



## Preface

This preface describes the objectives and organization of this document and explains how to find additional information on related products and services. This preface contains the following sections:

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## Document Revision History

[Table 1](#) records technical changes to this document.

**Table 1** *Document Revision History*

Release No.	Revision	Date	Change Summary
Cisco IOS Release 12.2(33)SCI	—	September 2014	Added information on the Cisco 6 Gbps Wideband Shared Port Adapter
Cisco IOS Release 12.2(33)SCG	OL-10705-07	July 2012	Updated the following chapters to explain support for downstream channel sharing across Cisco uBR-MC3GX60V line card and Cisco Wideband Shared Port Adapters: <ul style="list-style-type: none"> <li>• <a href="#">Chapter 2, “Cisco DOCSIS 3.0 Downstream Solution Overview for the Cisco M-CMTS”</a></li> <li>• <a href="#">Chapter 5, “Cisco DOCSIS 3.0 Downstream Solution Architecture”</a></li> </ul>
Cisco IOS Release 12.2(33)SCE	OL-10705-06	November 2010	The Cisco DOCSIS 3.0 Downstream solution has been modified to add support for Cisco uBR-MC3GX60V cable interface line card to the Cisco uBR10012 router.
Cisco IOS Release 12.2(33)SCD	OL-10705-05	March 2010	The DOCSIS 3.0 Downstream Channel Bonding feature has been extended to the Cisco uBR7200 series routers

**Table 1**      **Document Revision History**

<b>Release No.</b>	<b>Revision</b>	<b>Date</b>	<b>Change Summary</b>
Cisco IOS Release 12.3(33)SCB	OL-10705-04	March 2009	<p>The following features have been implemented in this release:</p> <ul style="list-style-type: none"> <li>• DOCSIS 3.0 support for Cisco 10000 SIP-600 SPA Interface Processor.</li> <li>• Support for 5-port Gigabit Ethernet SPA.</li> <li>• Support for 1-port 10 Gigabit Ethernet SPA.</li> <li>• Voice support on wideband (WB) modems for DOCSIS 3.0.</li> <li>• Dynamic Bandwidth Sharing support for DOCSIS 3.0.</li> <li>• Support for DOCSIS 3.0 WQF Scheduler for QoS congestion management.</li> <li>• DOCSIS 3.0 Downstream Bonding for Bronze Certification</li> </ul>
Cisco IOS Release 12.3(23)BC	OL-10705-03	December 2007	<p>The following key features have been implemented in this release:</p> <ul style="list-style-type: none"> <li>• Channel bonding of downstream channels from the SPA for DOCSIS 3.0 modem support.</li> <li>• DOCSIS 1.x/2.0 modem support from SPA RF channels.</li> <li>• Primary-capable SPA RF channels used for Mac Management Messages traffic.</li> <li>• Modular-cable interfaces to support narrowband channels.</li> <li>• Concept of Channel Grouping Domain.</li> <li>• RF channel bandwidth sharing between modular-cable and wideband interfaces.</li> <li>• Downstream External PHY Interface (DEPI).</li> <li>• Primary downstream channel selection.</li> <li>• High availability support for cable modems.</li> </ul>
Cisco IOS Release 12.3(21a)BC3	OL-10705-02	August 2007	Added information on the Linksys WCM300-NA, WCM300-EURO, WCM300-J modems.
Cisco IOS Release 12.3(21)BC	OL-10705-01	February 2007	First release.

# Objectives

This document describes the Cisco DOCSIS 3.0 Downstream Solution for Cisco IOS Release 12.3(23)BC, Cisco IOS Release 12.2(33)SCB, and later releases. It explains how to design and implement a cable network that uses the DOCSIS 3.0 Downstream features.

# Document Organization

This document is organized as follows:

Chapter	Title	Description
Chapter 1	<a href="#">Overview for Cisco DOCSIS 3.0 Downstream Solution</a>	Provides an overview of the Cisco DOCSIS 3.0 Downstream Solution.
Chapter 2	<a href="#">Cisco DOCSIS 3.0 Downstream Solution Overview for the Cisco M-CMTS</a>	Provides an overview of the Cisco DOCSIS 3.0 Downstream Solution for the modular cable termination system (M-CMTS).
Chapter 3	<a href="#">Cisco DOCSIS 3.0 Downstream Solution Overview for the I-CMTS</a>	Provides an overview of the Cisco DOCSIS 3.0 Downstream Solution for integrated cable termination system (I-CMTS).
Chapter 4	<a href="#">Cisco DOCSIS 3.0 Downstream Solution Components</a>	Describes the components of the Cisco DOCSIS 3.0 Downstream Solution.
Chapter 5	<a href="#">Cisco DOCSIS 3.0 Downstream Solution Architecture</a>	Explains the Cisco DOCSIS 3.0 Downstream Solution architecture.
Chapter 6	<a href="#">Implementing and Configuring the Solution</a>	Provides implementation and configuration information of the Cisco DOCSIS 3.0 Downstream Solution.
Chapter 7	<a href="#">Monitoring and Troubleshooting Narrowband and Wideband Components</a>	Provides an introduction to monitoring and troubleshooting the narrowband and wideband components of the Cisco DOCSIS 3.0 Downstream Solution.
Appendix A	<a href="#">Cisco DOCSIS 3.0 Downstream Solution, Component Compatibility Matrix</a>	Provides a summary of the component compatibility between the Cisco Wideband Cable Solution, Release 1.0 and Cisco DOCSIS 3.0 Downstream Solution for Cisco IOS Release 12.3(23)BC, Cisco IOS Release 12.2(33)SCB, and releases.

The following is a list of documents and URLs for the Cisco uBR10012 router and the Cisco Wideband SIP and Wideband SPA:

Related Topic	Document Title
Documentation roadmap	<ul style="list-style-type: none"> <li>• <i>Cisco uBR7200 Series Routers and Cisco uBR10012 Universal Broadband Router Documentation Roadmap</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/ubr7200/roadmap/7200rdmp.html">http://www.cisco.com/en/US/docs/cable/cmts/ubr7200/roadmap/7200rdmp.html</a></li> </ul>
Cisco uBR10012 hardware installation	<ul style="list-style-type: none"> <li>• Cisco uBR10012 Universal Broadband Router SIP and SPA Hardware Installation Guide <a href="http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/install_upgrade/uBR10012/b_10k_sip_spa_hig.html">http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/install_upgrade/uBR10012/b_10k_sip_spa_hig.html</a></li> <li>• Cisco uBR10012 Universal Broadband Router Hardware Installation Guide <a href="http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/installation/guide/hig.html">http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/installation/guide/hig.html</a></li> <li>• <i>Regulatory Compliance and Safety Information for the Cisco uBR10012 Universal Broadband Router</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/regulatory/compliance/ub10rcsi.html">http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/regulatory/compliance/ub10rcsi.html</a></li> <li>• <i>Cisco uBR10012 Universal Broadband Router Performance Routing Engine Module</i> <a href="http://www.cisco.com/en/US/docs/interfaces_modules/cable/performance_routing_engine/installation/guide/pre5096.html">http://www.cisco.com/en/US/docs/interfaces_modules/cable/performance_routing_engine/installation/guide/pre5096.html</a></li> </ul>
Cisco uBR10012 field-replaceable units (FRUs) and fiber-optic maintenance	<ul style="list-style-type: none"> <li>• <i>Cisco uBR10012 Install and Upgrade Guides</i> <a href="http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_installation_guides_list.html</a></li> <li>• For information about cleaning fiber-optic connections, go to the following URL: <a href="http://www.cisco.com/en/US/tech/tk482/tk876/technologies_white_paper09186a0080254eba.shtml">http://www.cisco.com/en/US/tech/tk482/tk876/technologies_white_paper09186a0080254eba.shtml</a></li> </ul>

Related Topic	Document Title
Cisco uBR10012 software, configuration, and features	<ul style="list-style-type: none"> <li data-bbox="493 260 1521 401">• <i>Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide</i> <a href="http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/b_10k_sip_spa_scg.html">http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/configuration/ubr10012/b_10k_sip_spa_scg.html</a></li> <li data-bbox="493 415 1521 527">• <i>Cisco Cable Wideband Solution Design and Implementation Guide, Release 1.0</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/wideband/solution/guide/release_1.0/2component.html">http://www.cisco.com/en/US/docs/cable/cmts/wideband/solution/guide/release_1.0/2component.html</a></li> <li data-bbox="493 541 1521 682">• Release Notes for Cisco uBR10012 Universal Broadband Router for Cisco IOS Release 12.3 BC <a href="http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/release/notes/12_3bc/ubr10k_123bc_rn.html">http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/release/notes/12_3bc/ubr10k_123bc_rn.html</a></li> <li data-bbox="493 697 1521 772">• <i>Cisco uBR10012 Universal Broadband Router Software Configuration Guide</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/configuration/guide/scg.html">http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/configuration/guide/scg.html</a></li> <li data-bbox="493 787 1521 898">• Cisco uBR10012 Router Software Features <a href="http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guides_list.html">http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guides_list.html</a></li> <li data-bbox="493 913 1521 989">• <i>Cisco Cable Modem Termination System Feature Guide</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/feature/guide/cmtsfg.html">http://www.cisco.com/en/US/docs/cable/cmts/feature/guide/cmtsfg.html</a></li> <li data-bbox="493 1003 1521 1115">• <i>Wideband Modem Resiliency Feature Guide</i> <a href="http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_wm_resiliency.html">http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_wm_resiliency.html</a></li> <li data-bbox="493 1129 1521 1241">• <i>Dynamic Bandwidth Sharing on the Cisco CMTS Router Feature Guide</i> <a href="http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_dyn_bw_sharing.html">http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/cmts_dyn_bw_sharing.html</a></li> <li data-bbox="493 1255 1521 1344">• <i>DOCSIS WFQ Scheduler on the Cisco CMTS Routers Feature Guide</i> <a href="http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_docsis_wfq_sch.html">http://www.cisco.com/en/US/docs/ios/cable/configuration/guide/ubr_docsis_wfq_sch.html</a></li> </ul>

Related Topic	Document Title
Cisco IOS command reference and related information	<ul style="list-style-type: none"> <li>For Cisco Wideband SIP and Wideband SPA commands, see Chapter 11, “SIP and SPA Commands” in the <i>Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide</i>.</li> <li><i>Cisco Broadband Cable Command Reference Guide</i> <a href="http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_book.html">http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_book.html</a></li> <li><i>Cisco IOS Release 12.3 web page</i> <a href="http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/index.html">http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/index.html</a></li> <li><i>Cisco CMTS Error Messages</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/system/message/uberrchap2.html">http://www.cisco.com/en/US/docs/cable/cmts/system/message/uberrchap2.html</a></li> <li><i>Cisco CMTS Universal Broadband Router MIB Specifications Guide</i> <a href="http://www.cisco.com/en/US/docs/cable/cmts/mib/reference/guide/mibv5ubr.html">http://www.cisco.com/en/US/docs/cable/cmts/mib/reference/guide/mibv5ubr.html</a></li> </ul>
Additional cable/broadband information resources	<ul style="list-style-type: none"> <li>Cisco uBR10012 troubleshooting and alerts <a href="http://www.cisco.com/en/US/products/hw/cable/ps2209/tsd_products_support_troubleshoot_and_alerts.html">http://www.cisco.com/en/US/products/hw/cable/ps2209/tsd_products_support_troubleshoot_and_alerts.html</a></li> <li>Cisco Cable/Broadband Software Center web page <a href="http://www.cisco.com/en/US/products/ps6895/serv_group_home.html">http://www.cisco.com/en/US/products/ps6895/serv_group_home.html</a></li> <li>Cisco Cable/Broadband Technical Support web page <a href="http://www.cisco.com/cisco/web/psa/default.html?mode=tech">http://www.cisco.com/cisco/web/psa/default.html?mode=tech</a></li> <li>Cisco Multiservice Broadband Cable Guide <a href="http://www.cisco.com/en/US/prod/collateral/video/ps8806/ps5684/ps2209/prod_brochure09186a008014eeb0.pdf">http://www.cisco.com/en/US/prod/collateral/video/ps8806/ps5684/ps2209/prod_brochure09186a008014eeb0.pdf</a></li> </ul>

## Conventions

This guide uses the following conventions for command syntax descriptions and textual emphasis:

**Table 2 Command Syntax and Emphasis Conventions**

Convention	Description
<b>boldface</b> font	Commands and keywords are in <b>boldface</b> .
<i>italic</i> font	Arguments for which you supply values are in <i>italics</i> .
[ ]	Elements in square brackets are optional.
{x   y   z}	Alternative, mutually exclusive, keywords are grouped in braces and separated by vertical bars.
[x   y   z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in screen font.
<b>boldface screen</b> font	Information you must enter is in <b>boldface screen</b> font.

**Table 2** Command Syntax and Emphasis Conventions (continued)

Convention	Description
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords, are in angle brackets in contexts where italics are not available.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point ( ! ) or a pound sign ( # ) at the beginning of a line of code indicates a comment line.

**Note**

This symbol means *reader take note*. Notes contain helpful suggestions or references to material not This symbol means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

## Obtaining Documentation and Submitting a Service Request

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

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