Transport (DPT) WAN card **Note** Cisco IOS Release 12.2(11)CY does not support the CISCO-SRP-MIB.my MIB for the Cisco uBR10-SRP-OC12SML DPT WAN card.
Timing, Communication and Control Plus (TCC+) card	The TCC+ card can connect to an external reference Stratum 3 clock source that is traceable to a Stratum 1 source. Two such sources can be connected for redundancy. The TCC+ card also monitors the cable line cards and power supply use, as well as control the LCD display screen on the chassis. Two cards can be installed for redundancy.

Table 4   Cisco uBR10012 Universal Broadband Router Overview (continued)

Performance Routing Engine (PRE1)	One PRE1 module performs layer 2 and layer 3 packet processing, as well as routing and system management functions. Two PRE1 modules can be installed for redundancy. **Note** Cisco IOS Release 12.2(11)CY does not support the original PRE module.
DC-input Power Entry Module or AC Power Entry Module (PEM or AC PEM)	Two DC PEMs or two AC PEMs provide power to the chassis. To provide power balancing and redundancy, and the ability to hot-swap a single power supply as needed, install two PEMs of the same type (two DC PEMs or two AC PEMs - you cannot mix PEM types in the same chassis).
Fan assembly module	The fan assembly module contains four fans that are capable of cooling the chassis even with the failure of a single fan. The fan assembly is dual-speed, providing additional cooling when the chassis temperature exceeds the nominal operating range.

Note The Cisco uBR10012 router is compatible with Cisco Broadband Troubleshooter 2.0 and Cisco Cable Manager 2.0.

Determining Your Software Release

To determine the version of Cisco IOS software running on the Cisco uBR10012 universal broadband router, log in to the router and enter the **show version** EXEC command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.2 CY Software (uBR10000-is-mz), Version 12.2(11)CY, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Cisco IOS Upgrade Ordering Instructions* located at: http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957_pp.htm.

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Table 5 lists the features and feature sets supported by the Cisco uBR10012 routers in Cisco IOS Release 12.2(11)CY and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.

Note This table might not be cumulative or list all the features in each image. You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hard-copy documents were printed. For a list of the 12.1 T-train features in this platform, refer to Feature Navigator. For more information about Feature Navigator, see the "Cisco Feature Navigator" section on page 26.

Table 5 Feature List by Feature Sets for Cisco uBR10012 Universal Broadband Routers

Feature	Feature Set	
	DOCSIS IP Plus	DOCSIS IP Plus with BPI
IP Routing		
DOCSIS 1.0 and 1.1 Support	Yes	Yes
DHCP[1] Server	Yes	Yes
DRP[2] Server Agent	Yes	Yes
IP Enhanced IGRP[3] Route Authentication	Yes	Yes
PBR support for Cisco uBR10012	Yes	Yes
VLAN support for Cisco uBR10012	Yes	Yes
Management		
Cisco Call History MIB Command Line Interface	Yes	Yes
Cisco IOS Internationalization	Yes	Yes
DOCSIS Ethernet MIB Objects Support (RFC 2665)	Yes	Yes
DOCSIS OSSI[4] Objects Support (RFC 2233)	Yes	Yes
DOCSIS 1.1 N+1 Redundancy Support on Cable Interface Line Cards	Yes	Yes
Dynamic Ranging Support	Yes	Yes
Entity MIB, Phase 1	Yes	Yes
Interface Command Enhancements	Yes	Yes
Internal Modem Configuration File Editor	Yes	Yes
MIB Enhancements	Yes	Yes
BPI[5] and BPI+ MIB	No	Yes
LinkUp/Down Traps Support (RFC 2233)	Yes	Yes
RF Interface MIB	Yes	Yes
SNMP Cable Modem Remote Query	Yes	Yes
SNMPv2C[6] and SNMPv3[7]	Yes	Yes
Multimedia		
Bidirectional PIM[8]	Yes	Yes
Stub IP Multicast Routing	Yes	Yes

Table 5   Feature List by Feature Sets for Cisco uBR10012 Universal Broadband Routers (continued)

Feature	Feature Set	
	DOCSIS IP Plus	DOCSIS IP Plus with BPI
Quality of Service		
252 Operator Configurable QoS Service Profiles for DOCSIS 1.0	Yes	Yes
Admission Control for Load Balancing	Yes	Yes
Admission Control (Including Weighting Functions per QoS Profile)	Yes	Yes
DOCSIS 1.0 Configuration File Editor (IOS CLI-based)	Yes	Yes
DOCSIS 1.0+[9] QoS Enhancements	Yes	Yes
Downstream QoS Handling	Yes	Yes
Downstream Traffic Shaping	Yes	Yes
Dynamic Map-Advance	Yes	Yes
Dynamic Time-of-Day-Based QoS Service Profiles for DOCSIS 1.0	Yes	Yes
Dynamic Upstream Modulation	Yes	Yes
Guaranteed Upstream Minimum Throughput per Modem for DOCSIS 1.0	Yes	Yes
Improved Upstream QoS	Yes	Yes
Multiple SID Support for DOCSIS 1.0+	Yes	Yes
Multiple SID Support for DOCSIS 1.1	Yes	Yes
Multiple SID Support (static only)	Yes	Yes
QoS Configuration	Yes	Yes
QoS Profile Enforcement	Yes	Yes
QoS Profile Management via SNMP, IOS CLI, or Dynamic	Yes	Yes
RTP[10] Header Compression	Yes	Yes
Time of Day (ToD) Server	Yes	Yes
TOS Bit Restamping and TOS-based QoS for DOCSIS 1.0	Yes	Yes
Upstream Address Verification	Yes	Yes
Upstream Traffic Shaping	Yes	Yes
Security		
Automated Double Authentication	Yes	Yes
BPI and BPI+ Encryption	No	Yes
Cable source-verify	Yes	Yes
Cable source-verify DHCP, Including lease-query	Yes	Yes
Cisco IOS Firewall Enhancements	Yes	Yes
Dynamic Mobile Hosts	Yes	Yes
HTTP[11] Security	Yes	Yes

Table 5 Feature List by Feature Sets for Cisco uBR10012 Universal Broadband Routers (continued)

Feature	Feature Set	
	DOCSIS IP Plus	DOCSIS IP Plus with BPI
Named Method Lists for AAA[12] Authorization & Accounting	Yes	Yes
Per-User Configuration	Yes	Yes
Secure Shell (SSH)	Yes	Yes
SNMP Access Lists, Including Logging Features	Yes	Yes
TACACS+	Yes	Yes
TFTP-enforce	Yes	Yes
VPN		
MPLS VPN Support for Subinterfaces and Interface Bundles	Yes	Yes

1. DHCP = Dynamic Host Configuration Protocol
2. DRP = Director Response Protocol
3. IGRP = Interior Gateway Routing Protocol
4. OSSI = Operations Support System Interface
5. BPI = Baseline Privacy Interface
6. SNMPv2 = Simple Network Management Protocol version 2
7. SNMPv3 = Simple Network Management Protocol version 3
8. PIM = Protocol Independent Multicast
9. The DOCSIS 1.0+ QoS Enhancements is a set of Cisco's Quality of Service extensions to DOCSIS 1.0 to enable basic VoIP service over the DOCSIS link before DOCSIS 1.1 becomes available. The main enhancements include support for dynamic creation and teardown of flows during voice calls, support for one new unsolicited grant service (UGS) slot scheduling mechanism for voice slots, and per IP-precedence rate shaping on the downstream.
10. RTP = Real-Time Transport Protocol
11. HTTP = Hypertext Transfer Protocol
12. AAA =authentication, authorization, and accounting

Important Notes

The following sections contain important notes about Cisco IOS Release 12.2(11)CY that apply to the Cisco uBR10012 universal broadband router.

Synchronization of the System Clocks

Ensure that the system clocks on the CMTS and on the time-of-day (ToD) servers are synchronized. If this does not occur, the clocks on the CMs will not match the clocks on the CMTS, which could interfere with Baseline Privacy Interface Plus (BPI+) operations. In particular, this could prevent the proper verification of the digital certificates on the CM.

Upgrading When Using Shared Secret Passwords

Cisco IOS Release 12.2 BC changed the encryption algorithm used for the **shared-secret** command. If you are upgrading from Cisco IOS Release 12.1 EC or Cisco IOS Release 12.0 SC, you cannot cut and paste the "shared-secret" configuration lines that include an encrypted password. Instead, you must re-enter the original shared secret passwords at the CLI prompt.

For example, if the actual shared secret password is "cm-sharedsecret-password," you would enter the **cable shared-secret cm-sharedsecret-password** command at the CLI prompt. If you have enabled password encryption, the configuration file will then show only the newly encrypted password.

The following example shows a typical configuration session:

```
Router# config t
Router(config)# service password-encryption
Router(config)# int c6/0
Router(config-if)# cable shared-secret cm-sharedsecret-password
Router(config-if)# exit
Router(config)# exit
Router# show running-config | include shared
cable shared-secret 7 0458064B1C294D5C0C1D161211190910673B253B20222D0103
Router#
```

Note This change only affects the encryption of the passwords that are stored in the configuration file. It does not affect the actual encryption that is used between the CMTS and CMs, so you do not need to change the shared secret in the DOCSIS configuration files for the CMs.

Using the show cable modem Command After an HCCP Switchover

If you are using HCCP 1+1 or N+1 redundancy, the new primary processor after a switchover automatically creates a new database of the online cable modems. This means that the **show cable modem** *ip-address* and **show cable modem** *ip-address* **cnr** commands might not show a particular cable modem until the CMTS receives IP traffic from that cable modem.

You can force IP traffic by using the **ping** *ip-address* command, and then the **show cable modem** *ip-address* and **show cable modem** *ip-address* **cnr** commands will show the cable modem. You can also display any particular cable modem by using the **show cable modem | include** *ip-address* command.

Use of the FastEthernet Interface on the PRE1 Module

The FastEthernet interface (interface F0/0/0) on the PRE1 module is intended for network management access and should not be used for WAN connectivity purposes. For WAN connections, use the appropriate network uplink cards, which take full advantage of the system's high-performance PXF processing subsystem.

Note The FastEthernet interface on the PRE1 module ignores the link speed and duplex settings but instead always automatically negotiates the correct speed and duplex settings with the device at the other end of the connection.

SNR Algorithm Updated

Since Cisco IOS Release 12.2(4)BC1, the algorithm for calculating the SNR estimate in the show controllers cable upstream command was refined for a more accurate value. The new SNR estimate uses the algorithm as recommended by the chip manufacturer, and depending on plant characteristics, the new SNR value could be up to 6 dB lower than the values shown in earlier software releases.

Note This value is only an estimate—for the most accurate value, use specialized test equipment like a spectrum analyzer.

Avoiding the Dropping of SNMP Traps

When the **snmp-server enable traps** command is given without any options, it enables all traps, which can generate a significant number of traps at key events, such as system power-up. If the SNMP queue is not large enough to handle all of the traps, new traps will be dropped without notification until the existing traps are sent and slots become available in the queue.

You can do two things to avoid dropping traps in this situation:

- Increase the SNMP trap queue size. The default queue size is 10, which is insufficient to handle all traps. Use the **snmp-server queue-length** *length* global configuration command to increase the queue size. The *length* parameter can range from 10 to 1000. Increase the queue size until traps are no longer dropped.

- Disable unneeded SNMP traps. For example, if you do not need SYSLOG traps (which are sent for every message displayed on the console), disable those traps as follows:

```
router(config)# snmp-server enable traps
router(config)# no snmp-server enable traps syslog
```

Configuring the Routing Protocol Causes a Reset of the Cable Modems

Be aware that when configuring a routing protocol, the Cisco IOS software must reset the interfaces to enable the change. This normally does not significantly affect operations on the interface, except that when this is done on a cable interface, it causes all cable modems on that particular downstream to reinitialize, potentially interfering with data transmission on that downstream. Therefore you should use routing global configuration commands, such as **router rip**, on a cable interface only when a minimum of subscribers would be affected.

Cable Device, Host, and Modem Commands Not Supported

The Cisco uBR10012 universal broadband router does not support the following commands:

- **cable device access-group**
- **cable host access-group**
- **cable modem access-group**

DOCSIS 1.0 BPI Support

To conform with a recent change in the DOCSIS 1.0 Baseline Privacy Interface (BPI) Specification, Cisco IOS Release 12.2(8)BC1 and later releases require that the Baseline Privacy Configuration Settings Option (Type 17) must be included in the DOCSIS configuration file for all DOCSIS 1.0 cable modems attempting to register for BPI encryption. If the type 17 option is not included, an "Unauthorized SAID" warning will appear in the CMTS console, and the cable modem will not be allowed to come online.

Previous Cisco IOS Releases allowed DOCSIS 1.0 cable modems to register for BPI encryption and to come online, even if the DOCSIS configuration file did not include the type 17 option. The change to the DOCSIS BPI specification, however, made the type 17 option mandatory for BPI operation.

For more information about this requirement, see the TAC technical note on Cisco.com at http://www.cisco.com/warp/public/109/bpi_changes_23895.html.

Limitation on Vendor-Specific Information in the DOCSIS Configuration File

DOCSIS requires that when the cable modem sends its Registration Request (REG-REQ) message to the CMTS, it must include the configuration information found in the DOCSIS configuration file. This configuration information must include all vendor-specific information fields (VSIF). Because MAC-layer management messages, such as REG-REQ, have a maximum data size of 1522 bytes, this limits the amount of VSIF information that can be included in the DOCSIS configuration file.

In particular, the maximum packet size imposes a limit on the number of Cisco IOS CLI commands you can include as VSIF fields in the DOCSIS configuration file. The exact number of commands that will fit depends on the other configuration information included in the file, as well as the length of each command.

If the REG-REQ message is larger than 1522 bytes, the cable modem will likely report errors similar to the following errors that appears on Cisco uBR900 series cable access routers:

```
%LINK-4-TOOBIG: Interface cable-modem0, Output packet size of 1545 bytes too big
%LINEPROTO-5-UPDOWN: Line protocol on Interface cable-modem0, changed state to down
```

In addition, the CMTS will also report that the cable modem timed out during the registration process. If this occurs, you can try the following steps:

- Reduce the length of the commands by using the abbreviated form of the command. For example, you can specify the **int c0** instead of the full command **interface cable-modem 0**.

- SNMP MIB objects are not included in the Registration Request message, so wherever possible, replace the CLI commands with the corresponding SNMP MIB object statements in the DOCSIS configuration file.

- If a large number of CLI commands must be given, use VSIF option 128 to download a Cisco IOS configuration file to the cable modem.

For complete details on what is included in the REG-REQ message, see Chapter 6 of the current DOCSIS 1.1 specification (SP-RFIv1.1-I07-010829 or later).

Minimum Revision for the Cisco uBR-LCP Line Card Processor

The Cisco uBR-LCP line processor card must be at revision 4.4 or greater and be using the boothelper image from Cisco IOS Release 12.2(2)XF1 or later to support the Cisco uBR-MC16C and Cisco uBR-MC16E cable interface line cards.

Redundant PRE1 Modules Are Not Supported Before Release 12.2(4)XF

Cisco IOS Release 12.2(4)XF introduced support for the Route Processor Redundancy (RPR) feature for the Performance Routing Engine (PRE1) cards. This allows two PRE1 modules to be installed in a Cisco uBR10012 chassis for redundant operation.

Earlier releases of software for the Cisco uBR10012 router do not support RPR. In these earlier releases, two PRE1 modules can be installed in a Cisco uBR10012 chassis, but Cisco does not guarantee that upon a failure of the primary PRE1 module, the redundant PRE1 module can automatically bring up all DOCSIS cable interface line cards.

For more information about the RPR feature, see the *Route Processor Redundancy (RPR) on the Cisco uBR10012 Universal Broadband Router* feature module, available on Cisco.com and the Customer Documentation CD-ROM.

Web Cache Communication Protocol Is Not Supported

The Cisco uBR10012 router does not support the Web Cache Communication Protocol (WCCP) feature set in Cisco IOS Release 12.2(11)CY.

EIGRP, IS-IS, and OSPF Not Supported on Cable Interfaces

The Cisco uBR10012 router supports advanced routing protocols such as Enhanced Interior Gateway Routing Protocol (EIGRP), Intermediate System-to-Intermediate System (IS-IS), and Open Shortest Path First (OSPF) only on the WAN interfaces, not on the cable interfaces. On cable interfaces, use a routing protocol that is supported by the cable modems, such as RIPv2.

Configuring the CMTS Cable Interface When Configuring a CM for Routing Mode

If you have configured a Cisco cable modem for routing mode and are also using the **cable-modem dhcp-proxy nat** command on the cable modem, you must configure the corresponding cable interface on the Cisco uBR10012 router with the **cable dhcp-giaddr policy** command. Otherwise, the cable interface could flap and the CM could go offline unpredictably.

Field Notices and Bulletins

- Field Notices—Cisco recommends 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/warp/customer/770/index.shtml. If you do not have a Cisco.com login account, you can find field notices at http://www.cisco.com/warp/public/770/index.shtml.

- Product Bulletins—If you have an account on Cisco.com, you can find product bulletins at http://www.cisco.com/warp/customer/cc/general/bulletin/index.shtml. If you do not have a Cisco.com login account, you can find product bulletins at http://www.cisco.com/warp/public/cc/general/bulletin/iosw/index.shtml.

- *What's New for IOS — What's New for IOS* lists recently posted Cisco IOS software releases and software releases that have been removed from Cisco.com. If you have an account on Cisco.com, you can access *What's New for IOS* at http://www.cisco.com/kobayashi/sw-center/sw-ios.shtml or by logging in and selecting **Software Center: Cisco IOS Software: What's New for IOS**.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco uBR10012 router for Cisco IOS Release 12.2(11)CY. These sections also show the features inherited from Cisco IOS Release 12.2(2)XF1.

For more information about these features, refer to the documents listed in the "Related Documentation" section on page 24.

New Hardware Features in Release 12.2(11)CY

Support for the Cisco uBR10-MC5X20S Cable Interface Line Card

The Cisco uBR10-MC5X20S-F and Cisco uBR10-MC5X20S-D cable interface line cards are a 20 by 16 inch card designed specifically for the Cisco uBR10012 router. The Cisco uBR10-MC5X20S cable interface line card transmits and receives RF signals between the subscriber and the headend over hybrid fiber/coax (HFC) system. It provides the highest port density available in Cisco cable interface line cards.

The Cisco uBR10-MC5X20S cable interface line card is available with either F-connectors or dense (D-) connectors. The F-connectors or D-connectors option provides cable operators the choice of using standard coaxial cable F-connectors or space-saving dense connectors.

The Cisco uBR10-MC5X20S cable interface line card supports downstream and upstream traffic over a Data-Over-Cable Service Interface Specification (DOCSIS)-based cable modem network. The card supports all DOCSIS 1.1-specified Annex B radio frequency (RF) data rates, channel widths, and modulation schemes and has DOCSIS MAC management and spectrum management capabilities.

The Cisco uBR10-MC5X20S cable interface line card supports 6-MHz National Television Systems Committee (NTSC) channel operation, using standard (STD), Harmonic Related Carrier (HRC), or Incremental Related Carrier (IRC) frequency plans conforming to EIA-S542. The card supports downstream channels in the 88 to 860 MHz range, and upstream channels in the 5 to 42 MHz range.

The Cisco uBR10-MC5X20S cable interface line card contains five downstream ports and twenty upstream ports. The downstream ports support 64-QAM and 256-QAM, and the upstream ports support QPSK and 16-QAM modulation.

Each downstream port includes an onboard integrated upconverter that generates an RF signal suitable for connection to a combiner and transmission on the coaxial cable network, without the need for any external upconverters. This can save both the money and rack space required by an external upconverter, as well as reduce the complexity of the equipment at the headend site.

Upstream data from the subscriber, comes through the upstream ports (US0- US19) on the Cisco uBR10-MC5X20 cable interface line card. The line card processes and configures the data and sends it across the backplane to the WAN card and out to the Internet.

Downstream data to the subscriber, comes from the Internet through the WAN card, and across the backplane to the Cisco uBR10-MC5X20 cable interface line card. The Cisco uBR10-MC5X20S card processes and configures the data and sends it out through the appropriate downstream port (DS0 - DS4) to be combined with the rest of the downstream signals in the headend. Each downstream port includes an inboard integrated upconverter.

Table 6 shows the supported DOCSIS modulation schemes.

Table 6   Supported DOCSIS Modulation Schemes

Cable Interface Line Card	Downstream Modulation	Upstream Modulation
Cisco uBR10-MC5X20S-D	QAM–64, QAM-256	QPSK, QAM-16
Cisco uBR10-MC5X20S-F	QAM–64, QAM-256	QPSK, QAM-16

Restrictions

• Cisco IOS Release 12.2(11)CY and the Cisco uBR10-MC5X20S-D/F cable interface line card require the use of the Cisco PRE1 module in the Cisco uBR10012 universal broadband router. If you are using redundant processors, both processors must be Cisco PRE1 modules.

• The following software features are not supported for the Cisco uBR10-MC5X20S cable interface line card with Cisco IOS Release 12.2(11)CY:

   – Cable Monitor

   – HCCP 1+1 and N+1 redundant configurations

   – Point-to-Point Protocol over Ethernet (PPPoE)

• The Cisco uBR10-MC5X20S cable interface line card includes onboard spectrum analyzer hardware. However, card support for advanced spectrum management features on the Cisco uBR10-MC5X20S cable interface line card will commence with future Cisco IOS releases. Future advanced spectrum management support will include all features currently available with the Cisco uBR-LCP2-MC16S cable interface line card.

• The configuration of the downstream and upstream ports is fixed into five domains.

Note   For information on installing and cabling the Cisco uBR10-MC5X20S-D/F cable interface line card, refer to the FRU document, *Cisco uBR10-MC5X20S Cable Interface Line Card*. For information on configuring the Cisco uBR10-MC5X20S-D/F cable interface line card, refer to the New Features document, *Configuring the Cisco uBR10-MC5X20S Cable Interface Line Card*.

New Software Features in Release 12.2(11)CY

PBR support for the Cisco uBR10012

Policy-Based Routing (PBR) provides a tool for expressing and implementing the forwarding or routing of data packets, on the basis of the policies that are defined by network administrators. PBR allows policy override on routing protocol decisions by selectively applying policies based on access list and/or packet size.

Network administrators can also use PBR to selectively change the IP ToS, IP precedence, and IP QoS Group fields for matching incoming packets on an interface.

The Cisco uBR10012 universal broadband router supports a maximum of 255 PBR policies and 32 route maps within each policy. The following subset of policy-based routing commands is supported in this release of Cisco IOS software:

- ip policy route-map map-tag
- route-map map-tag [permit | deny] [sequence-number]
- match ip address {ACL-number | ACL-name} [ACL-number | ACL-name ...]
- match length min max
- set [default] interface type number [type number ...]
- set ip [default] next-hop ip-address [ip-address ...]
- set ip precedence value
- set ip qos-group value
- set ip tos value
- show route-map [map-tag]

For more information on PBR, refer to the "Configuring Policy-Based Routing" chapter in the *Cisco IOS Quality of Service Solutions Configuration Guide, Release 12.2* at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgcr/fqos_c/fqcprt1/qcfpbr.htm

VLAN support for the Cisco uBR10012

Cisco IOS IEEE 802.1Q provides support for IEEE 802.1Q encapsulation for Virtual LANs (VLANs). VLANs can be implemented with Cisco IOS platforms in environments where the IEEE 802.1Q encapsulation standard is required. With the introduction of the Cisco IOS IEEE 802.1Q Support feature, Cisco IOS supported 802.1Q VLAN encapsulation, in addition to the currently supported ISL and IEEE 802.10 SDE encapsulations.

Release 12.2(11)CY adds 802.1Q VLAN support for the Cisco uBR10012 universal broadband router. Service providers can use 802.1Q VLANs on gigabit Ethernet interfaces to provide isolation between different content providers' traffic. 802.1Q VLANs may be mapped to MPLS VPN, maintaining traffic separation across an MPLS infrastructure.

For more information, refer to the *IEEE 802.1.Q Configuration* guide at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/mar_3200/mar_conf/m511m80.htm

Refer also to the *Cisco IOS IEEE 802.1Q Support* guide for command reference information at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/120newft/120t/120t1/8021q.htm#xtocid1367322

Limitations and Restrictions

Cisco uBR-MC5X20S Cable Interface Line Card

The Cisco uBR10-MC5X20S card has the following limitations and restrictions:

- When you change the symbol rate on the Cisco uBR10-MC5X20S cable interface line card, and then immediately use the **show controller cable upstream** command, you can see the notation, "US phy SNR_estimate - Unknown" for a brief period of time. Wait a minute and reissue the command to get an accurate signal-to-noise ratio (SNR) value.

- Occasionally, after the Cisco uBR10-MC5X20S cable interface line card is installed, when you issue the **show proc cpu** command, you see a CPU utilization value of 100% even when the card is not processing any traffic. This is due to a temporary timing readjustment and you can ignore the value. Reissue the command after a few minutes to get an accurate CPU utilization value.

- When fragmentation is not used and concatenation is enabled, which can result in packet sizes larger than 2KB, the Cisco uBR10-MC5X20S cable interface line card can drop packets. This is by design and you can avoid the problem by enabling fragmentation. Or if you disable fragmentation, then limit the maximum concatenation burst parameter to 2KB.

- The **show interface cable sid counter verbose** command always displays a value of 0 for concatenated packets, even when concatenation is enabled for cable modems on a Cisco uBR10-MC5X20S cable interface.

Channel-width and Minislot Size

Cable modems can go offline if you manually change the channel-width on an upstream without also changing the minislot size to the corresponding value. This restriction applies more to DOCSIS 1.0 and older cable modems. See the following examples for the correct channel-width and minislot pairings:

```
cable upstream 0 channel-width 3200000
cable upstream 0 minislot 4

cable upstream 0 channel-width 1600000
cable upstream 0 minislot 8

cable upstream 0 channel-width 800000
cable upstream 0 minislot 16

cable upstream 0 channel-width 400000
cable upstream 0 minislot 32

cable upstream 0 channel-width 200000
cable upstream 0 minislot 64
```

Gigabit Ethernet Performance Limitations on Small Packets

On the Cisco uBR10012 router, processing small packets (64 bytes or fewer) limits a Gigabit Ethernet interface to approximately 80% of full line rate performance. Full performance is attained when the Gigabit Ethernet interface is processing packets that are 80 bytes or larger.

Frame Relay Not Supported

- Frame Relay is not currently supported on any interfaces on the Cisco uBR10012 router.

- Although commands for Frame Relay support appear as part of the CLI on the Cisco uBR10012 router, Frame Relay operations are not supported on the network uplink WAN interface line cards.

Downstream Rate-limiting Cannot Be Disabled

In Cisco IOS Release 12.2(11)CY, you can no longer disable downstream rate-limiting on the Cisco uBR10012 router by using the **no cable downstream rate-limit** command. You can use the **cable downstream rate-limit** command to change the rate-limiting on the downstream ports, but you cannot disable downstream rate-limiting entirely.

N+1 Redundancy and Configuring Static Multicast Groups

N+1 Redundancy on the uBR10012 is not supported when you are also configuring static multicast groups with the **ip igmp static-group** commands. If the static multicast groups are configured along with N+1, the PRE1 module may hang after a switchover. This limitation is described in caveat CSCdy11181.

MIBs

Current MIBs

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB web site on Cisco.com at
http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

Supported MIBs

The Cisco uBR10012 universal broadband router supports the following categories of MIBs:

- SNMP standard MIBs—These MIBs are required by any agent supporting SNMPv1 or SNMPv2 network management.

- Cisco's platform and network-layer enterprise MIBs—Common across most of Cisco's router platforms. If your network management applications are already configured to support other Cisco routers, such as the 2600 series router, no further configuration is needed unless the version of Cisco IOS software being used has updated these MIBs.

- Cable-specific MIBs—Provide information about the cable interfaces and related information on the Cisco uBR10012 router. They include both DOCSIS-specific MIBs and Cisco-specific enterprise MIBs. If your network management applications have not already been configured for the Cisco uBR10012 routers, these MIBs must be loaded.

- Deprecated MIBs—Supported in earlier releases of Cisco IOS software but have been replaced by more standardized, scalable MIBs. Network Management applications and scripts should convert to the replacement MIBs as soon as possible.

- CISCO-ENTITY-VENDORTYPE-OID-MIB

The cable-specific MIBs are described in the following section. For information on the SNMP standard MIBs and Cisco's platform and network-layer enterprise MIBs, see Cisco's MIB web site at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

Cable-Specific MIBs

Table 7 shows the cable-specific MIBs that are supported on the Cisco uBR10012 universal broadband router. The table also provides a brief description of each MIB's contents and the Cisco IOS Software Release in which the MIB was initially functional—earlier releases might have had unsupported prototype versions of the MIB; later releases might have added new attributes and functionality. Because of interdependencies, the MIBs must be loaded in the order given in the table.

Note The names given in Table 7 are the filenames for the MIBs as they exist on Cisco's FTP site (ftp://ftp.cisco.com/pub/mibs/ or http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml). Most MIBs are available in both SNMPv1 and SNMPv2 versions; the SNMPv1 versions have *V1SMI* as part of their filenames.

Note Cisco IOS Release 12.2(11)CY does not support the CISCO-SRP-MIB.my MIB for the Cisco uBR10-SRP-OC12SML DPT WAN card.

Table 7 Cable-Specific MIBs Supported on Cisco uBR10012 Routers

MIB Filename	Description	Introduced in Release
SNMPv2-SMI.my SNMPv2-SMI-V1SMI.my	This module specifies the Structure of Management Information (SMI) for SNMPv2, as defined in RFC1902.	12.2(1)XF1
SNMPv2-TC.my SNMPv2-TC-V1SMI.my	This module defines the textual conventions as specified in RFC1903.	12.2(1)XF1
SNMPv2-MIB.my SNMPv2-MIB-V1SMI.my	The management protocol, SNMPv2, provides for the exchange of messages that convey management information between the agents and the management stations, as defined in RFC1907.	12.2(1)XF1
CISCO-SMI.my CISCO-SMI-V1SMI.my	This module specifies the SMI for Cisco's enterprise MIBs.	12.2(1)XF1
CISCO-TC.my CISCO-TC-V1SMI.my	This module defines the textual conventions used in Cisco's enterprise MIBs.	12.2(1)XF1
IF-MIB.my IF-MIB-V1SMI.my	This module describes generic objects for the Layer 3 network interface sublayers. This MIB is an updated version of MIB-II's *if* table and incorporates the extensions defined in RFC2233.	12.2(1)XF1
DOCS-IF-MIB.my DOCS-IF-MIB-V1SMI.my	This module describes the DOCSIS-compliant Radio Frequency (RF) interfaces in CMs and the CMTS. This MIB has been released as an RFC2670.	12.2(1)XF1
DOCS-BPI-MIB.my DOCS-BPI-MIB-V1SMI.my	This module describes the attributes for the DOCSIS 1.0-specified Baseline Privacy Interface (BPI) on cable modems and the CMTS.	12.2(1)XF1

Table 7   Cable-Specific MIBs Supported on Cisco uBR10012 Routers (continued)

MIB Filename	Description	Introduced in Release
DOCS-BPI-PLUS-MIB.my[1] DOCS-BPI-PLUS-MIB-V1SMI.my	This module describes the attributes for the DOCSIS 1.1-specified Baseline Privacy Interface Plus (BPI+) on CMs and the CMTS. This is revision 05 of the MIB. Note In DOCSIS 1.1 operation, this MIB replaces the DOCSIS 1.0 version, DOCS-BPI-MIB.	12.2(1)XF1
CISCO-DOCS-EXT-MIB.my CISCO-DOCS-EXT-MIB-V1SMI.my	This module extends the DOCSIS standard RFI MIB (DOCS-IF-MIB) with Cisco-specific extensions, such as QoS attributes and connection status and other information regarding the cable modems and CPE devices supported by the CMTS.	12.2(1)XF1
CISCO-CABLE-SPECTRUM-MIB.my CISCO-CABLE-SPECTRUM-MIB-V1SMI.my	This module describes the spectrum management and flap list attributes. Note The Cisco uBR10012 router supports only the flap list attributes in this MIB.	12.2(2)XF1
DOCS-QOS-MIB.my[1] DOCS-QOS-MIB-V1SMI.my	This module describes the quality of service (QoS) attributes. This is revision 04 of the MIB.	12.2(2)XF1
IGMP-MIB (RFC2933)[1]	This module describes the IGMP protocol attributes, as defined in RFC2933.	12.2(2)XF1
DOCS-IF-EXT-MIB.my[1]	This is the extension of module of the RFC2670 (DOCS-IF-MIB).	12.2(2)XF1

1. These MIBs are in draft form. They have not yet been finalized by the DOCSIS committee and are subject to change with future releases.

Deprecated MIBs

Old Cisco MIBs will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs without affecting existing Cisco IOS products or network management system (NMS) applications. You can update from deprecated MIBs to the replacement MIBs as shown in Table 8.

Table 8   Replacements for Deprecated MIBs

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be determined
OLD-CISCO-DECNET-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be determined

Table 8 Replacements for Deprecated MIBs (continued)

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be determined
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be determined

Note   Some of the MIBs listed in Table 8 represent feature sets that are not supported on
Cisco uBR10012 universal broadband routers.

Note   *Cisco Management Information Base (MIB) User Quick Reference* is no longer published. If you have
an account with Cisco.com, you can find the current list of MIBs supported by Cisco. To reach the
Cisco Network Management Toolkit, go to Cisco.com, press **Login**, and then go to **Software Center:
Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most
serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only
selected severity 3 caveats are included in the caveats document.

All caveats in Cisco IOS Release 12.2 T and Cisco IOS Release 12.2(11)BC1b are also in Cisco IOS
Release 12.2(11)CY.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*. For
information on caveats in Cisco IOS Release 12.2(11)BC1b, see Release Notes for Cisco uBR10012
Universal Broadband Router for Cisco IOS Release 12.2 BC. These documents lists severity 1 and
severity 2 caveats and only selected severity 3 caveats, and are located on Cisco.com and the
Documentation CD-ROM.

Caveat numbers and brief descriptions for Release 12.2(11)CY are listed in this section.

Note   If you have an account on Cisco.com, you can use the Bug Toolkit to find select caveats of any
severity. To reach the Bug Toolkit, log in to Cisco.com and click **Technical Support**: **Tools &
Utilities: Software BUG TOOLKIT (under Configuration Tools)**. Another option is to enter the
following URL in your web browser or go to
http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

Open Caveats—Cisco IOS Release 12.2(11)CY

Table 9 documents possible unexpected behavior by Cisco IOS Release 12.2(11)CY and describes only severity 1 and 2 caveats and select severity 3 caveats.

Table 9   Open Caveats for Release 12.2(11)CY

Caveat ID Number	Description
CSCdw92201	Schooner: No entAliasMappingEntry for PRE1 NetworkManagementEthernet
CSCdx03987	Schooner:Modems are online on a upstream not connected physially
CSCdx25516	CM can spoof QoS once with no cable qos permission modem.
CSCdx59958	Multi-cast fails for the CPE connected behind the slave interface
CSCdx78723	Both Working & Protect interfaces are UP with the same IP Address
CSCdx90989	DOCSIS CPE Configurator has Java error on Pentium IV Windows PC
CSCdx92909	Schooner: modems stuck in init(rc) upon reload
CSCdy04675	SRP Topology timer is improperly initialized
CSCdy11702	Ubr10k:show int cx/x/x sid association does not update after N+1 swit
CSCdy41190	show cable modem <MAC> verbose shows a wrong QOS Prodfile Index
CSCdy60261	ubr10000: LCP crash with crashinfo
CSCdy77073	Higher amount of CPEs at CPE counter
CSCdy89339	source-verify dhcp does not stop traffic for ip 0.0.0.0
CSCdz06773	modems stuck in init(rc) in 1st cable bundle, 2nd ok
CSCdz07946	can not define MQC priority command on RP
CSCdz19454	Need a way to determine which modems cpe with static ips are behind
CSCdz23695	CPE database not updated with static IP address of new CPE until ARP
CSCdz28905	unable to clear cable host
CSCdz42719	successive shut/no shut corrupts ARP table on CMTS
CSCdz50750	PRE Crash at cmts_remove_bundle_entry during N+1 switchover
CSCin25672	ubr10k/N+1:Multicast traffic not forwarded after N+1 switchover
CSCin26360	sch_p2:Spurious memory access at strcmp_mem for show controllers aft

Resolved Caveats—Cisco IOS Release 12.2(11)CY

All the caveats listed in Table 10 are resolved in Cisco IOS Release 12.2(11)CY and describes only severity 1 and 2 caveats and select severity 3 caveats.

Table 10   Resolved Caveats for Release 12.2(11)CY

Caveat ID Number	Description
CSCdy57048	Corrupted TCP packets generated by a 7206VXR
CSCdy87221	CW2K hangs GSR when SSH enabled; crashes 7200 when SSH enabled
CSCdz14783	Traceback occurs during switchover

Table 10   Resolved Caveats for Release 12.2(11)CY (continued)

Caveat ID Number	Description
CSCdz25778	min reserved rate sfids misbehave under interface congestion
CSCdz40566	UBR10K/16S: Router crashed when running SNMP spectrum tests
CSCdz52094	RP hang with multicasting
CSCdz55178	QoS profile name of more then 32 chars will crash the router

Related Documentation

The following sections describe the documentation available for the Cisco uBR10012. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents. Use these release notes with these documents:

- Release-Specific Documents, page 24
- Platform-Specific Documents, page 25
- Cisco IOS Software Documentation Set, page 26

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.2 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.2*

  On Cisco.com at:

  Technical Documents: **Cisco IOS Software**: **Cisco IOS Release 12.2**: **Release Notes**: **Cross-Platform Release Notes**

  On the Documentation CD-ROM at:

  Cisco Product Documentation: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.2**: **Release Notes**: **Cross-Platform Release Notes**

- Product bulletins, field notices, and other release-specific documents on Cisco.com at:

  Technical Documents

- *Caveats for Cisco IOS Release 12.2*

  As a supplement to the caveats listed in "Caveats" in these release notes, see *Caveats for Cisco IOS Release 12.2*, which contains caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.2.

  On Cisco.com at:

  Technical Documents: **Cisco IOS Software**: **Cisco IOS Release 12.2**: **Release Notes**: **Caveats**

  On the Documentation CD-ROM at:

  Cisco Product Documentation: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.2**: **Caveats**

Note   If you have an account on Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log in to Cisco.com and click **Service & Support**: **Software Center**: **Cisco IOS Software**: **BUG TOOLKIT**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Platform-Specific Documents

The following related documents are available on Cisco.com and the Documentation CD-ROM:

- *Cisco uBR10012 Series Hardware Installation Guide*
- *Cisco uBR10012 Series Software Configuration Guide*
- *Field Replaceable Units (FRUs)*
- *Cisco Broadband Cable Command Reference Guide*

The following documents describe the Cisco uBR-RFSW RF Switch:

- *Cisco uBR-RFSW RF Switch Installation and Configuration Guide*
- *Cisco uBR-FRSW RF Switch Cabling Instructions*
- *Cisco uBR-RFSW RF Switch Regulatory Compliance and Safety Information*

Note   Some of the above documentation will not be available on Cisco.com until the official release of the Cisco uBR10012 router and its public software release.

On Cisco.com, beginning under the **Service & Support** heading:

Technical Documents: Broadband/Cable Solutions: **Cisco uBR10000 Series Universal Broadband Routers**

Note   **The** *Broadband Command Consolidation* is available on Cisco.com through the following path: **Technical Documents: Broadband/Cable Solutions**

On the Documentation CD-ROM:

Cisco Product Documentation: Broadband/Cable Solutions: **Cisco uBR10000 Series Universal Broadband Routers**

Note   **The** *Broadband Command Consolidation* is available on the Documentation CD-ROM through the following path: **Cisco Product Documentation: Broadband/Cable Solutions**

Tip   Information about features of the Cisco *uBR10012* universal broadband router, as well as software release notes, are available on Cisco.com at: http://www.cisco.com/univercd/cc/td/doc/product/cable/ubr10k/index.htm.

Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to quickly 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 release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access 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 will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

http://www.cisco.com/register

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/cgi-bin/Support/FeatureNav/FN.pl

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents. The Cisco IOS software documentation set is shipped with your order in electronic form on the Documentation CD-ROM, unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

On Cisco.com, beginning under the **Service & Support** heading:

Technical Documents: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

On the Documentation CD-ROM:

Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

Release 12.2 Documentation Set

> **Note** You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the paper documents were printed.

On Cisco.com, beginning under the **Service & Support** heading:

Technical Documents: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

On the Documentation CD-ROM:

Cisco Product Documentation: Cisco IOS Software Configuration: **Cisco IOS Release 12.2**: **Configuration Guides and Command References**

> **Note** The *Cisco Management Information Base (MIB) User Quick Reference* publication is no longer published. For the latest list of MIBs supported by Cisco, see *Cisco Network Management Toolkit* on Cisco.com. From Cisco.com, click on the following path: **Service & Support: Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. In the Cisco Documentation home page, click the **Fax** or **Email** option in the "Leave Feedback" section at the bottom of the page.

You can email your comments to bug-doc@cisco.com.

You can submit your comments by mail by using the response card behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages

- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

If you want to obtain customized information and service, you can self-register on Cisco.com. To access Cisco.com, go to this URL:

http://www.cisco.com

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

http://www.cisco.com/register/

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.